

Технические характеристики

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CytroPac small power unit

Type CytroPac



CytroPac

► Component series 1X

Features

- Integrated frequency converter
- Power 1.5 ... 4.0 kW with identical frame size and interfaces
- Power unit is suitable for S1 operation (continuous operation)
- Early warning signals in case of faults regarding oil level, temperature, return flow filter and frequency converter
- Plug and run (electrical connection via plug-in connection)
- Integrated cooling for motor and frequency converter, optionally also for active oil cooling
- Noise-reduced design
- Integrated oil drain facility
- Integrated return flow filter
- Reduced oil volume due to degassing-optimized tank
- Compact design
- Prestart Control to reduce the collapse of pressure
- Sleep function to reduce the power consumption, e.g. during accumulator charging operation.

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Ordering code

01	02	03	04	05	06	07	08	09	10	11	12					
CYTROPAC	-	1X	/	20	/		/	2	/		/	1	/	7035	/	*

01	Small power unit	CYTROPAC
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02	Component series 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	1X
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Tank size

03	20 liters	20
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Drive

04	Asynchronous motor with frequency converter	AF
	Asynchronous motor with frequency converter and STO	ST

Performance class

05	1.5 kW	1
	2.2 kW	2
	3.0 kW	3
	4.0 kW	4

Pump

06	Size 4	AS04
	Size 5	AS05
	Size 8	AS08
	Size 11	AS11
07	Maximum operating pressure 240 bar	2

Sensor technology

08	Basic	B
	Premium	P

Cooling type / maximum cooling power fluid ¹⁾

09	Without additional cooling packages	WA
	500 ... 1000 Watt (1 cooling package) ²⁾	WB
	1000 ... 1500 Watt (2 cooling packages) ²⁾	WC
	1500 ... 2000 Watt (3 cooling packages) ²⁾	WD

Filling

10	Return flow filter	1
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Coloring

11	RAL 7035	7035
12	Further details in the plain text	*

¹⁾ The connection to a cooling water supply for cooling the motor and the frequency converter must always be ensured before the operation, also in version WA.

²⁾ Depending on the water inlet temperature, oil level, pressure and flow

**Notice:**

The required operating pressure can be pre-set at the factory. Please indicate in the order. If there is no specification, the operating pressure is set at the factory to 20 bar.

Selection table**CytroPac power 1.5 kW**

Power in kW	Displacement in cm ³ /r	Sensor technology design	Cooling type	Material number	Material number STO
1.5	4	Basic	WA	R901500001	R901501001
			WB	R901500002	R901501002
			WC	R901500003	R901501003
			WD	R901500004	R901501004
		Premium	WA	R901500009	R901501009
			WB	R901500010	R901501010
			WC	R901500011	R901501011
			WD	R901500012	R901501012
	5.5	Basic	WA	R901500013	R901501013
			WB	R901500014	R901501014
			WC	R901500015	R901501015
			WD	R901500016	R901501016
		Premium	WA	R901500021	R901501021
			WB	R901500022	R901501022
			WC	R901500023	R901501023
			WD	R901500024	R901501024
	8	Basic	WA	R901500025	R901501025
			WB	R901500026	R901501026
			WC	R901500027	R901501027
			WD	R901500028	R901501028
		Premium	WA	R901500033	R901501033
			WB	R901500034	R901501034
			WC	R901500035	R901501035
			WD	R901500036	R901501036
11	Basic	WA	R901500037	R901501037	
		WB	R901500038	R901501038	
		WC	R901500039	R901501039	
		WD	R901500040	R901501040	
	Premium	WA	R901500045	R901501045	
		WB	R901500046	R901501046	
		WC	R901500047	R901501047	
		WD	R901500048	R901501048	

Selection table**CytoPac power 2.2 kW**

Power in kW	Displacement in cm ³ /r	Sensor technology design	Cooling type	Material number	Material number STO
2.2	4	Basic	WA	R901500061	R901501061
			WB	R901500062	R901501062
			WC	R901500063	R901501063
			WD	R901500064	R901501064
		Premium	WA	R901500069	R901501069
			WB	R901500070	R901501070
			WC	R901500071	R901501071
			WD	R901500072	R901501072
	5.5	Basic	WA	R901500073	R901501073
			WB	R901500074	R901501074
			WC	R901500075	R901501075
			WD	R901500076	R901501076
		Premium	WA	R901500081	R901501081
			WB	R901500082	R901501082
			WC	R901500083	R901501083
			WD	R901500084	R901501084
	8	Basic	WA	R901500085	R901501085
			WB	R901500086	R901501086
			WC	R901500087	R901501087
			WD	R901500088	R901501088
Premium		WA	R901500093	R901501093	
		WB	R901500094	R901501094	
		WC	R901500095	R901501095	
		WD	R901500096	R901501096	
11	Basic	WA	R901500097	R901501097	
		WB	R901500098	R901501098	
		WC	R901500099	R901501099	
		WD	R901500100	R901501100	
	Premium	WA	R901500105	R901501105	
		WB	R901500106	R901501106	
		WC	R901500107	R901501107	
		WD	R901500108	R901501108	

Selection table**CytoPac power 3.0 kW**

Power in kW	Displacement in cm ³ /r	Sensor design	Cooling type	Material number	Material number STO
3.0	4	Basic	WA	R901500121	R901501121
			WB	R901500122	R901501122
			WC	R901500123	R901501123
			WD	R901500124	R901501124
		Premium	WA	R901500129	R901501129
			WB	R901500130	R901501130
			WC	R901500131	R901501131
			WD	R901500132	R901501132
	5.5	Basic	WA	R901500133	R901501133
			WB	R901500134	R901501134
			WC	R901500135	R901501135
			WD	R901500136	R901501136
		Premium	WA	R901500141	R901501141
			WB	R901500142	R901501142
			WC	R901500143	R901501143
			WD	R901500144	R901501144
	8	Basic	WA	R901500145	R901501145
			WB	R901500146	R901501146
			WC	R901500147	R901501147
			WD	R901500148	R901501148
Premium		WA	R901500153	R901501153	
		WB	R901500154	R901501154	
		WC	R901500155	R901501155	
		WD	R901500156	R901501156	
11	Basic	WA	R901500157	R901501157	
		WB	R901500158	R901501158	
		WC	R901500159	R901501159	
		WD	R901500160	R901501160	
	Premium	WA	R901500165	R901501165	
		WB	R901500166	R901501166	
		WC	R901500167	R901501167	
		WD	R901500168	R901501168	

CytoPac power 4.0 kW

Power in kW	Displacement in cm ³ /r	Sensor technology design	Cooling type	Material number	Material number STO
4.0	4	Basic	WA	R901500181	R901501181
			WB	R901500182	R901501182
			WC	R901500183	R901501183
			WD	R901500184	R901501184
		Premium	WA	R901500189	R901501189
			WB	R901500190	R901501190
			WC	R901500191	R901501191
			WD	R901500192	R901501192
	5.5	Basic	WA	R901500193	R901501193
			WB	R901500194	R901501194
			WC	R901500195	R901501195
			WD	R901500196	R901501196
		Premium	WA	R901500201	R901501201
			WB	R901500202	R901501202
			WC	R901500203	R901501203
			WD	R901500204	R901501204
	8	Basic	WA	R901500205	R901501205
			WB	R901500206	R901501206
			WC	R901500207	R901501207
			WD	R901500208	R901501208
Premium		WA	R901500213	R901501213	
		WB	R901500214	R901501214	
		WC	R901500215	R901501215	
		WD	R901500216	R901501216	
11	Basic	WA	R901500217	R901501217	
		WB	R901500218	R901501218	
		WC	R901500219	R901501219	
		WD	R901500220	R901501220	
	Premium	WA	R901500225	R901501225	
		WB	R901500226	R901501226	
		WC	R901500227	R901501227	
		WD	R901500228	R901501228	

Technical data

(For applications outside these values, please consult us!)

General		
Installation position		Vertical
Line connections	▶ Pressure port	G1/2
	▶ Return flow	G1/2 (via filter) G1 (2x, direct)
Place of installation		Industrial building with minor corrosion conditions Air humidity < 80%
Ambient temperature range (during operation)	°C	+10 ... +40
Material	▶ Oil tank	Polyamide
	▶ Hood	Polyamide
	▶ Central plate	GG, zinc thin layer-passivated (chromium VI-free)
Weight (depending on configuration level) without oil	kg	60 ... 65

Hydraulic		
Maximum operating pressure	bar	See characteristic curves from page 9
Maximum flow	l/min	See characteristic curves from page 9
Oscillating volume	l	10
Tank capacity	l	20
Maximum return flow via return flow filter	l/min	35
Temperature range hydraulic fluid	°C	+10 ... +65
Admissible hydraulic fluids		See table below
Maximum admissible degree of contamination of the hydraulic fluid; cleanliness class according to ISO 4406 (c)		Class 20/18/15 ¹⁾
Return flow filter		35.0035CP H10XL-R00-0-M
	▶ Filter rating	µm 10
	▶ Cold start	°C < 10 → maximum flow 10 l/min
	▶ Early warning	% 75
	▶ Shut-off	% 100
Filling level monitoring	▶ Early warning	l 10
	▶ Shut-off	l 13
Temperature monitoring	▶ Early warning	°C 60
	▶ Shut-off	°C 65
Pump	▶ Minimum flow	l/min 0.5 ... 2; depending on motor and pump size
	▶ Viscosity range hydraulic fluid	mm ² /s 12 ... 800 (admissible range, for start at most 2000) 20 ... 100 (recommended range)

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HLP ISO VG 32 HLP ISO VG 46 HLP ISO VG 68	NBR, FKM	DIN 51524	90220

Important information on hydraulic fluids:

- ▶ For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.


¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.

Technical data

(For applications outside these values, please consult us!)

Electric			
	▶ Performance class	kW	1.5; 2.2; 3.0; 4.0
	▶ Voltage (according to IEC 60038)	V	380 ... 480 AC (-15% / +10%)
	▶ Frequency	Hz	50/60
Protection class according to DIN EN 60529			IP 54
Maximum pre-fuse protective motor switch (on the customer side)	▶ Power 1.5 kW	max. A	10
	▶ Power 2.2 kW	max. A	16
	▶ Power 3.0 kW	max. A	20
	▶ Power 4.0 kW	max. A	20

Cooling water			
Requirement	▶ Flow	l/min	> 8
Cooling water supply	▶ Inlet temperature	°C	15 ... 30
	▶ Connections		G1/2 (2x, cylindrical)
	▶ Maximum glycol share	%	30
	▶ Maximum cooling water pressure	bar	10

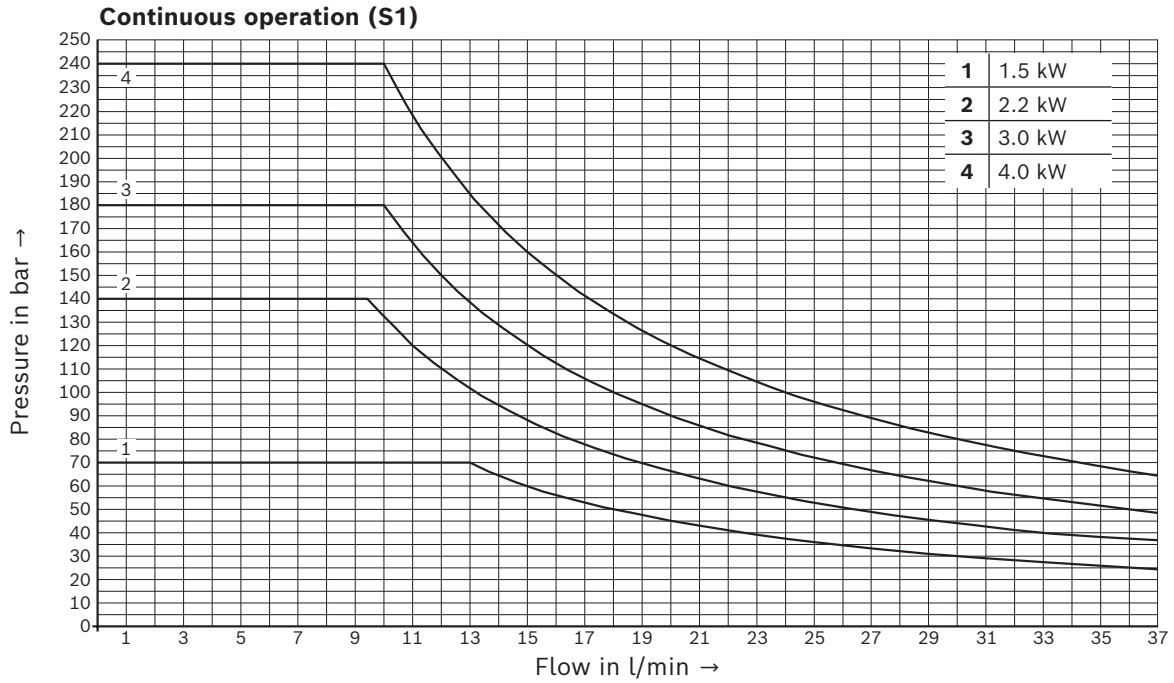
 **Notice:**

The cooling water supply for cooling the motor and the frequency converter must always be activated before the operation. It must be ensured that the cooling water supply temperature does not fall below the dewpoint of the ambient air of the power unit. Different coolant possible after consultation.

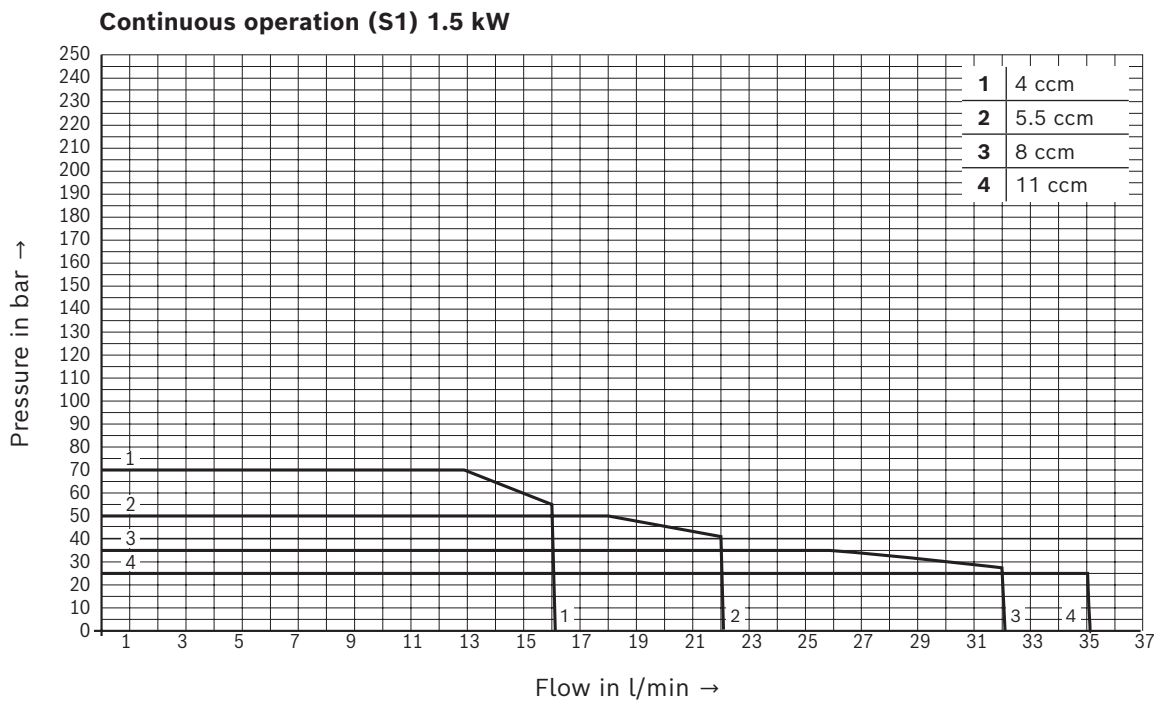
Characteristic curves

(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$; voltage 380 V - 480 V)

Performance diagram for the project planning of the performance class



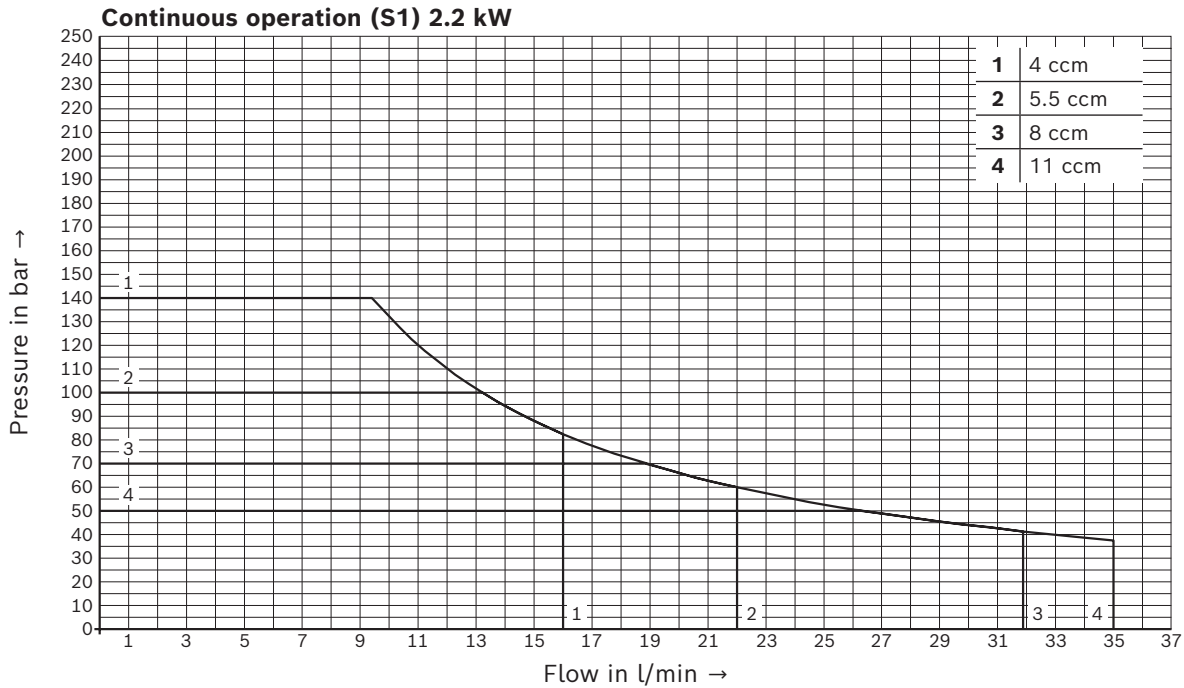
Performance diagram for selecting the pump



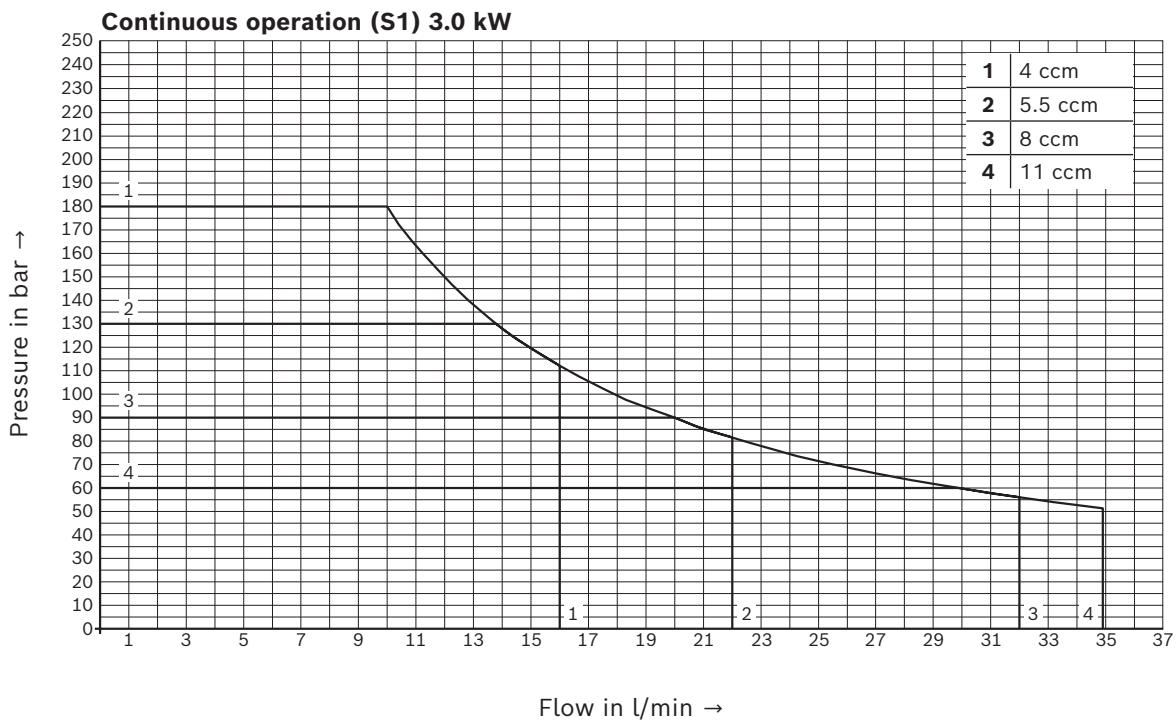
Characteristic curves

(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$; voltage 380 V - 480 V)

Performance diagram for selecting the pump



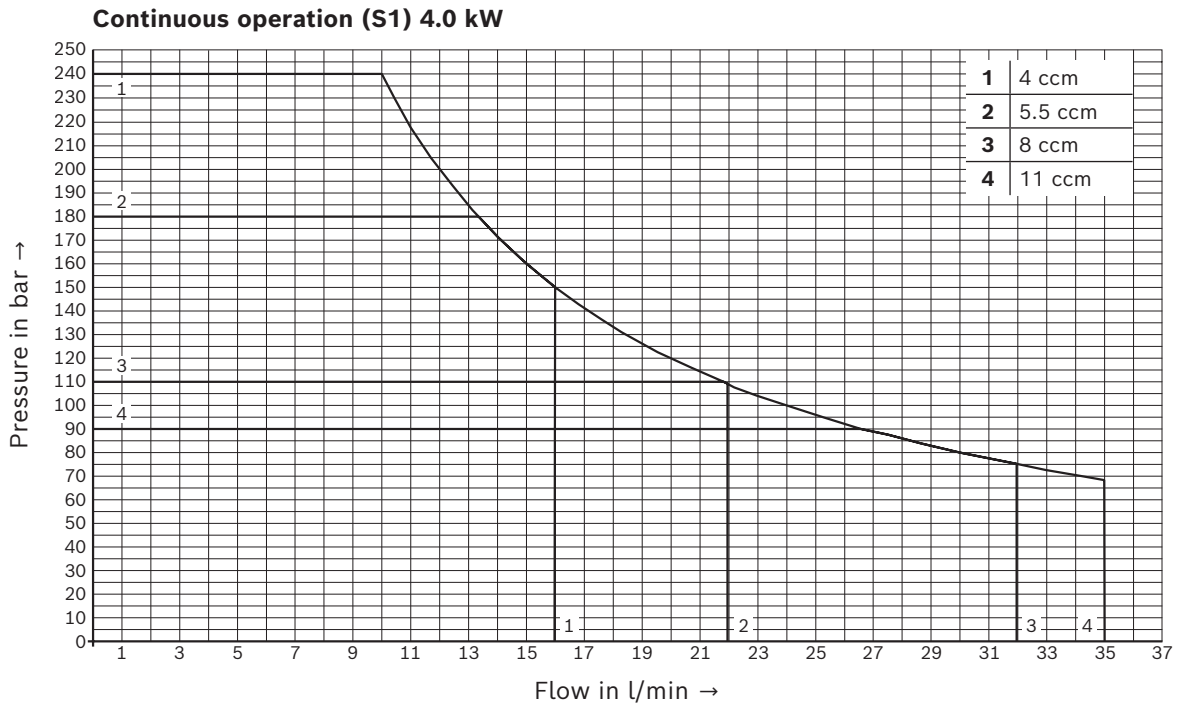
Performance diagram for selecting the pump



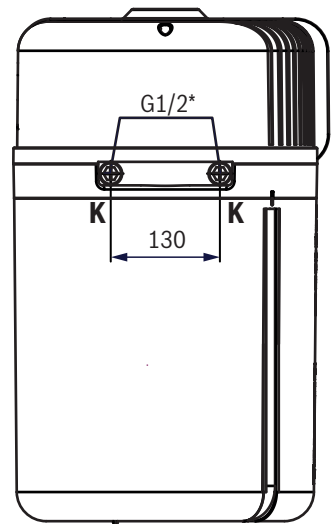
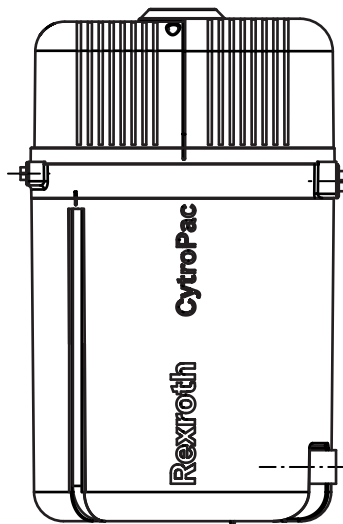
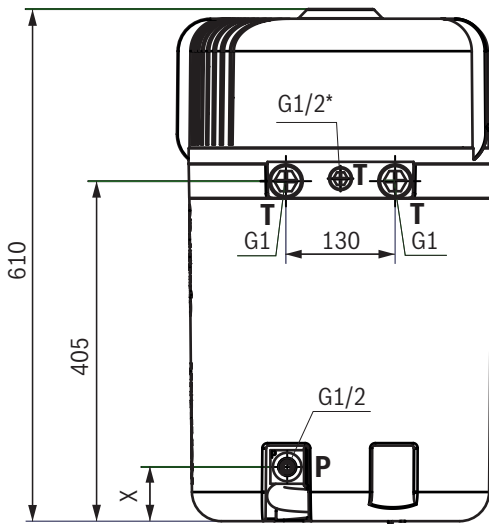
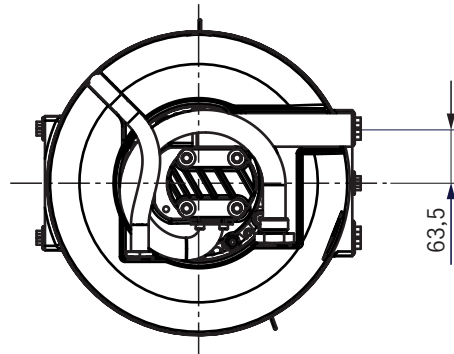
Characteristic curves

(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$; voltage 380 V - 480 V)

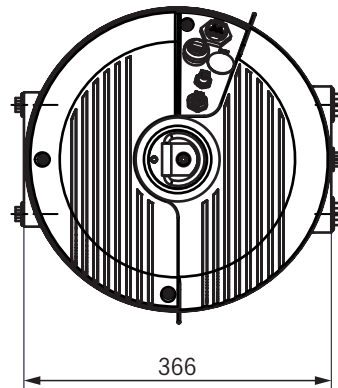
Performance diagram for selecting the pump



Dimensions:
(dimensions in mm)



* according to DIN EN ISO 1179-2

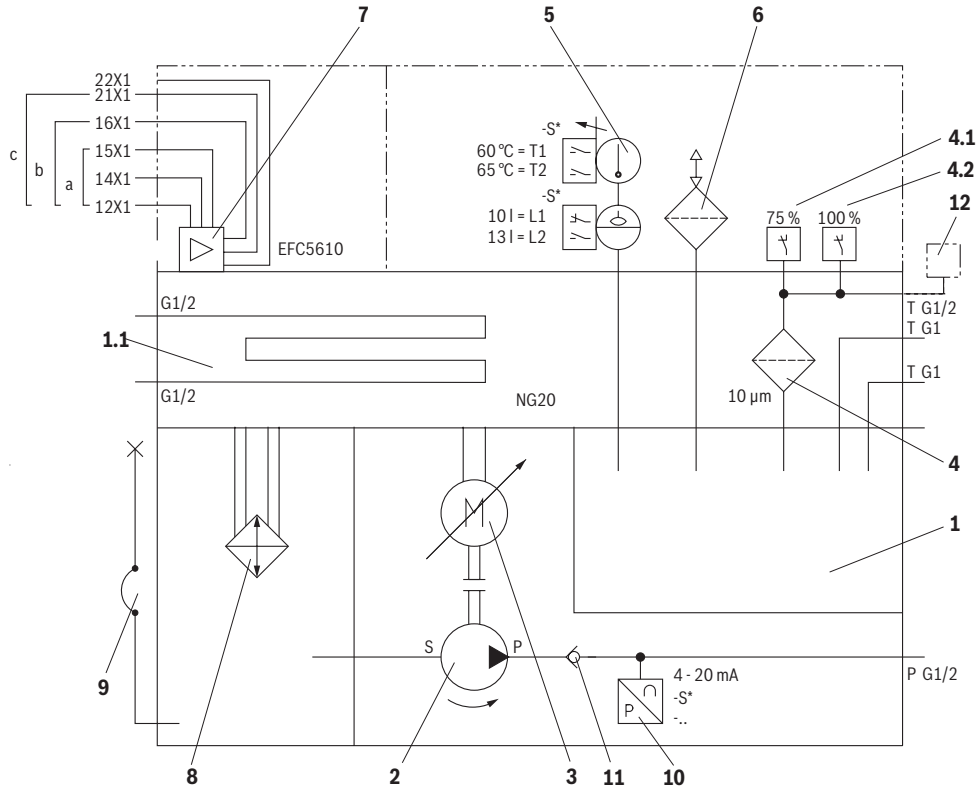


X (port p)	Pump design
65	AS04
64	AS05
61	AS08
58	AS11

Notice:

The power unit must be set up on a level area, preferably on a damping mat.
For the fastening of the power unit, a fastening set (see Accessories) is available.
The cooling water ports K: G1/2 are to be designed with cylindrical fittings.

Circuit diagram, hydraulic



- 1 Oil tank
- 1.1 Central plate (integrated heat exchanger)
* Feed/return flow can be exchanged
- 2 Pump
- 3 Motor
- 4 Return flow filter
- 4.1 Filter contamination sensor 75%
- 4.2 Filter contamination sensor 100%
- 5 Filling level and temperature sensor
- 6 Breathing filter
- 7 Frequency converter
- 8 Cooling package (option)
- 9 Visual oil level check and oil drain
- 10 Pressure load cell
- 11 Check valve
- 12 Filling coupling (optional)

Electrical connections

- a) Sensor technology configuration: "Basic"
 - 11 12X1: Feed-in/voltage supply
 - 12 15X1: Enable signal 24 VDC (M12x1, 8-pole), customer interface
 - 13 14X1: Mini USB service interface
- b) Sensor technology configuration: "Advanced" in addition:
 - 14 16X1: M12x1 evaluation sensors: (wired at the plant)
- c) Sensor technology configuration: "Premium" in addition:
 - 15 21X1: Multi-Ethernet interface, network input
 - 16 21X2: Multi-Ethernet interface, network input
 - 17 22X1: STO interface



STO functionality (Safe Torque Off)

The STO function is used if separation from the mains is required to prevent an unexpected start-up. By means of this function, the energy supply of the motor can be safely interrupted.

Prestart Control (pressure drop/excessive pressure compensation)

By means of a control signal, the drive unit is already accelerated before hydraulic actuators are connected. This reduces the collapse of pressure and you can possibly do without a hydraulic accumulator.

A1 option

With the A1 option, the CytroPac is available with another tank port. The port is designed in size G1" and is located next to the pressure port.

This option is selected in the type key with .../7035/A1

In this case, the drive cannot generate any torque / force and thus no dangerous movements.

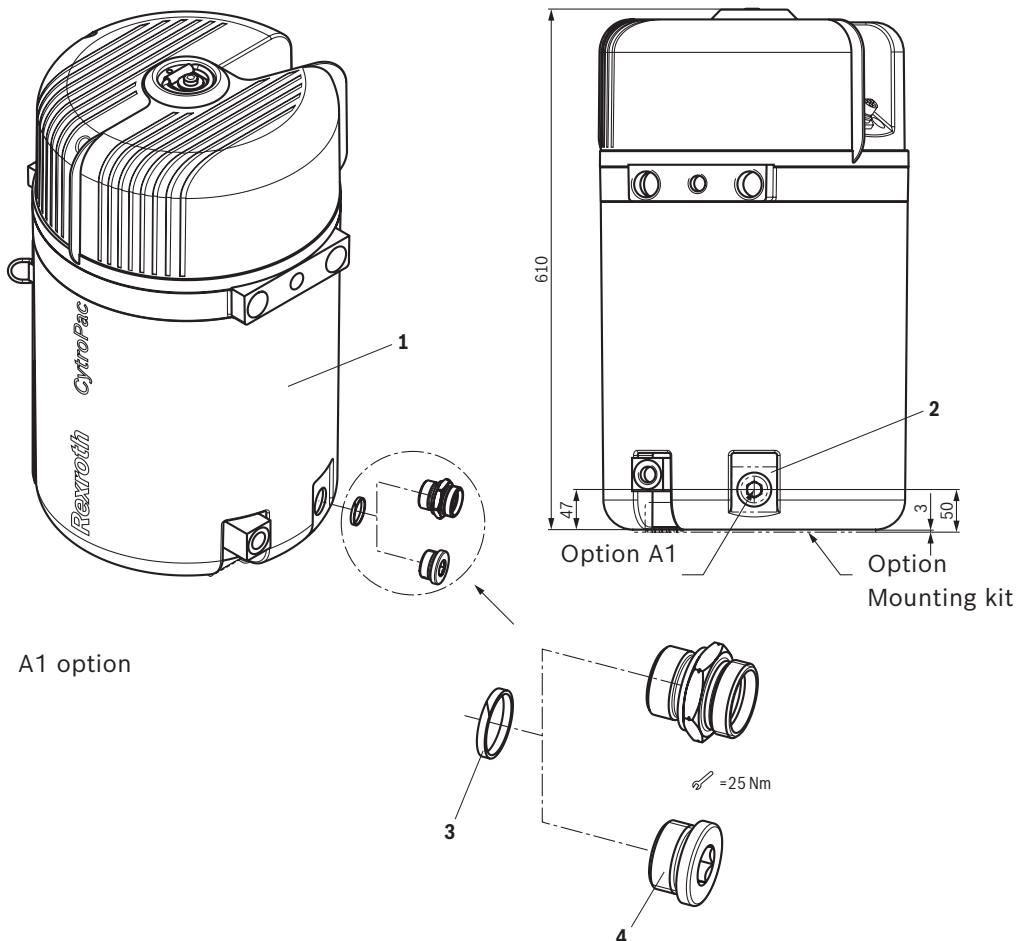
Sleep function

By means of the integrated pressure monitoring, the hydraulic power unit is automatically switched off if the command pressure is reached at a current flow below the set threshold value or respectively switched on if the pressure is dropping.

This increases the energy efficiency and you can, for example, realize an accumulator charging circuit without additional control signals (see R911378635 Sytronix quick guide).

Notice:

For further information, refer to the EFC operating instructions R911369847.

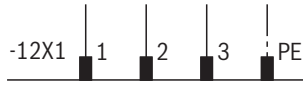


Sensor and interface selection

		Basic	Advanced	Premium
Sensor technology	Filling level sensor early warning (10 liters)	✓	✓	✓
	Filling level sensor shut-off (13 liters)	✓	✓	✓
	Oil temperature sensor early warning (60 °C)	✓	✓	✓
	Oil temperature sensor shut-off (65 °C)	✓	✓	✓
	Filter contamination sensor early warning (75%)	✓	✓	✓
	Filter contamination sensor shut-off (100%)	✓	✓	✓
	Shut-off overtemperature of the drive unit	✓	✓	✓
Analysis	Wiring and evaluation of the sensor technology by machine control necessary	✓	–	–
	Wiring and evaluation of the sensor technology integrated in the power unit	–	✓	✓
	Read-out of all power unit parameters for condition monitoring	–	–	✓
Interfaces	Input (24 V) enable power unit	✓	✓	✓
	Input (24 V) reset power unit	✓	✓	✓
	USB service interface	✓	✓	✓
	Output - power unit ready for operation (24 V); fault 0 V	✓	✓	✓
	Output - power unit early warning (24 V)	–	✓	✓
	Multi-Ethernet interface	–	–	✓
Functions	Sleep function for accumulator charging circuit	✓	✓	✓
	Up to four parameter configurations (e.g. pressure ratings)	✓	✓	✓
	Prestart Control	✓	✓	✓
	Error visualization via LED strip	–	✓	✓
	Access to and adjustment of all power unit parameters (e.g. pressure ratings, flows)	–	–	✓

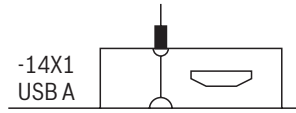
Electrical connections

12X1 Feed-in / voltage supply



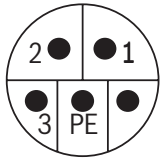
Feed-in voltage supply including pre-fuse and mains contactor are to be realized by the customer.

14X1 USB to the frequency converter



Interface frequency converter (USB A-mini) see page 26.

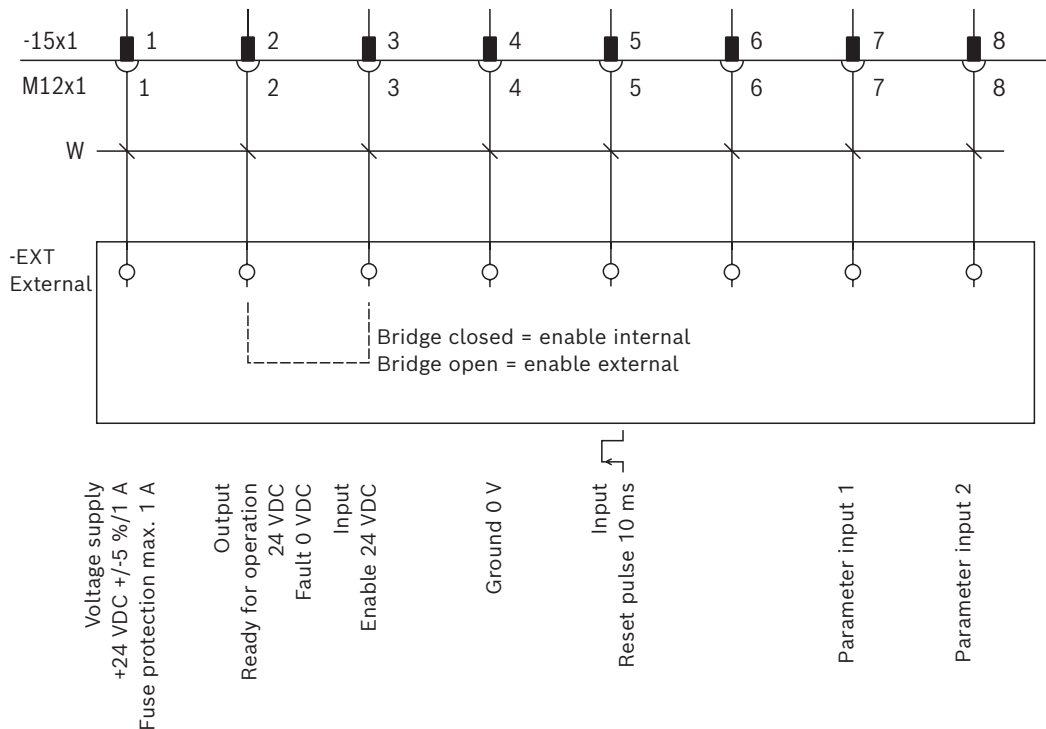
12X1 power connector (optionally available, see chapter Accessories)



Pin	Function
1	L1
2	L2
3	L3

Voltage	3P 380 V ...480 VAC (-15% / +10%)
Frequency	50/60 Hz
Assignment	L1/L2/L3/PE
Rotating field	Rotating field right
Pre-fuse customer side	Power 1.5 kW → maximum 10 A Power 2.2 kW → maximum 16 A Power 3.0 kW → maximum 20 A Power 4.0 kW → maximum 20 A

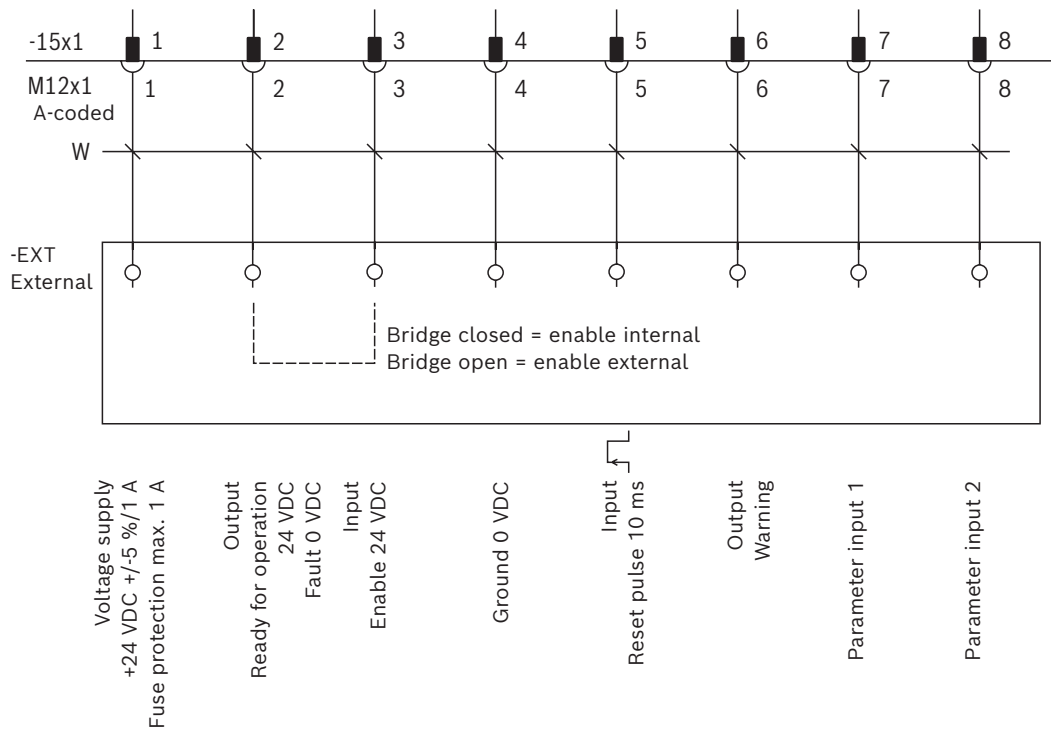
15X1 enable, customer interface (Basic)



Notice:

If no Ready for operation → then Fault

15X1 enable, customer interface (Premium)



Notice:
If no Ready for operation → then Fault

15x1 enable (Basic and Premium)

Pin	Function	Basic	Advanced	Premium
		1	Voltage supply 24 VDC	✓
2	Ready for operation	✓	✓	*
3	Enable	✓	✓	*
4	Ground	✓	✓	✓
5	Fault acknowledgment	✓	✓	*
6	Warning	-	✓	*
7	Selection of pressure command value bit 0	✓	✓	*
8	Selection of pressure command value bit 1	✓	✓	*



(Connector)
M12x1; 8-pole,
A-coded

* These functions can be realized via field bus.

Pin 8 bit1	Pin 7 bit0	Parameter	Designation
0	0	Parameter set 1	F1.05 Pressure command digital setting 0
0	1	Parameter set 2	F1.06 Pressure command digital setting 1
1	0	Parameter set 3	F1.07 Pressure command digital setting 2
1	1	Parameter set 4	F1.08 Pressure command digital setting 3

Notice:
In the "Premium" configuration level, the sensors are wired with the integrated control and evaluated at the factory. The sensor conditions are signaled via the integrated LED strip and can be read out via the USB service interface.
Changing the operating pressure:
In the Basic version, up to four pressure ratings can be set. The settings are described accordingly in the operating instructions R.51055-B CytroPac in chapter 8.3.1.

22X1- Safe Torque OFF (STO)

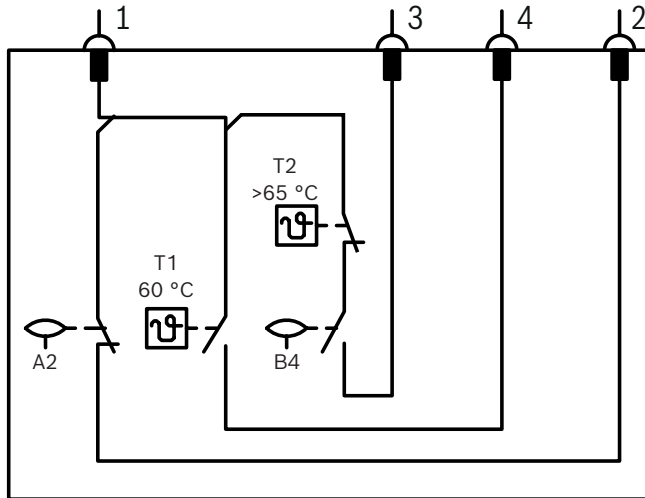


(Connector)
M12x1; 8-pole,
A-coded

Pin	Function
1	Not used (NC)
2	STO 1 +
3	STO 1 -
4	STO 2 +
5	STO 2 -
6	Not used (NC)
7	Not used (NC)
8	Not used (NC)

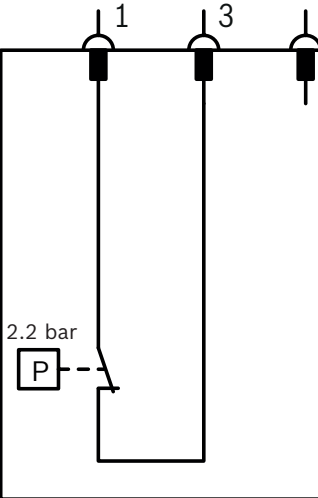
Filling level, temperature and filter contamination sensor

M12x1 thread
-16B1



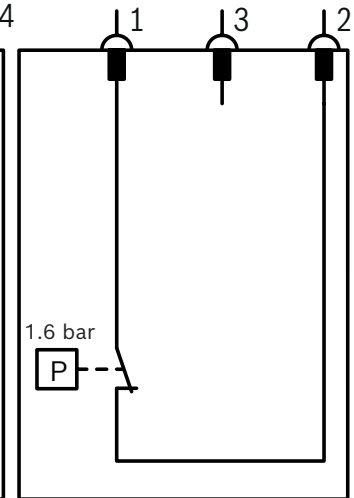
Filling level/
temperature sensor

M12x1 thread
-16B2



Filter contamination
sensor 100%

M12x1 thread
-16B3




Filter contamination
sensor 75%

Notice:


In the "Basic" configuration, the sensors have to be wired and evaluated on the customer side.

Filling level/temperature sensor

	Pin	Function
	1	Voltage supply 24 VDC
	2	Early warning level
	3	Shut-off level and temperature
	4	Early warning temperature


M12x1; 4-pole, A-coded
(Connector)

Filter contamination sensor 75%

	Pin	Function
	1	Voltage supply 24 VDC
	2	Early warning 75% at 1.6 bar


M12x1; 4-pole, A-coded
(Connector)

Filter contamination sensor 100%

	Pin	Function
	1	Voltage supply 24 VDC
	3	Early warning 100% at 2.2 bar

M12x1; 4-pole, A-coded
(Connector)

21X1 / 21X2 - Multi-Ethernet interface

	Device socket IP67 Push-Pull
---	------------------------------

Notice:

Use only suitable connectors and/or lines with protection class IP67.
Optionally available, see chapter Accessories on page 20

Accessories (separate order)

		12X1		Voltage supply	
		R901460889	LEITUNGSDOSE	0DEG *OPT.CYTROPAC	Power connector, straight without cable imperatively necessary for the operation
		R901477770	LEITUNGSDOSE	99.401.3537.7	Power connector straight with cable, open end; length: 2 m
		R901477934	LEITUNGSDOSE	99.402.3537.7	Power connector straight with cable, open end; length: 5 m
		R901477936	LEITUNGSDOSE	99.403.3537.7	Power connector straight with cable, open end; length: 10 m
		14X1		USB - service interface	
		R901486183	USB KABEL	USB 2.0 A/MINI-B 5 M&	USB cable with ferrite core, A/Mini - B; length: 5 m USB mobile phone or charging cables are not suitable and susceptible to fault
		15X1 / 22X1		Enable customer interface / STO	
Electric		R913002121	LEITUNGSDOSE	8P 7000-17-2910500	Bush straight shielded 8-pole M12, with free PUR line end; length: 5 m (8x0.25 mm ² / d=7.0 mm); 24 VAC/DC, max. 1.5 A, IP67
		R901467712	LEITUNGSDOSE	7000-17041-3771000	Bush straight with cable support sleeve 8-pole M12, with free PUR line end; length: 10 m (8x0.34 mm ² / d=6.2 mm); 30 VAC/DC, max. 2 A, IP65 and IP67 in stretched and screwed condition
		21X1 / 21X2		Multi-Ethernet interface¹⁾	
		R901469479	STECKER	IE-PS-V04P-RJ45-FH	Connector without cable
		R901471844	NETZWERKKABEL	RJ45/IP67-RJ65 5M	Length: 5 m; certificate: CAT 6A /RoHS
		R901471845	NETZWERKKABEL	RJ45/IP67-RJ65 10M	Length: 10 m; certificate: CAT 6A /RoHS
		R901492613	NETZWERKKABEL	RJ45/IP67-RJ65 20M	Length: 20 m; certificate: CAT 6A /RoHS
				General	
		R901451741	KABELSATZ	K160601NNZ	Optional cable set for Basic version to connect the sensors for filter contamination (early warning, shut-off) and level and temperature with one supply line
				Mounting kit	
		R901460890	BEFESTIGUNGSSATZ	BASE285 *OPT CYTROPAC	Foot mounting assembly kit
				Filling device	
Mechanical		R901460916	FUELLVORRICHTUNG	MD-012-2*OPT.CYTROPAC	Filling device assembly kit
		R900988089	KUPPLUNGSMUFFE	MD-012-0-WR521-19-1	Counterpart quick-release coupling
				Connection accessories	
		R901460961	ANSCHLUSSZUBEHOER	HYDR.CON*OPT.CYTROPAC	Oil and water fitting assembly kit
				Oil pan	
		R920062334	OELWANNE	CYTROPAC - 600X 500X 105-ES	Optional oil pan (stainless steel according to WHG)

¹⁾ With regard to IP67, we recommend using the Multi-Ethernet cable provided by Rexroth with Push-Pull connector

Accessories (separate order)

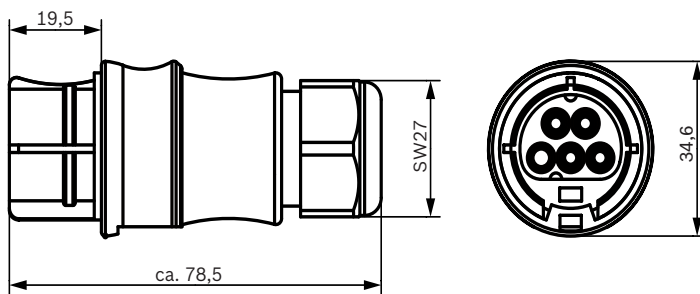
	Filter element (return flow filter)		
R928035258	35.0035CP H10XL-R00-0-M		
	Filter element (air filter)		
R901470062	LUFTFILTER	T MDF/1/BRC	Standard
R901471242	LUFTFILTER	T MDF/1/BR	If filling coupling R901460916 is mounted
	Oil/air cooler		
R901492913	OEL-LUFTKUEHLER AP300/2E*OPT.CYTROPAC		incl. mating connector
R901492896	ANSCHLUSSZUBEHOER COOLER*OPT.CYTROPAC		incl. hose and fittings
R901516546	SCHLAUCHSATZ COOLER*OPT.CYTROPAC		incl. hose and fittings
R901492898	Mounting kit GN528-PA-140-8,5-SW		incl. handle and hose
	Pressure limitation unit		
R901519129	DRUCKBEGR.EINHEIT 200BAR/2900PSI - CYT&		Set pressure up to 200 bar
R901519130	DRUCKBEGR.EINHEIT 315BAR/4568PSI - CYT&		Set pressure up to 315 bar

Mechanical

The frequency converter can be accessed and settings can be made using the IndraWorksDS software.

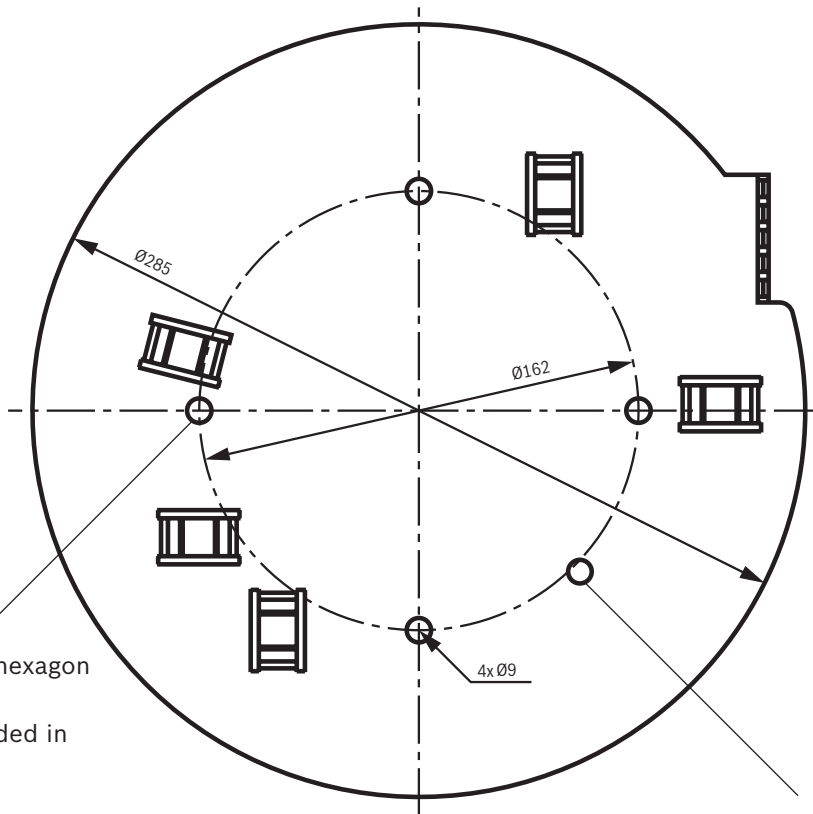
Power connector (12X1)

Material number	Denomination
R901460889	LEITUNGSDOSE 0DEG *OPT.CYTROPAC



Foot mounting

Material number	Denomination
R901460890	BEFESTIGUNGSSATZ BASE285 *OPT.CYTROPAC



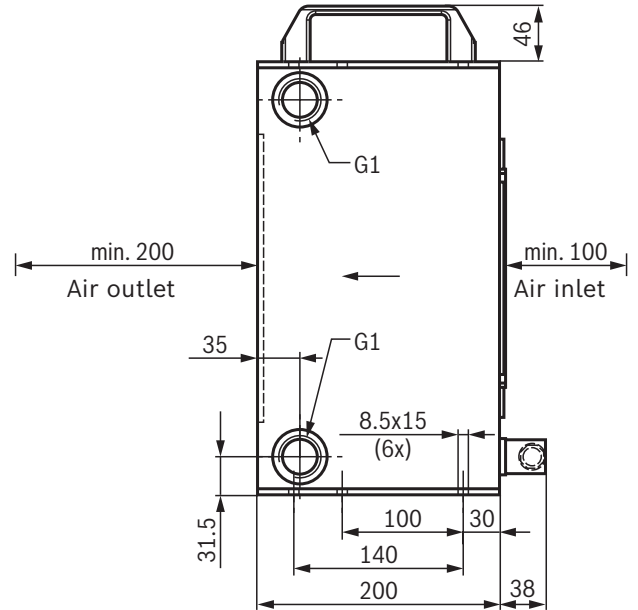
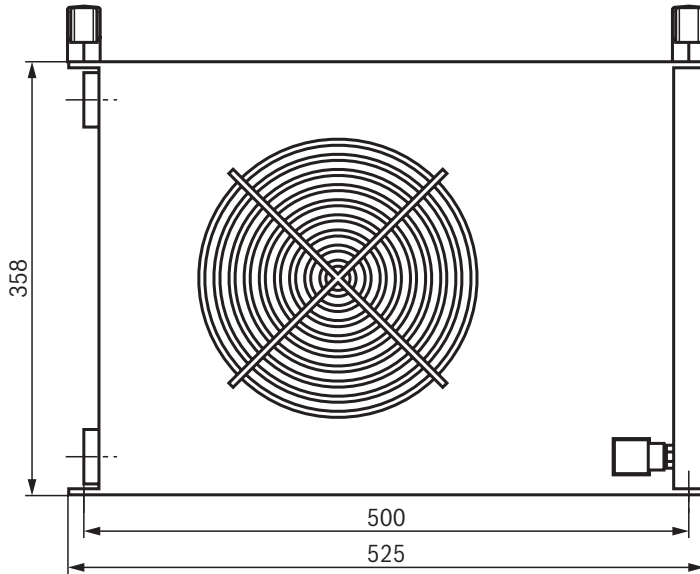
Foot mounting with 4x hexagon socket head cap screw M8 x 20 mm (not included in the scope of delivery)

Tank mounting at central plate with 1x hexagon socket head cap screw M6 x 430 mm (not included in the scope of delivery)



Oil/air cooler (optional)

Material number	Denomination
R901492913	OEL-LUFTKUEHLER AP300/2E*OPT.CYTROPAC (including mating connector)

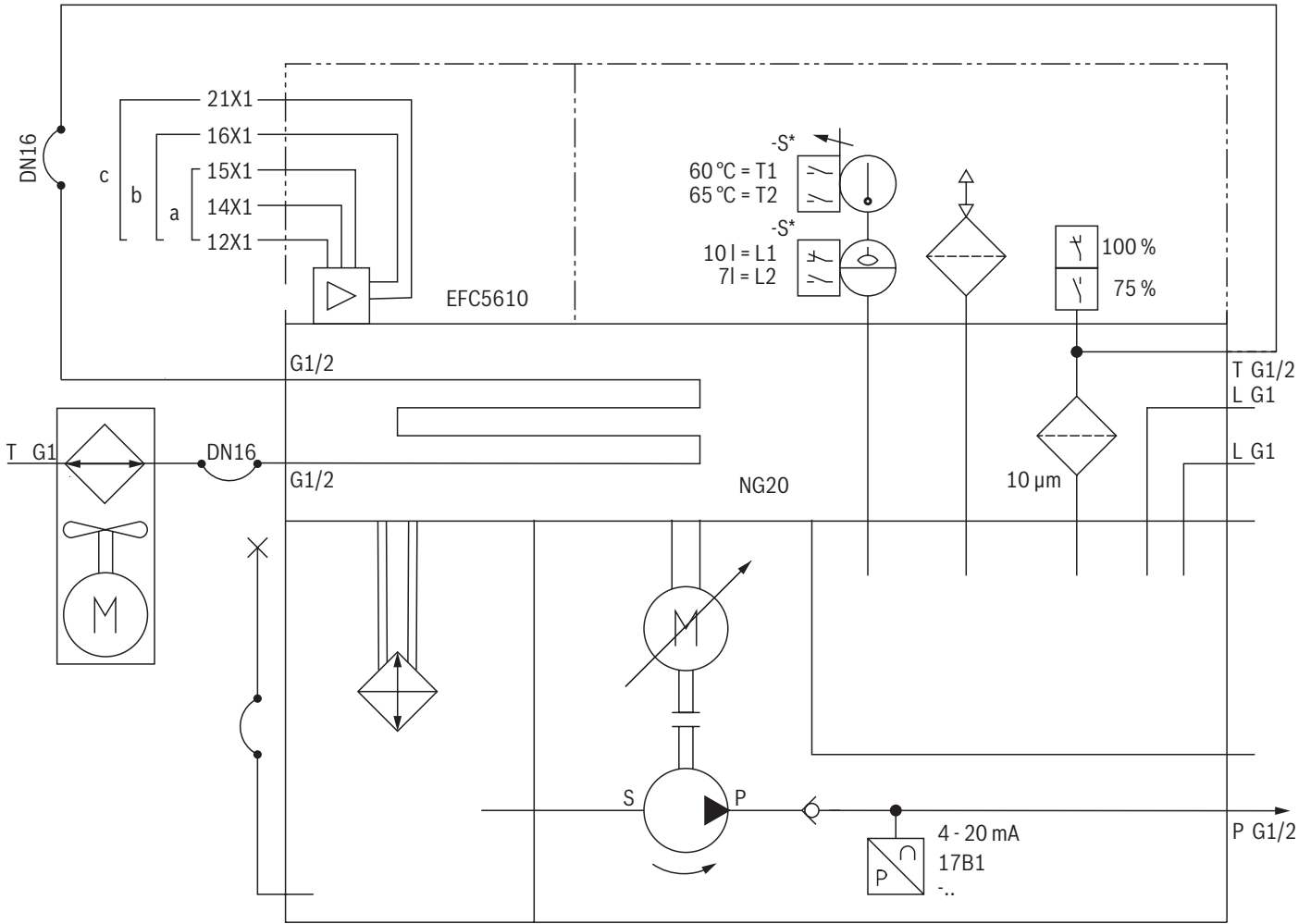

Accessories (optional)

1	R901492896	ANSCHLUSSZUBEHOER COOLER*OPT.CYTROPAC	including hose (900 mm) and fittings
2	R901516546	SCHLAUCHSATZCOOLER*OPT.CYTROPAC	including hose and fittings
3	R901492898	ANBAUSATZ GN528-PA-140-8,5-SW	including handle and screws
	R901494941	PARAMETERSATZ CYTROPAC-2/001	additional parameter set

Technical data

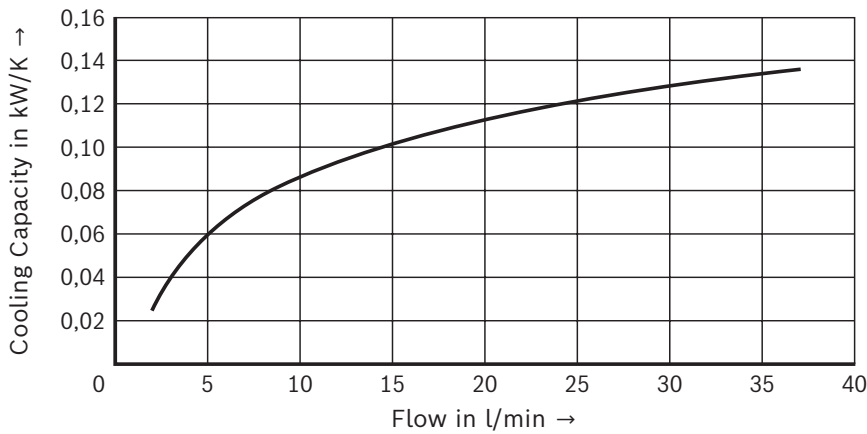
▶ Power	W	115
▶ Voltage (according to IEC 60038)	V	230
▶ Frequency	Hz	50/60
Protection class according to DIN EN 60529		IP 54
▶ Current	A	0.51
▶ Setting thermostat	°C	30
▶ Noise level	dB(A)	75
▶ Weight	kg	17
▶ Dimensions	mm	525 x 200 x 358

Circuit diagram oil/air cooler, hydraulic



Notice:
 If the oil/air cooler is used, no cooling packages are required at the CytroPac. In the CytroPac type key, the WA version is to be selected

Cooling power curve for optional oil/air cooler



Pressure limitation (optional)

Material number	Denomination
R901519129	DRUCKBEGR.EINHEIT 200BAR/2900PSI - CYT&
R901519130	DRUCKBEGR.EINHEIT 315BAR/4568PSI - CYT&



Contents assembly kit:

- ▶ Pressure relief valve DBDS (R. 25402)
- ▶ Minimes connection
- ▶ Hose
- ▶ Fittings

Technical data

Hydraulic		
Size	NG	6
Set pressure	bar	up to 200 (R901519129)
	bar	up to 315 (R901519130)
Port P		16S

Project planning information

- ▶ It has to be ensured before the commissioning that on the customer side, a pressure relief valve (set pressure 10% over nominal pressure, however at most 260 bar) has been installed in the pressure line.
- ▶ The feed-in and 24 V supply must be secured on the customer side, as described on page 16.
- ▶ For the cooling of the motor and the frequency converter, the power unit must imperatively be connected to cooling water.
- ▶ The connection of the power unit to the machine must be realized by means of hydraulic hoses (no rigid pipeline admissible).
- ▶ It must be ensured on the customer side that the cooling water supply temperature does not fall below the dewpoint of the ambient air of the power unit.
- ▶ The maximum operating pressure of 240 bar must not be exceeded.

Connection with IndraWorks

The Rexroth EFC 5610 frequency converter is integrated into the CytroPac; this frequency converter can be connected to an external PC by means of a mini USB cable. The frequency converter can be accessed and settings can be made via the IndraWorksDS software.

4. Select the interface 14X1 with the external PC in IndraWorks connection selection, click the "Serial" tab → interface xFc → Connect

The quick guide R911378635 contains further information on the handling of the frequency converter.

1. Connect the power unit to the interface 15X1 (24 V); only then may the voltage supply 12X1 be applied.
2. Open the IndraWorks software on an external computer
3. Connect the CytroPac to an external computer, using a mini USB cable and interface 14X1

Further information

- | | |
|---|------------------|
| ▶ Hydraulic fluids on mineral oil basis | Data sheet 90220 |
| ▶ Environmentally compatible hydraulic fluids | Data sheet 90221 |
| ▶ Selection of the filters | |
| ▶ Information on available spare parts | |
| ▶ EFC operating instructions | R911369847 |
| ▶ Quick guide FcP 5020 | R911378635 |

Hydraulic power unit

CytroBox



- ▶ Component series 1X
- ▶ Maximum operating pressure 315 bar
- ▶ Maximum flow 160 l/min

Features

- ▶ Integrated drive controller
- ▶ Power up to 30 kW with identical frame size and interfaces
- ▶ Servo drive
- ▶ Reduced hydraulic fluid volume due to degassing-optimized tank
- ▶ Optional set-up of different control systems

Contents

Features	1
Ordering code	2 ... 5
Circuit diagram	6
Technical data	7, 8
Electrical connections	9, 10
Interfaces	11, 12
Characteristic curves	13 ... 16
Dimensions	17
Return flow filter (optional)	18
Accessories	19
Project planning information	20
Further information	20

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	
CYTROBOX	-	/	A	A	A	/	/	00	0	/	0	/	*

01	Hydraulic power unit	CYTROBOX
----	----------------------	----------

Version

02	Standard	N
	Functionality extension	F

Oscillating volume

03	Maximum 50 liters	A
----	-------------------	---

Control cabinet

04	Position "top"	A
----	----------------	---

Cooling

05	Motor and hydraulic system water-cooled; control cabinet air-cooled	A
----	---	---

Motor-pump group (drive 1)

06	A10FZO010/MS2N07-E0BQL	AA
	A10FZO016/MS2N07-E0BQL	BA
	A10FZO032/MS2N10-F0BHL	CB
	A10FZO045/MS2N10-F0BHL	DB
	A10FZO063/MS2N10-F0BHL	EB

Converter (drive 1)

07	HCS03-0070	A
	HCS03-0100	B
	HCS03-0150	C

Motor-pump group (drive 2)

08	Without	00
----	---------	----

Converter (drive 2)

09	Without	0
----	---------	---

Oil cooling

10	Without (standard)	0
	Cooling power 4 kW	A
	Cooling power 10 kW	B

Oil treatment

11	Pressure filter (standard)	A
	Pressure filter and return flow filter	B

Sensor technology

12	Standard sensor package	AAA
	For more sensor packages, see selection table on page 5	e.g. AAE
13	Further details in the plain text	*

Ordering code

CytroBox selection table

Motor-pump group in cm ³	Converter in A (max)	Cooling	Sensor package	Denomination	Material number
10	70	without	AAA	CYTROBOX-N/AAA/AAA/000/0A/AAA	R901600033
			AAB	CYTROBOX-N/AAA/AAA/000/0A/AAB	R901600001
			ABG	CYTROBOX-N/AAA/AAA/000/0A/ABG	R901600068
		4 kW	AAA	CYTROBOX-N/AAA/AAA/000/AA/AAA	R901600041
			AAB	CYTROBOX-N/AAA/AAA/000/AA/AAB	R901600003
			ABG	CYTROBOX-N/AAA/AAA/000/AA/ABG	R901600084
		10 kW	AAA	CYTROBOX-N/AAA/AAA/000/BA/AAA	R901600060
			AAB	CYTROBOX-N/AAA/AAA/000/BA/AAB	R901600092
			ABG	CYTROBOX-N/AAA/AAA/000/BA/ABG	R901600069
16	70	without	AAA	CYTROBOX-N/AAA/BAA/000/0A/AAA	R901600034
			AAB	CYTROBOX-N/AAA/BAA/000/0A/AAB	R901600005
			ABG	CYTROBOX-N/AAA/BAA/000/0A/ABG	R901600070
		4 kW	AAA	CYTROBOX-N/AAA/BAA/000/AA/AAA	R901600042
			AAB	CYTROBOX-N/AAA/BAA/000/AA/AAB	R901600007
			ABG	CYTROBOX-N/AAA/BAA/000/AA/ABG	R901600085
		10 kW	AAA	CYTROBOX-N/AAA/BAA/000/BA/AAA	R901600061
			AAB	CYTROBOX-N/AAA/BAA/000/BA/AAB	R901600093
			ABG	CYTROBOX-N/AAA/BAA/000/BA/ABG	R901600071
32	100	without	AAA	CYTROBOX-N/AAA/CBB/000/0A/AAA	R901600035
			AAB	CYTROBOX-N/AAA/CBB/000/0A/AAB	R901600009
			ABG	CYTROBOX-N/AAA/CBB/000/0A/ABG	R901600072
		4 kW	AAA	CYTROBOX-N/AAA/CBB/000/AA/AAA	R901600043
			AAB	CYTROBOX-N/AAA/CBB/000/AA/AAB	R901600011
			ABG	CYTROBOX-N/AAA/CBB/000/AA/ABG	R901600086
		10 kW	AAA	CYTROBOX-N/AAA/CBB/000/BA/AAA	R901600062
			AAB	CYTROBOX-N/AAA/CBB/000/BA/AAB	R901600094
			ABG	CYTROBOX-N/AAA/CBB/000/BA/ABG	R901600073
32	150	without	AAA	CYTROBOX-N/AAA/CBC/000/0A/AAA	R901600036
			AAB	CYTROBOX-N/AAA/CBC/000/0A/AAB	R901600013
			ABG	CYTROBOX-N/AAA/CBC/000/0A/ABG	R901600074
		4 kW	AAA	CYTROBOX-N/AAA/CBC/000/AA/AAA	R901600044
			AAB	CYTROBOX-N/AAA/CBC/000/AA/AAB	R901600015
			ABG	CYTROBOX-N/AAA/CBC/000/AA/ABG	R901600087
		10 kW	AAA	CYTROBOX-N/AAA/CBC/000/BA/AAA	R901600063
			AAB	CYTROBOX-N/AAA/CBC/000/BA/AAB	R901600095
			ABG	CYTROBOX-N/AAA/CBC/000/BA/ABG	R901600075


Ordering code

Motor-pump group in cm ³	Converter in A (max)	Cooling	Sensor package	Denomination	Material number
45	100	without	AAA	CYTROBOX-N/AAA/DBB/000/0A/AAA	R901600037
			AAB	CYTROBOX-N/AAA/DBB/000/0A/AAB	R901600017
			ABG	CYTROBOX-N/AAA/DBB/000/0A/ABG	R901600076
		4 kW	AAA	CYTROBOX-N/AAA/DBB/000/AA/AAA	R901600045
			AAB	CYTROBOX-N/AAA/DBB/000/AA/AAB	R901600019
			ABG	CYTROBOX-N/AAA/DBB/000/AA/ABG	R901600088
		10 kW	AAA	CYTROBOX-N/AAA/DBB/000/BA/AAA	R901600064
			AAB	CYTROBOX-N/AAA/DBB/000/BA/AAB	R901600096
			ABG	CYTROBOX-N/AAA/DBB/000/BA/ABG	R901600077
45	150	without	AAA	CYTROBOX-N/AAA/DBC/000/0A/AAA	R901600038
			AAB	CYTROBOX-N/AAA/DBC/000/0A/AAB	R901600021
			ABG	CYTROBOX-N/AAA/DBC/000/0A/ABG	R901600078
		4 kW	AAA	CYTROBOX-N/AAA/DBC/000/AA/AAA	R901600046
			AAB	CYTROBOX-N/AAA/DBC/000/AA/AAB	R901600023
			ABG	CYTROBOX-N/AAA/DBC/000/AA/ABG	R901600089
		10 kW	AAA	CYTROBOX-N/AAA/DBC/000/BA/AAA	R901600065
			AAB	CYTROBOX-N/AAA/DBC/000/BA/AAB	R901600097
			ABG	CYTROBOX-N/AAA/DBC/000/BA/ABG	R901600079
63	100	without	AAA	CYTROBOX-N/AAA/EBB/000/0A/AAA	R901600039
			AAB	CYTROBOX-N/AAA/EBB/000/0A/AAB	R901600025
			ABG	CYTROBOX-N/AAA/EBB/000/0A/ABG	R901600080
		4 kW	AAA	CYTROBOX-N/AAA/EBB/000/AA/AAA	R901600047
			AAB	CYTROBOX-N/AAA/EBB/000/AA/AAB	R901600027
			ABG	CYTROBOX-N/AAA/EBB/000/AA/ABG	R901600090
		10 kW	AAA	CYTROBOX-N/AAA/EBB/000/BA/AAA	R901600066
			AAB	CYTROBOX-N/AAA/EBB/000/BA/AAB	R901600098
			ABG	CYTROBOX-N/AAA/EBB/000/BA/ABG	R901600081
63	150	without	AAA	CYTROBOX-N/AAA/EBC/000/0A/AAA	R901600040
			AAB	CYTROBOX-N/AAA/EBC/000/0A/AAB	R901600029
			ABG	CYTROBOX-N/AAA/EBC/000/0A/ABG	R901600082
		4 kW	AAA	CYTROBOX-N/AAA/EBC/000/AA/AAA	R901600048
			AAB	CYTROBOX-N/AAA/EBC/000/AA/AAB	R901600031
			ABG	CYTROBOX-N/AAA/EBC/000/AA/ABG	R901600091
		10 kW	AAA	CYTROBOX-N/AAA/EBC/000/BA/AAA	R901600067
			AAB	CYTROBOX-N/AAA/EBC/000/BA/AAB	R901600099
			ABG	CYTROBOX-N/AAA/EBC/000/BA/ABG	R901600083

Ordering code

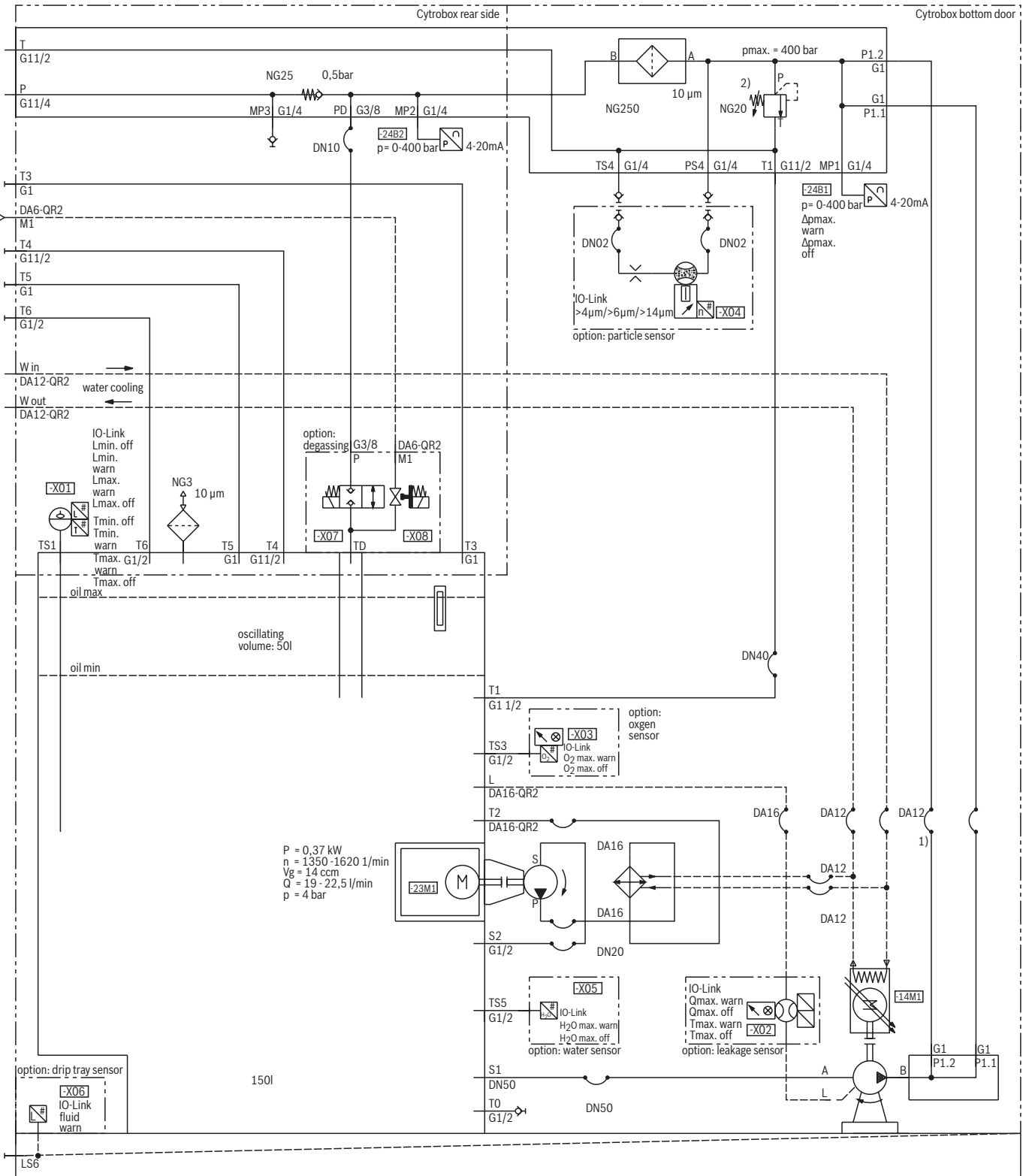
Sensor selection table

Type	Standard				Optional						
	Control pressure	Tank filling level	Tank temperature	Pressure filter contamination	Pump leakage flow	Pump leakage temperature	Water content in tank	Dissolved air share in tank	Dirt particles in tank	Oil pan leakage	
AAA	✓	✓	✓	✓	-	-	-	-	-	-	
AAB	✓	✓	✓	✓	✓	✓	-	-	-	-	
AAC	✓	✓	✓	✓	-	-	✓	-	-	-	
AAD	✓	✓	✓	✓	✓	✓	✓	-	-	-	
AAE	✓	✓	✓	✓	-	-	-	✓	-	-	
AAF	✓	✓	✓	✓	✓	✓	-	✓	-	-	
AAG	✓	✓	✓	✓	-	-	✓	✓	-	-	
AAH	✓	✓	✓	✓	✓	✓	✓	✓	-	-	
AAI	✓	✓	✓	✓	-	-	-	-	✓	-	
AAJ	✓	✓	✓	✓	✓	✓	-	-	✓	-	
AAK	✓	✓	✓	✓	-	-	✓	-	✓	-	
AAL	✓	✓	✓	✓	✓	✓	✓	-	✓	-	
AAM	✓	✓	✓	✓	-	-	-	✓	✓	-	
AAN	✓	✓	✓	✓	✓	✓	-	✓	✓	-	
AAO	✓	✓	✓	✓	-	-	✓	✓	✓	-	
AAP	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	
AAR	✓	✓	✓	✓	-	-	-	-	-	✓	
AAS	✓	✓	✓	✓	✓	✓	-	-	-	✓	
AAT	✓	✓	✓	✓	-	-	✓	-	-	✓	
AAU	✓	✓	✓	✓	✓	✓	✓	-	-	✓	
AAV	✓	✓	✓	✓	-	-	-	✓	-	✓	
AAW	✓	✓	✓	✓	✓	✓	-	✓	-	✓	
AAX	✓	✓	✓	✓	-	-	✓	✓	-	✓	
AAZ	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	
AAA	✓	✓	✓	✓	-	-	-	-	✓	✓	
ABA	✓	✓	✓	✓	✓	✓	-	-	✓	✓	
ABB	✓	✓	✓	✓	-	-	✓	-	✓	✓	
ABC	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	
ABD	✓	✓	✓	✓	-	-	-	✓	✓	✓	
ABE	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	
ABF	✓	✓	✓	✓	-	-	✓	✓	✓	✓	
ABG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

 **Notice:**

The sensors are connected to the drive controllers via IO link. Current data and limit values can be read and set via the Multi-Ethernet interface.

Circuit diagram: hydraulic



Technical data

(For applications outside these values, please consult us!)

General		
Installation position		Vertical
Line connections	▶ Pressure port	G1 1/4
	▶ Return flow	G1 1/2
Place of installation		Industrial building; stationary application
Ambient temperature range (during operation)	°C	+10 ... +40
Weight (depending on configuration level) without oil	kg	500 ... 550 depending on the equipment
Corrosion	▶ Tank	Plastic (PP)
Protection class	▶ Steel components	Galvanized, painted, powder-coated
	▶ Base	Polymer concrete

Hydraulic		
Maximum operating pressure	bar	315 (see characteristic curves)
Maximum flow	l/min	160 (see characteristic curves)
Maximum oscillating volume	l	50
Maximum tank capacity	l	150
Maximum temperature range hydraulic fluid	°C	+5 ... +70
Hydraulic fluids		Mineral oil HLP according to DIN 51524
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)		class 20/18/15 ¹⁾
Pressure filter ²⁾	▶ Filter rating	μm 10
Filling level monitoring	▶ Early warning	adjustable by means of parameter
	▶ Shut-off	adjustable by means of parameter
Temperature monitoring (hydraulic fluid)	▶ Early warning	adjustable by means of parameter
	▶ Shut-off	adjustable by means of parameter
Pump	▶ Minimum flow	l/min 0
	▶ Hydraulic fluid viscosity range (see data sheet 91485)	mm ² /s

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems.

²⁾ Directly mounted at the block



Important notice on hydraulic fluids:

For further information and data on the use of other hydraulic fluids, please contact us.

Technical data

(For applications outside these values, please consult us!)

Electric		
Voltage (according to IEC 60038)	V	400 ... 500 AC (+10% / -15%)
Frequency	Hz	50/60
Protection class according to DIN EN 60529		IP54
Maximum pre-fuse	▶ HCS03 - 0070	A 50
protective motor switch (on the customer side)	▶ HCS03 - 0100	A 80
	▶ HCS03 - 0150	A 125

Cooling water supply ³⁾		
Flow	l/min	20
Inlet temperature	°C	15 ... 25
Connections		Quick-release coupling push-in Ø12 mm
Maximum glycol share	%	30
Maximum cooling water pressure	bar	< 10

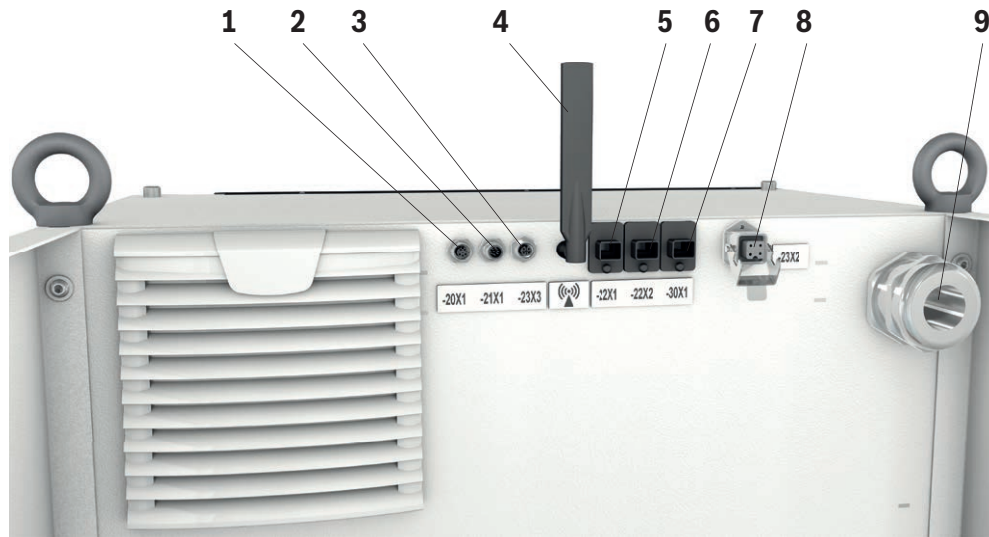
Plate heat exchanger		
Thermal output (for hydraulic fluid and motor)	kW	4; 10
Inlet oil temperature	°C	50
Outlet oil temperature	°C	43
Inlet water temperature	°C	20
Outlet temperature	°C	25

³⁾ In addition, the R911347582 project planning instructions for IndraDyn S must be observed. Maximum particle size ≤ 100 µm

**Notice:**

- ▶ A cooling water supply must always be connected, the oil temperature can be set by means of parameters.
- ▶ The control cabinet is air-cooled and the electric motor is water-cooled. The hydraulic fluid is cooled by a circulation circuit with a plate heat exchanger.

Electrical connections: Voltage supply, data interfaces




- 1 20X1: Digital input and output signals
- 2 21X1: Safe Torque OFF (STO)
- 3 23X3: Water valve control (optional)
- 4 Mobile communications antenna
- 5 22X1: Multi-Ethernet control communication (network output)
- 6 22X1: Multi-Ethernet control communication (network input)
- 7 30X1: CytroConnect
- 8 23X2: Cooling unit control (optional)
- 9 Cable bushing for power supply



Notice:

For further information, see project planning description R911338961.

20X1 (position 1), digital inputs and outputs

 (Mating connector) M12x1; 8-pole A-coded	Pin	Function	Input DI/output DO
		1	Release
	2	Reset	DI
	3	GND . Ext.	DI
	4	Filter alarm	DO
	5	Oil level alarm	DO
	6	Temperature alarm	DO
	7	Ready for operation, no error	DO
	8	In operation	DO

Inputs: 24 VDC (high ≥ 11 V ; low ≤ 5 V)
 Outputs: max. current 500 mA; total of all currents max. 2000 mA

Electrical connections: Voltage supply**21X1 (position 2), safety technology Safe Torque OFF (STO)**

(Connector)

M 12x1; 8-pole
A - coded

Pin	Function
1	Input channel 2
2	0 V power supply
3	Input channel 1
4	+24 V power supply $\pm 20\%/0.7$ A
5	Output channel 2
6	Output channel 1
7	not used
8	not used

For further information on connection possibilities see R911332633

RJ45 (IP67)	Position	Port	Function
	5	22X1	Multi-Ethernet Control communication
	6	22X2	
	7	30X1	Engineering port

Notice:

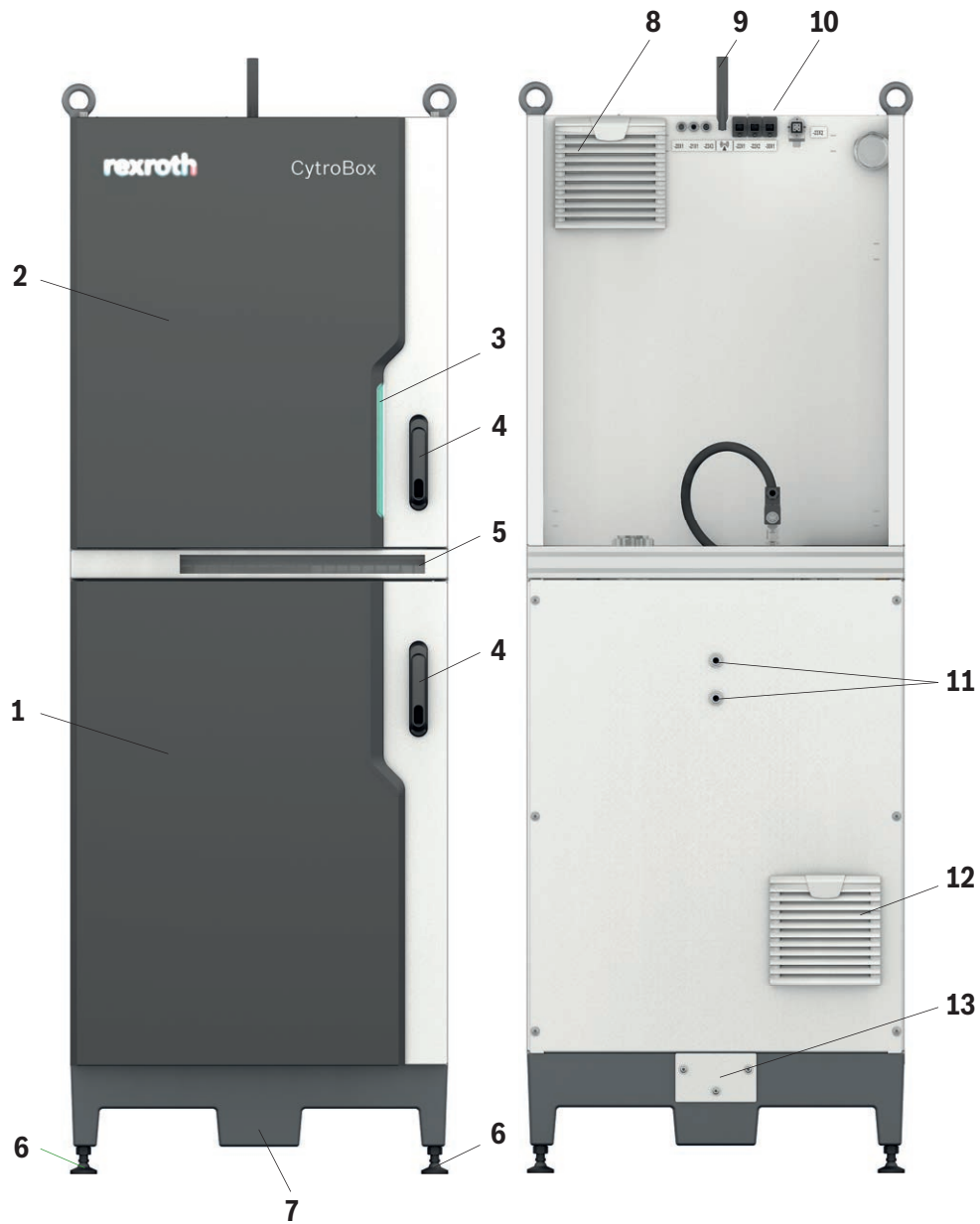
For RJ45 ports, only use suitable connectors (push-pull) in compliance with IP67, e.g.

R901469479 CONNECTOR IE-PS-V04P-RJ45-FH

R901471844 NETWORK CABLE RJ45/IP47-RJ45 5M

Mains connection voltage in VAC	Power rating	Maximum current in A	PIN	Terminal	Cable cross-section in mm ²
400 ... 500	70	63	L1	2	16 ... 25
			L2	4	
			L3	6	
			GNYE	PE	16
	100	100	L1	2	35 ... 50
			L2	4	
			L3	6	
			GNYE	PE	25
	150	125	L1	2	50 ... 70
			L2	4	
			L3	6	
			GNYE	PE	25

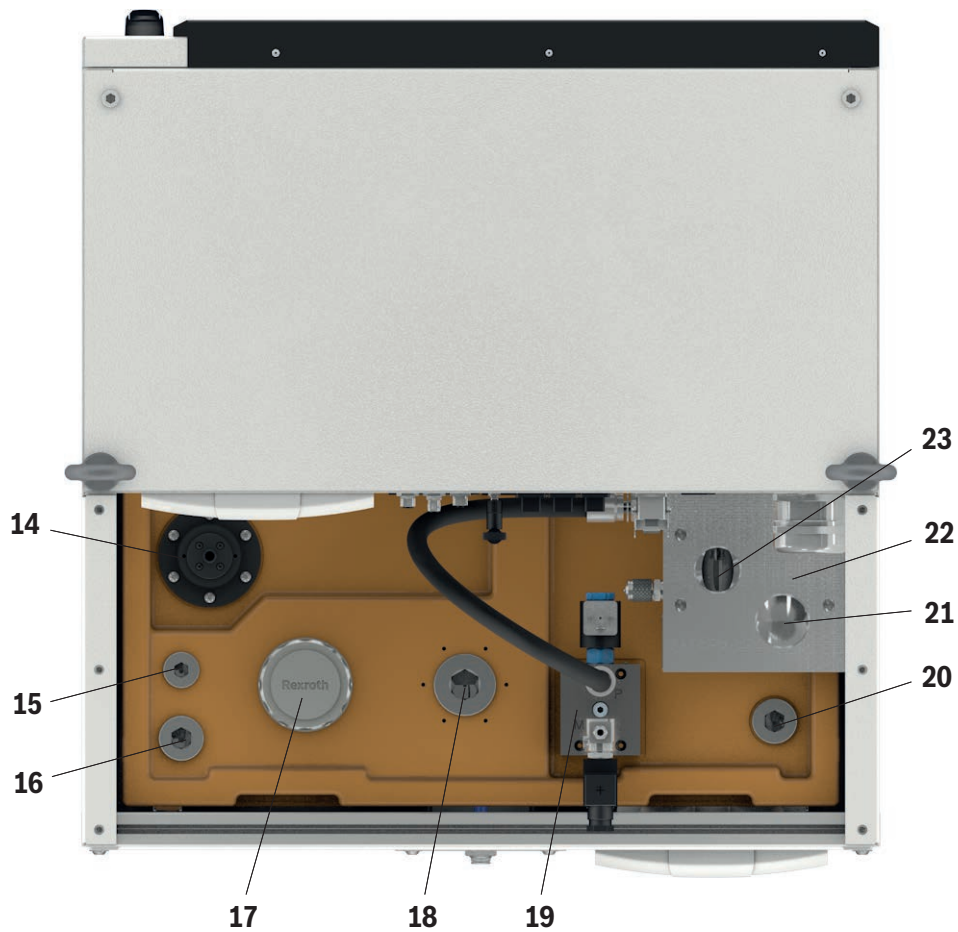
Interfaces



- 1 Hydraulic cabinet
- 2 Electrical cabinet
- 3 LED status display
- 4 Door opener
- 5 Air inlet at the electrical cabinet
- 6 Adjustable machine feet
- 7 Foundation made of polymer concrete

- 8 Air outlet at the electrical cabinet
- 9 Mobile antenna
- 10 Electrical interfaces
- 11 Cooling water connections (push-in, Ø12 mm)
- 12 Air inlet at the hydraulic cabinet
- 13 Drip pan discharge plate

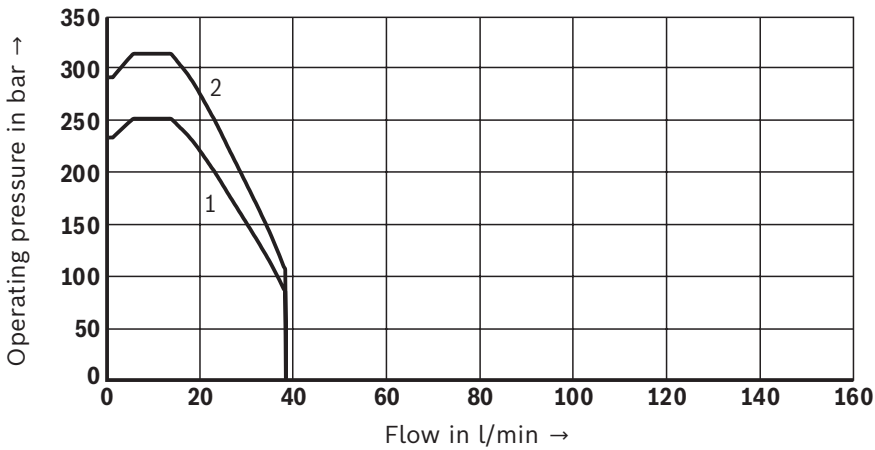
Interfaces



- 14 Level and temperature sensor
- 15 Tank spare port (G3/4)
- 16 Tank spare port (G1)
- 17 Breathing filter
- 18 Tank spare port (G1 1/2)
- 19 Degassing and irrigation module
- 20 Tank spare port (G3/4)
- 21 Return flow port T (G1)
- 22 Connection block; optional adapter for modular IH20 plate systems
- 23 Pressure port P (G1 1/4)

Characteristic curves

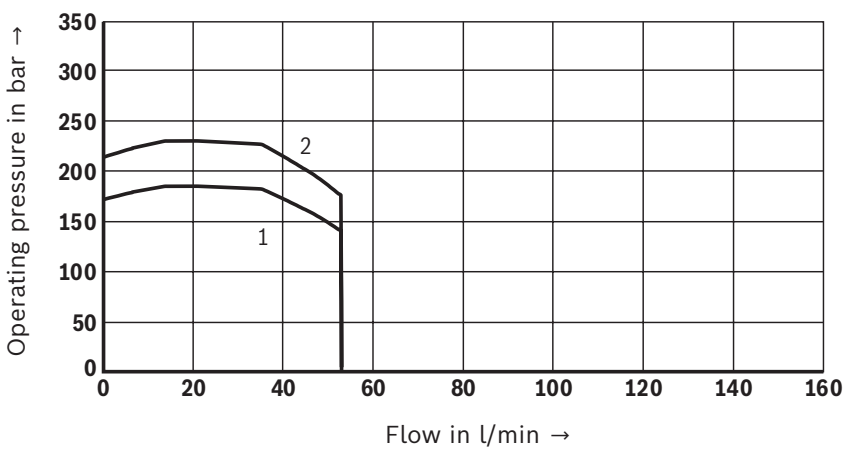
Design "AAA" (A10FZO010-MS2N07-E0BQL-HCS03.1E-W0070)



Continuous characteristic curve at

- 1 40 °C ambient temperature
- 2 30 °C ambient temperature

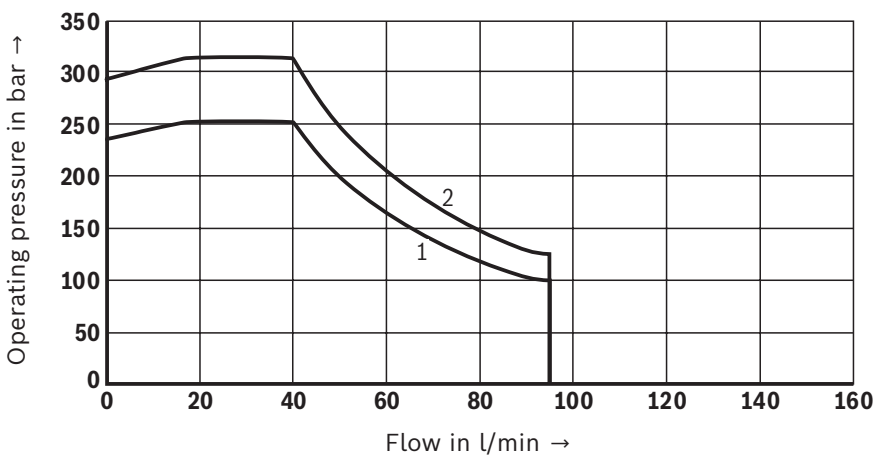
Design "BAA" (A10FZO016-MS2N07-E0BQL-HCS03.1E-W0070)



Continuous characteristic curve at

- 1 40 °C ambient temperature
- 2 30 °C ambient temperature

Version "CBB" (A10FZO032-MS2N10-F0BHL-HCS03.1E-W0100)



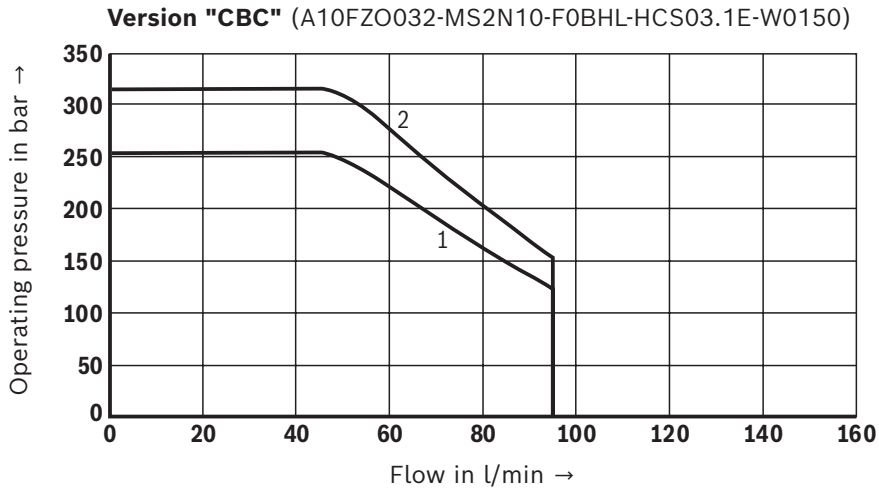
Continuous characteristic curve at

- 1 40 °C ambient temperature
- 2 30 °C ambient temperature

Notice:

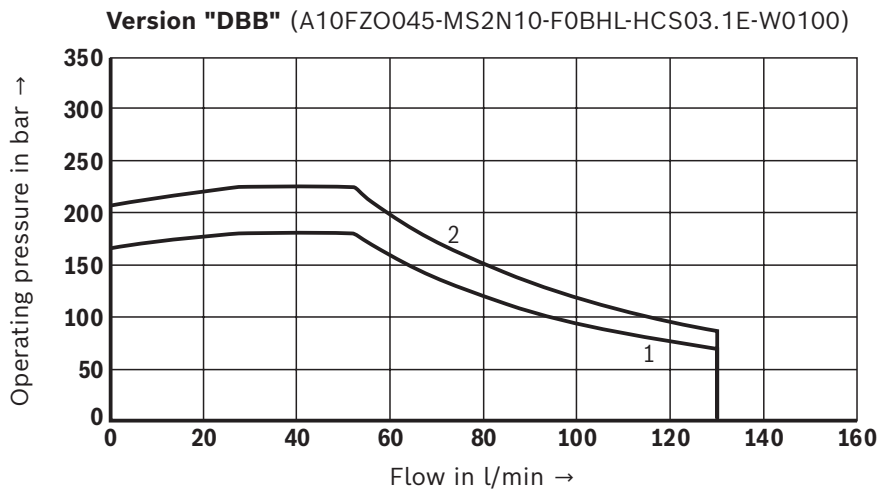
At ambient temperatures > 30 °C, the power characteristic curve is reduced by 2% per Kelvin temperature increase. Maximum ambient temperature 40 °C.

Characteristic curves



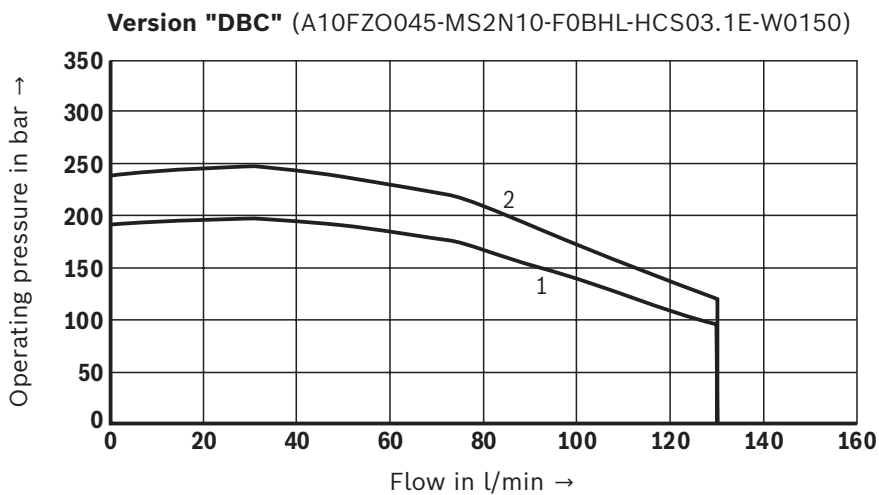
Continuous characteristic curve at

- 1 40 °C ambient temperature
- 2 30 °C ambient temperature



Continuous characteristic curve at

- 1 40 °C ambient temperature
- 2 30 °C ambient temperature



Continuous characteristic curve at

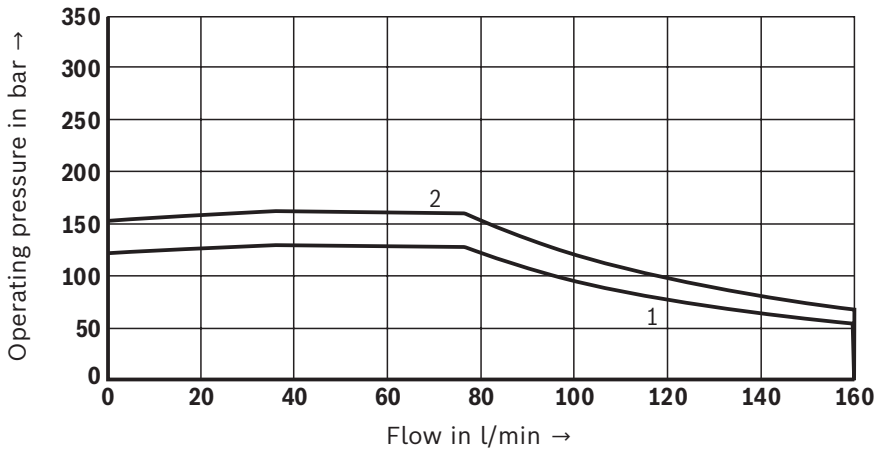
- 1 40 °C ambient temperature
- 2 30 °C ambient temperature

Notice:

At ambient temperatures > 30 °C, the power characteristic curve is reduced by 2% per Kelvin temperature increase. Maximum ambient temperature 40 °C.

Characteristic curves

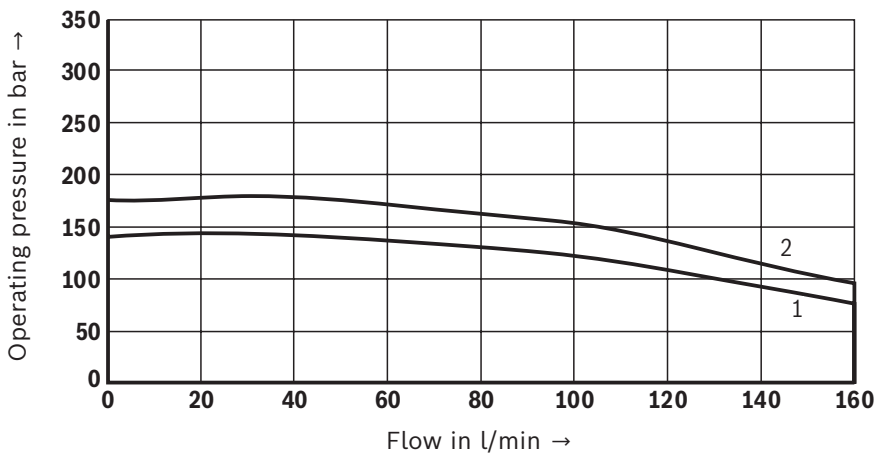
Version "EBB" (A10FZO063-MS2N10-F0BHL-HCS03.1E-W0100)



Continuous characteristic curve at


- 1 40 °C ambient temperature
- 2 30 °C ambient temperature

Version "EBC" (A10FZO063-MS2N10-F0BHL-HCS03.1E-W0150)



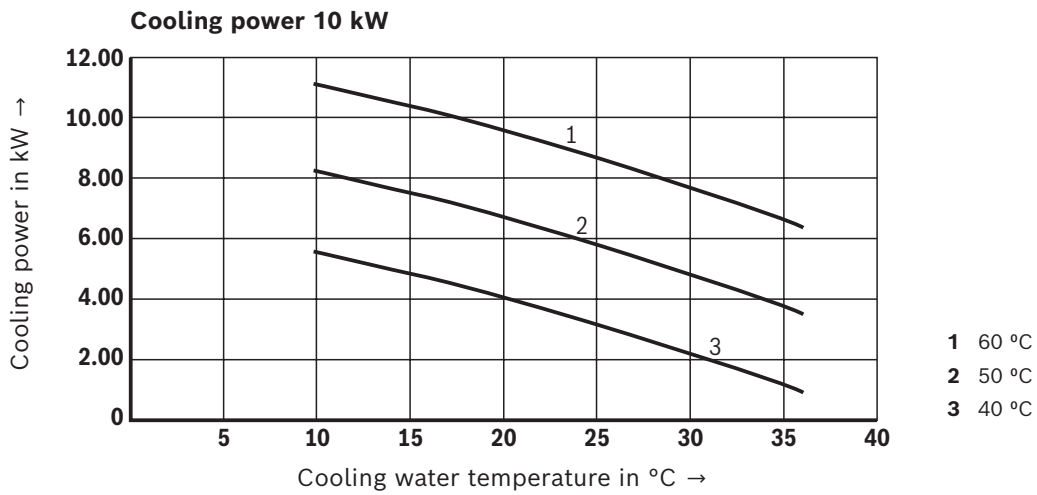
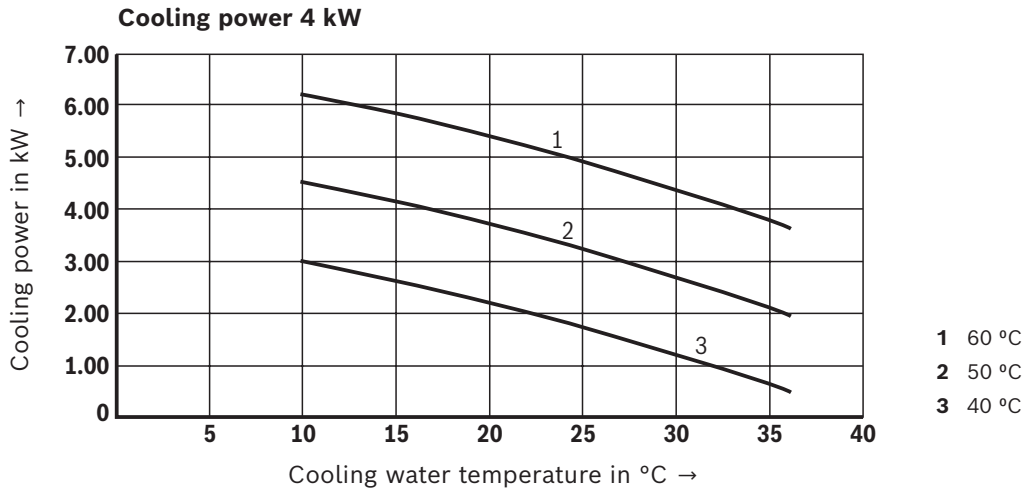
Continuous characteristic curve at

- 1 40 °C ambient temperature
- 2 30 °C ambient temperature

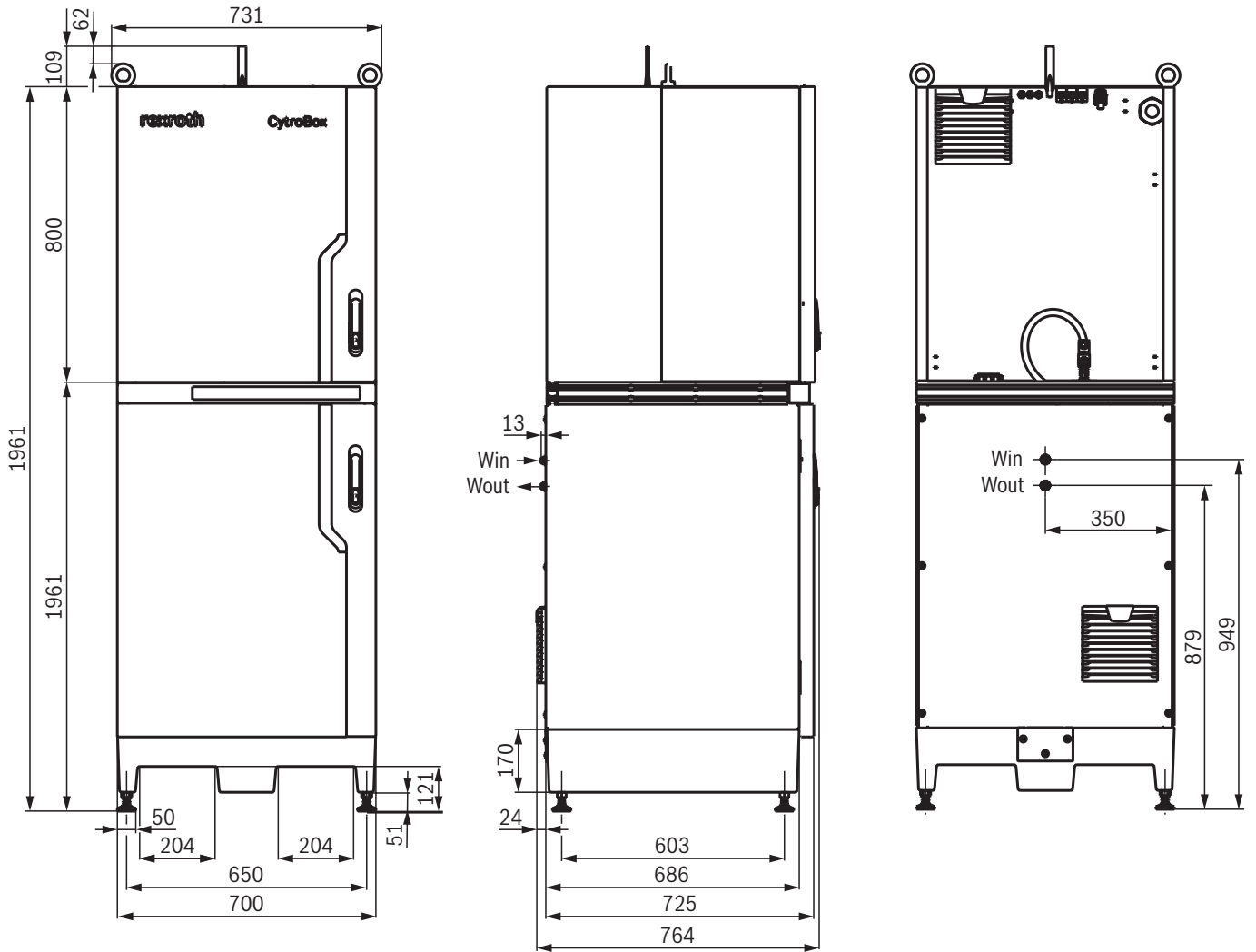
 **Notice:**

At ambient temperatures > 30 °C, the power characteristic curve is reduced by 2% per Kelvin temperature increase. Maximum ambient temperature 40 °C.

Characteristic curves: Cooler



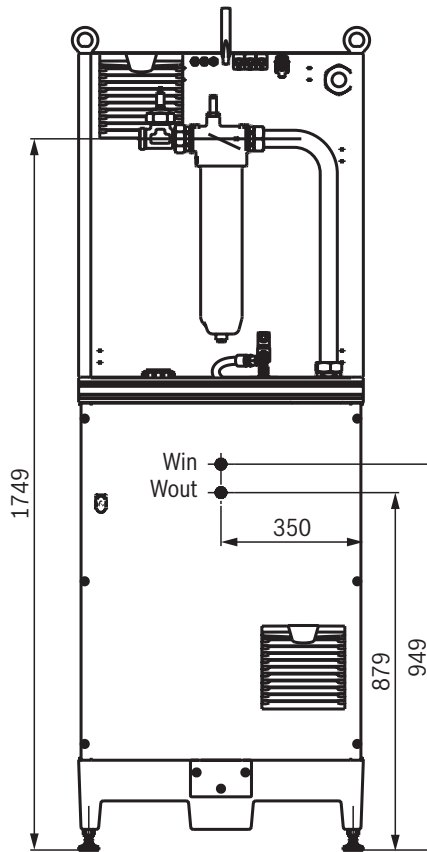
Dimensions
(dimensions in mm)



Return flow filter (optional)

For the CytroBox an optional return flow filter is available as an assembly.

This is mounted on the back of the tank port G1 1/2 and contains a pressure sensor type HM20 for back pressure measurement, see page 19.



Accessories

► Electric

20X1, analog / digital input signals

		Comment	scope of delivery
R913002119	CONDUCTOR PLUG 8P 7000-17081-2910500	Connection plug, straight, shielded, 8-pole M12, with free PUR line end, Length: 5 m (8 x 0.25 mm ² /Ø7.0 mm) 24 VAC/DC, max. 1.5 A; IP67	1
R913002641	CONDUCTOR PLUG 8P 7000-17081-2911000	Connection plug, straight, shielded, 8-pole M12, with free PUR line end, Length: 10 m (8 x 0.25 mm ² /Ø7.0 mm) 24 VAC/DC, max. 1.5 A; IP67	1

21X1, Safe Torque OFF (STO)

		Comment	scope of delivery
R913002121	PLUG-IN CONNECTOR 8P 7000-17121-2910500	Socket, straight, shielded, 8-pole M12, with free PUR line end, Length: 5 m (8 x 0.25 mm ² /Ø7.0 mm) 24 VAC/DC, max. 1.5 A; IP67	1
R901467712	PLUG-IN CONNECTOR 7000-17041-3771000	Bush straight with cable support sleeve 8-pole M12, with free PUR line end, Length: 10 m (8 x 0.34 mm ² /Ø6.2 mm) 30 VAC/DC, max. 2.0 A; IP65 and IP67 in plugged and screwed condition	1

21X1 / 22X2 / 30X1, Multi-Ethernet interface / CytroConnect ¹⁾

		Comment	scope of delivery
R901469479	CONNECTION PLUG IE-PS-V04P-RJ45-FH	Connector without cable	1
R901471844	NETWORK CABLE RJ45/IP67-RJ45 5M	Length: 5 m Certificate: CAT 6 A / RoHS	1
R901471845	NETWORK CABLE RJ45/IP67-RJ45 10M	Length: 10 m Certificate: CAT 6 A / RoHS	1
R901492613	NETWORK CABLE RJ45/IP67-RJ45 20M	Length: 20 m Certificate: CAT 6 A / RoHS	1

► Mechanical

		Comment	scope of delivery
R901500465	COUPLING SOCKET CEJN567-G1/2-020-105&	Counterpart filling coupling	1
1823391944	FITTING QR2-S-RVA-DA12-DA12	Pneumatic angle for cooling water connection	2
R901527423	INLINE FILTER CB ASSEMBLY RETURN FLOW FILTER	Optional assembly return flow filter incl. HM20 pressure sensor	1

¹⁾ We recommend using the Multi-Ethernet cable provided by Rexroth (protection class IP67).

Project planning information

- ▶ Design
Sytronix Size - SvP 7020. Only selected converter and motor-pump combinations can be realized.
- ▶ Connectivity
The default 4G interface enables connection of the CytroBox to the CytroConnect Service. This way, additional Cloud-based functions are available.

Further information

- | | |
|---|------------------|
| ▶ Hydraulic fluids on mineral oil basis | Data sheet 90220 |
| ▶ Environmentally compatible hydraulic fluids | Data sheet 90221 |
| ▶ Rexroth IndraDrive | R911332633 |
| ▶ IndraDrive control parts | R911338961 |
| ▶ IndraDyn S | R911347582 |
| ▶ Selection of the filters | |
| ▶ Information on available spare parts | |

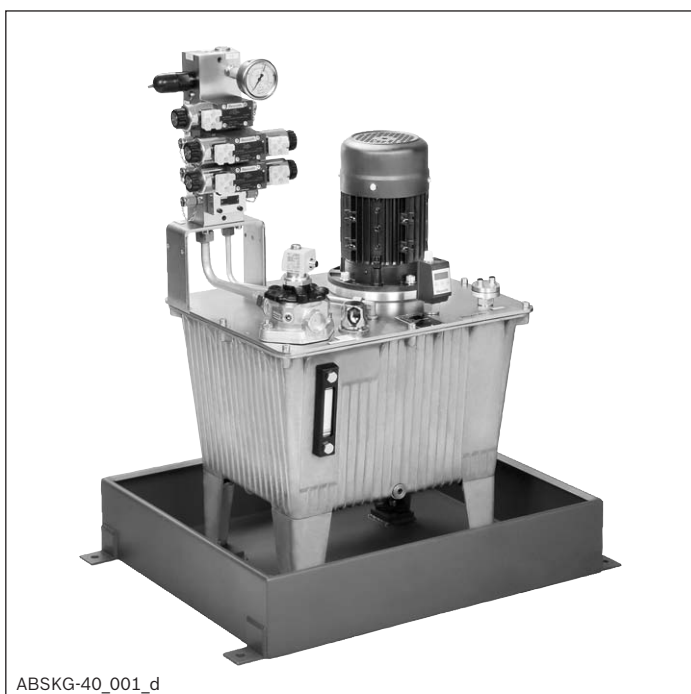
Modular standard power units

Type ABSKG

RE 51013

Edition: 2016-12

Replaces: 11.14



- ▶ Tank size 20, 40 and 60 liters

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Ordering code	2
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▶ Hand pump P	26 ... 28
▶ Thermostat T	29
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▶ Filter replacement element for return flow filter	30
▶ Mating connectors	30
▶ Foot AB 40-09 for tank 40 = l; 60 l	30
▶ Return pipe PN16 for drain lines	31
Installation, commissioning, maintenance and operating instructions	32

Features

- ▶ Stable aluminum tank
- ▶ Modular design
- ▶ Compact power unit design
- ▶ Individual adjustment possible
- ▶ Versatile possible applications
- ▶ Additional options possible
- ▶ Clear, maintenance-friendly set-up

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14
ABSKG	-	AL	9	/		/		/				/	

Power unit

01	Type ABSKG	ABSKG
----	------------	-------

Tank size

02	20 liters	20
	40 liters	40
	60 liters	60

Tank material

03	Aluminum	AL
----	----------	----

AB standard tank

04	AB 40-09	9
----	----------	---

Kind of set-up: Pump-motor group

05	Pump power unit vertically installed	V
----	--------------------------------------	---

Pump type / size (see selection table page 5 to 7)

06	Gear pump, externally geared, < 4 cm ³	AZPB...
	Gear pump, externally geared, ≥ 4 cm ³ according to data sheet 10089	AZPF...
	Gear pump, internally geared according to data sheet 10213	GF2...
	Radial piston pump according to data sheet 11263	R4...

Motor frame size

07	(See selection table page 5 to 7)	
----	-----------------------------------	--

Basic power unit type

08	Without air heat exchanger	no code
	With air heat exchanger	L

Control variant (see page 8)

09	Pressure control unit type ABZRD-01/10 to DCCS11010	1
	Subplate AB 42-09GG...DMAB	6
	Subplate AB 42-09GG...DMAB with accumulator charging circuit	7

Number of controls

10	With control variant 6 and 7 (with control variant 7, one control is required for the accumulator charging valve)	1 ... 6; 8
----	---	------------

Options

11	Level switch	N
	Oil pan	O
12	Hand pump	P
	Thermostat	T

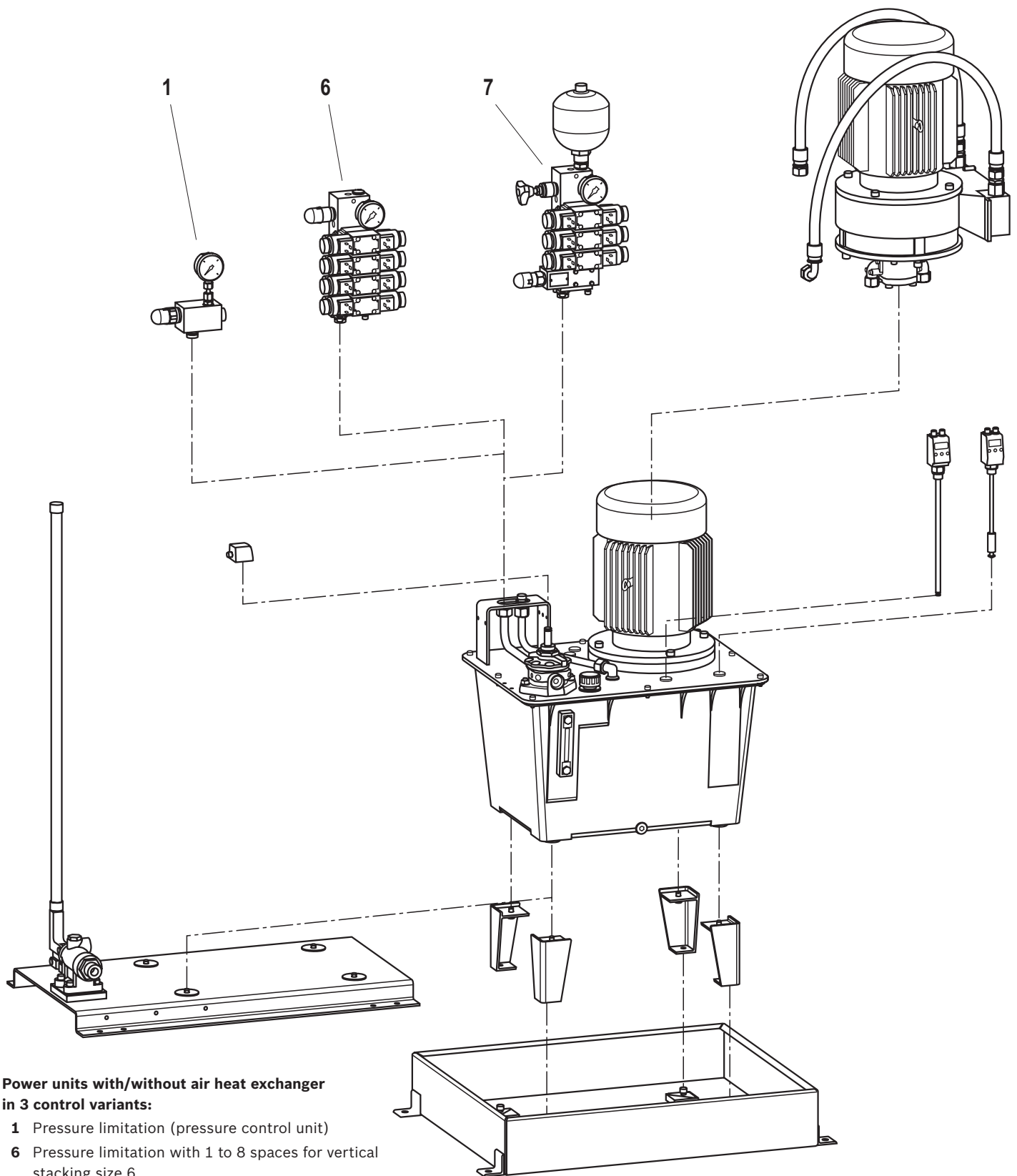
Circuit diagram short symbols (determination after receipt of the order, example)

13	Responsible department e.g. 013	
14	Serial number e.g. A487	

Order example:

ABSKG-40AL9/VGF2-011/100L/63NT/013A487

Power unit set-up



Power units with/without air heat exchanger in 3 control variants:

- 1 Pressure limitation (pressure control unit)
- 6 Pressure limitation with 1 to 8 spaces for vertical stacking size 6
- 7 Pressure limitation with 1 to 8 spaces for vertical stacking size 6 including accumulator charging circuit

Selection table basic power unit with tank size 20 (type ABSKG-20) kind of set-up V

Set-up pump power units with electric motors efficiency class IE2 or IE3 (according to IEC 60034-30)
at 50 Hz (HLP 46; 50 °C; 32 mm²/s)

Pump	$q_{V \max}$ at 1450 min ⁻¹ in l/min	p_{\max} in bar	Power P at 50 Hz in kW	Electric motor frame size	Material no. without heat exchanger	Weight in kg	Material no. with heat exchanger	Weight in kg
AZPB 2.0	2.9	60	0.37	71	R901440637	25	–	–
		130	0.75	80	R901434131	33	–	–
		250/270 (intermittent)	1.5	90L	R901434137	40	R901434139	48
AZPB 3.1	4.5	40	0.37	71	R901440738	25	–	–
		80	0.75	80	R901434146	33	–	–
		170	1.5	90L	R901434147	40	R901434148	48
		250	2.2	100L	R901434150	45	R901434153	57
AZPF-004	5.8	25	0.37	71	R901440743	27	–	–
		65	0.75	80	R901434172	33	–	–
		130	1.5	90L	R901434175	39	R901434176	50
		250/265 (intermittent)	3	100L	R901434532	53	R901434533	62
AZPF-005	7.9	45	0.75	80	R901434536	33	–	–
		95	1.5	90	R901434540	40	R901434542	50
		195	3	100L	R901434547	53	R901434548	62
		250/270 (intermittent)	4	112M	R901434549	60	R901434641	69
AZPF-008	11.6	60	1.5	90L	R901434643	40	R901434671	50
		130	3	100L	R901434672	53	R901434673	62
		175	4	112M	R901434684	60	R901434691	69
R4-1,6-700	2.1	315	1.5	90L	R901434699	48	R901434700	55
R4-3,15-500	5.1	290	3	100L	R901434702	63	R901434703	67

Selection table basic power unit with tank size 40 (type ABSKG-40) kind of set-up V

Set-up pump power units with electric motors efficiency class IE2 or IE3 (according to IEC 60034-30)
at 50 Hz (HLP 46; 50 °C; 32 mm²/s)

Pump	$q_{V \max}$ at 1450 min ⁻¹ in l/min	p_{\max} in bar	Power P at 50 Hz in kW	Electric motor frame size	Material no. without heat exchanger	Weight in kg	Material no. with heat exchanger	Weight in kg
AZPB 2.0	2.9	60	0.37	71	R901462033	30	–	–
		130	0.75	80	R901433981	39	–	–
		250/270 (intermittent)	1.5	90L	R901433996	46	R901433999	53
AZPB 3.1	4.5	170	1.5	90L	R901434001	46	R901434003	53
		250	2.2	100L	R901434007	51	R901434008	62
AZPF-004	5.8	130	1.5	90L	R901434044	45	R901434056	55
		250/265 (intermittent)	3	100L	R920046270	59	R901434058	67
AZPF-005	7.9	95	1.5	90	R901434064	45	R901434070	55
		190	3	100L	R901434073	59	R901434077	67
		250/270 (intermittent)	4	112M	R901434086	66	R901434087	74
AZPF-008	11.6	60	1.5	90L	R901434090	45	R901434091	55
		130	3	100L	R901434092	59	R901434093	67
		175	4	112M	R901462000	66	R901462027	74
		245	5.5	132S	R901434095	81	R901434098	92
GF2-011	16	90	3	100L	R901434099	60	R901434100	69
		130	4	112M	R901434111	67	R901434113	76
		180	5.5	132S	R901434114	85	R901434116	93
		210/240 (intermittent)	7.5	132M	R901407200	96	R901407201	104
R4-1,6-700	2.1	315	1.5	90L	R901434117	51	R901434118	61
R4-3,15-500	5.1	290	3	100L	R901434120	62	R901434121	73
R4-6,3-500	8.4	315	5.5	132S	R901434122	89	R901434125	98
R4-8,0-500	11.5	315	7.5	132M	R901407203	102	R901407204	111

Selection table basic power unit with tank size 60 (type ABSKG-60) kind of set-up V

Set-up pump power units with electric motors efficiency class IE2 or IE3 (according to IEC 60034-30) at 50 Hz (HLP 46; 50 °C; 32 mm²/s)

Pump	$q_{V \max}$ at 1450 min ⁻¹ in l/min	p_{\max} in bar	Power P at 50 Hz in kW	Electric motor frame size	Material no. without heat exchanger	Weight in kg	Material no. with heat exchanger	Weight in kg
AZPF-004	5.8	130	1.5	90L	R901433565	59	R901433566	69
		250/265 (intermittent)	3	100L	R901433570	72	R901433575	81
AZPF-005	7.9	95	1.5	90	R901433576	59	R901433577	69
		190	3	100L	R901433579	73	R901433595	81
		250/270 (intermittent)	4	112M	R901433648	79	R901433649	88
AZPF-008	11.6	60	1.5	90L	R901433650	59	R901433651	69
		130	3	100L	R901433653	73	R901433654	81
		175	4	112M	R901461991	80	R901461994	88
		245	5.5	132S	R901433655	92	R901433656	104
GF2-011	16	90	3	100L	R901433658	74	R901433664	83
		130	4	112M	R901433667	81	R901433674	89
		180	5.5	132S	R901433964	96	R901433965	105
		210/240 (intermittent)	7.5	132M	R901407150	107	R901407163	116
GF2-016	23.2	85	4	112M	R901433968	81	R901433970	90
		120	5.5	132S	R901433971	97	R901433973	105
		165	7.5	132M	R901406078	108	R901407165	116
R4-3,15-500	5.1	290	3	100L	R901433974	76	R901433975	86
R4-6,3-500	8.4	315	5.5	132S	R901433976	101	R901433978	109
R4-8,0-500	11.5	315	7.5	132M	R901407168	114	R901407170	122

With higher noise requirements, we recommend using the following hydraulic pumps (upon request):

Pump size	$q_{V \max}$ at 1450 min ⁻¹ in l/min	Material no.	Type	Comment
004	5.8	R918C03744	AZPS-11-004RCB20MB	Identical drive shaft, front cover, line connections as the pumps of type AZPF used in the basic power units
005	7.9	R918C03756	AZPS-11-005RCB20MB	
008	11.6	R918C03771	AZPS-11-008RCB20MB	
012	17.4	R918C03842	AZPJ-22-012RCB20MB	
016	23.2	R918C03846	AZPJ-22-016RCB20MB	

Project planning information for the use of air heat exchangers:

- ▶ In power units with air heat exchanger, smoothly switching valves according to data sheet 23183 are to be preferably used in order to reduce pressure peaks in the tank line.
- ▶ Due to the abrupt opening of releasable check valves, application-inherent pressure peaks in the tank line may also occur if smoothly switching valves are used.
- ▶ For unloading large decompression volumes, a free return flow port is available leading directly into the tank.
- ▶ Due to the use of the air heat exchanger in the return line, the flow from the system/of the application is to be observed. (E.g. increase in the flow due to the use of differential cylinders and/or accumulator applications.) For more detailed information on the back pressure to be expected see page 10.

Selection table control variant 1

Pressure control unit type ABZRD-01/10 to DCCS11010

Pressure rating in bar	50	100	200	315
Material no.	R900827584	R900827585	R900827581	R900827580
Weight in kg	3.0			

Selection table control variant 6

Subplate type AB42-09/06..DMAB with measuring port consisting of:

- ▶ Plate AB42-09/06..DMAB
- ▶ Pressure gauge size 63 according to data sheet 50205
- ▶ Pressure relief valve DBDS 6 K1X/... according to data sheet 25402

Number of controls	Pressure rating in bar				Weight in kg
	50	100	200	315	
1	R900868291	R900867747	R900867748	R900867749	5.0
2	R900868317	R900868009	R900868017	R900868024	6.5
3	R900868318	R900868010	R900868018	R900868025	8.0
4	R900868319	R900868011	R900868019	R900868026	9.5
5	R900868320	R900868013	R900868020	R900868027	11.0
6	R900868321	R900868014	R900868021	R900868028	12.5
8	R900868323	R900868016	R900868023	R900868030	15.5

Selection table control variant 7

Subplate type AB42-09/06..DMAB with accumulator charging circuit and measuring port consisting of:

- ▶ Plate AB42-09/06..DMAB
- ▶ Pressure gauge size 63; data sheet 50205
- ▶ Pressure relief valve DBDH 6 K1X/...E according to data sheet 25402
- ▶ Pressure cut-off valve DA 6 VA2A5X/...FSM according to data sheet 26405
- ▶ Diaphragm type accumulator 0.7 l HAD0,7-350-2X/2G04E-1N111-BA according to data sheet 50150

Number of controls	Pressure rating pressure relief valve/pressure cut-off valve in bar			Weight in kg
	110 / 100	210 / 200	315 / 315	
1	R901250197	R901250189	R901250182	12.3
2	R901250196	R901250188	R901250181	13.8
3	R901250195	R901250187	R901250180	15.3
4	R901250194	R901250186	R901250179	16.8
5	R901250193	R901250185	R901250178	18.3
6	R901250191	R901250184	R901250177	19.8
8	R901250190	R901250183	R901250176	22.8

Valve settings from pressure valves:

At the factory, the valves are - upon delivery - set to the pressures indicated in the hydraulic circuit diagram.

Project planning information:

Diaphragm type accumulators (type of mounting (oil port form) E or E5) according to data sheet 50150 can be directly mounted onto plate AB42-09 up to a volume of 2.0 liters.

Technical data

(For applications outside these parameters, please consult us!)

Tank capacity	20; 40; 60		
Line connections	Connection thread according to ISO 1179 (DIN 3852-2 form X) and/or pipe connections according to ISO 8434 part 1		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN 3448 (other hydraulic fluids upon request!) ▶ Please observe our provisions according to data sheet 90220 ▶ Different oil types must not be mixed ▶ According to the operating conditions, the hydraulic fluid must be renewed at certain intervals.		
Return flow filter with filter element according to DIN 24550 according to data sheet 51424	▶ Tank 20 l	10TEN0040-H10XLA00-V2,2-M-R3...	
	▶ Tank 40 l, 60 l	10TEN0063-H10XLA00-V2,2-M-R3...	
Filter rating	▶ Breathing filter	µm	10
	▶ Return flow filter	µm	10
Viscosity range with pump type	▶ AZPB; AZPF	mm ² /s	12 ... 800 (recommended range 20 ... 100)
	▶ GF2	mm ² /s	10 ... 300
	▶ R4	mm ² /s	10 ... 200
Required cleanliness classes according to ISO 4406 for basic power units with pump type ¹⁾	20/18/15		
Electric motor	▶ Motor type	Three-phase asynchronous motor	
	▶ Efficiency class	0,37 kW IE2; 0,75 up to 7,5 kW IE3	
	▶ Voltage according to IEC 38 U	V	Up to 3 kW 230/400 V 50 Hz; from 4 kW 400/690 V 50 Hz
	▶ Number of pole pairs	4	
	▶ Speed	min ⁻¹	1450
	▶ Protection class	IP55	
Heat exchanger	▶ Type	Oil-air	
	▶ Operating pressure max.	bar	16
Type of piping	Tube forming system for fittings with 24° cone connection or double-edge cutting ring according to ISO 8434 part 1 (DIN 2353) easy/heavy series according to the technical possibilities		
Surface treatment:	▶ Steel components; pipes	Cr(VI)-free metal surface coatings	
	▶ Oil pan steel design	Single-layer coating RAL 5010	
	▶ Tank aluminum cast	Without additional surface treatment	
	▶ Connection manifold	Phosphate coating according to EN12476	
	▶ Components	Remain in the state as delivered by the manufacturer. This offers at least temporary corrosion protection.	

¹⁾ The required cleanliness classes of the other components must be adhered to in hydraulic systems. Effective filtration

prevents faults and at the same time increases the life cycle of the components.

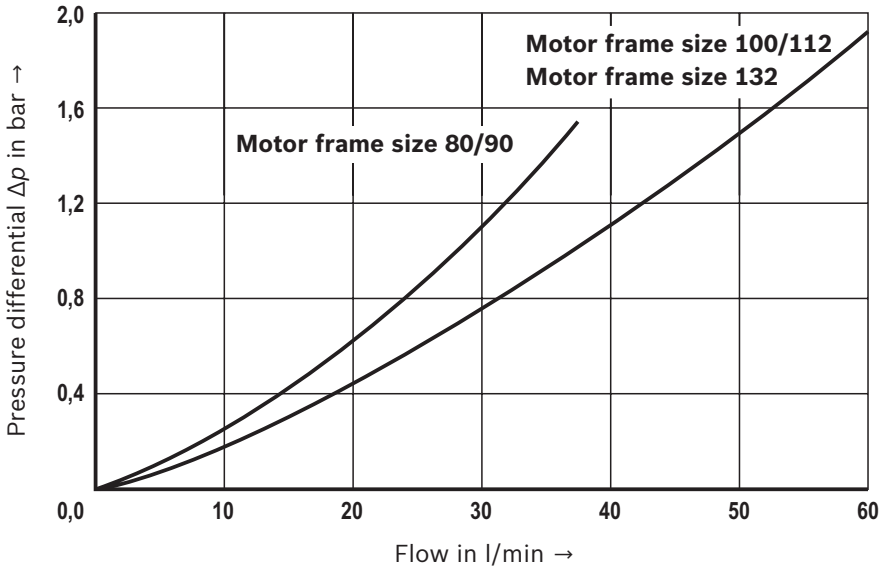
Heat power losses

Tank	Surface with cover in m ²	Heat power loss P30 in kW	Specific heat power loss in kW/°C
20	0.5	0.17	0.0055
40	1.0	0.78	0.026
60	1.3	0.87	0.029

Characteristic curves (average) for air heat exchanger

Flow resistance cooling element

Pressure differential Δp dependent on the flow q_v with an oil viscosity of 32 mm²/s.

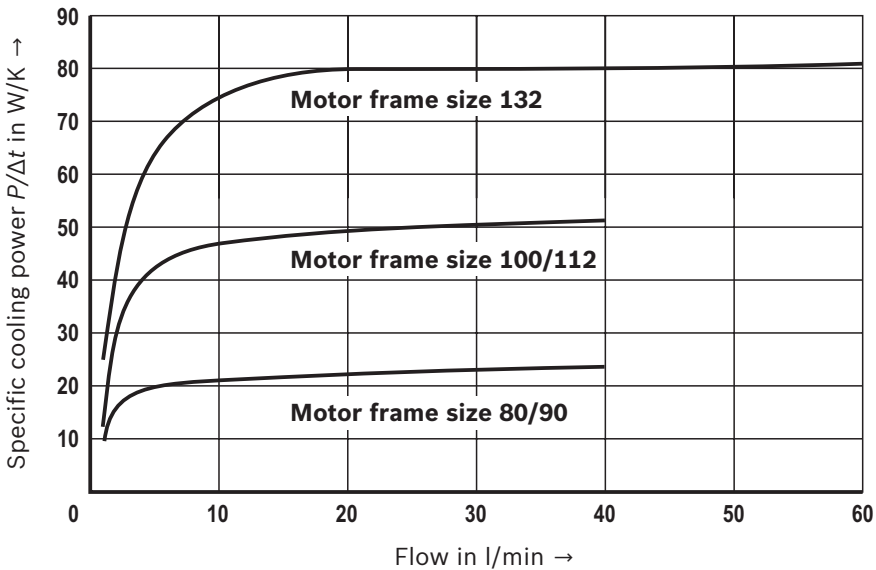


Correction factor k for Δp values dependent on other viscosities

Kinematic viscosity in mm ² /s	15	22	32	46	68	100	150	220	460
k	0.64	0.73	1	1.28	1.62	2.65	3.9	6.9	17.1

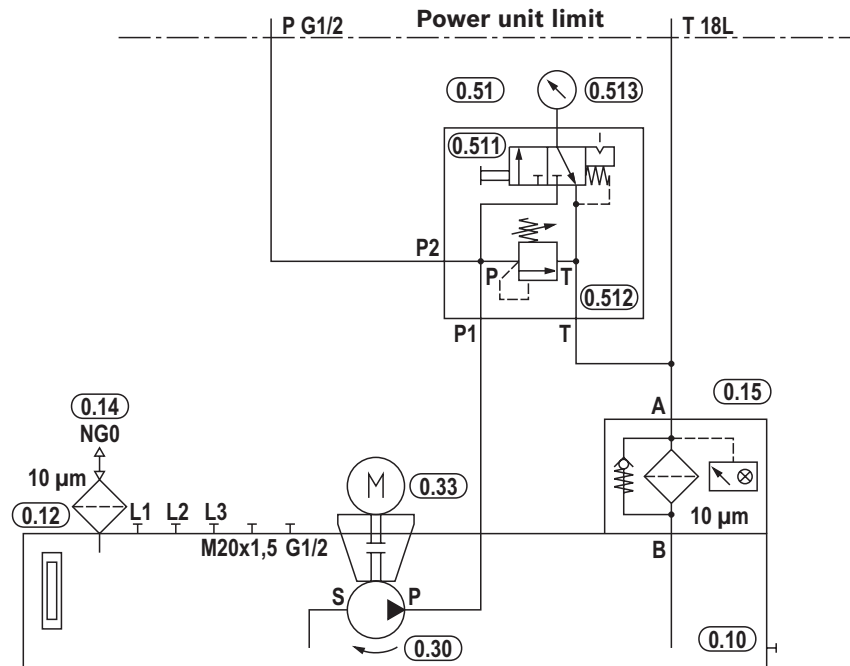
Specific cooling power

of the air heat exchanger dependent on the flow q_v and the temperature difference $\Delta t = 1$ K (oil inlet to air inlet) at fan wheel speed 1500 min⁻¹.

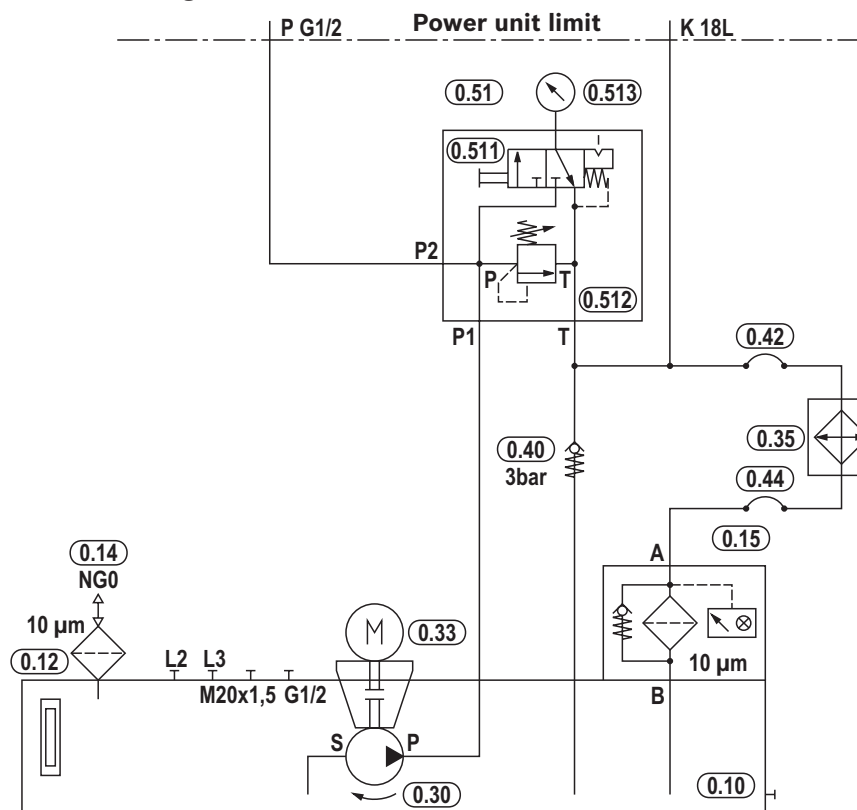


Circuit diagrams: Control variant 1

Control variant 1 without air heat exchanger



Control variant 1 with air heat exchanger

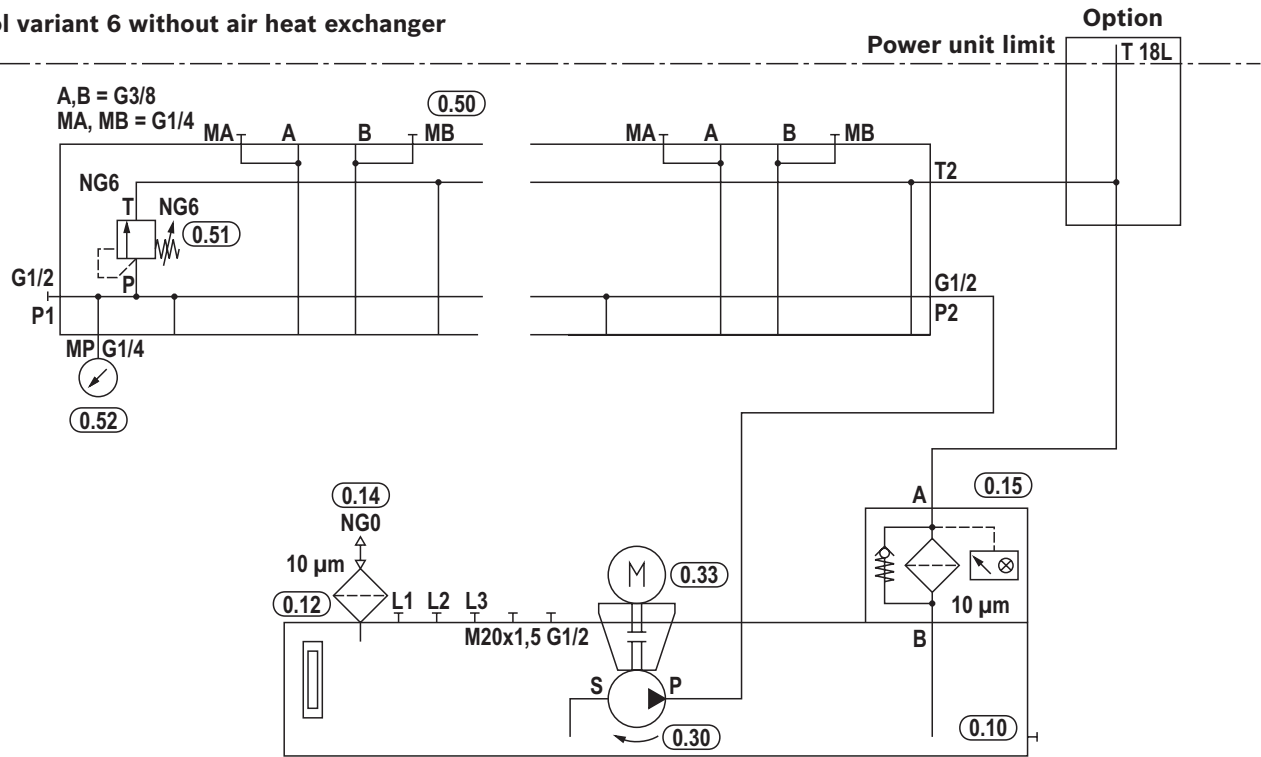


Notice!

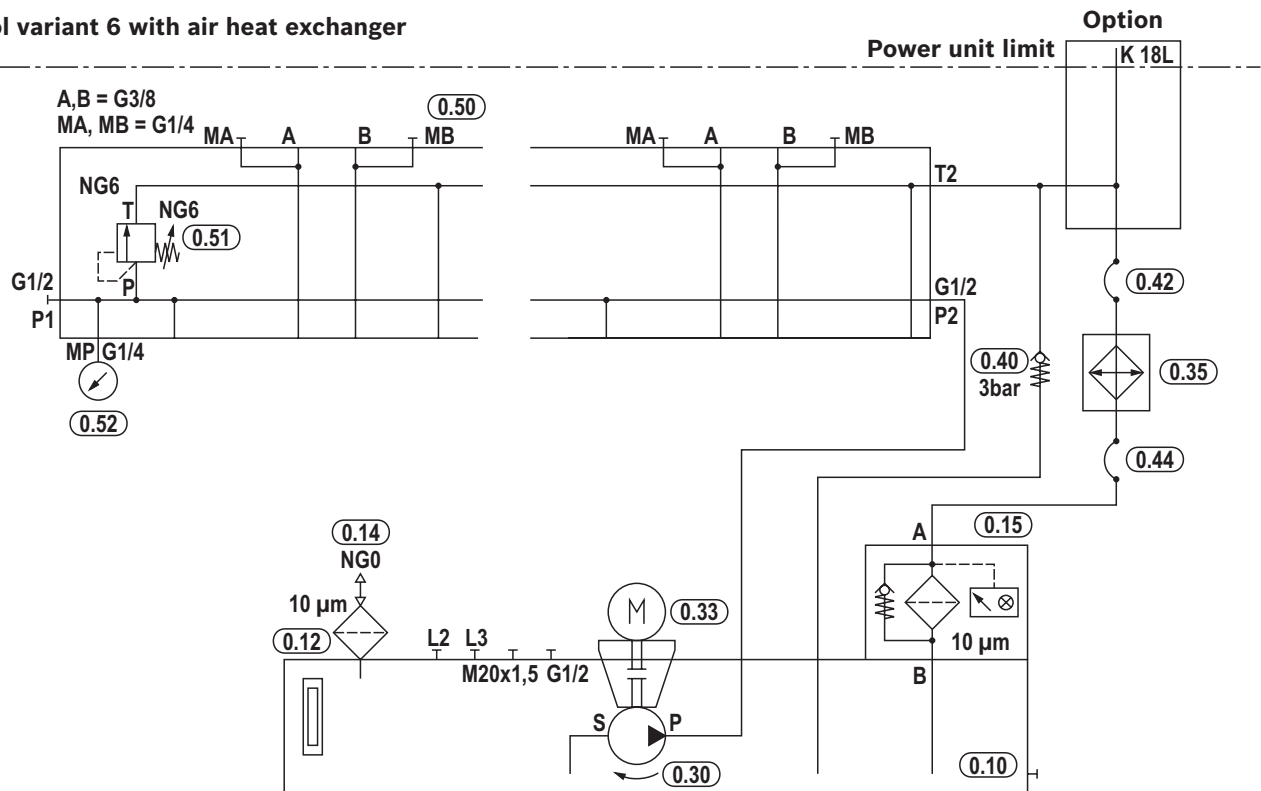
No port L3 with 40 l power unit with motor of frame size 132
 No port G1/2 on tank with 20 l power unit

Circuit diagrams: Control variant 6

Control variant 6 without air heat exchanger



Control variant 6 with air heat exchanger

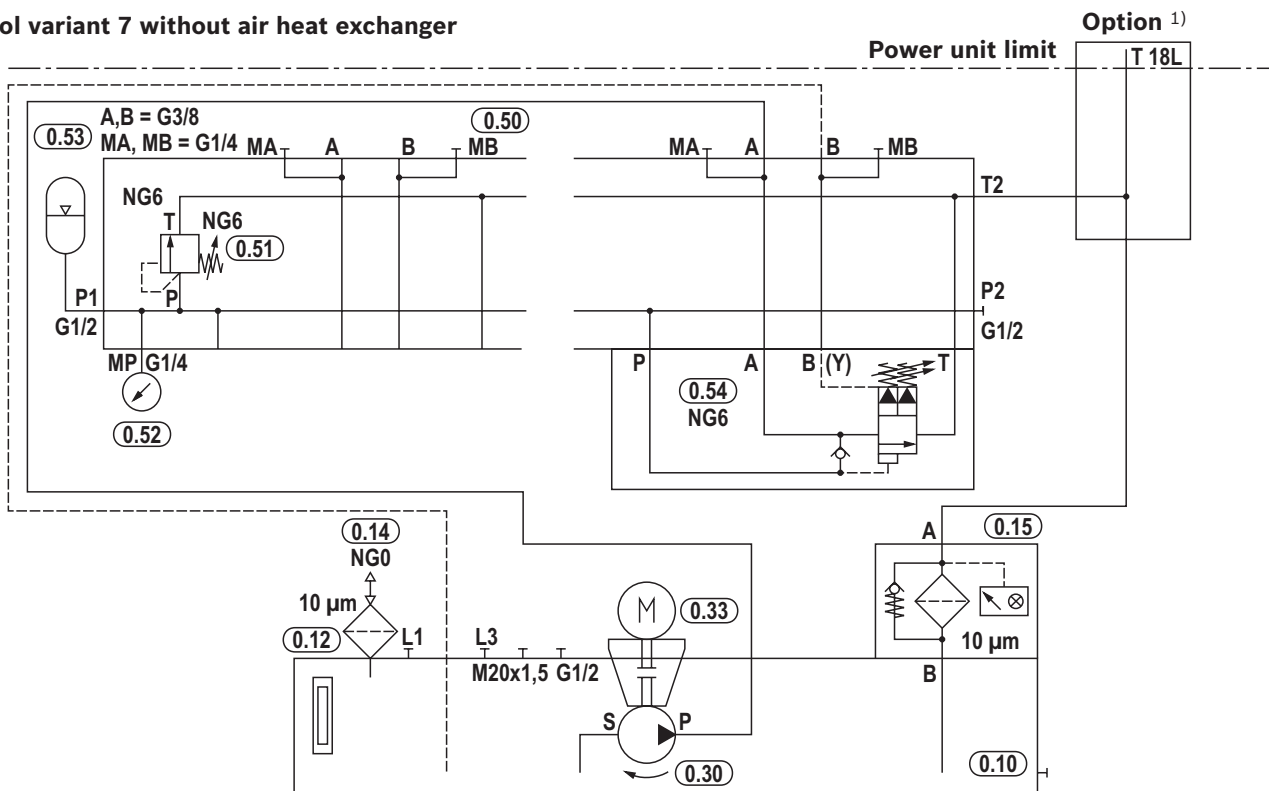


Notice!

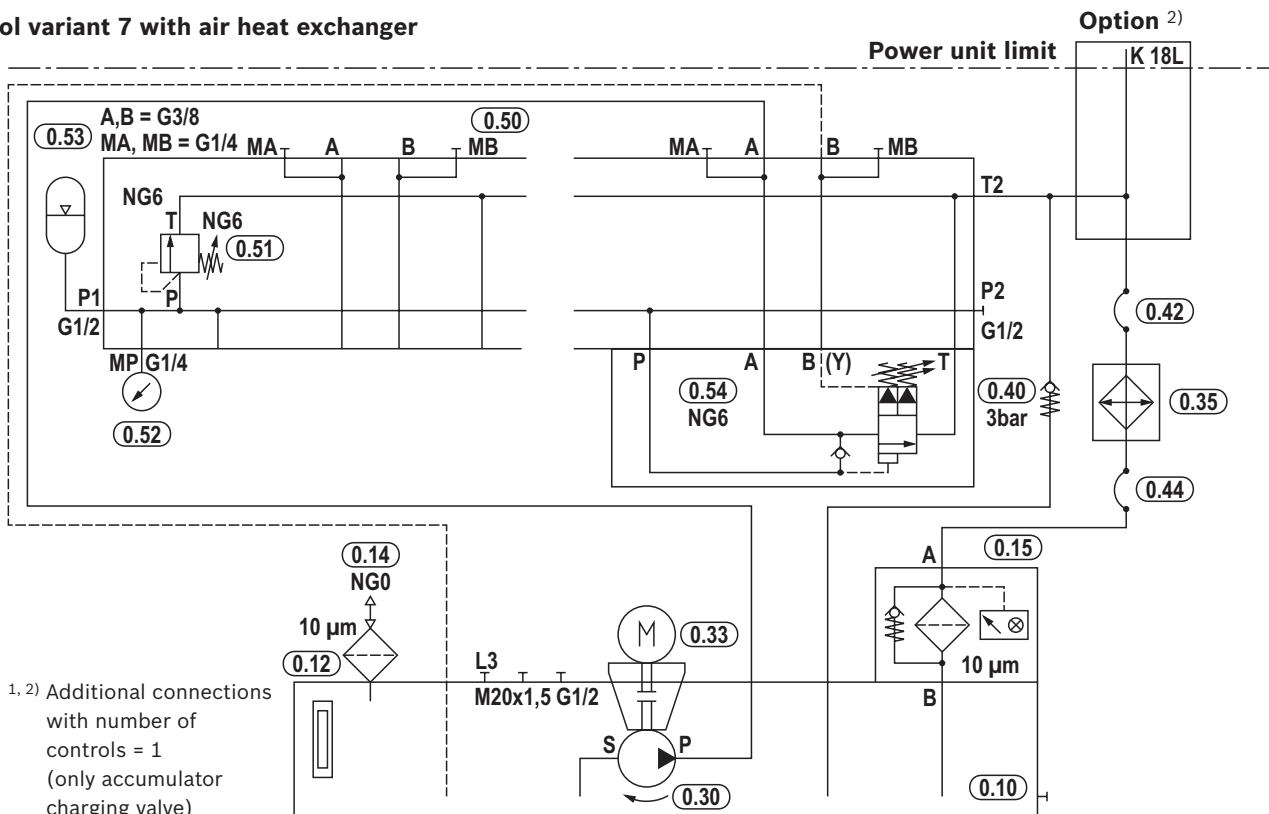
- No port L3 with 40 l power unit with motor of frame size 132
- No port G1/2 on tank with 20 l power unit

Circuit diagrams: Control variant 7

Control variant 7 without air heat exchanger



Control variant 7 with air heat exchanger



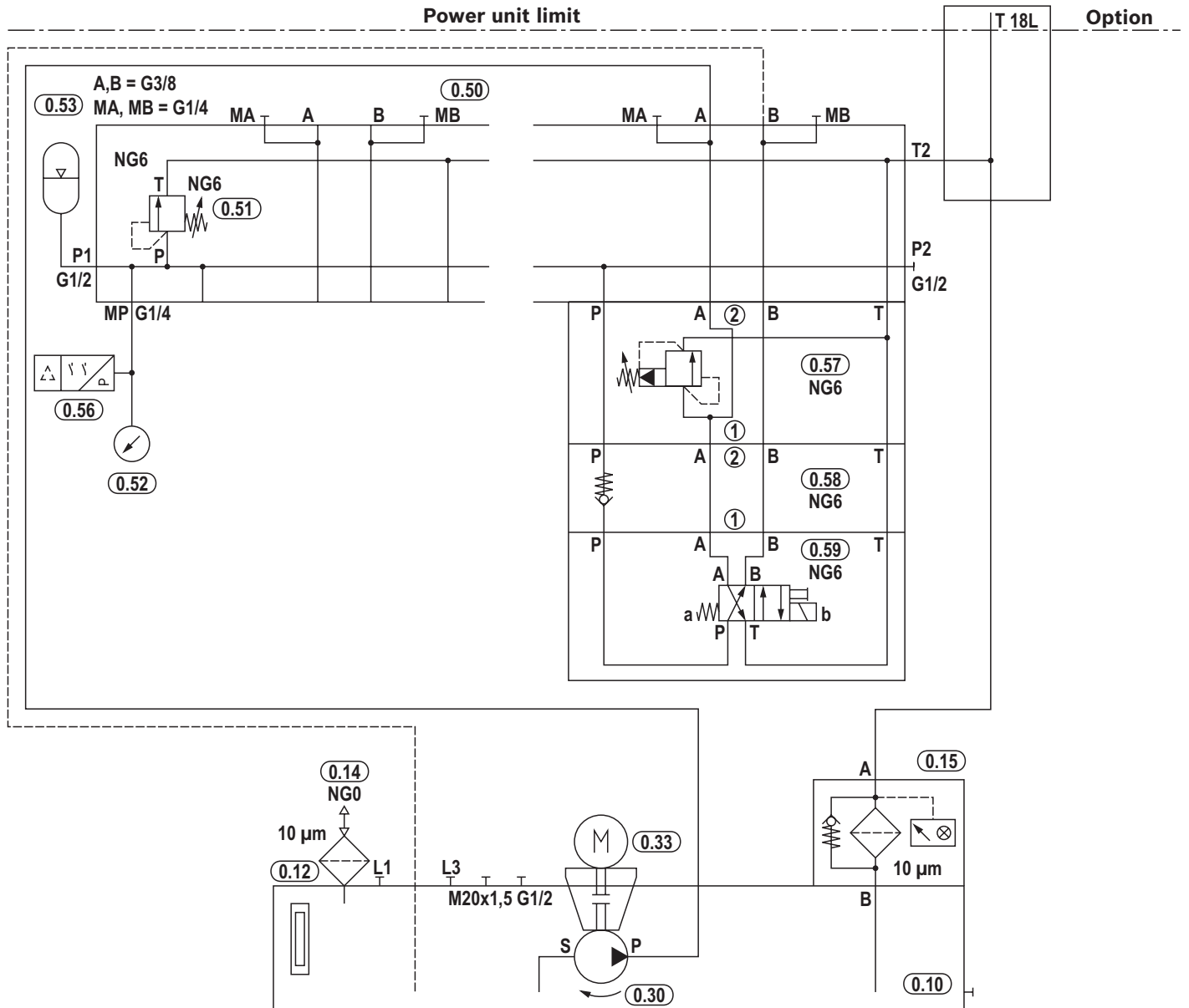
1, 2) Additional connections with number of controls = 1 (only accumulator charging valve)

Notice!

No port L3 with 40 l power unit with motor of frame size 132
 No port G1/2 on tank with 20 l power unit

Example of an electric accumulator charging circuit:

Circuit diagram

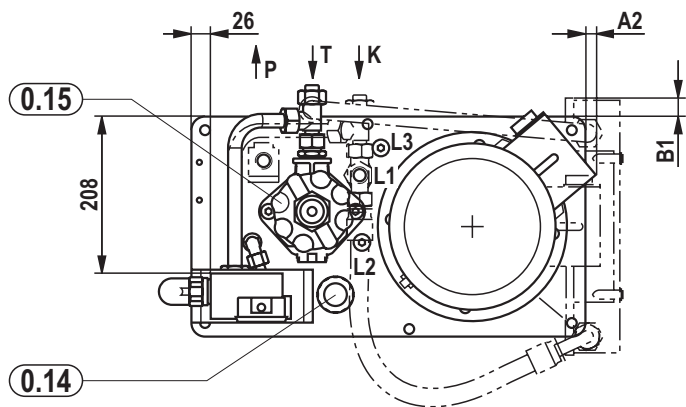
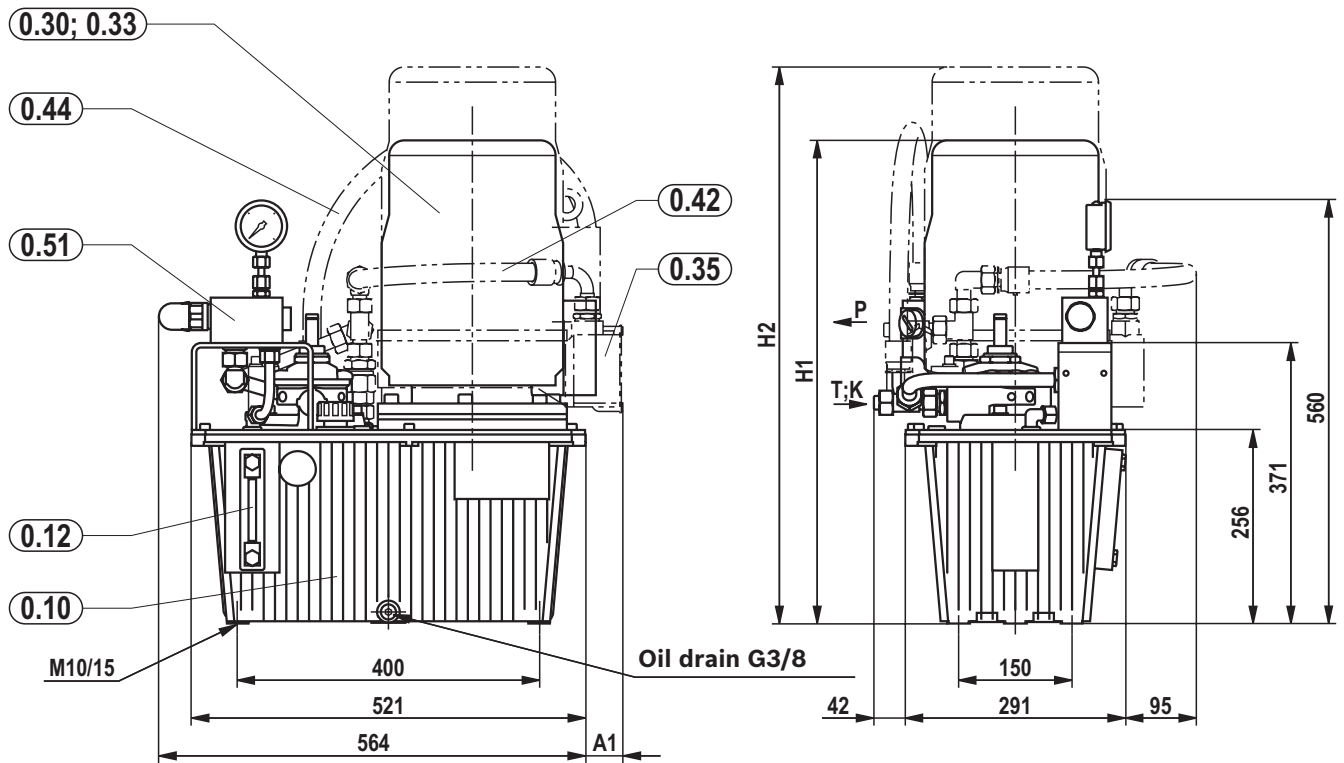


Item	Type	Data sheet
0.56	HEDE 10.../2/	30278
0.57	ZDB6_VA_-4X/_V	25751
0.58	R901086591 Z1S 6 P05-4X/V SO104	21534
0.59	R900572186 4WE 6 Y73-6X/EG24N9K4/A12	23183

Attention:

Observe the limitations of use of the valves (e.g. switching power limits of the solenoids).

Dimensions: Type ABSKG-20, control variant 1 (dimensions in mm)



- 0.10** Tank
- 0.12** Oil level display
- 0.14** Filling
- 0.15** Return flow filter
- 0.30** Pump
- 0.33** Electric motor
Pump carrier
Coupling
- 0.35** Air heat exchanger
(basic power unit .../L)
- 0.42** Hose to the
heat exchanger
- 0.44** Hose from the heat
exchanger to the filter
- 0.51** Pressure control unit

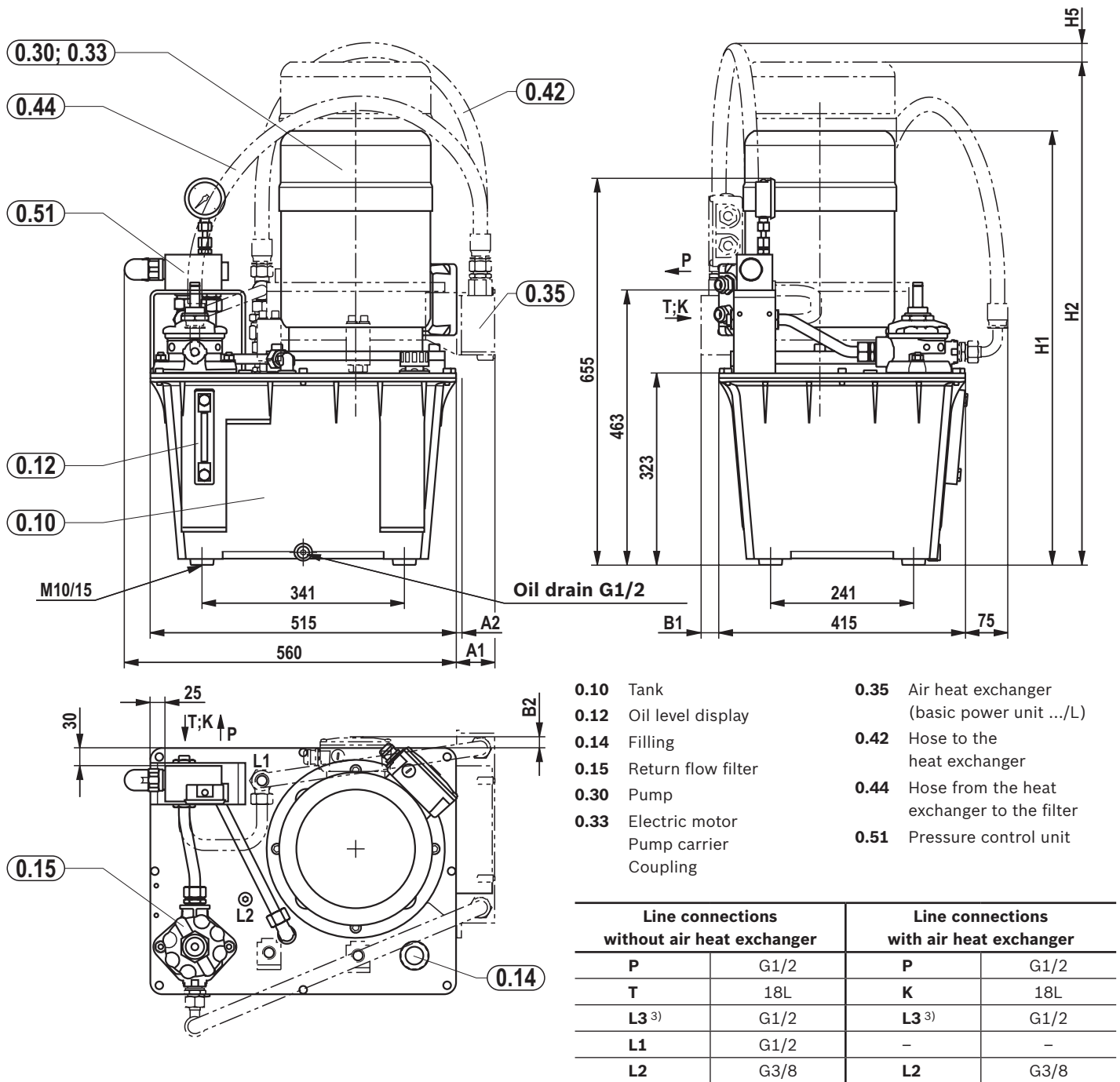
Line connections without air heat exchanger		Line connections with air heat exchanger	
P	G1/2	P	G1/2
T	18L	K	18L
L2; L3	G3/8	L2; L3	G3/8
L1	G1/2	-	-

Motor frame size		71	80/90	100/112
Without air heat exchanger	A2	-	-	-/15
	H1	490	532/579 ¹⁾	623 ²⁾ /647
With air heat exchanger	A1	-	-/32	51
	B1	-	-	29
	H2	-	-/660	720/744

¹⁾ +25 mm with pump R4

²⁾ +45 mm with pump R4

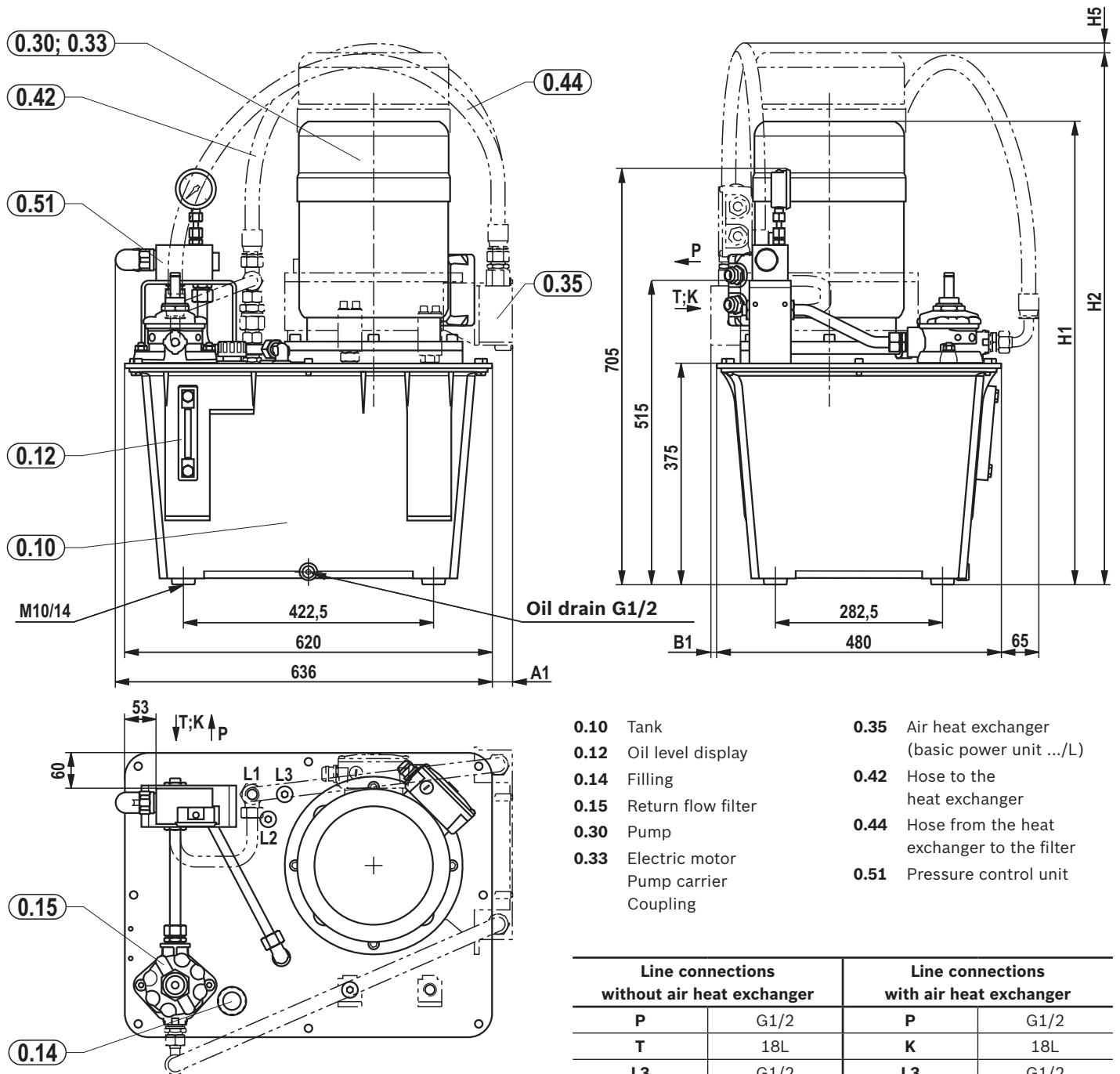
Dimensions: Type ABSKG-40, control variant 1 (dimensions in mm)



Motor frame size		71	80/90	100/112	132S/132M
Without air heat exchanger	A2	-	-	-/10	-
	B2	-	-	-	20
	H1	557	599/646	690/714	728/766
With air heat exchanger	A1	-	-/31	50	66
	B1	-	-	14	30
	H2	-	-/727	787/811	844/882
	H5	-	-/65	30/30	40/50

³⁾ No port L3 with power unit with motor of frame size 132

Dimensions: Type ABSKG-60, control variant 1 (dimensions in mm)

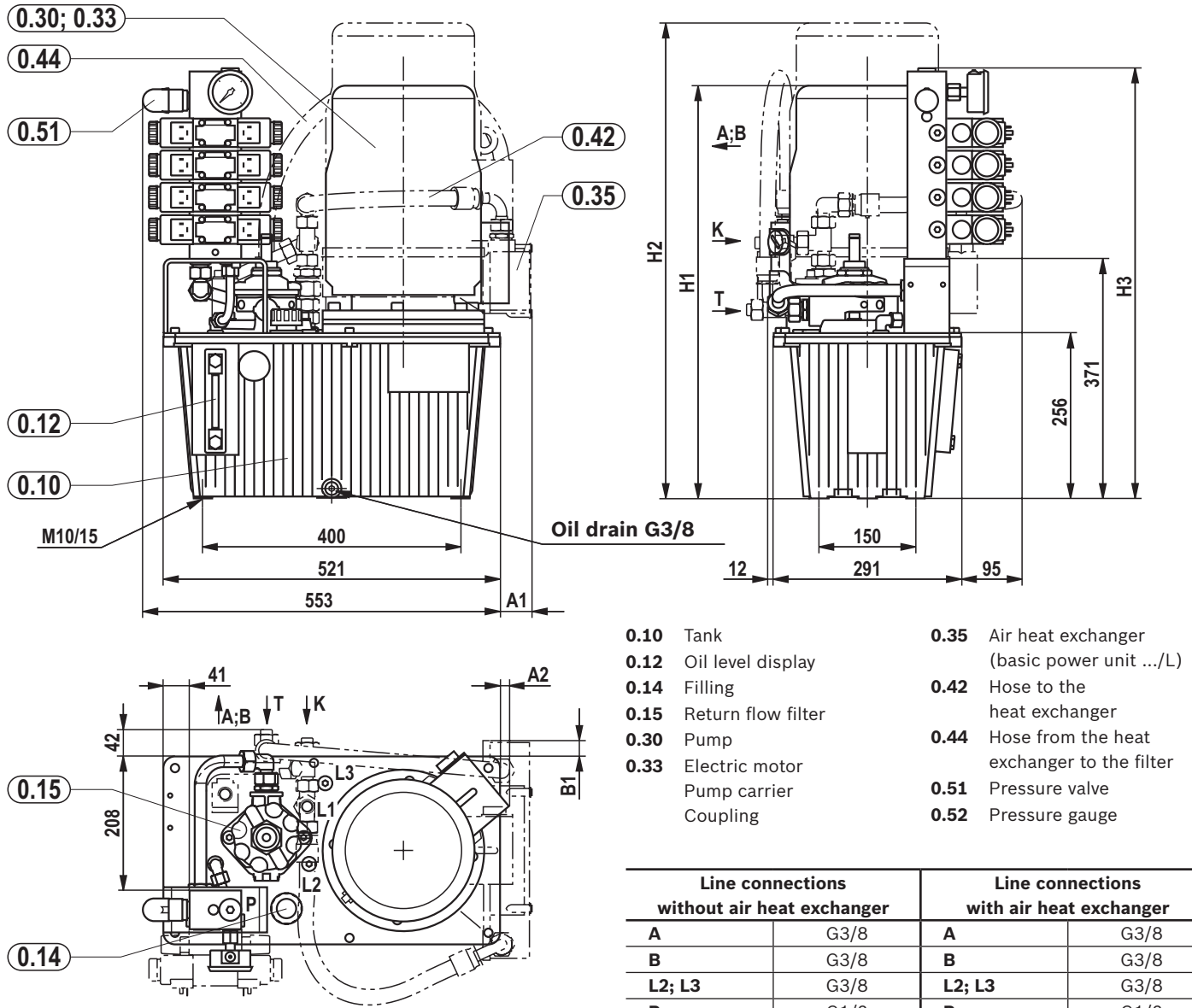


- 0.10** Tank
- 0.12** Oil level display
- 0.14** Filling
- 0.15** Return flow filter
- 0.30** Pump
- 0.33** Electric motor
Pump carrier
Coupling
- 0.35** Air heat exchanger
(basic power unit .../L)
- 0.42** Hose to the
heat exchanger
- 0.44** Hose from the heat
exchanger to the filter
- 0.51** Pressure control unit

Line connections without air heat exchanger		Line connections with air heat exchanger	
P	G1/2	P	G1/2
T	18L	K	18L
L3	G1/2	L3	G1/2
L1	G1/2	-	-
L2	G3/8	L2	G3/8

Motor frame size		71	80/90	100/112	132S/132M
Without air heat exchanger	H1	(607)	(649)/696	740/764	778/816
	A1	-	-	-	35
With air heat exchanger	B1	-	-	-	10
	H2	-	-/777	837/861	894/932
	H5	-	-/55	35/25	25/40

Dimensions: Type ABSKG-20, control variant 6 (dimensions in mm)



- 0.10** Tank
- 0.12** Oil level display
- 0.14** Filling
- 0.15** Return flow filter
- 0.30** Pump
- 0.33** Electric motor
Pump carrier
Coupling
- 0.35** Air heat exchanger
(basic power unit .../L)
- 0.42** Hose to the
heat exchanger
- 0.44** Hose from the heat
exchanger to the filter
- 0.51** Pressure valve
- 0.52** Pressure gauge

Line connections without air heat exchanger		Line connections with air heat exchanger	
A	G3/8	A	G3/8
B	G3/8	B	G3/8
L2; L3	G3/8	L2; L3	G3/8
P	G1/2	P	G1/2
T (optional)	18L	K (optional)	18L
L1	G1/2	-	-

Motor frame size		71	80/90	100/112
Without air heat exchanger	A2	-	-	-/15
	H1	490	532/579 ¹⁾	623 ²⁾ /647
With air heat exchanger	A1	-	-/32	51
	B1	-	-	29
	H2	-	-/660	720/744

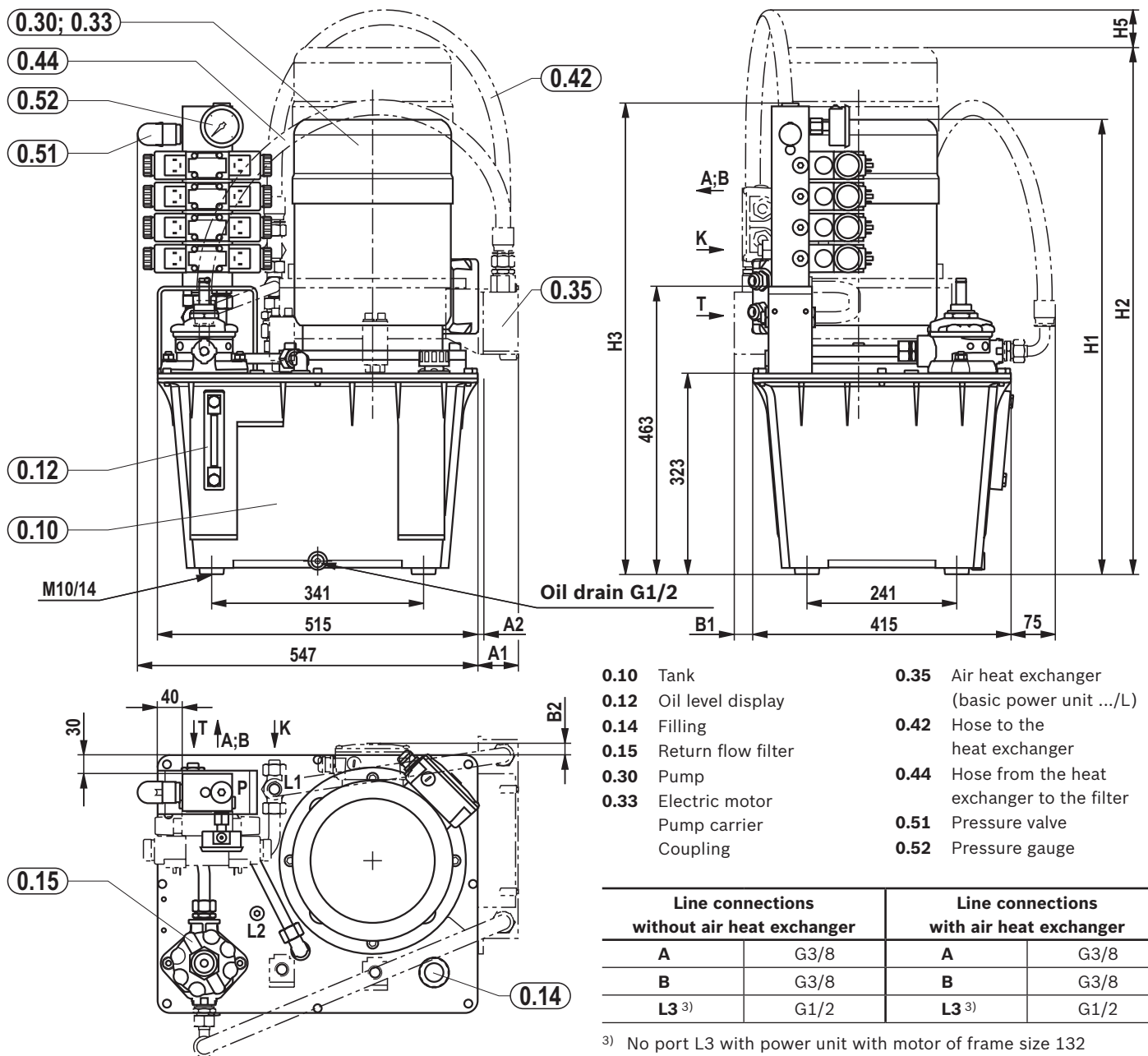
¹⁾ +25 mm with pump R4 ²⁾ +45 mm with pump R4

Dimensions: Dimension H3

Number of controls	1	2	3	4	5	6	8
H3	516	566	616	666	716	766	866

Attention: The maximum dimensions may differ due to the attached valves.

Dimensions: Type ABSKG-40, control variant 6 (dimensions in mm)



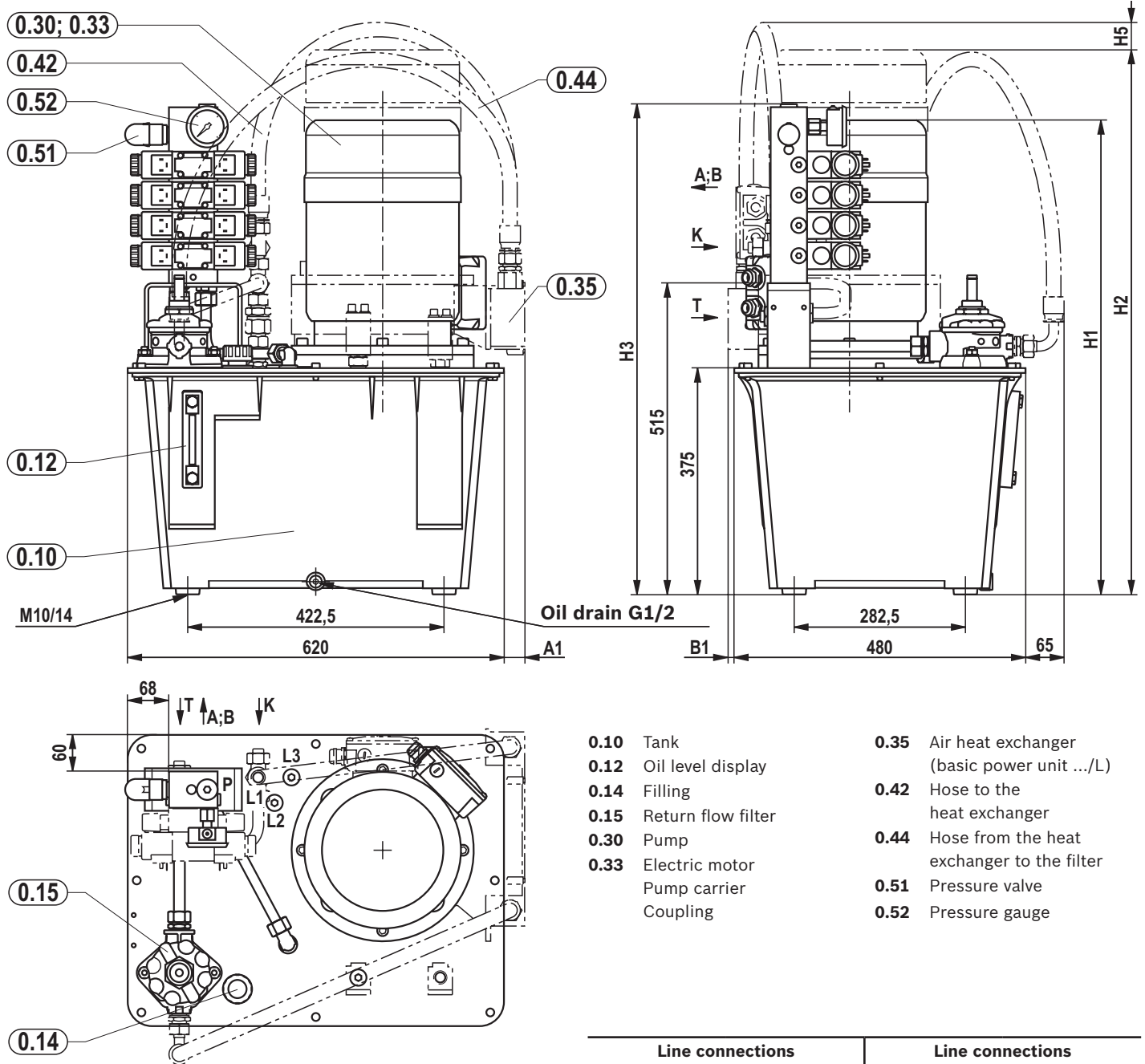
Motor frame size		71	80/90	100/112	132S/132M
Without air heat exchanger	H1	557	599/646	690/714	728/766
	A2	-	-	-/10	-
	B2	-	-	-	20
With air heat exchanger	A1	-	-/31	50	66
	B1	-	-	14	30
	H2	-	-/727	787/811	844/882
	H5	-	-/95	60/60	70/80

Dimensions: Dimension H3

Number of controls	1	2	3	4	5	6	8
H3	608	658	708	758	808	858	958

Attention: The maximum dimensions may differ due to the attached valves.

Dimensions: Type ABSKG-60, control variant 6 (dimensions in mm)



- 0.10 Tank
- 0.12 Oil level display
- 0.14 Filling
- 0.15 Return flow filter
- 0.30 Pump
- 0.33 Electric motor
Pump carrier
Coupling
- 0.35 Air heat exchanger
(basic power unit .../L)
- 0.42 Hose to the
heat exchanger
- 0.44 Hose from the heat
exchanger to the filter
- 0.51 Pressure valve
- 0.52 Pressure gauge

Motor frame size	71	80/90	100/112	132S/132M	
Without air heat exchanger	H1	(607)	(649)/696	740/764	778/816
	A1	-	-	-	35
With air heat exchanger	B1	-	-	-	10
	H2	-	-/777	837/861	894/932
	H5	-	-/85	65/55	55/70

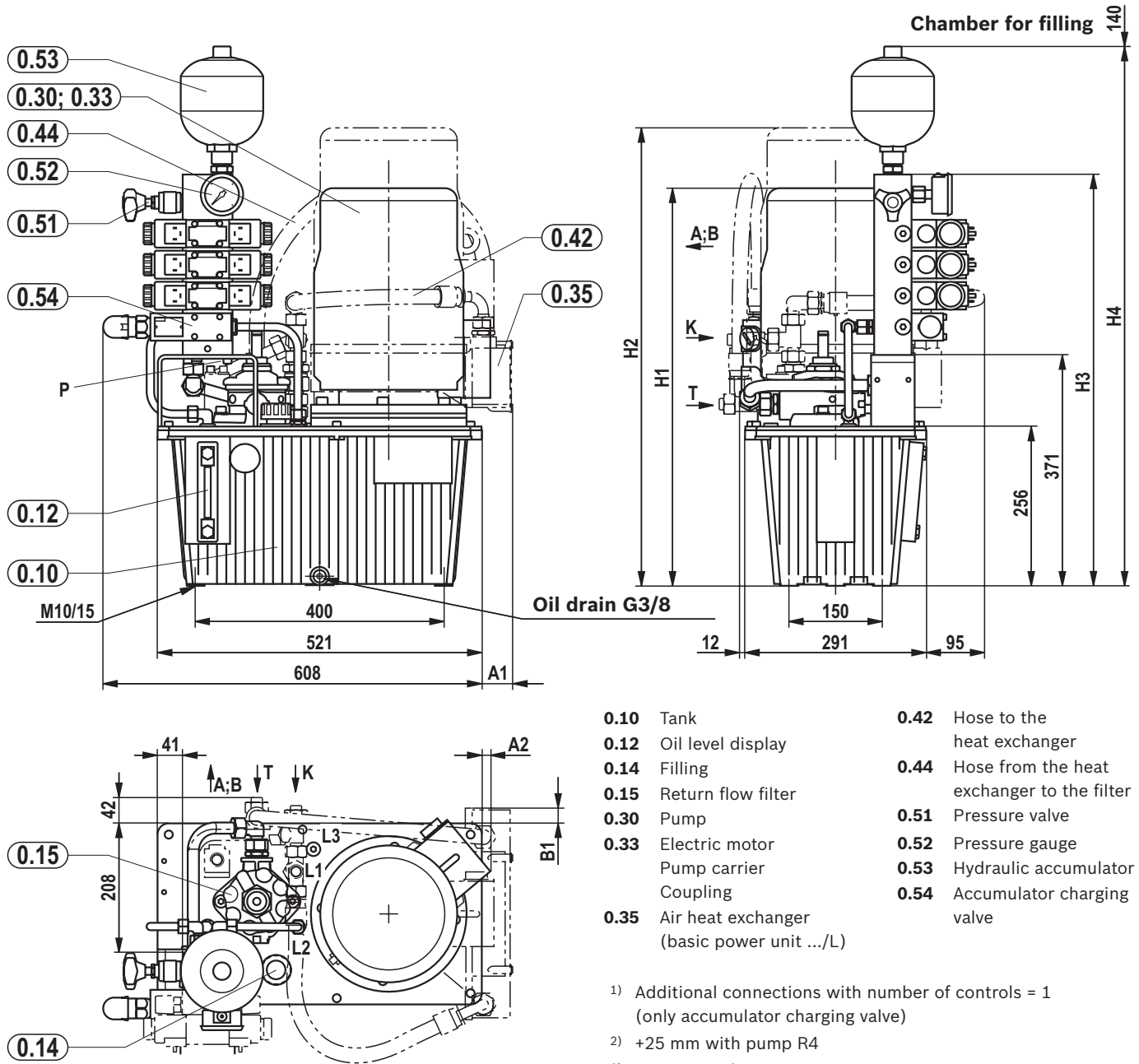
Line connections without air heat exchanger		Line connections with air heat exchanger	
A	G3/8	A	G3/8
B	G3/8	B	G3/8
L3	G1/2	L3	G1/2
P	G1/2	P	G1/2
T (optional)	18L	K (optional)	18L
L1	G1/2	-	-
L2	G3/8	L2	G3/8

Dimensions: Dimension H3

Number of controls	1	2	3	4	5	6	8
H3	658	708	758	808	858	908	1008

Attention: The maximum dimensions may differ due to the attached valves.

Dimensions: Type ABSKG-20, control variant 7 (dimensions in mm)



- 0.10** Tank
- 0.12** Oil level display
- 0.14** Filling
- 0.15** Return flow filter
- 0.30** Pump
- 0.33** Electric motor
Pump carrier
Coupling
- 0.35** Air heat exchanger
(basic power unit .../L)
- 0.42** Hose to the
heat exchanger
- 0.44** Hose from the heat
exchanger to the filter
- 0.51** Pressure valve
- 0.52** Pressure gauge
- 0.53** Hydraulic accumulator
- 0.54** Accumulator charging
valve

- 1) Additional connections with number of controls = 1
(only accumulator charging valve)
- 2) +25 mm with pump R4
- 3) +45 mm with pump R4

Motor frame size		71	80/90	100/112
Without air heat exchanger	H1	490	532/579 ²⁾	623 ³⁾ /647
	A2	-	-	-/15
With air heat exchanger	A1	-	-/32	51
	B1	-	-	29
	H2	-	-/660	720/744

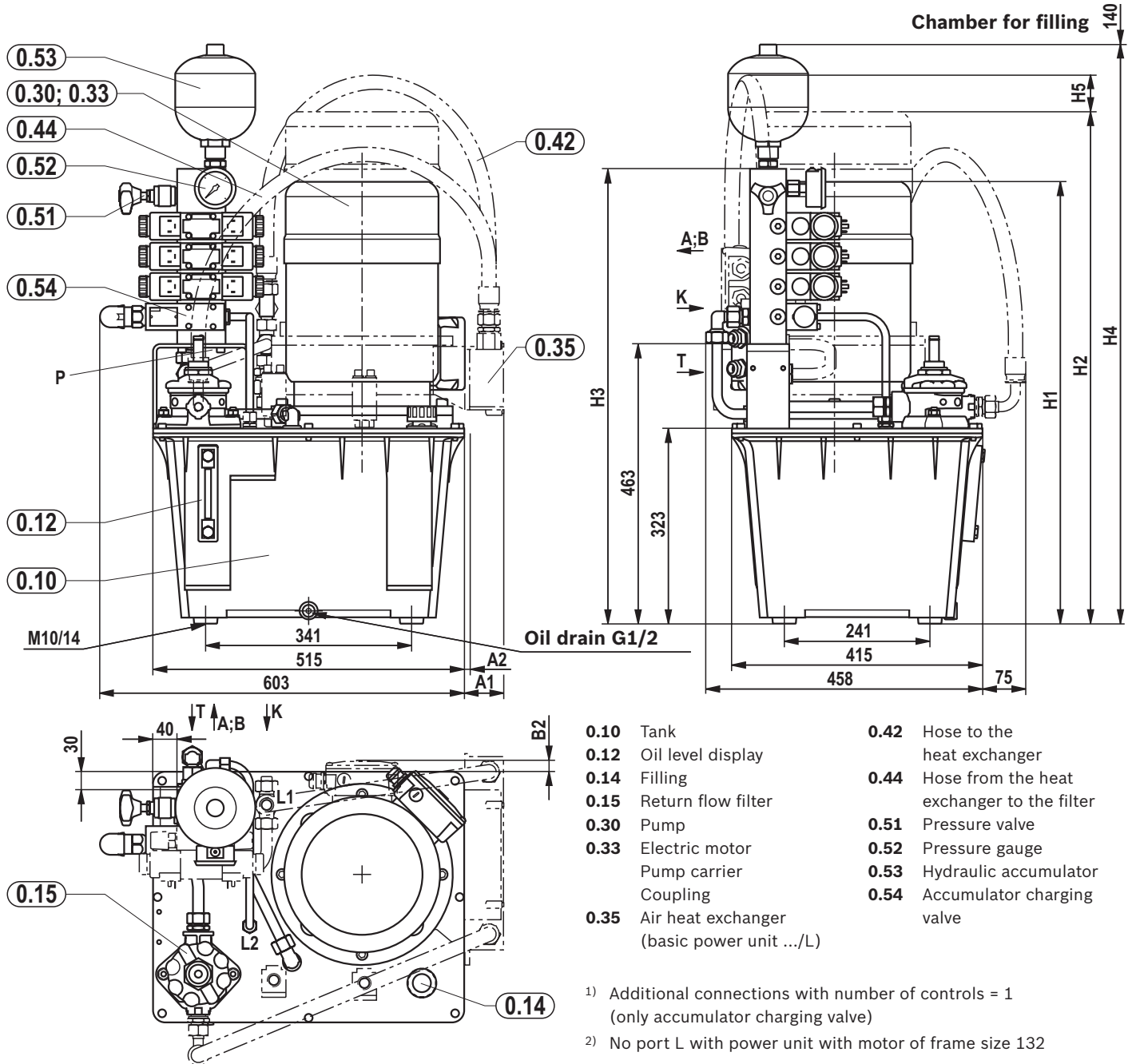
Line connections without air heat exchanger		Line connections with air heat exchanger	
A	G3/8	A	G3/8
B	G3/8	B	G3/8
L3	G3/8	L3	G3/8
T (optional) ¹⁾	18L	K (optional) ¹⁾	18L
P	G1/2	P	G1/2
L1	G1/2	-	-

Dimensions: Dimension H3; H4

Number of controls	1	2	3	4	5	6	8
H3	511	561	611	661	711	761	861
H4	717	767	817	867	917	967	1067

Attention: The maximum dimensions may differ due to the attached valves.

Dimensions: Type ABSKG-40, control variant 7 (dimensions in mm)



- 0.10** Tank
- 0.12** Oil level display
- 0.14** Filling
- 0.15** Return flow filter
- 0.30** Pump
- 0.33** Electric motor
- Pump carrier
- Coupling
- 0.35** Air heat exchanger (basic power unit .../L)
- 0.42** Hose to the heat exchanger
- 0.44** Hose from the heat exchanger to the filter
- 0.51** Pressure valve
- 0.52** Pressure gauge
- 0.53** Hydraulic accumulator
- 0.54** Accumulator charging valve

1) Additional connections with number of controls = 1 (only accumulator charging valve)
 2) No port L with power unit with motor of frame size 132

Motor frame size		71	80/90	100/112	132S/132M
Without air heat exchanger	H1	557	599/646	690/714	728/766
	A2	-	-	-/10	-
	B2	-	-	-	20
With air heat exchanger	A1	-	-/31	50	66
	B1	-	-	14	30
	H2	-	-/727	787/811	844/882
	H5	-	-/95	60/60	70/80

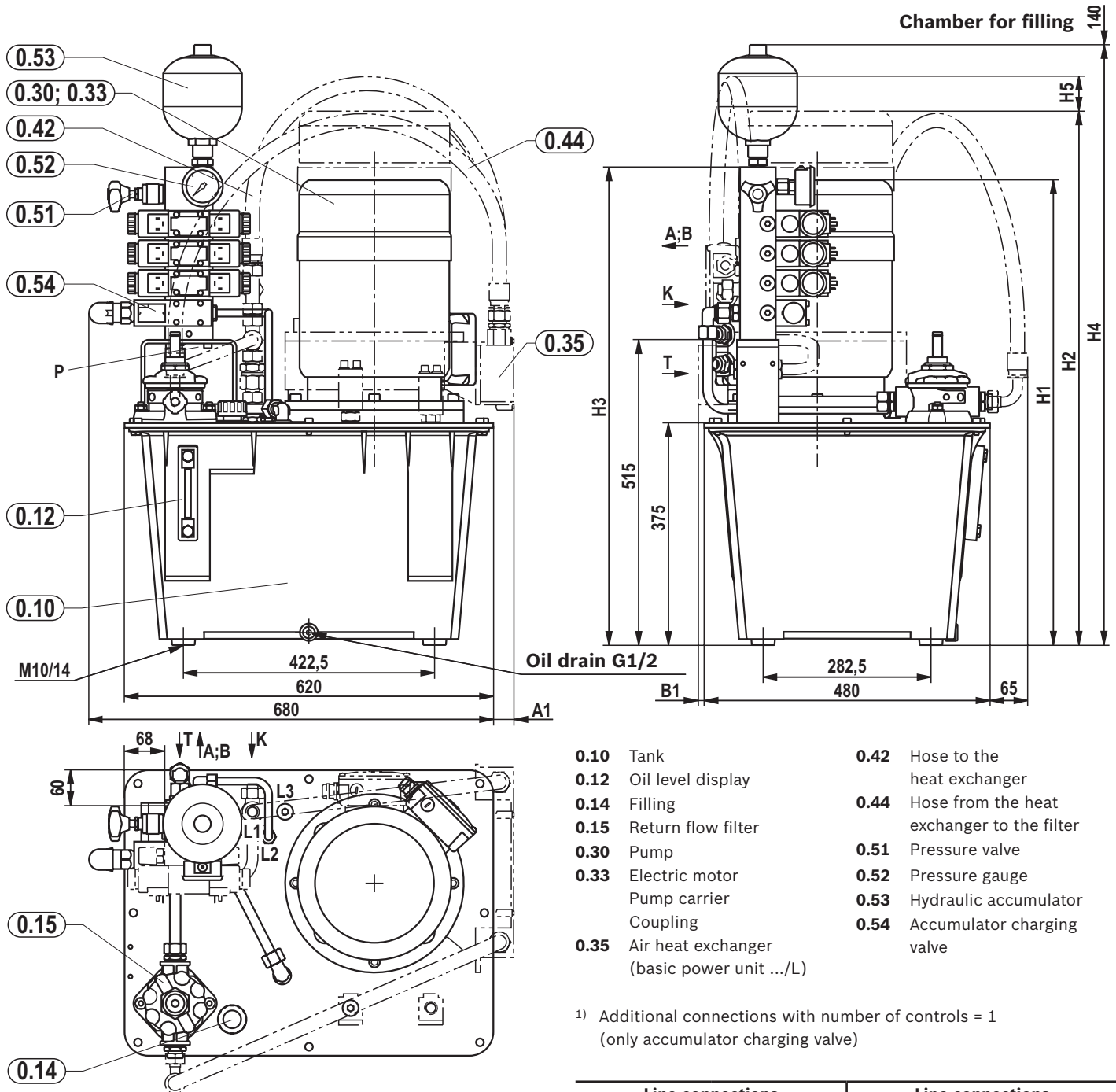
Line connections without air heat exchanger		Line connections with air heat exchanger	
A	G3/8	A	G3/8
B	G3/8	B	G3/8
L3 ²⁾	G1/2	L3 ²⁾	G1/2
T (optional) ¹⁾	18L	K (optional) ¹⁾	18L
P	G1/2	P	G1/2
L1	G1/2	-	-

Dimensions: Dimension H3; H4

Number of controls	1	2	3	4	5	6	8
H3	603	653	703	753	803	853	953
H4	809	859	909	959	1009	1059	1159

Attention: The maximum dimensions may differ due to the attached valves.

Dimensions: Type ABSKG-60, control variant 7 (dimensions in mm)



- 0.10 Tank
- 0.12 Oil level display
- 0.14 Filling
- 0.15 Return flow filter
- 0.30 Pump
- 0.33 Electric motor
Pump carrier
- 0.35 Air heat exchanger
(basic power unit .../L)
- 0.42 Hose to the
heat exchanger
- 0.44 Hose from the heat
exchanger to the filter
- 0.51 Pressure valve
- 0.52 Pressure gauge
- 0.53 Hydraulic accumulator
- 0.54 Accumulator charging
valve

1) Additional connections with number of controls = 1
(only accumulator charging valve)

Motor frame size	71	80/90	100/112	132S/132M	
Without air heat exchanger	H1 (607)	(649)/696	740/764	778/816	
With air heat exchanger	A1	-	-	35	
	B1	-	-	10	
	H2	-	-/777	837/861	894/ 932
	H5	-	-/95	75/65	65/80

Line connections without air heat exchanger		Line connections with air heat exchanger	
A	G3/8	A	G3/8
B	G3/8	B	G3/8
L3	G1/2	L3	G1/2
T (optional) ¹⁾	18L	K (optional) ¹⁾	18L
P	G1/2	P	G1/2
L1	G1/2	-	-

Dimensions: Dimension H3; H4

Number of controls	1	2	3	4	5	6	8
H3	653	703	753	803	853	903	1003
H4	859	909	959	1009	1059	1109	1209

Attention: The maximum dimensions may differ due to the attached valves.

Options

Level switch N

- Float switch according to data sheet 50212 with **min./max. switching contacts** and optionally with a temperature contact (70 °C)

Tank size	Min. switching point normally closed contact ¹⁾ in mm	Max. switching point normally open contact ¹⁾ in mm	Temperature contact normally closed contact in °C	Type	Material no.
20	120	50	–	ABZMS-35-1X/120F050S-K24	R901057913
40 / 60	165	85	–	ABZMS-35-1X/165F085S-K24	R901057914
20	120	50	70	ABZMS-35-1X/120F050S-T70F-K24	R901057918
40 / 60	165	85	70	ABZMS-35-1X/165F085S-T70F-K24	R901057920

- Float switch according to data sheet 50212 with **min./pre-warning switching contacts** and optionally with a temperature contact (70 °C)

Tank size	Min. switching point normally closed contact ¹⁾ in mm	Switching point (pre-warning) normally open contact ¹⁾ in mm	Temperature contact normally closed contact in °C	Type	Material no.
20	120	90	–	ABZMS-35-1X/120F090S-K24	R901088810
40 / 60	165	135	–	ABZMS-35-1X/165F135S-K24	R901088811
20	120	90	70	ABZMS-35-1X/120F090S-T70F-K24	R901088813
40 / 60	165	135	70	ABZMS-35-1X/165F135S-T70F-K24	R901088814

- Float switch according to data sheet 50220 with **min./pre-warning switching contacts** for level, temperature display and with two programmable temperature switching outputs

Tank size	Min. switching point normally closed contact ¹⁾ in mm	Switching point (pre-warning) normally open contact ¹⁾ in mm	Type	Material no.
20	120	90	ABZMS-40-1X/120F090S-T2-K24	R901245525
40 / 60	165	135	ABZMS-40-1X/165F135S-T2-K24	R901245526

Tank size	Max. filling volume in l	Switching point (pre-warning) in mm	Filling volume at switching point pre-warning in l	Min. switching point in mm	Filling volume at switching point min in l
20	18	90	14	120	11.2
40	33	135	25	165	20.8
60	54	135	43	165	37.0

¹⁾ with decreasing level

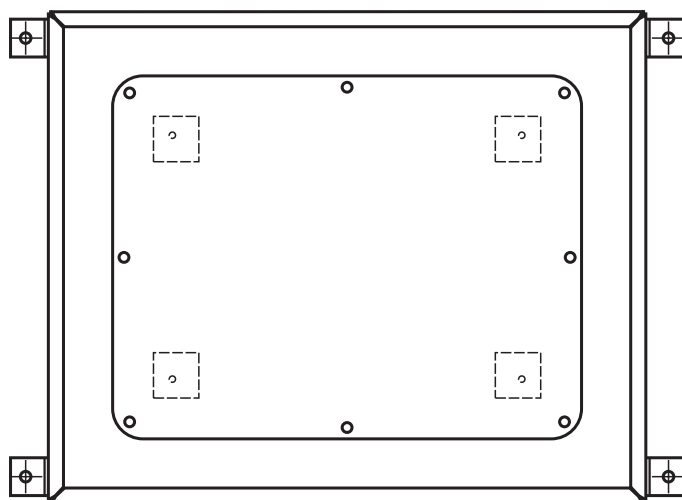
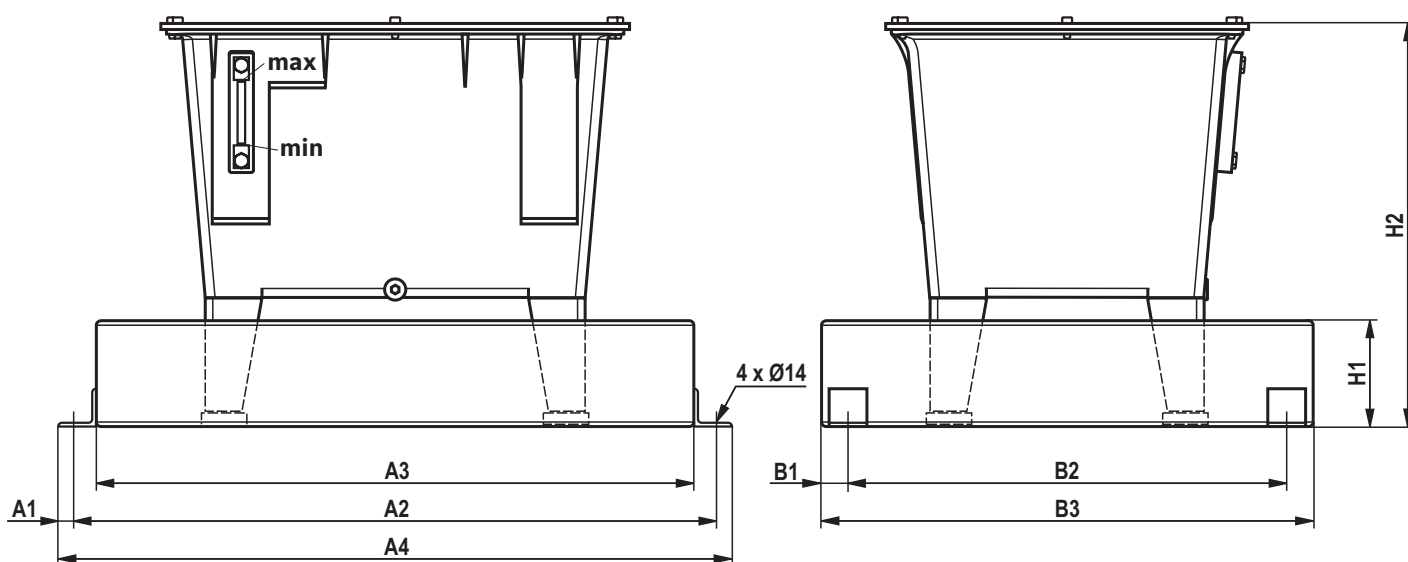
For more versions see data sheet 50220

Options

Oil pan O

► The oil pans have been designed to take up the entire tank volume.

Tank size	Oil pan	Material no. assembly steel version	Material no. assembly stainless steel version according to Water Resources Act	Weight in kg
20	AB 40-09/20	R901048242	R901048243	19
40	AB 40-09/40	R901048248	R901048249	23
60	AB 40-09/60	R901048245	R901048246	26



Dimension (dimensions in mm)	Tank size		
	20	40	60
A1	20	20	20
A2	740	750	850
A3	680	690	790
A4	780	790	890
B1	35	35	35
B2	380	520	580
B3	450	590	650
H1	100	140	140
H2	363	483	535

Options

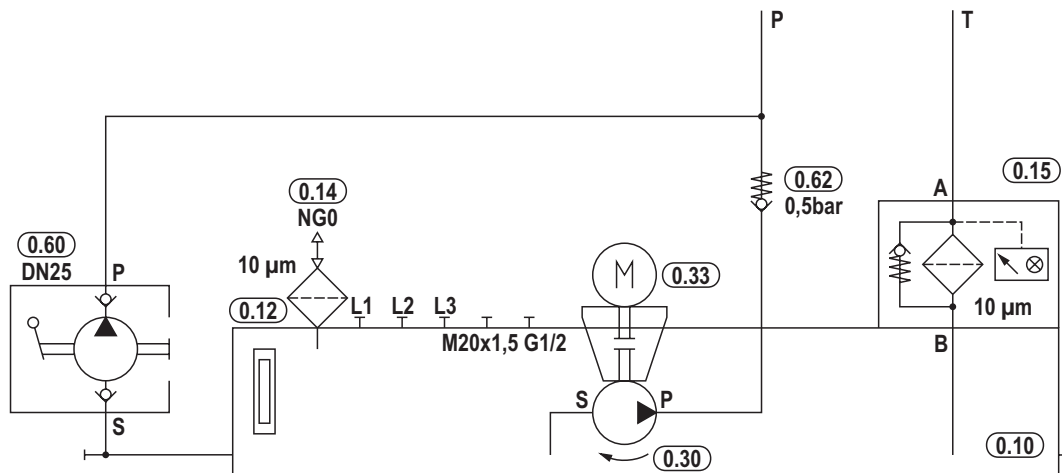
Hand pump P

Assembly kit consisting of:

- ▶ Hand pump AB42-20/25
- ▶ Check valve AB21-12 type RE 12S-0,5 / RE S16-0,5
- ▶ Console

q_{Vmax} in l/min	Tank size	Type	Material no.	Weight in kg
≤ 11.8	20	MONTAGESATZ AB40-09/20-HANDPUMPE <11.8L	R901009181	19
	40	MONTAGESATZ AB40-09/40-HANDPUMPE <11.8L	R901009022	24
	60	MONTAGESATZ AB40-09/60-HANDPUMPE <11.8L	R901009019	29
> 11.8	40	MONTAGESATZ AB40-09/40-HANDPUMPE >11.8L	R901009023	25
	60	MONTAGESATZ AB40-09/60-HANDPUMPE >11.8L	R901009021	30

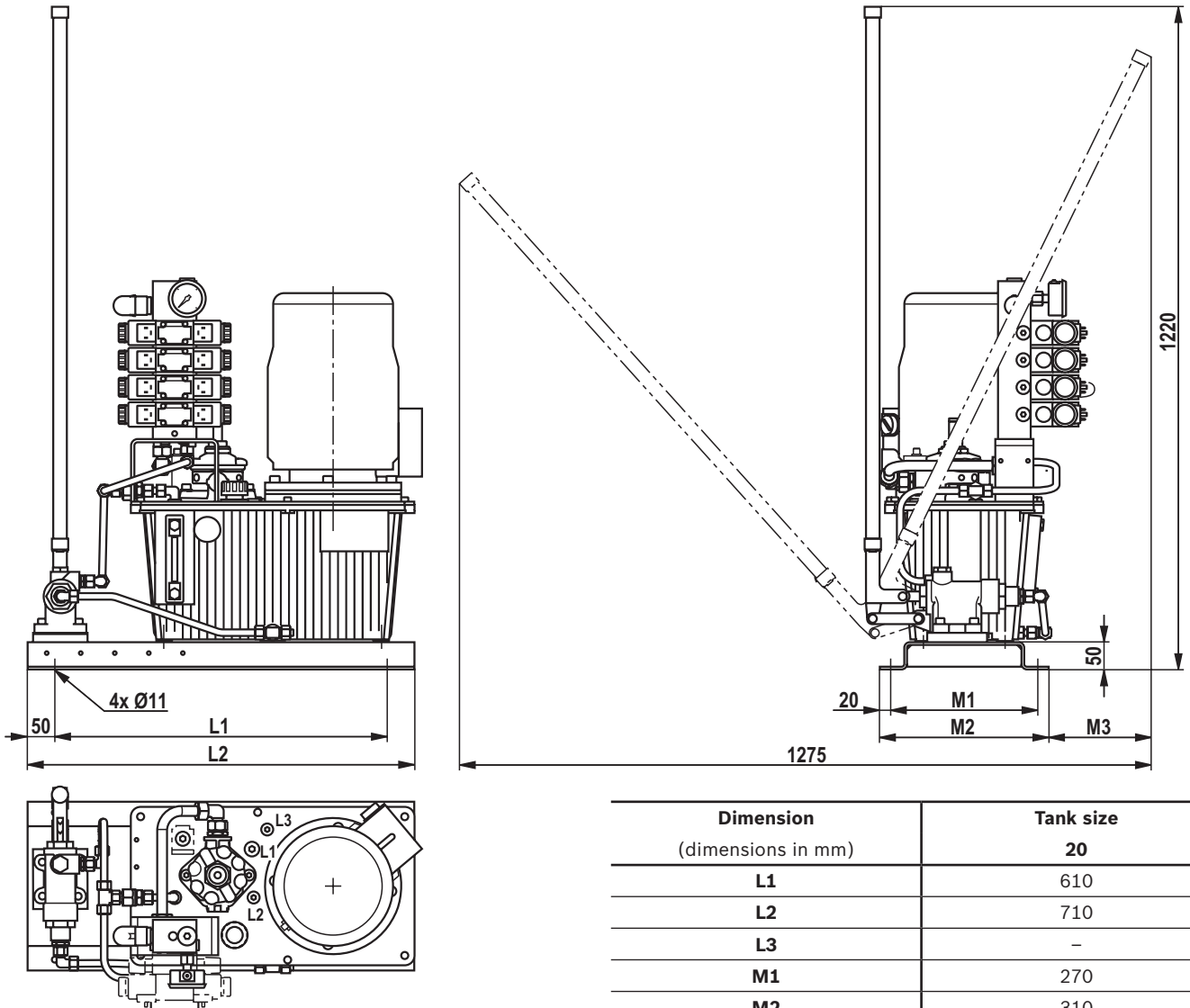
Hydraulic circuit diagram



Options

Hand pump P

Dimensions tank size 20



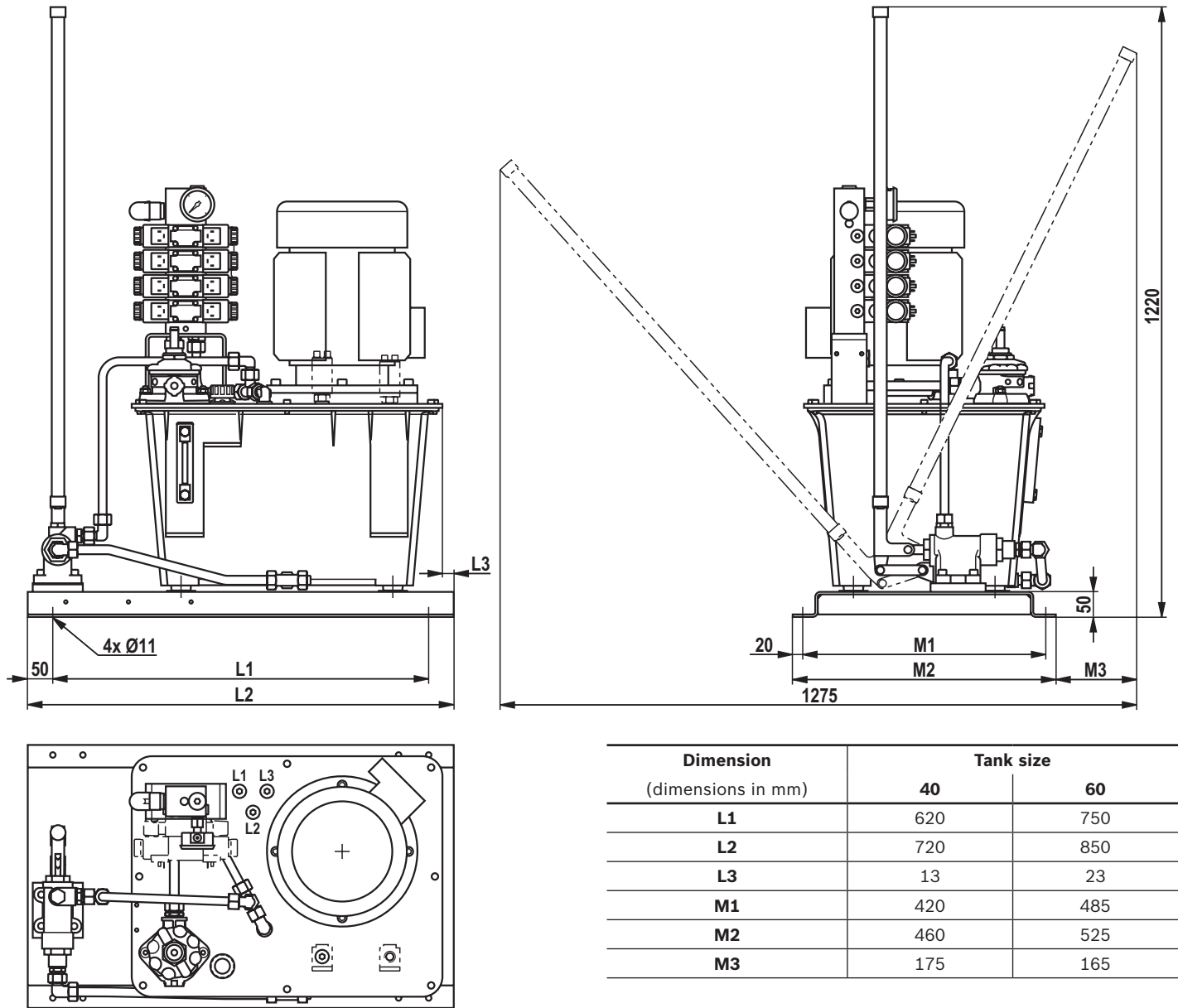
Dimension (dimensions in mm)	Tank size 20
L1	610
L2	710
L3	-
M1	270
M2	310
M3	190

Options hand pump with oil pan on request

Options

Hand pump P

Dimensions tank size 40 l; 60 l



Options hand pump with oil pan on request

Options

Thermostat T

- ▶ Electronic contact thermometer according to data sheet 50224 with directly attached display and control unit and temperature display and two programmable switching outputs

Tank size	Type	Material no.
40 / 60	ABZMT-1X/0300MS/D0-T2-K24	R901247784

- ▶ Electronic contact thermometer according to data sheet 50224 with directly attached display and control unit and temperature display and four programmable switching outputs

Tank size	Type	Material no.
40 / 60	ABZMT-1X/0300MS/D0-T4-K24	R901247785

For more versions see data sheet 50224

More options (e.g. console for pressure filter, accumulator station ABSBG, water heat exchanger) are possible on request.

By default, the power units are supplied without labeling (option).

Complete painting is possible as an option.

Accessories

Maintenance indicator according to data sheet 51450 for return flow filter

- ▶ Electronic switching element for maintenance indicator

Material no.	Type	Signal	Switching points	LED
R928028409	WE-1SP-M12x1	Changeover	1	NO
R928028410	WE-2SP-M12x1	Normally open (at 75 %) / normally closed contact (at 100 %)	2	3 pieces
R928028411	WE-2SPSU-M12x1	Normally closed contact		

For more versions see data sheet 51450

Accessories

Filter replacement element for return flow filter

Tank size	Type	Material no.
20	1.0040 H10XL:A00-O-M	R928005837
40 / 60	1.0063 H10XL:A00-O-M	R928005855

Mating connectors – For detailed information see data sheet 08006

- ▶ Suitable for the listed float switches according to data sheet 50212/50220;
- contact thermometer according to data sheet 50224;
- maintenance indicator for return flow filter according to data sheet 51450

Mating connector for connector K24

Type	Material no.
LEITUNGSDOSE 4P Z24 SPEZ	R900031155

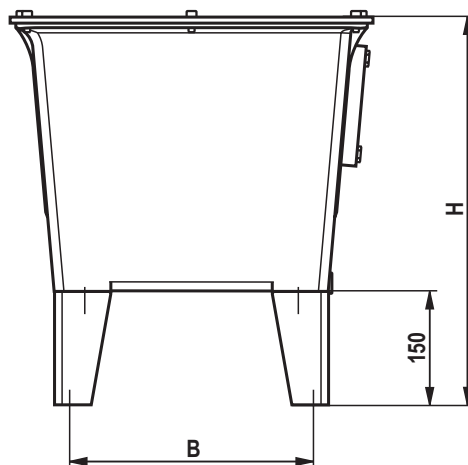
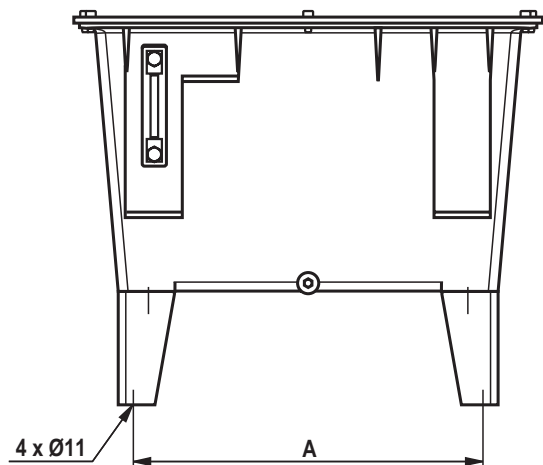
Mating connector for connector K24 with potted-in PVC cable, 3 m long

Type	Material no.
LEITUNGSDOSE 4P Z24M12X1 + 3MSPEZ	R900064381

Foot AB 40-09 for tank 40 l; 60 l

Type	Material no.	Quantity
FUSS AB40-09/1	R901044792	4

Dimension (dimensions in mm)	Tank size	
	40	60
A	381	462.5
B	281	322.5
H	463	515



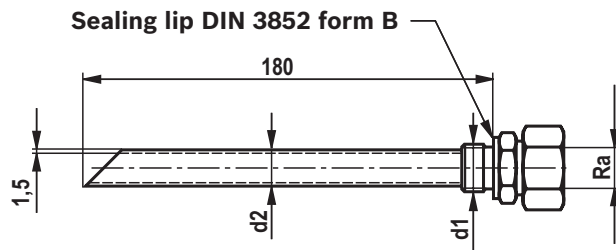
Accessories

Return pipe PN16 for drain lines

Material galvanized steel

Pipe connection according to ISO 8434 part 1

Dimensions (dimensions in mm)



Row	Ra	d1	d2	Material no.
L light	10	G3/8	10	R900086003
	12	G3/8	12	R900064249
	15	G1/2	16	R900064255
	18	G1/2	16	R900064254
S heavy	16	G1/2	16	R900053354

Installation, commissioning, maintenance and operating instructions

Hydraulic power units according to this data sheet are exclusively intended for stationary operation.

They must be installed under low corrosion conditions at a dry indoor climate.

During installation, the power units are to be included in the equipotential bonding. A connection thread M8 marked with the corresponding earthing symbol is located on the tank cover at the mounting bracket of the control.

The power units may only be operated within the performance limits described in this data sheet with the listed operating media.

The power unit must particularly not be operated above the specified operating pressure range and no values above the maximum settings indicated in the circuit diagram must be set at the pressure relief valve.

Warning!

With basic power units without pressure limitation, pressure limitation equipment must be provided in the system, usually a pressure relief valve!

Attention!

Pressure setting upon commissioning with accumulator charging circuits control variant 7!

- ▶ The pressure setting of the pressure cut-off valve DA 6 VA... must at least be 15 bar lower than that of the accumulator safety valve DBDH 6 K1X/...E.

In this connection, please observe the instructions contained in the following documents which are supplied by the factory together with the power unit and must be available upon installation and commissioning:

- ▶ Declaration of incorporation in the sense of the EC Machinery Directive 2006/42/EC, annex II B
- ▶ General assembly instructions with information on the transport of the hydraulic power units, assembly instructions 07009-MON
- ▶ General operating instructions for hydraulic power units and assemblies, data sheet 07009
- ▶ Operating instructions diaphragm type accumulator type HAD (in version with control variant 7), 50150-B
- ▶ Setting instructions pressure relief valve, direct operated type DBD, DBD...-E, 25402-EVT
- ▶ Hydraulic circuit diagram

Notes in the sense of the EC Machinery Directive 2006/42/EC

- ▶ The power units are manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100 and DIN EN 60204-1.
- ▶ The hydraulic power unit constitutes partly completed machinery in the sense of the EC Machinery Directive 2006/42/EC. It is exclusively intended for integration into a machine or system or to be assembled with other components to form a machine or system. The product may be commissioned only if it has been integrated into the machine or system for which it is designed and if the machine or system fully complies with the requirements of the EC Machinery Directive. The hydraulic power unit is not considered to be a safety component in the sense of the EC Machinery Directive 2006/42/EC.

Standard power unit

ABPAC

configurable

connectable

efficient





Filter cooler unit

IoT gateway rack

Variable-speed motor-pump assembly

Mechanical basic elements

Accumulator station with accumulator shut-off block

The ABPAC is a smart standard power unit for all areas in which hydraulic solutions are used and a pressure supply unit is required – for example, in general mechanical engineering, metal-cutting machine tools, as well as in presses and material handling.

Tank

Return flow filter

Multifunctional block with pressure filter

An individual hydraulic power unit efficiently produced as a serial product: tailored, cost-effective, intelligent

Hydraulic power units for mechanical engineering are subject to stricter requirements than ever before: they should be powerful, energy-efficient, and quickly available, yet also intelligent, flexible, and of course cost-effective at the same time. With the ABPAC standard power units, Bosch Rexroth has come up with a convincing answer. The online configurator enables you to find your individual solution in no time. Your entry into Industry 4.0?

Short delivery times, faster startup

The portfolio of components defined in the modular system can reproduce a wide range of customer-specific power unit solutions via the convenient online configurator. The configurator immediately provides you with all the necessary information – from technical data through to prices. Everything is comprehensively documented. If you require individual solutions outside the modular system, your usual Rexroth contact will be happy to assist you at all times.

Delivery times are drastically reduced due to the use of standard components from Bosch Rexroth's GoTo program, standardized manufacturing processes, and a flexible steel construction concept without welding.

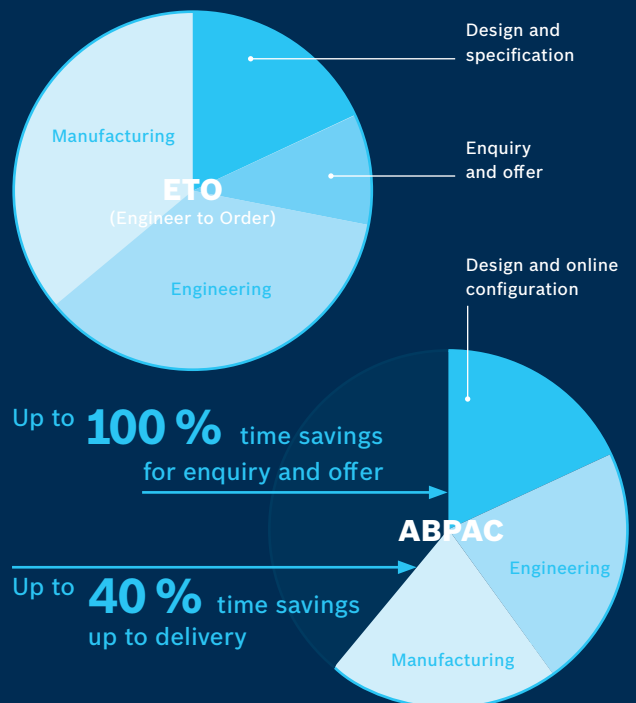
Ready for IoT

The IoT gateway software offers you transparency for your machine and process data. Real-time monitoring of process data, such as temperature, pressure and vibration, ensures consistently high quality in production. Rule-based evaluation of specific information simplifies predictive maintenance of your systems.

SPECIAL PROPERTIES

- ▶ Browser-based configuration
- ▶ Rapid design and transparency
- ▶ Visualization via web app
- ▶ Open interfaces
- ▶ Integration of a variety of different data sources
- ▶ Interface to big data systems (e.g. ODin)

POWER UNITS IN A FLASH



The online configurator delivers time savings of up to 100 % at the enquiry and offer stage; standard modules reduce engineering and production outlay by up to 40 %.

Consistently modular: never before was a standard power unit so easy to individualize and so efficient to produce.



Multifunctional block: with all basic functions and with variable interfaces

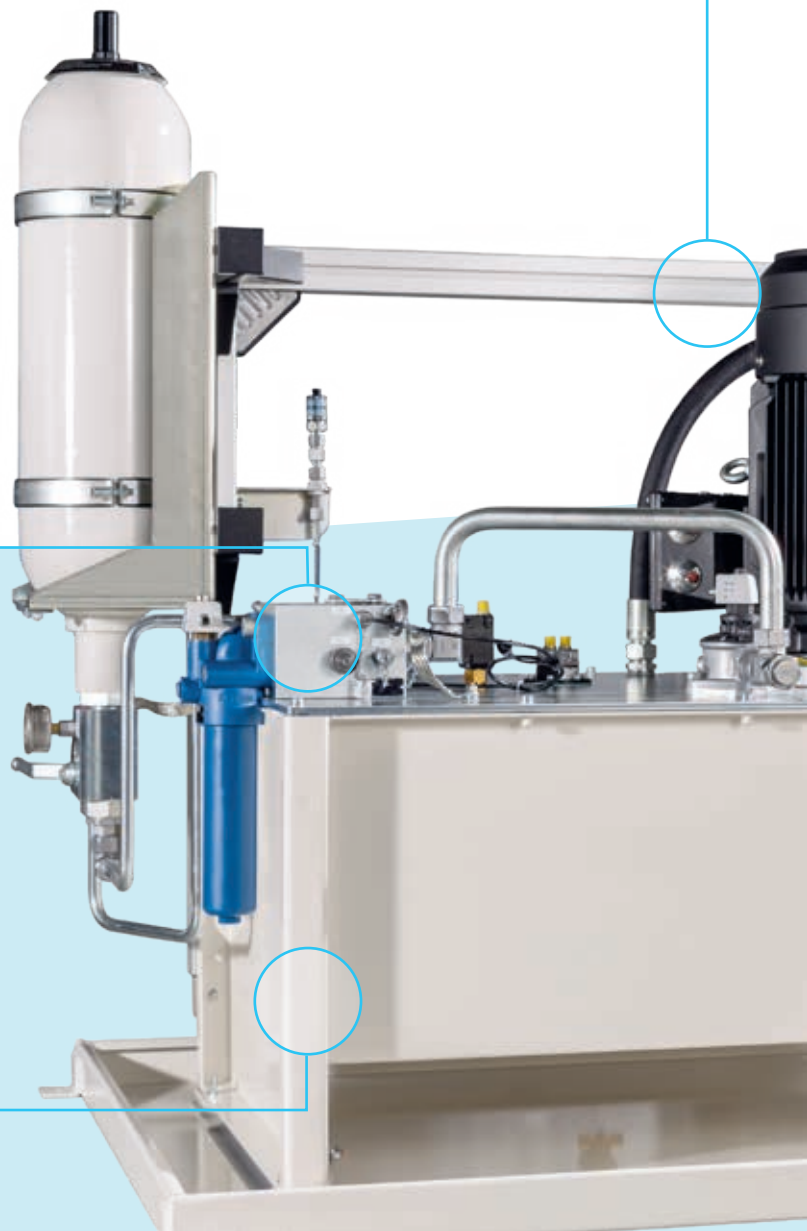
The extremely compact multifunctional block contains all the standard basic functions you need – from pressure filtration through to the bypass for FcP/SvP applications. It is the central interface to advanced hydraulic control systems. This saves space, reduces the piping work and gives you the option to integrate the hydraulic control either in the ABPAC or in the machine. There are four designs available in two sizes (with/without pressure filtration as well as with/without mounting option for the standard hydraulic control IH20).

Clever design: screws instead of welding

The steel construction and tank concept provide unprecedented flexibility. The standardized basic tanks require no welded-on elements and are available in tank capacities between 100 and 630 liters. The variance is in the assembly instead of the steel construction as is usual, which considerably reduces delivery and commissioning times. Individual adjustments can be made without any problems via the screwed cover. The ratio between hydraulic power and tank capacities can be easily optimized, depending on the application.

Mechanical basic elements: flexible set-ups, extensions, adjustments

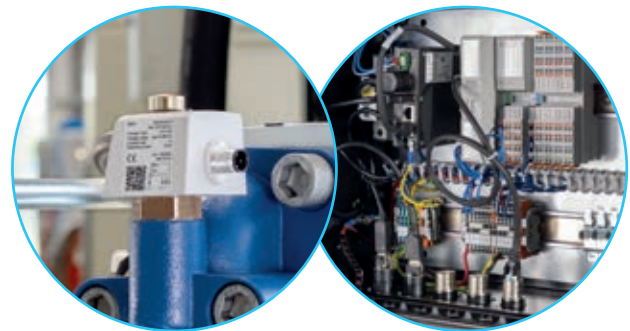
The Rexroth mechanical basic elements fit anywhere on each side of the tank. The dimensions are variable in this respect, with the variance arising only in assembly. This offers a high degree of flexibility and allows customer-specific add-ons to realize easily.





**Save energy:
with variable-speed Sytronix drives**

You can save a lot of energy and money when you optionally use drives from the Sytronix modular system. The FcP 5020 and SvP 7020 variable-speed drives are not only particularly powerful and quiet, more importantly, they save up to 80 % energy!



**Connectable:
i4.0-ready thanks to comprehensive sensor package**

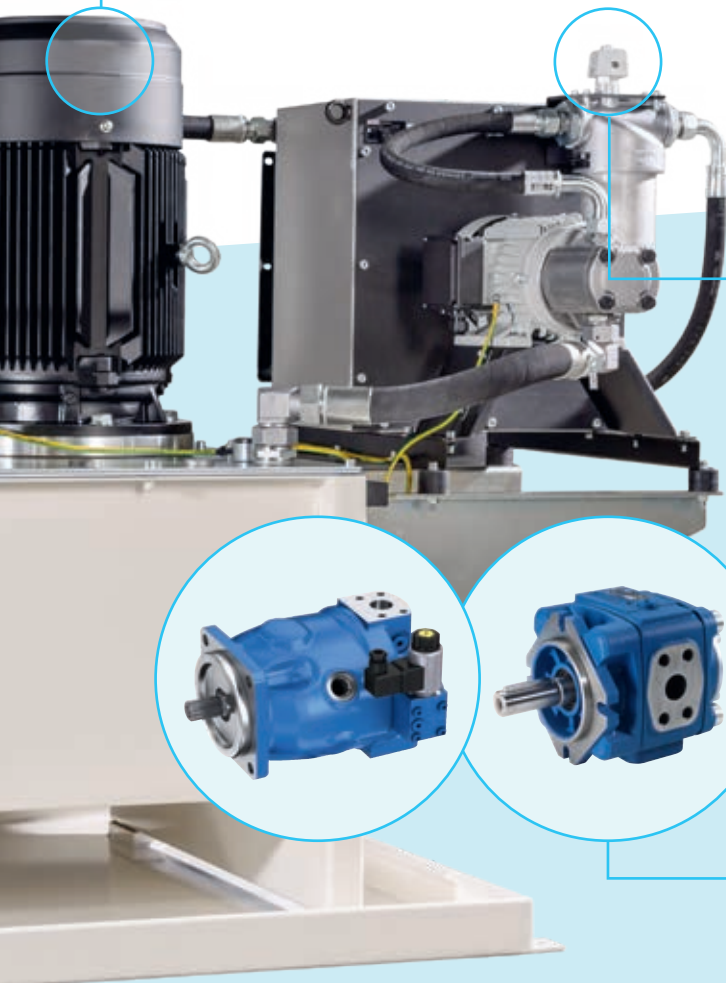
A comprehensive and universal sensor package continuously records all relevant system states, such as oil quality, efficiency, pressures, filling levels and temperatures. Pre-evaluation and forwarding via the IoT gateway enable predictive condition monitoring. The ABPAC can be connected vertically and horizontally. Visualization of power unit states can be performed simply by means of an intuitive web browser interface. The IoT gateway concept therefore requires minimal effort for commissioning and offers optimally convenient operation.

**Individual:
the right drive for every application**

With the different fixed and variable displacement pumps you can easily implement your individual drive concept. And in the smallest space – with the same performance range. The current motor standards (IE3 as standard) are thereby complied with at all times.

Available pumps:

- ▶ Internal gear pumps (PGH, PGF, fixed displacement pumps installed vertically)
- ▶ External gear pumps (AZPJ [Silence Plus])
- ▶ Axial piston pumps (A10VSO/31, variable displacement pumps installed horizontally)



ABPAC Marine – for applications on the high seas

THE ADVANTAGES AT A GLANCE



Efficient

- ▶ Price savings owing to standardization, for example as a result of pre-defined parts list with fewer variants
- ▶ Shorter development time thanks to simple configuration



Fast

- ▶ Reduced delivery times due to standardized components – for example from the GoTo program
- ▶ Binding offer within a matter of days



Simple

- ▶ Application-specific online configuration instead of the former engineer-to-order process



Certified

- ▶ Approved by Lloyd's Register for Marine & Offshore
- ▶ Further certifications on request



Environmentally friendly

- ▶ Use of environmentally acceptable hydraulic fluids possible



The ABPAC Marine power unit design has been optimized especially for applications on board of ships in order to ensure long-term pressure supply under deck.

Special technical features

- ▶ Choice of components for marine and offshore conditions: relative air humidity of 50% to 90%, temperature range of 0 °C to +45 °C
- ▶ High-efficiency marine motors of energy-efficiency class IE3
- ▶ Fluid tanks approved by Lloyd's Register with bolted tank covers
- ▶ Slosh-proof tank breathing, mounted on extension pipe
- ▶ High-quality corrosion protection of all surfaces (based on ISO 12944-2; C4 medium)
- ▶ Lifting eyes for all tank sizes
- ▶ Larger bending radii for pressure lines (3 x OD)

Options

- ▶ Certifications by other classification societies on request
- ▶ Customer-specific adaptations possible at any time – for example redundant motor-pump groups
- ▶ Operation with environmentally acceptable hydraulic fluids in accordance with ISO 15380
- ▶ Tank made of stainless chrome-nickel steel
- ▶ Water-absorbing tank breathing filter
- ▶ Fluid measuring rod
- ▶ Filter made of cast iron or steel
- ▶ Cleaning opening with steel cover
- ▶ Additional fluid drip tray
- ▶ Fluid/seawater heat exchanger
- ▶ Terminal box with marine-specific cabling

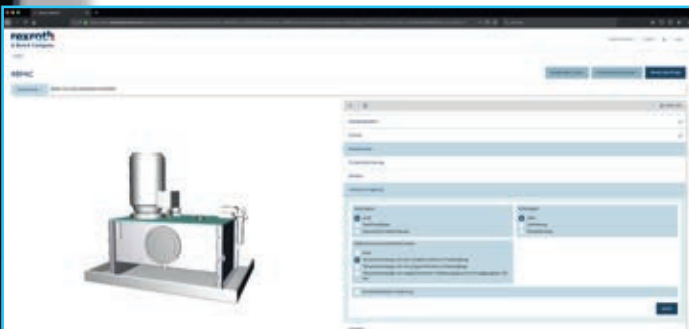


ABPAC Marine Power Units are type approved from Lloyd's Register (LR). This saves time and costs during subsequent approval of the complete machine. Rexroth standard power units are used both in non-essential and in essential equipment.

Easy to configure online: get your own solution with just a few clicks



The ABPAC is consistently modular in design and can be configured in a few clicks with the online configurator based on the requirements and hydraulic assemblies required. The software tool guides you clearly through the process. It queries the hydraulic and technical key data, such as working pressure, flow, and the type of actuator, and proposes the appropriate assemblies.



As soon as the configuration is complete, the program produces a complete documentation package with initial information on installation dimensions, parts lists, price, and delivery time. You can quickly and easily jump to customer-specific adaptations at any time. Additional assemblies such as coolers or control systems can also be configured. You can therefore design a customized power unit more easily than ever before.



ADVANTAGES AT A GLANCE

- +** **Online configurator** for customized power units including documentation
- +** Intelligent **condition monitoring** via standardized bus interface and advanced sensor technology
- +** User-driven, platform-neutral **visualizations** on smart devices
- +** Sytronix FcP and SvP (optional) for increased **energy efficiency** and **noise reduction**
- +** Basic functions integrated in the **multifunctional block**
- +** **Interface** to additional hydraulic control concepts
- +** Wide **area of applications**: metal-cutting machine tools, wood processing, presses, plastics processing machines, etc.
- +** Products from the GoTo program for **optimized delivery times**

Configurations

TECHNICAL KEY DATA

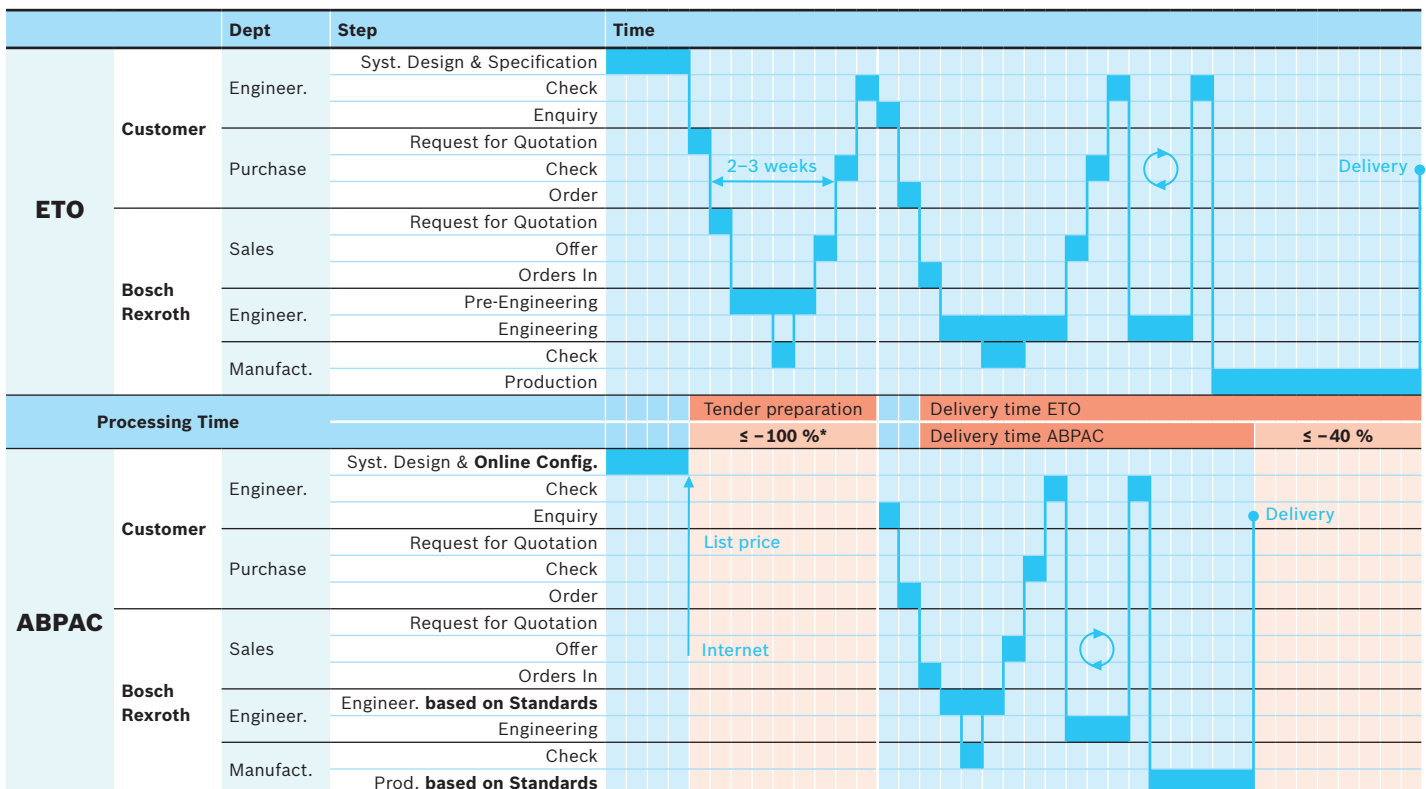
- ▶ Tank capacity: 100 to 630 liters
- ▶ Flow: max. 200 l/min
- ▶ Operating pressure: max. 315 bar
- ▶ Multifunctional block: in 4 designs
- ▶ Sytronix modular system: optionally FcP 5020
- ▶ Design: simplified, flexible steel construction

Power unit variants	Pump types	Q _{thmax} l/min 1,450 rpm	Pressure Tank	Nominal power electric motor [kW]													
				3	4	5,5	7,5	11	15	18,5	22	30	37	45	55	75	
with fixed displacement pump	PGF2-2X/019	27	p [bar] Size	82 100	112 100 160	153 100 160	210 160 250										
	PGF3-3X/020	29	p [bar] Size	67 100	94 100 160	130 100 160	195 160 250	210 160 250									
	PGF3-3X/025	36	p [bar] Size	53 160	76 160	105 160	156 160 250	210 160 250									
	PGF3-3X/032	47	p [bar] Size		65 160	89 160	132 160 250	180 160 250	210 250 400								
	PGF3-3X/040	58	p [bar] Size			63 250	97 250	135 250	169 250 400	180 250 400							
	PGH4-X/020	29	p [bar] Size					203 160 250	280 160 250	315 250 400							
	PGH4-X/025	36	p [bar] Size					161 160 250	221 160 250	274 250 400	315 250 400						
	PGH4-X/032	47	p [bar] Size						173 160 250	212 250 400	252 250 400	315 250 400					
	PGH4-X/040	58	p [bar] Size							174 250 400	207 250 400	281 250 400	315 400				
	PGH4-X/050	73	p [bar] Size							142 250 400	170 250 400	233 250 400	250 400	250 400	400	400	250
PGH5-X/063	93	p [bar] Size									127 400	175 400	216 400	265 400			
with external gear pump	AZPJ-22-016	22	p [bar] Size	67 100	91 100	127 100 160	174 100 160	250 160 250									
	AZPJ-22-019	27	p [bar] Size	57 100	77 100	107 100 160	147 100 160	215 160 250	250 160 250								
	AZPJ-22-022	31	p [bar] Size		64 100 160	89 100 160	123 100 160	181 160 250	210 160 250								
	AZPJ-22-025	35	p [bar] Size			81 160	111 160	165 160 250	185 160 250								
	AZPJ-22-028	39	p [bar] Size			71 160	98 160	130 160 250									
with control pump and DFR1 controller	A10VSO 18	26	p [bar] Size	90 100	110 100	138 100	228 160	280 160									
	A10VSO 28	40	p [bar] Size			70 160	95 160	132 160 250	180 160 250	222 250	280 250						
	A10VSO 45	65	p [bar] Size				60 250	81 250	111 250	137 250 400	162 250 400	222 400 630	280 400 630				
	A10VSO 71	102	p [bar] Size						72 400	89 400	106 400	144 400 630	178 400 630	220 400 630	280 630		
	A10VSO 100	145	p [bar] Size							61 400	73 400	99 400 630	136 400 630	170 400 630	205 630	280 630	
	A10VSO 140	203	p [bar] Size											119 630	146 630	200 630	
with control pump and DFLR controller	A10VSO 45	65	p max [bar] Size				280 250										
	A10VSO 71	102	p max [bar] Size					280 400	280 400	280 400							
	A10VSO 100	145	p max [bar] Size							280 400	280 400						

ABPAC hydraulic power unit configurations with Sytronix FCP 5020

Pumps						Motors					
$n_{max} = 3,000$ (PGH); $3,600$ (PGF) rpm						4	5,5	7,5	11	15	P_{nom} [kW]
Typ	Size	p_{cont} [bar]	p_{max} [bar]	Q_{peff} [l/min]	Q_{max} [l/min]	4,000	4,000	4,000	3,800	3,800	n_{max} [rpm]
PGF2	8.0	210	250	19	29	139					p _{eff} [bar] (without efficiency)
Tank Size						100					
PGF2	13.0	210	250	31	47		119				
Tank Size							100 160				
PGF2	19.0	210	250	46	68		84	114			
Tank Size							160	160 250			
PGH2	8.0	315	350	19	24	143	198	269			
Tank Size						100	100	100			
PGH3	13.0	315	350	31	39	88	122	166	244		
Tank Size						100 160	100 160	100 160	160		
PGH4	20.0	315	350	48	60		79	108	158	216	
Tank Size							160	160 250	160 250	160 250	
PGH4	32.0	315	350	77	98				99	135	
Tank Size									250	250 400	
PGH4	50.0	250	310	120	152					86	
Tank Size										400	

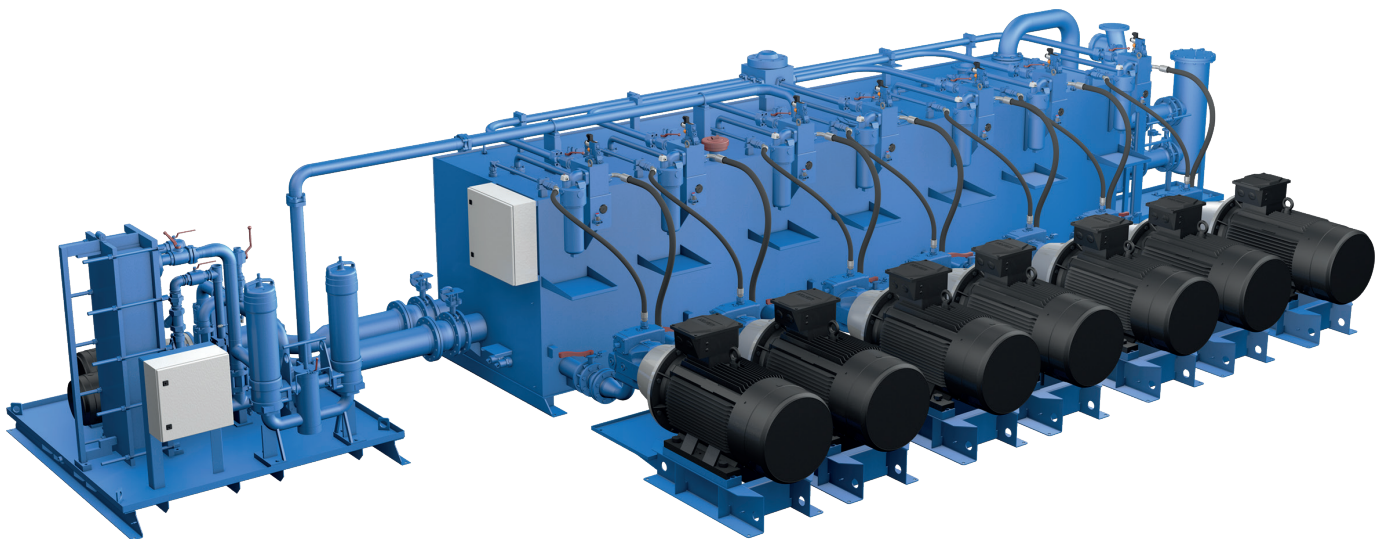
Reduced delivery times due to online configuration and standard components



* In case of special requests, processing time extends accordingly

ABMAXX – Large modular HPU

Technical Information



Content

Product Description	2	myCro	14
Advantages	3	Outlook into the Future	15
Overview of the Modules		Sizing Guidelines ABMAXX	15
– Modular Tank Unit MTU	4		
– Modular Motor Pump Unit MPU	5 - 6		
– Noise values ABMAXX MPU:			
A10VSO respectively A4VSO	7 - 8		
– Modular Return Filter Unit MFU	9		
– Modular Circulation Unit MCU	10 - 11		
– Modular Pump Block MPB	12		
– Modular Accumulator Unit MAU	13		

Product Description

With ABMAXX, Bosch Rexroth is the first hydraulic supplier to offer a modular system for large HPUs.

ABMAXX reduces significantly the time for engineering and commissioning of large HPUs in green field or modernization projects.

Our hydraulic specialists can build up a quotation within 5 days, including footprints, 3d drawings, hydraulic schematics and list of material.

OEMs and end user are therefore able to reduce their basic engineering time by up to 80 percent.

The pre-configured modules from ABMAXX are based on highly available standard components. The modular design reduces the costs and increases the service lifetime significantly. The faster engineering and commissioning time is achieved with the modular concept. This concept combines the advantages of a standardization allowing sufficient freedom for individual solutions. Therefore, the engineers from Bosch Rexroth have defined 6 basic modules: tank unit, motor pump unit, return filter unit, circulation unit, pump block and accumulator unit.

Each module is based on proven construction and tried and tested design and composed on highly available standard products. The modules can operate with mineral oil as well as with special fire resistant fluids, which is often the requirement in the metallurgical sector.

Details of the technical specification see TS

- ▶ Tank in steel and stainless steel
- ▶ Voltage valves 24 VDC
- ▶ Voltage motors 400/690 V – 50 Hz
- ▶ Shut off valve with position monitoring
- ▶ Medium mineral oil
- ▶ Paint Rexroth standard
- ▶ Wiring Rexroth standard
- ▶ Placement of the modules as shown

ABMAXX tank sizes start with 2,000 l up to 12,500 l.

With the three pressure levels 160, 210 and 315 the concept complies with the increasing requirements of high pressure systems. The possible hydraulic flows vary from 345 l/pm up to 2,160 l/pm.

The main motor pump unit and the circulation unit are always equipped with a stand-by unit offering therefore highest system availability.

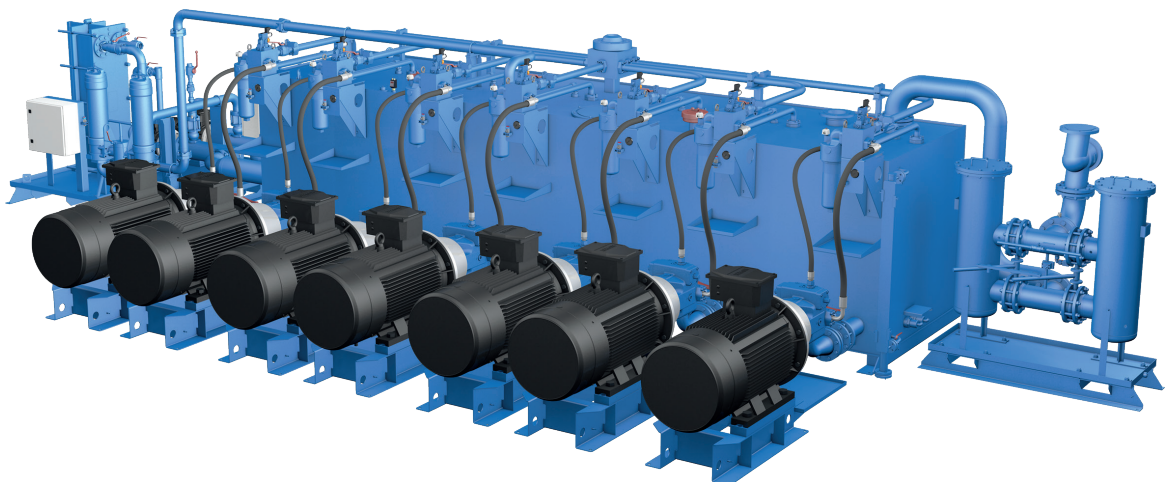
Stand-by units are also optionally available only with one motor pump group.

Proofed safety design, together with the necessary documentation, helps the design engineers to comply with the relevant safety regulations.

The standardization reduces the system costs and simplifies the maintenance work. All modules are designed for easy accessibility to the components. In addition, the standardization reduces the maintenance and service effort during the whole operation life time as the used standard components are highly available and will also remain in our product portfolio for a long time.

A maintenance friendly design also reduces the time for the exchange of the components.

ABMAXX reduces the engineering of complete HPUs as well as for separate modules. The HPUs comply fully with the requirements in steel plants and big presses, regarding function and performance.



Advantages

Swift integration in the overall design

- ▶ Swift feasibility study and determination of footprint
- ▶ Compliance with relevant safety regulations
- ▶ Detailed documentation
- ▶ Also suitable for HF media (on request)
- ▶ Six modules: MTU – Tank Unit, MPU – Motor Pump Unit, MCU – Circulation Unit, MPB – Pump Blocks, MFU – Return Filter Unit, MAU – Accumulator Unit

Low initial investment costs and high availability

- ▶ Composed of highly available standard components
- ▶ Low engineering effort
- ▶ Reduction of engineering errors by using preconfigured modules

Accelerated quote phase

- ▶ Quotation, circuit diagram, parts list and 3D models in 5 days
- ▶ Proven construction and tried-and-tested design

Reduction of total cost of ownership

- ▶ Maintenance friendly design
- ▶ Impressive service life of components
- ▶ Reduction of tank size with myCro system

Time saved and errors avoided

- ▶ Always the same design features
- ▶ Engineering errors ruled out
- ▶ Optimized for transportation and handling
- ▶ Extensive installation documentation

Low storage costs

- ▶ Identical parts concept
- ▶ Highly available standard components

High system availability (24/7)

- ▶ Standardized solutions
- ▶ Modules are composed of highly available standard components

Reduced operating costs

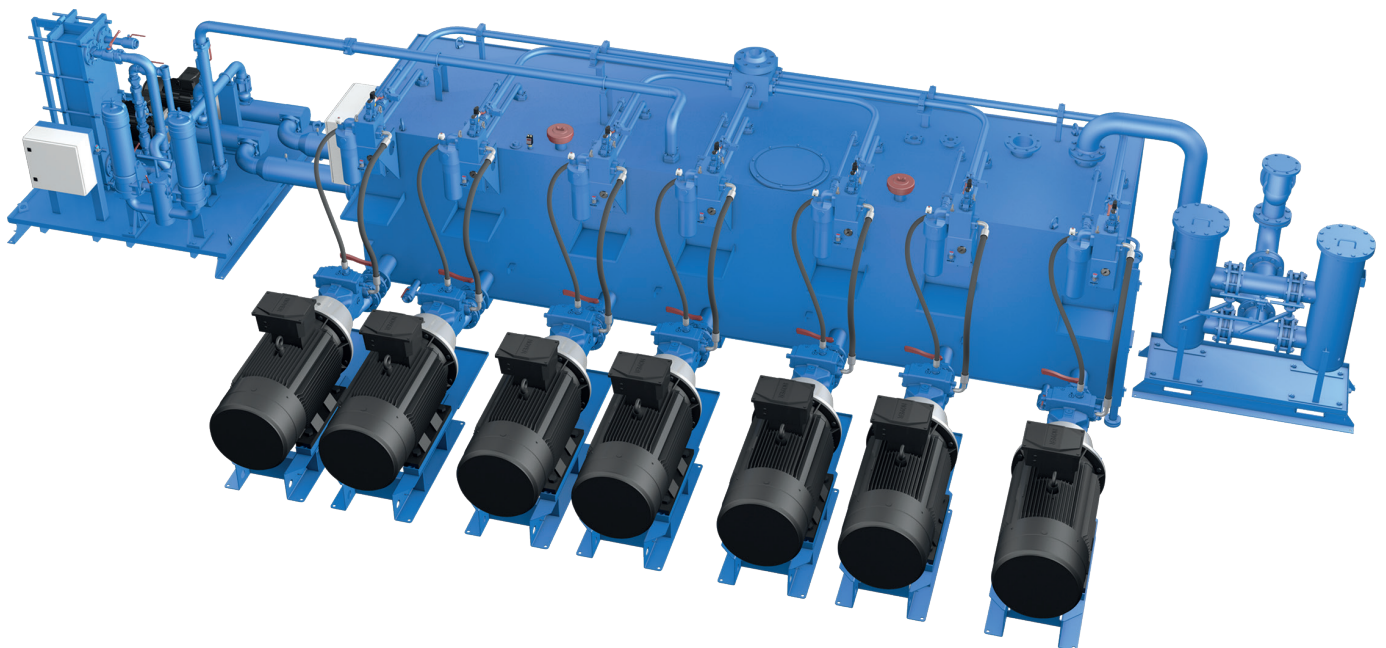
- ▶ Up to 80 % energy saving (variable speeds)
- ▶ Impressive service life of components

Impressive identical parts concept

- ▶ Option for connectivity
- ▶ Basic modules with standardized design features
- ▶ Low storage costs

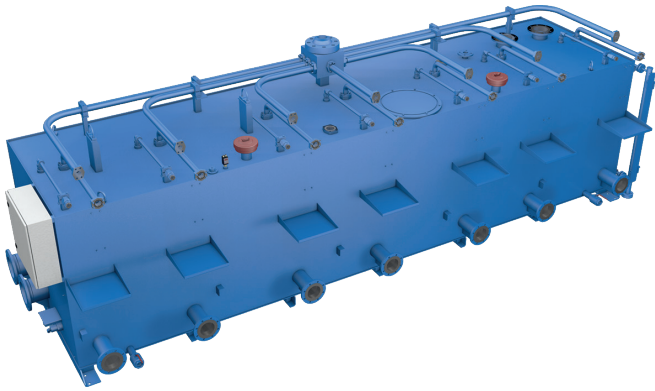
Maintenance friendly design

- ▶ Good access to components and connections
- ▶ Uncomplicated and swift replacement of components



Overview of the Modules

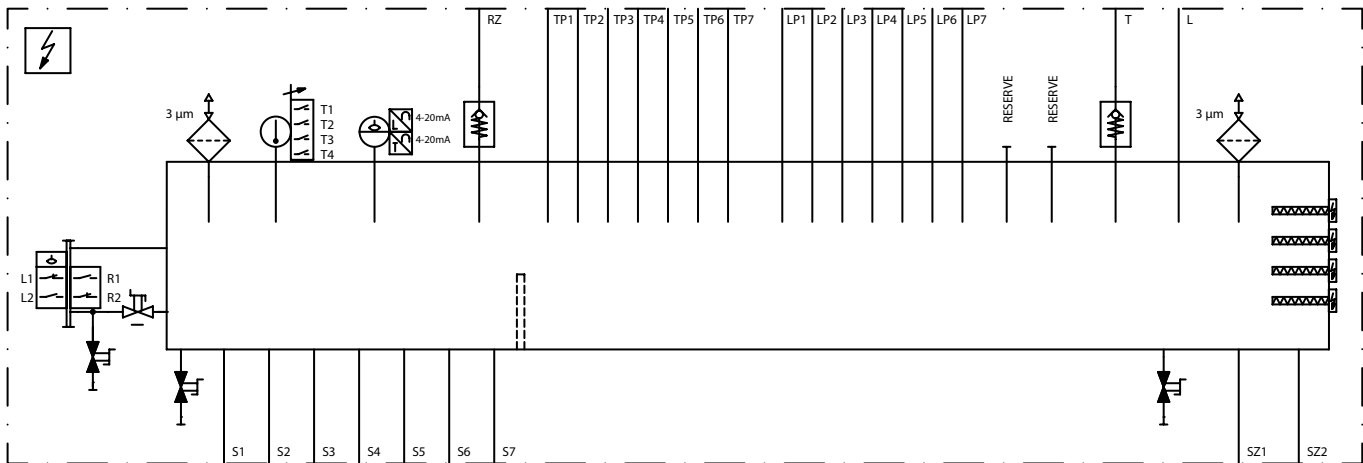
Modular Tank Unit MTU



Modular Tank Unit MTU

- ▶ Tank size – 2,000 l up to 12,500 l
- ▶ Tank top cover with leakage edge to avoid leakage spill during filter replacement
- ▶ Until tank size 4,000 l – double return filter with 10 µm integrated in the tank
- ▶ Oil level indicator on the outside with 4 level switches, as well as an outlet for taking oil probes
- ▶ Temperature sensor with 4 temperature switches and visual temperature indicator
- ▶ Analogue sensor for monitoring oil level and temperature with 4 to 20 mA signal output (connection to ODiN possible)

Hydraulic schematic

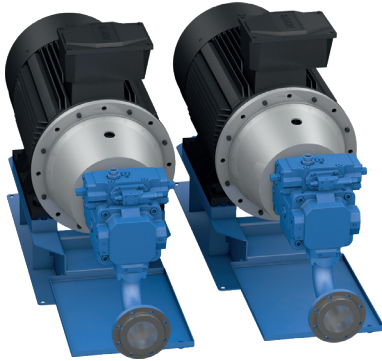


Variant overview

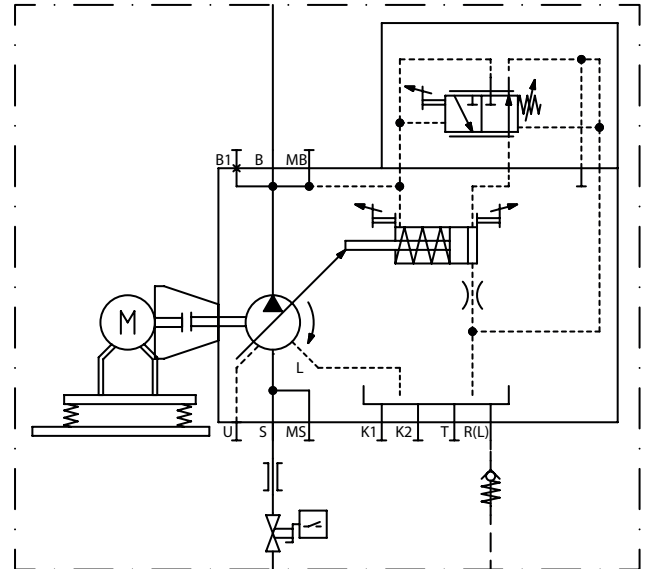
Tank type	Tank size in l	Usable volume in l	Number pumps additionally each 1x stand-by	Material number	Type / description
ABMAXX	2000	1860	2x A4VSO125	R920063343	ABTSR-MTU-02000-2XA4VSO125
				R920069703	ABTSR-MTU-02000-2XA4VSO125-V
		1x A4VSO250	R920064060	ABTSR-MTU-02000-1XA4VSO250	
			R920069704	ABTSR-MTU-02000-1XA4VSO250-V	
	3000	2950	2x A4VSO180	R920063344	ABTSR-MTU-03000-2XA4VSO180
				R920069705	ABTSR-MTU-03000-2XA4VSO180-V
			3x A4VSO125	R920064061	ABTSR-MTU-03000-3XA4VSO125
			R920069706	ABTSR-MTU-03000-3XA4VSO125-V	
	4000	4060	3x A4VSO180	R920063345	ABTSR-MTU-04000-3XA4VSO180
				R920069707	ABTSR-MTU-04000-3XA4VSO180-V
		2x A4VSO250	R920064062	ABTSR-MTU-04000-2XA4VSO250	
			R920069714	ABTSR-MTU-04000-2XA4VSO250-V	
	6000	5870	4x A4VSO180	R920063346	ABTSR-MTU-06000-4XA4VSO180
				R920069709	ABTSR-MTU-06000-4XA4VSO180-V
		3x A4VSO250	R920064063	ABTSR-MTU-06000-3XA4VSO250	
			R920069710	ABTSR-MTU-06000-3XA4VSO250-V	
8000	7860	4x A4VSO250	R920064065	ABTSR-MTU-08000-4XA4VSO250	
			R920069711	ABTSR-MTU-08000-4XA4VSO250-V	
10000	9850	5x A4VSO250	R920063347	ABTSR-MTU-10000-5XA4VSO250	
			R920069712	ABTSR-MTU-10000-5XA4VSO250-V	
12500	12150	6x A4VSO250	R920064066	ABTSR-MTU-12500-6XA4VSO250	
			R920069713	ABTSR-MTU-12500-6XA4VSO250-V	

Overview of the Modules

Modular Motor Pump Unit MPU



Hydraulic schematic



Modular Motor Pump Unit MPU

- ▶ Pump variants – A4 (NG 71 up to NG 355) and A10 (NG 100 up to NG 180)
- ▶ Motor size – 37 kW up to 315 kW (Fa. Hoyer)
Motor voltage 400/690 V – 50 Hz
(combinations depending on pumps)
- ▶ 5x standardized frames with integrated drip pan for all variants
- ▶ MPU modules as a unit package with suitable suction line, compensator and position monitored shut off valve

Variant overview A10VSO

Frequency	50 Hz / 1450 min ⁻¹		50 Hz / 1450 min ⁻¹	E-Motor Hoyer		
Pump A10VSO	q _{vmax} in l/min	p _{max} in bar	Power in kW		Material number	Type / description
100DR	138	129	37,0	225S	R920069151	ABPSA-MPU-A10VSO100DR-37KW-HOY
					R920069550	ABPSA-MPU-A10VSO100DR-37KW-HOY-V
		160	45,0	225M	R920069152	ABPSA-MPU-A10VSO100DR-45KW-HOY
					R920069551	ABPSA-MPU-A10VSO100DR-45KW-HOY-V
		196	55,0	250M	R920069470	ABPSA-MPU-A10VSO100DR-55KW-HOY
					R920069552	ABPSA-MPU-A10VSO100DR-55KW-HOY-V
		273	75,0	280S	R920069471	ABPSA-MPU-A10VSO100DR-75KW-HOY
			R920069553	ABPSA-MPU-A10VSO100DR-75KW-HOY-V		
		280	90,0	280M	R920069481	ABPSA-MPU-A10VSO100DR-90KW-HOY
					R920069554	ABPSA-MPU-A10VSO100DR-90KW-HOY-V
140DR	193	119	45,0	225M	R920069153	ABPSA-MPU-A10VSO140DR-45KW-HOY
					R920069555	ABPSA-MPU-A10VSO140DR-45KW-HOY-V
		148	55,0	250M	R920069482	ABPSA-MPU-A10VSO140DR-55KW-HOY
					R920069556	ABPSA-MPU-A10VSO140DR-55KW-HOY-V
		204	75,0	280S	R920069154	ABPSA-MPU-A10VSO140DR-75KW-HOY
					R920069557	ABPSA-MPU-A10VSO140DR-75KW-HOY-V
		246	90,0	280M	R920069480	ABPSA-MPU-A10VSO140DR-90KW-HOY
			R920069558	ABPSA-MPU-A10VSO140DR-90KW-HOY-V		
		280	110,0	315S	R920069475	ABPSA-MPU-A10VSO140DR-110KW-HOY
					R920069559	ABPSA-MPU-A10VSO140DR-110KW-HOY-V
180DR	248	120	55,0	250M	R920069157	ABPSA-MPU-A10VSO180DR-55KW-HOY
					R920069560	ABPSA-MPU-A10VSO180DR-55KW-HOY-V
		167	75,0	280S	R920069158	ABPSA-MPU-A10VSO180DR-75KW-HOY
					R920069569	ABPSA-MPU-A10VSO180DR-75KW-HOY-V
		203	90,0	280M	R920069476	ABPSA-MPU-A10VSO180DR-90KW-HOY
					R920069570	ABPSA-MPU-A10VSO180DR-90KW-HOY-V
		251	110,0	315S	R920069477	ABPSA-MPU-A10VSO180DR-110KW-HOY
			R920069571	ABPSA-MPU-A10VSO180DR-110KW-HOY-V		
		280	132,0	315M	R920069478	ABPSA-MPU-A10VSO180DR-132KW-HOY
					R920069572	ABPSA-MPU-A10VSO180DR-132KW-HOY-V

Overview of the Modules

Modular Motor Pump Unit MPU

Variant overview A4VSO

Frequency	50 Hz / 1450 min ⁻¹		50 Hz / 1450 min ⁻¹	E-Motor Hoyer	Material number	Type / description
Pump A4VSO	q _{vmax} in l/min	p _{max} in bar	Power in kW			
71DR	98	185	37,0	225S	R920069736	ABPSA-MPU-A4VSO71DR-37KW
					R920069908	ABPSA-MPU-A4VSO71DR-37KW-V
		238	45,0	225M	R920069737	ABPSA-MPU-A4VSO71DR-45KW
					R920069909	ABPSA-MPU-A4VSO71DR-45KW-V
		295	55,0	250M	R920069738	ABPSA-MPU-A4VSO71DR-55KW
					R920069910	ABPSA-MPU-A4VSO71DR-55KW-V
125DR	172	350	75,0	280S	R920069739	ABPSA-MPU-A4VSO71DR-75KW
					R920069911	ABPSA-MPU-A4VSO71DR-75KW-V
		162	55,0	250M	R920069740	ABPSA-MPU-A4VSO125DR-55KW
					R920069929	ABPSA-MPU-A4VSO125DR-55KW-V
		227	75,0	280S	R920069741	ABPSA-MPU-A4VSO125DR-75KW
					R920069930	ABPSA-MPU-A4VSO125DR-75KW-V
180DR	248	276	90,0	280M	R920069742	ABPSA-MPU-A4VSO125DR-90KW
					R920069931	ABPSA-MPU-A4VSO125DR-90KW-V
		342	110,0	315S	R920069743	ABPSA-MPU-A4VSO125DR-110KW
					R920069932	ABPSA-MPU-A4VSO125DR-110KW-V
		193	90,0	280M	R920069744	ABPSA-MPU-A4VSO180DR-90KW
					R920069916	ABPSA-MPU-A4VSO180DR-90KW-V
250DR	344	237	110,0	315S	R920069759	ABPSA-MPU-A4VSO180DR-110KW
					R920069917	ABPSA-MPU-A4VSO180DR-110KW-V
		282	132,0	315M	R920069760	ABPSA-MPU-A4VSO180DR-132KW
					R920069918	ABPSA-MPU-A4VSO180DR-132KW-V
		344	160,0	315L	R920069761	ABPSA-MPU-A4VSO180DR-160KW
					R920069919	ABPSA-MPU-A4VSO180DR-160KW-V
355DR	489	167	110,0	315S	R920069762	ABPSA-MPU-A4VSO250DR-110KW
					R920069920	ABPSA-MPU-A4VSO250DR-110KW-V
		249	160,0	315L	R920069749	ABPSA-MPU-A4VSO250DR-160KW
					R920069921	ABPSA-MPU-A4VSO250DR-160KW-V
		311	200,0	315L	R920069750	ABPSA-MPU-A4VSO250DR-200KW
					R920069922	ABPSA-MPU-A4VSO250DR-200KW-V
355DR	489	350	250,0	355M	R920069751	ABPSA-MPU-A4VSO250DR-250KW
					R920069923	ABPSA-MPU-A4VSO250DR-250KW-V
		169	160,0	315L	R920069752	ABPSA-MPU-A4VSO355DR-160KW
					R920069933	ABPSA-MPU-A4VSO355DR-160KW-V
		212	200,0	315L	R920069764	ABPSA-MPU-A4VSO355DR-200KW
					R920069934	ABPSA-MPU-A4VSO355DR-200KW-V
355DR	489	267	250,0	355M	R920069765	ABPSA-MPU-A4VSO355DR-250KW
					R920069935	ABPSA-MPU-A4VSO355DR-250KW-V
		334	315,0	355L	R920069766	ABPSA-MPU-A4VSO355DR-315KW
					R920069927	ABPSA-MPU-A4VSO355DR-315KW-V

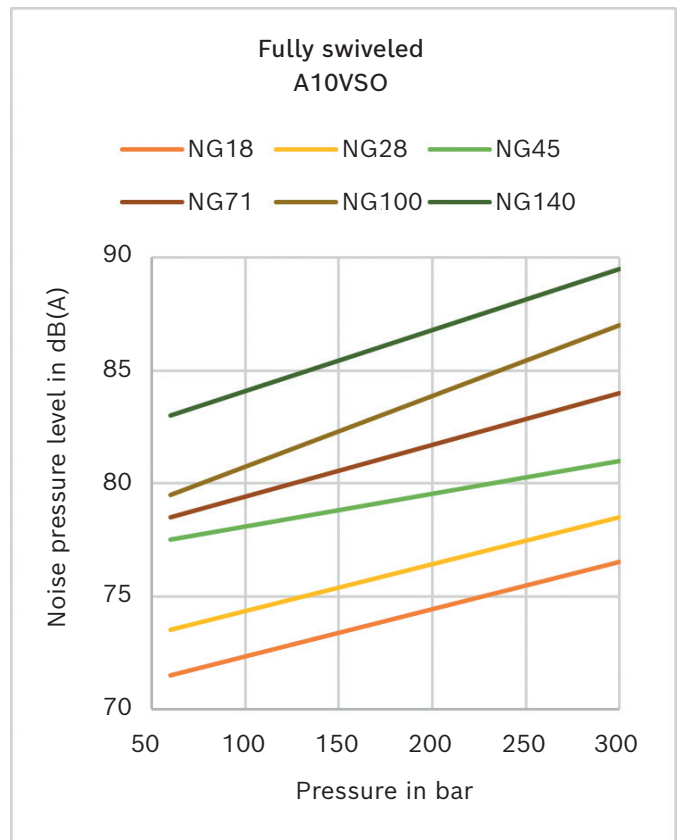
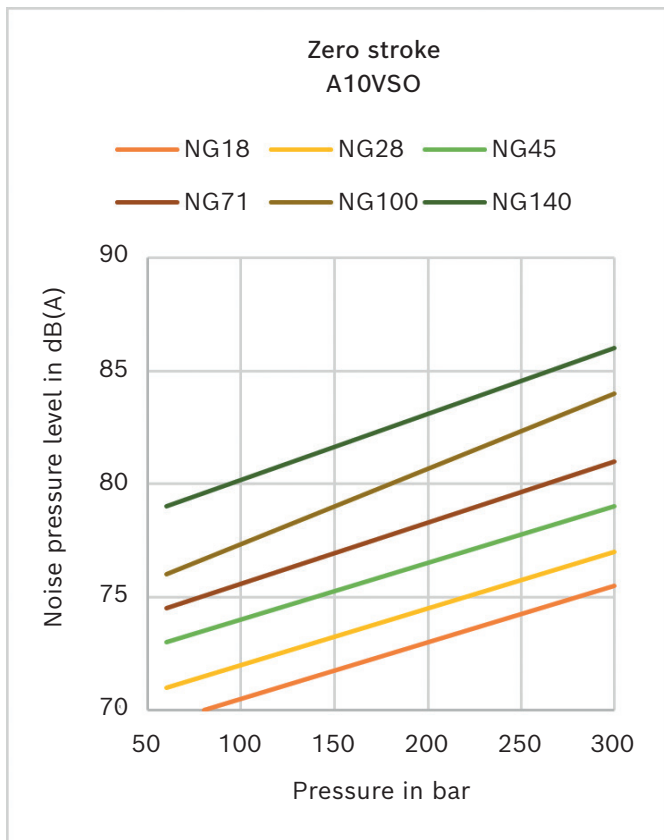
Overview of the Modules

Modular Motor Pump Unit MPU

Noise values ABMAXX MPU: A10VSO

Zero stroke		
A10VSO	Pressure in bar	Noise pressure level in dB(A)
NG 18	80	70
	300	75,5
NG 28	60	71
	300	77
NG 45	60	73
	300	79
NG 71	60	74,5
	300	81
NG 100	60	76
	300	84
NG 140	60	79
	300	86

Fully swiveled		
A10VSO	Pressure in bar	Noise pressure level in dB(A)
NG 18	60	71,5
	300	76,5
NG 28	60	73,5
	300	78,5
NG 45	60	77,5
	300	81
NG 71	60	78,5
	300	84
NG 100	60	79,5
	300	87
NG 140	60	83
	300	89,5



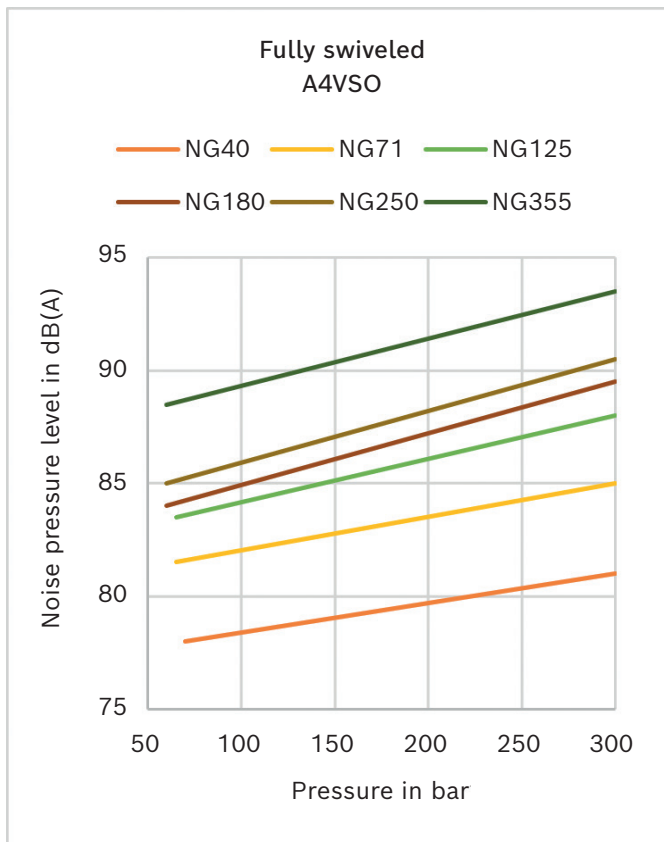
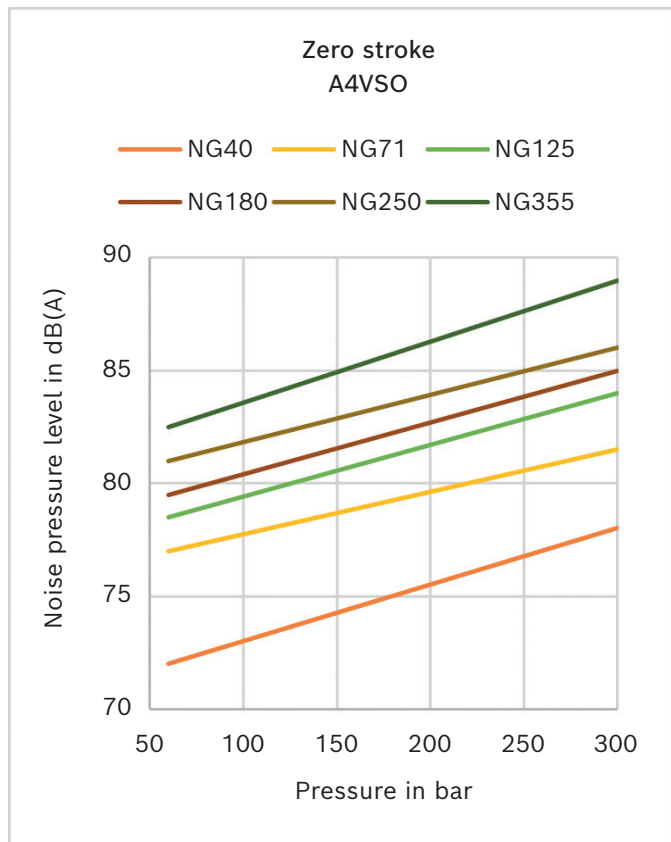
Overview of the Modules

Modular Motor Pump Unit MPU

Noise values ABMAXX MPU: A4VSO

Zero stroke		
A4VSO	Pressure in bar	Noise pressure level in dB(A)
NG 40	60	72
	300	78
NG 71	60	77
	300	81,5
NG 125	60	78,5
	300	84
NG 180	60	79,5
	300	85
NG 250	60	81
	300	86
NG 355	60	82,5
	300	89

Fully swiveled		
A4VSO	Pressure in bar	Noise pressure level in dB(A)
NG 40	70	78
	300	81
NG 71	65	81,5
	300	85
NG 125	65	83,5
	300	88
NG 180	60	84
	300	89,5
NG 250	60	85
	300	90,5
NG 355	60	88,5
	300	93,5

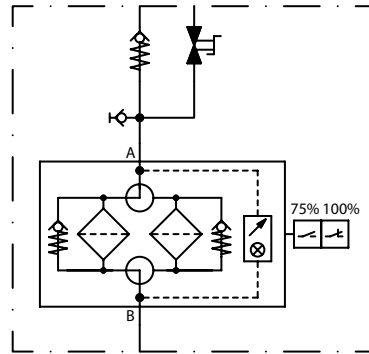


Overview of the Modules

Modular Return Filter Unit MFU



Hydraulic schematic



Modular Return Filter Unit MFU

- ▶ Filter variants – double filter switchable – 10 µm filtration rating
- ▶ 4x standardized frames with integrated drip pan for all variants
- ▶ Oil filling through ball valve (also usable as drain in T-Line)
- ▶ Electronic clogging indicator 75 % and 100 %

Variant overview

Filter type	Filter size Filtration rating 10 µm Nominal pressure 16 bar	Volume in l/min at v = 30 mm ² /s and Δp = 0,5 bar	Material number	Type / description
Rexroth	2500	2200	R920058922	ABFST-MFU-16FD-2500-F10
			R920069577	ABFST-MFU-16FD-2500-F10-V
	3000	2700	R920058923	ABFST-MFU-16FD-3000-F10
			R920069578	ABFST-MFU-16FD-3000-F10-V
	4000	3400	R920058924	ABFST-MFU-16FD-4000-F10
			R920069579	ABFST-MFU-16FD-4000-F10-V
	6000	5500	R920058925	ABFST-MFU-16FD-6000-F10
			R920069580	ABFST-MFU-16FD-6000-F10-V
	7000	7400	R920058926	ABFST-MFU-16FD-7000-F10
			R920069581	ABFST-MFU-16FD-7000-F10-V
	7500	10500	R920058927	ABFST-MFU-16FD-7500-F10
			R920069582	ABFST-MFU-16FD-7500-F10-V

Overview of the Modules

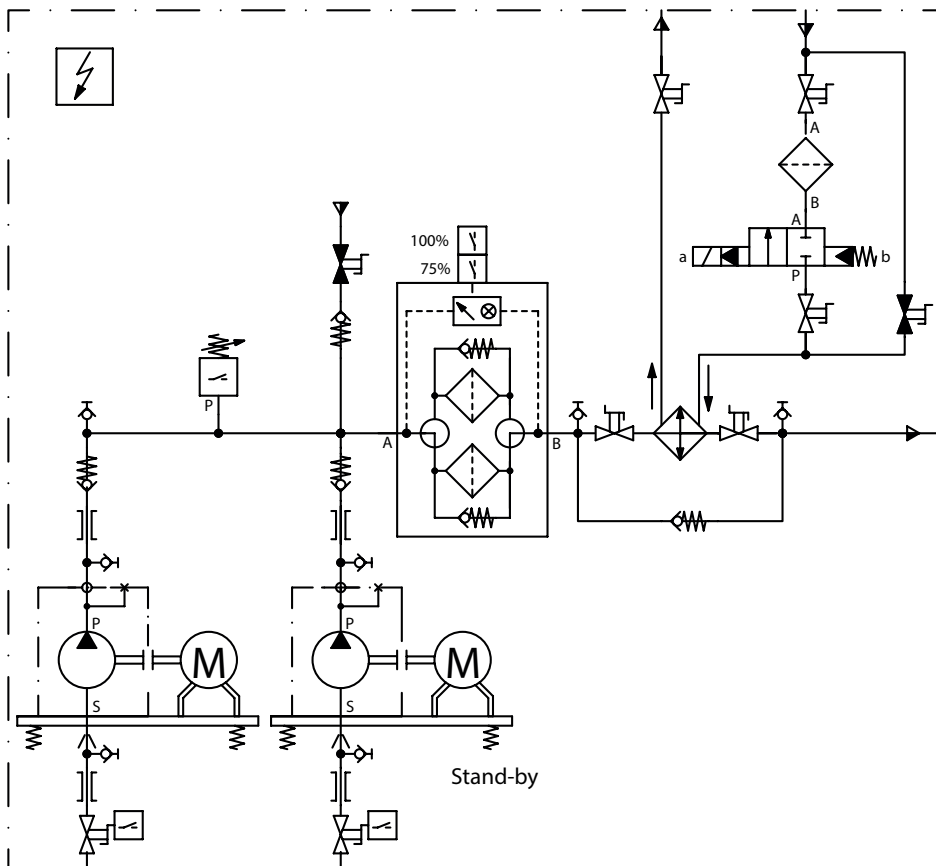
Modular Circulation Unit MCU



Modular Circulation Unit MCU

- ▶ Circulation unit for cooling and filtering
- ▶ 6 variants, each with 3 cooler variants with a cooling capacity up to 396 kW
- ▶ Design with 2 pumps (1x stand-by)
- ▶ Design with 1 pump
- ▶ Double filter switchable with 6 micron filtration
- ▶ Screwed plate heat exchanger
- ▶ Filling port with ball valve at the filter
- ▶ Electrical water valve with dirt filter

Hydraulic schematic



Overview of the Modules

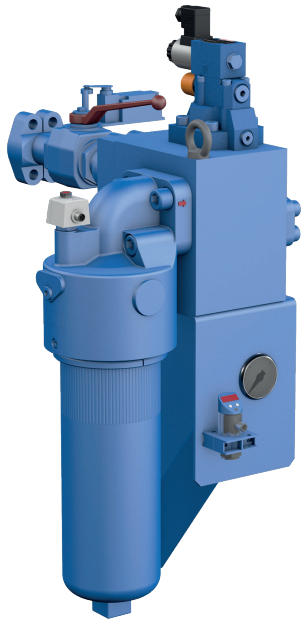
Modular Circulation Unit MCU – Variant overview

Cooler type	Oil flow in l	Power cooler in kW ΔT = 30 °C	Power E-Motor in kW	Material number	Type / description	Usable for tank in l		
FP	150	36	5,5	R920064500	ABFKS-MCU-150L-36KW-F6	2000		
				R920069715	ABFKS-MCU-150L-36KW-F6-V ¹⁾			
				R920067525	ABFKS-MCU-150L-36KW-F6-1P ²⁾			
				R920069942	ABFKS-MCU-150L-36KW-F6-1P-V ³⁾			
		R920064499	53	5,5	R920064499		ABFKS-MCU-150L-53KW-F6	
		R920069716			ABFKS-MCU-150L-53KW-F6-V ¹⁾			
		R920067526			ABFKS-MCU-150L-53KW-F6-1P ²⁾			
		R920069943			ABFKS-MCU-150L-53KW-F6-1P-V ³⁾			
		R920063476	66	5,5	R920063476		ABFKS-MCU-150L-66KW-F6	
		R920069717			ABFKS-MCU-150L-66KW-F6-V ¹⁾			
		R920067527			ABFKS-MCU-150L-66KW-F6-1P ²⁾			
		R920069944			ABFKS-MCU-150L-66KW-F6-1P-V ³⁾			
	252	59	7,5	R920064501	ABFKS-MCU-252L-59KW-F6	3000/4000		
				R920069718	ABFKS-MCU-252L-59KW-F6-V ¹⁾			
				R920067528	ABFKS-MCU-252L-59KW-F6-1P ²⁾			
				R920069945	ABFKS-MCU-252L-59KW-F6-1P-V ³⁾			
			R920064502	73	7,5		R920064502	ABFKS-MCU-252L-73KW-F6
			R920069720				ABFKS-MCU-252L-73KW-F6-V ¹⁾	
			R920067529				ABFKS-MCU-252L-73KW-F6-1P ²⁾	
			R920069946				ABFKS-MCU-252L-73KW-F6-1P-V ³⁾	
		R920064503	105	7,5	R920064503		ABFKS-MCU-252L-105KW-F6	
		R920069721			ABFKS-MCU-252L-105KW-F6-V ¹⁾			
		R920067530			ABFKS-MCU-252L-105KW-F6-1P ²⁾			
		R920069947			ABFKS-MCU-252L-105KW-F6-1P-V ³⁾			
		R920063477	132	7,5	R920063477		ABFKS-MCU-252L-132KW-F6	
		R920069722			ABFKS-MCU-252L-132KW-F6-V ¹⁾			
		R920067532			ABFKS-MCU-252L-132KW-F6-1P ²⁾			
		R920069948			ABFKS-MCU-252L-132KW-F6-1P-V ³⁾			
	406	109	11	R920064504	ABFKS-MCU-406L-109KW-F6	6000		
				R920069723	ABFKS-MCU-406L-109KW-F6-V ¹⁾			
				R920067533	ABFKS-MCU-406L-109KW-F6-1P ²⁾			
				R920069949	ABFKS-MCU-406L-109KW-F6-1P-V ³⁾			
		R920064505	158	11	R920064505		ABFKS-MCU-406L-158KW-F6	
		R920069724			ABFKS-MCU-406L-158KW-F6-V ¹⁾			
		R920067534			ABFKS-MCU-406L-158KW-F6-1P ²⁾			
		R920069950			ABFKS-MCU-406L-158KW-F6-1P-V ³⁾			
		R920063498	198	11	R920063498		ABFKS-MCU-406L-198KW-F6	
		R920069725			ABFKS-MCU-406L-198KW-F6-V ¹⁾			
		R920067535			ABFKS-MCU-406L-198KW-F6-1P ²⁾			
		R920069951			ABFKS-MCU-406L-198KW-F6-1P-V ³⁾			
	510	145	15	R920064506	ABFKS-MCU-510L-145KW-F6	8000		
				R920069726	ABFKS-MCU-510L-145KW-F6-V ¹⁾			
				R920067537	ABFKS-MCU-510L-145KW-F6-1P ²⁾			
				R920069952	ABFKS-MCU-510L-145KW-F6-1P-V ³⁾			
		R920064507	211	15	R920064507		ABFKS-MCU-510L-211KW-F6	
		R920069727			ABFKS-MCU-510L-211KW-F6-V ¹⁾			
		R920067538			ABFKS-MCU-510L-211KW-F6-1P ²⁾			
		R920069953			ABFKS-MCU-510L-211KW-F6-1P-V ³⁾			
R920063484		264	15	R920063484	ABFKS-MCU-510L-264KW-F6			
R920069728				ABFKS-MCU-510L-264KW-F6-V ¹⁾				
R920067539				ABFKS-MCU-510L-264KW-F6-1P ²⁾				
R920069954				ABFKS-MCU-510L-264KW-F6-1P-V ³⁾				
746	181	22	R920064508	ABFKS-MCU-746L-181KW-F6	10000			
			R920069729	ABFKS-MCU-746L-181KW-F6-V ¹⁾				
			R920067540	ABFKS-MCU-746L-181KW-F6-1P ²⁾				
			R920069955	ABFKS-MCU-746L-181KW-F6-1P-V ³⁾				
	R920064509	264	22	R920064509		ABFKS-MCU-746L-264KW-F6		
	R920069730			ABFKS-MCU-746L-264KW-F6-V ¹⁾				
	R920067542			ABFKS-MCU-746L-264KW-F6-1P ²⁾				
	R920069956			ABFKS-MCU-746L-264KW-F6-1P-V ³⁾				
	R920063480	330	22	R920063480		ABFKS-MCU-746L-330KW-F6		
	R920069731			ABFKS-MCU-746L-330KW-F6-V ¹⁾				
	R920067543			ABFKS-MCU-746L-330KW-F6-1P ²⁾				
	R920069957			ABFKS-MCU-746L-330KW-F6-1P-V ³⁾				
870	218	22	R920064510	ABFKS-MCU-870L-218KW-F6	12500			
			R920069732	ABFKS-MCU-870L-218KW-F6-V ¹⁾				
			R920067544	ABFKS-MCU-870L-218KW-F6-1P ²⁾				
			R920069958	ABFKS-MCU-870L-218KW-F6-1P-V ³⁾				
	R920064511	317	22	R920064511		ABFKS-MCU-870L-317KW-F6		
	R920069733			ABFKS-MCU-870L-317KW-F6-V ¹⁾				
	R920067545			ABFKS-MCU-870L-317KW-F6-1P ²⁾				
	R920069959			ABFKS-MCU-870L-317KW-F6-1P-V ³⁾				
	R920064189	396	22	R920064189		ABFKS-MCU-870L-396KW-F6		
	R920069734			ABFKS-MCU-870L-396KW-F6-V ¹⁾				
R920067546	ABFKS-MCU-870L-396KW-F6-1P ²⁾							
R920069960	ABFKS-MCU-870L-396KW-F6-1P-V ³⁾							

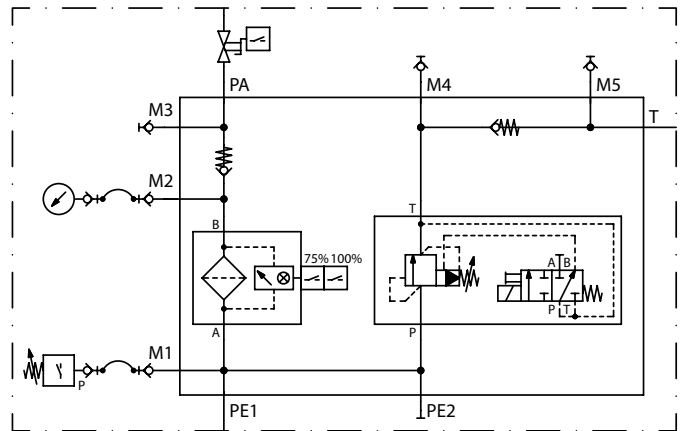
¹⁾ FKM version; ²⁾ Without stand-by pump; ³⁾ Without stand-by pump, FKM version

Overview of the Modules

Modular Pump Block MPB



Hydraulic schematic



Modular Pump Block MPB

- ▶ 4 variants for $Q_{\max} = 200$ l/min and $Q_{\max} = 450$ l/min, as well as pressure range from 200 bar and 315 bar
- ▶ Directly mounted on the tank with permanent pressure monitoring
- ▶ Integrated pressure filtration $10 \mu\text{m}$
- ▶ Drip pan for exchange of filter element
- ▶ If required a variant with TÜV-DB is available
- ▶ Position switch for the ball valve on the pressure line
- ▶ Integrated check valve in p and t line
- ▶ Soft start of the pump

Variant overview

Block type	Block size	Usable volume in l/min filtration rating $10 \mu\text{m}$	Pressure rating in bar	Material number	Type / description
PSBS01	NG 10	200	200	R920065053	ABVSK-MPB-PSBS01-10-200-F10
				R920069869	ABVSK-MPB-PSBS01-10-200-F10-V
			315	R920065054	ABVSK-MPB-PSBS01-10-315-F10
				R920069870	ABVSK-MPB-PSBS01-10-315-F10-V
	NG 20	450	200	R920065055	ABVSK-MPB-PSBS01-20-200-F10
				R920069871	ABVSK-MPB-PSBS01-20-200-F10-V
			315	R920063373	ABVSK-MPB-PSBS01-20-315-F10
				R920069872	ABVSK-MPB-PSBS01-20-315-F10-V

Overview of the Modules

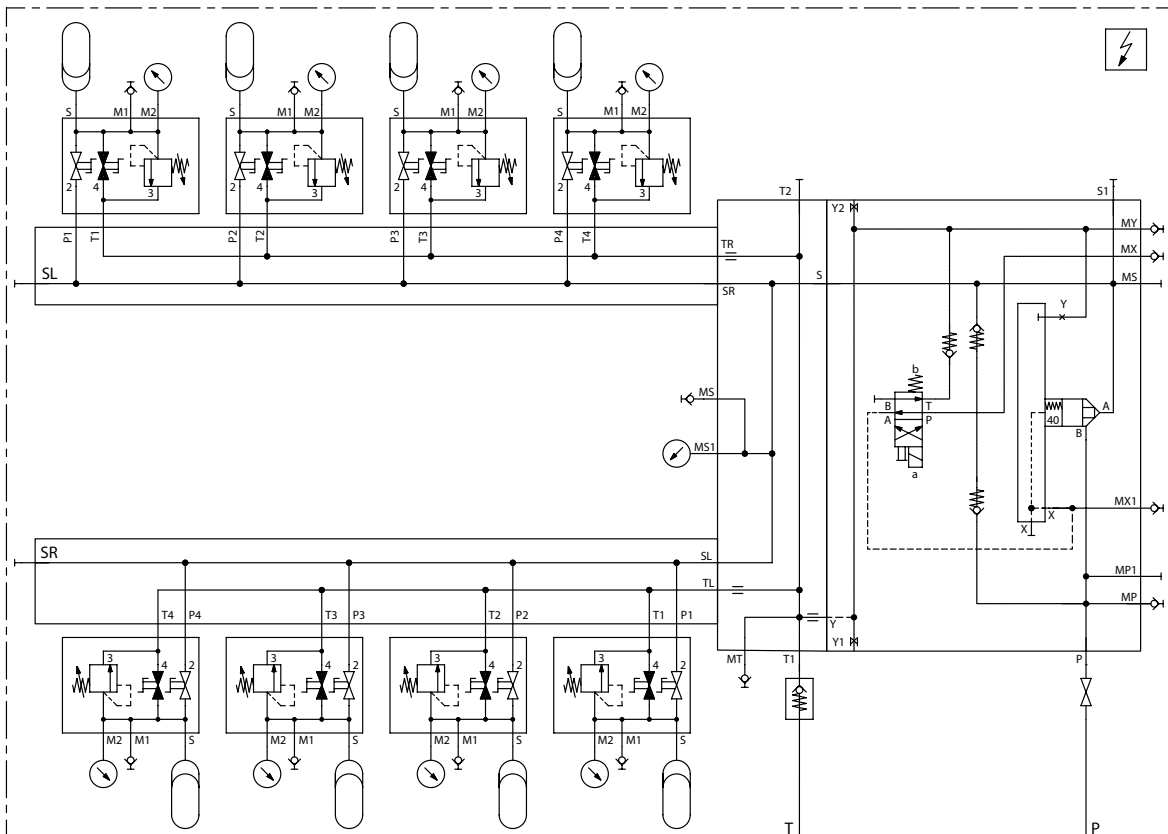
Modular Accumulator Unit MAU



Modular Accumulator Unit MAU

- ▶ Pressure accumulator 50 l with safety manifold
- ▶ Variants with 3, 5, 6 and 10 x 50 l
- ▶ Electrical shut-off/release of the pressure
- ▶ Manual shut-off on the safety manifold per accumulator quantity 3 and 5 plus 1 x electrical shut off only with single mounting

Hydraulic schematic



myCro

ABMAXX for industrial applications is a future orientated concept and can also be equipped with the latest innovations from Rexroth. One example therefore is the tank downsizing concept myCro with which the TCO (Total cost of ownership) can be reduced significantly.

As an option Bosch Rexroth can offer patented and proven myCro downsized tanks for the following sizes:

Tank size 1,500 l myCro – Replacement of a MTU 3,000 l

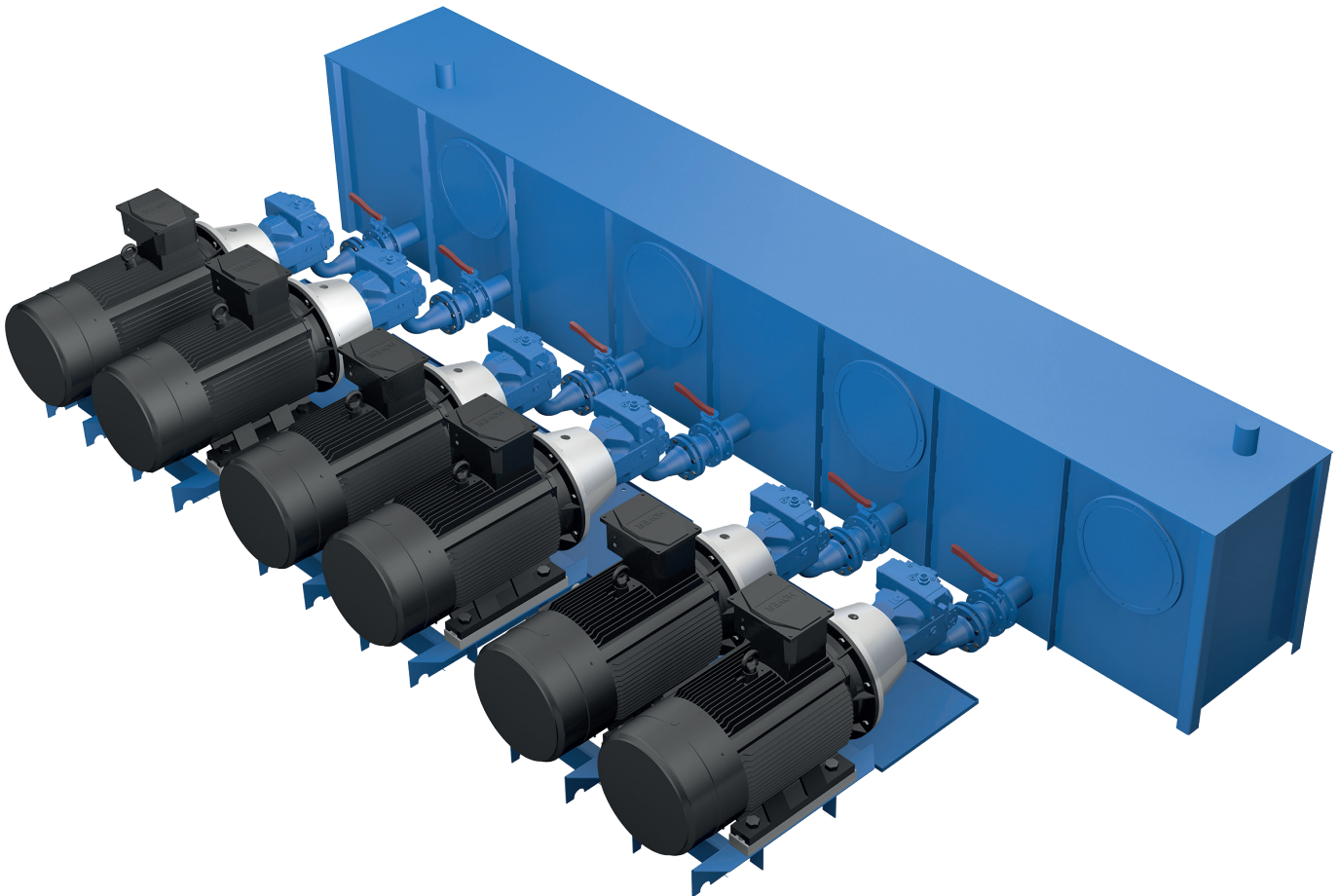
Tank size 3,000 l myCro – Replacement of a MTU 6,000 l

Tank size 4,500 l myCro – Replacement of a MTU 8,000 l

Tank size 6,000 l myCro – Replacement of a MTU 12,500 l

The inner tank design of these myCro tanks was optimized based on advanced fluid simulation programs; nevertheless, the return flow of the system must also always be taken into account.

That is why a selection of the tank size must be done by a Bosch Rexroth expert considering the specific application.



Outlook into the Future

Energy efficiency, environmental protection and connectivity are the future topics of industry.

For this reason, we also want to offer the right solution for big power units.

Therefore we are expanding the already available modular system with our variable-speed Sytronix drive solutions, defined sensor packages and integration into our IoT platform. The combination of benchmark axial piston pumps, energy-efficient drives, condition monitoring and demand-oriented maintenance increases the availability of our products while significantly reducing operating costs.



Sizing Guidelines ABMAXX

Medium	Standard mineral oil HLP46 (optional HFD-U with FKM sealing)
Reservoir and piping material	Carbon steel (optional stainless steel available)
Reservoir size to pump flow	6 times
Circulation of the reservoir volume	4 times in 1 hr
Circulation of oil volume flow to water volume flow	1,5 times
Velocity pressure line	4 up to 5 m/s
Velocity return line	2 up to 3 m/s
Velocity suction line	0,5 m/s
Filtration	6 / 10 μm
Heater capacity per 1000 l	1 kW
Motor power (kW) MPG to cooling capacity	30 %

Compact power modules

ME - MR series

RE 18306-01

Edition: 12.2018

Replaces: 01.2017

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Ordering Details for Compact Power Modules ME with A.C. Motor

01	02	03	04	05	06	07	08	09	10	11	12
ME	-	-	-	-	-	-	-	-	-	-	-

Family

01	Power module type	ME
----	-------------------	----

Power module type of motor

02	Without motor	0
	With 3ph motor	2
	With 1ph motor	3

A.C. Electric motor

03	(See page 11-12)	
----	------------------	--

Junction Elements

04	The code of the Junction Element is showing in the page after the selected AC motor.	
----	--	--

Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar

05	Select the required Central manifold with the required pressure range of the Relief valve and put the required setting in bar beetwen bracket.	
----	--	--

Built-in Valves

06	Insert the codes of the required valves following the number of the cavity in the Central Manifold (see page after the selected Central Manifold).	
----	--	--

Coil Model and Connector

07	In case of selection of Solenoid Built-in Valve choice the required coil Voltage and the required Connector. (See page 41-43)	
----	---	--

Gears pump

08	Select the required Gears pump. (See page 46)	
----	---	--

Oil Tank

09	Select the required Oil Tank.(See page 47-53)	
----	---	--

Mounting Position and Mounting Brackets

10	Select the required working position of the Power Module and the position of the therminal box and Oil Filler cap in case of mounting position V1. If needed select the Mounting Bracket. (See page 54-55)	
----	--	--

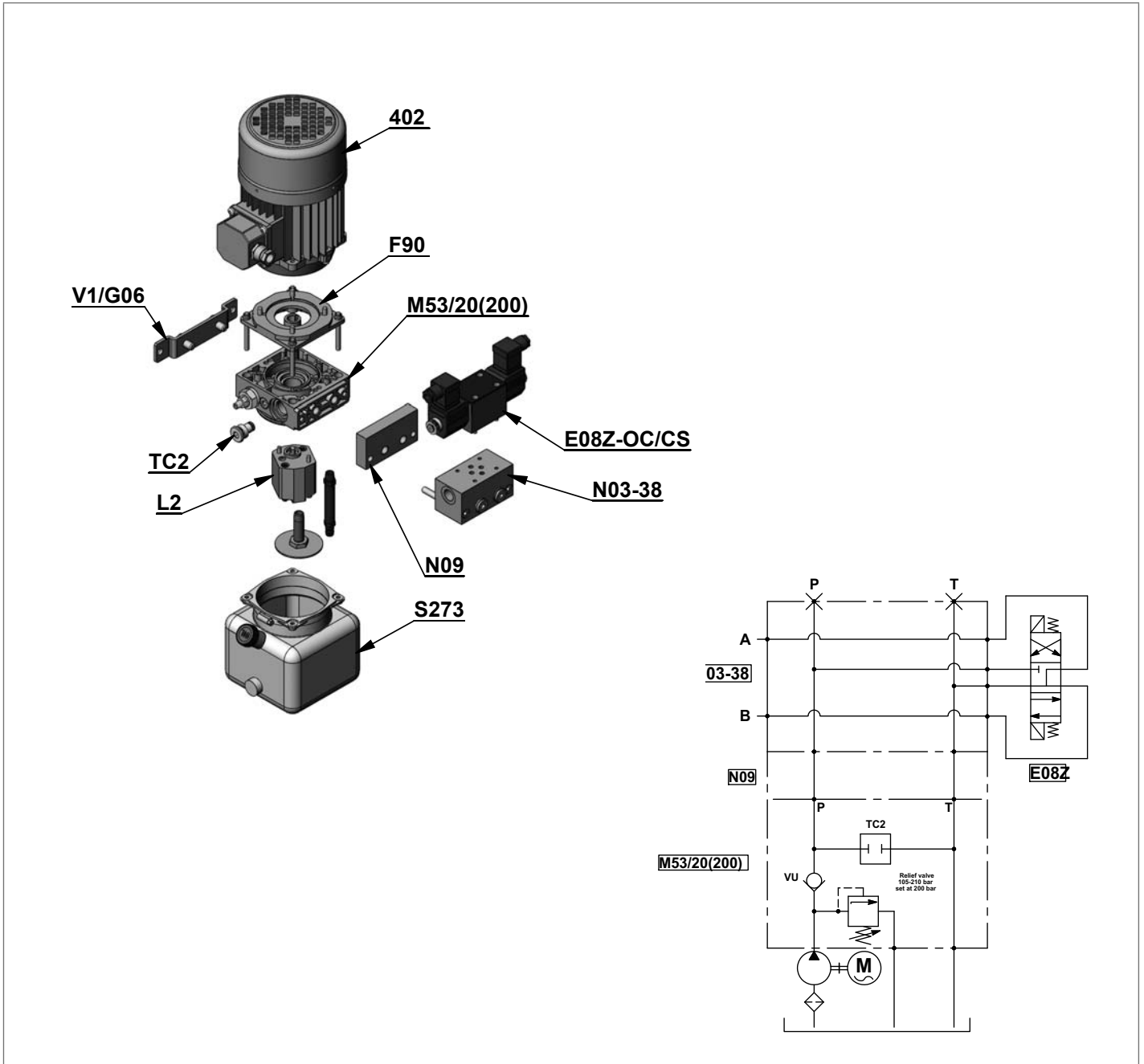
Modular Stackable Elements

11	If needed select the additional Modular Stackable Elements.	
----	---	--

Accessories

12	If needed select the additional Accessories.	
----	--	--

Example of Ordering Details for Compact Power Modules ME with A.C. Motor



Ordering Details for Compact Power Modules with AC Motor

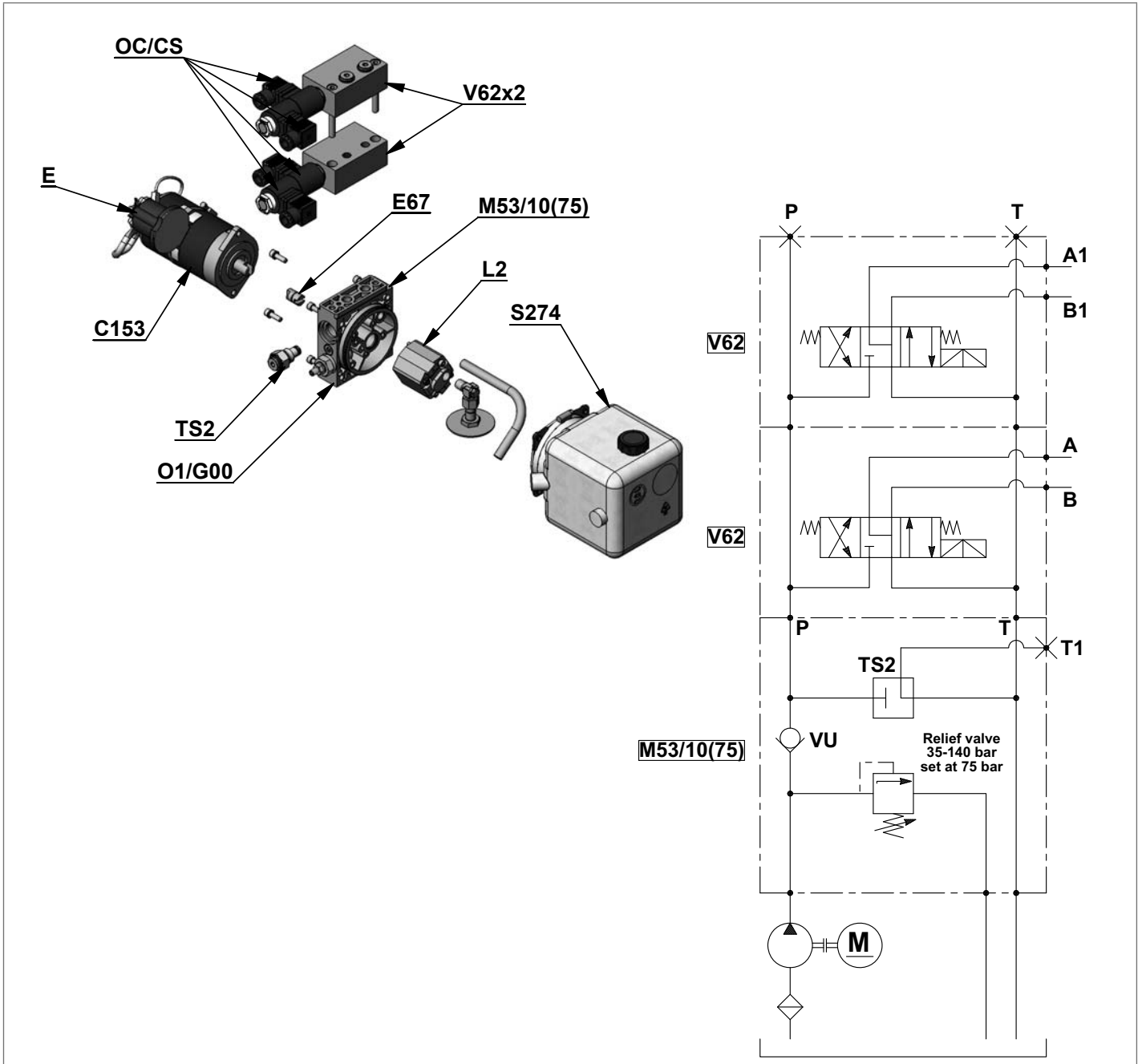
01	02	03	04	05	06	08	09	10	11
ME	2	- 402	- F90	- M53/20(200)	- TC2	- L2	- S273	- V1/G06	- N09/N03-38/ E08Z-OC/CS
Power Module Type	Power Module Type of Motor	AC Electric motor	Junction Element	Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar beetwen bracket	Built-in Valves	Gears pump	Oil Tank	Mounting Position and Mounting Brackets	Modular Stackable Elements Coil Voltage Connector

Ordering Details for Compact Power Modules ME with D.C. Motor

01	02	03	04	05	06	07	08	09	10	11	12	13	14
ME	-	-	-	-	-	-	-	-	-	-	-	-	-

Family													
01	Power module type												ME
Power module type of motor													
02	With DC motor												1
D.C. Electric motor													
03	Select the required DC motors. (See page 14-27)												
Relay													
04	The available relays are shown in the page after the selected DC motor.												
Plastic Protection													
05	The possibility to assemble the plastic protection is shown in the page after the selected DC motor.												
Junction Elements													
06	The code of the Junction Element is showing in the page after the selected DC motor.												
Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar													
07	Select the required Central manifold with the required pressure range of the Relief valve and put the required setting in bar beetwen bracket.												
Built-in Valves													
08	Insert the codes of the required valves following the number of the cavity in the Central Manifold. (see page after the selected Central Manifold)												
Coil Model and Connector													
09	In case of selection of Solenoid Built-in Valve choice the required coil Voltage and the required Connector. (See page 41-43)												
Gears pump													
10	Select the required gears pump. (See page 46)												
Oil Tank													
11	Select the required Oil Tank.(See page 47-53)												
Mounting Position and Mounting Brackets													
12	Select the required working position of the Power Module and the position of Relay and Oil Filler cap in case of mounting position V1. If needed select the Mounting Bracket. (See page 54-55)												
Modular Stackable Elements													
13	If needed select the additional Modular Stackable Elements												
Accessories													
14	If needed select the additional Accessories												

Example of Ordering Details for Compact Power Modules ME with D.C. Motor



Ordering Details for Compact Power Modules with AC Motor

	01	02	03	04	06	07	08	10	11	12	13
ME	1	- C180	- H	- E67	- M53/10(75)	- TS2	- L2	- S274	- O1/G00	- V62x2-OC/CS	
Power Module Type	Power Module Type of Motor	DC Electric motor	Relay	Junction Element	Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar between bracket	Built-in Valves	Gears pump	Oil Tank	Mounting Position and Mounting Brackets	Modular Stackable Elements Coil Voltage Connector	

Ordering Details for Compact Power Modules MR (reversible pump)

01	02	03	04	05	06	07	08
MR	-	-	-	- / - ()	-	-	-

Family							
01	Power module type						MR

Power module type of motor							
02	Without motor						0
	With DC motor						1
	With AC 3ph motor						2
	With AC 1ph motor						3

Electric motor							
03	Select the required DC motors. (See pages 14-21) Or required AC motors. (See pages 11-12)						

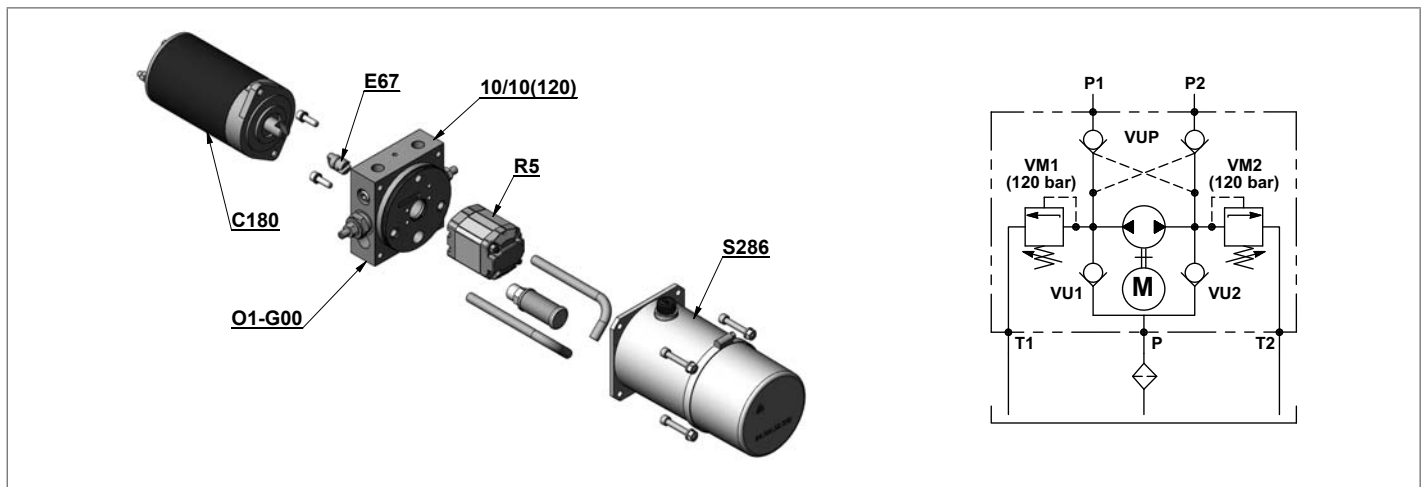
Junction Elements							
04	The code of the Junction Element is showing in the page after the selected motor.						

Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in bar							
05	Select the required Central manifold with the required pressure range of the Relief valve and put the required setting in bar between bracket.						

Gears pump							
06	Select the required gears pump (See page 46)						

Oil Tank							
07	Select the required Oil Tank. (See pages 47-53)						

Mounting Position and Mounting Brackets							
08	Select the required working position of the Power Module and the position of Oil Filler cap in case of mounting position V1. If needed select the Mounting Bracket. (See pages 55-56)						



Ordering Details for Compact Power Modules MR

01	02	03	04	05	06	07	08
MR	1	- C180	- E67	- 10 / 10 (120)	- R5	- S286	- O1-G00
Power Module Type	Power Module Type of Motor	AC Electric motor	Junction Element	Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar between bracket	Reversible Gears pump	Oil Tank	Mounting Position and Mounting Brackets

General Technical Data for Compact Power Module ME and MR series

Through the years DCOC has developed a highly evolved modular system resulting in powerful, flexible and cost effective power pack range, identified as “**compact power modules**”. In its easier configuration, a “compact power module” is an assembly of electric motor, central manifold with valves, pump, oil tank and a few connection elements. The central manifold, with its built-in valves, allows to achieve a large variety of hydraulic control circuits. If more complex circuits are needed, modular integrated blocks can be added by flange mounting, or interfacing, to the central manifold to extend its capabilities.

Typical applications

Passenger lift
 Fork lift
 Car and motorcycle lift
 Lift table
 Dumper
 Tail gate
 Scissor lift
 Gangway and davits for boats
 Material handling
 Foods machinery

Power module selection

Choose the circuit which meets your application requirements.

Take note of all dimensions resulting from the basic components chosen for your application.

Note

dimensions may vary slightly and should be confirmed by DCOC, if the assembly is to be installed in a space with narrow clearance.

The tank capacity and the tank dimensions need to be large enough to assure proper pump suction: there must always be a reserve of oil in the tank when all cylinders are fully extended and avoid overflow when cylinders are fully retracted.

The tank must be evaluated also for best separation of air from oil, and for settling down oil contamination. It should be placed in a space with, at least, natural ventilation and it should permit enough heat dissipation to prevent high fluid temperature.

Select the electric motor by evaluating the power needed and the motor compliance with the heat developed during the expected run time (or “duty cycle”).

Hydraulic fluid for compact power module

Mineral oil based hydraulic fluids suitable for hydraulic systems can be used; they should have physical lubricating and chemical properties as specified by:

MINERAL OIL BASED HYDRAULIC FLUIDS HL
 (DIN 51524 part 1)

MINERAL OIL BASED HYDRAULIC FLUIDS HL P
 (DIN 51524 part 2)

For use of environmentally friendly fluids please consult DCOC.

Fluid viscosity, temperature range of the operating fluid, ambient temperature

The fluid viscosity should remain within the range 10 to 300 cSt (centistokes); recommended 15 to 120 cSt.

Permissive cold start viscosity is maximum 2000 cSt.

The fluid temperature should remain within the range -15°C and 80°C (5°F and 176°F).

Note

For compact power module with plastic tank the fluid temperature should remain within the range -15°C and 70°C (5°F and 158°F).

Ambient temperature -15°C +40°C (5°F and 104°F).

Fluid cleanliness requirements and maintenance

We recommend a cleanliness of the operating fluid according to ISO 4406 Class 20/18/15 or cleaner. All components of the hydraulic circuit, including hoses and actuators, must be flushed and cleaned before assembling, because the compact power module has a suction filter only.

The hydraulic fluid should be replaced after the first 50 hours, and then every 1000 hours, or, at least, once a year.

Power module installation

The mounting position (is basically un-restricted; just avoid installations that could compromise the pump suction, it is recommended to support the power module on vibration dampening blocks when the mounting structure is expected to vibrate.

Wiring and starting-up

The wiring between battery and electric motor should be selected in order to avoid excessive voltage drop (recommended less than 1 V).

It is strictly forbidden to allow the backwards rotation of the pump even at the first starting: to prevent reverse

rotation, the wiring polarities must be correctly connected (except for the reversible pumps).

Caution: when energized, the surface temperature of the electric motor could reach temperature levels of 60-80°C (140-176°F): care should be taken to avoid any accidental contact of people with the motor surface.

A.C. motors

The tolerances on the nominal voltage are:

Single phase motor: 230V +/-5% -

Three phase motor: 230-400V +/-10%.

Protection degree : IP54 (protection against dust and water splash).

Insulation class: F (155°C) (311°F).

All motors are aluminum alloy die cast without painting.

D.C. Motors

DCOC has a wide range of D.C. motors. In the following pages you will find a selection of our standard range.

For further information about our complete range please contact our Sales department.

Some motors Ø80 have reversible rotation (see the table) and are suitable for application in CPM MR series.

All the others motors shown have clockwise rotation suitable for driving our counter clockwise gear pumps.

For each motor a diagram is shown that enables the customer to select the right pump displacement needed for the required flow and working pressure.

To be sure of selecting the best electric motor for the application, also the duty cycle has to be verified.

Following are the definitions of the type of duty cycles:

S2 = Short time duty cycle: indicate the number of minutes the motor can operate before reaching the maximum allowable temperature. After this time the motor must cool down until the ambient temperature is reached.

S3 = Intermittent duty cycle: indicate the maximum time percentage (%) based on 10 minute period within the motor can run until reaching the maximum allowable temperature. For example an S3 value of 15% = 1,5 minutes running time every 10 minutes period. For 8,5 minutes the motor is switched-off.

The S2 and S3 values are related to the current draw. On the label of motor are indicated the S2 and S3 values referred to the nominal power of the motor.

To check the S2 or S3 value at different conditions is necessary to find the value of current in the motor-pumps diagram and related it with the represented list.

All the diagrams motor-pumps are obtained at the nominal voltage of 12 or 24 Volt using fluid ISO VG 46 at 20-30°C (68-86°F).

Central manifolds

All the Central Manifolds shown in the catalogue are made in die cast aluminium alloy except the manifold code 10 for CPM MR series that is made by extruded bar. The validation of the Central Manifolds follows a life-test with 250 bar (625 psi) pulsed pressure repeated for 300.000 cycles.

Built-in valves

A wide range of cartridge valves and special plugs is available to be assembled in our Central Manifolds. The cartridge valves shown are designed for use in our Compact Power Module and are manufactured using steel with high mechanical strength. Surface treatments protect the exposed parts to the external environment. Standard seals are NBR (BUNA-N) with backup rings in PTFE. The cartridge valves with "leak proof seat design" have an average leakage of 10-15 drops/minute (< 1 cm³/minute 0.06 in³/min.) at the maximum pressure using fluid ISO VG46 at 40°C (104°F).

The validation of the cartridge valves follows a life-test at pulsed maximum pressure (indicated for each valve) repeated for 500.000 cycles.

All the solenoid cartridge valves are fitted with protective O-Rings installed between the pole tube and the coil. These O-Rings protect the internal parts from condensation and contaminants, which could cause malfunction.

All the solenoid cartridge valves are designed for operating in D.C..

Power supply in A.C. requires a connector with bridge rectifier included.

External gear pumps

DCOC offers a wide range of External Gear Pumps to cover different kind of applications. The standard version are suitable for the biggest part of applications. All the pumps are pressure compensated to guarantee the best efficiency.

Oil tanks

In this catalogue you will find a wide selection of steel and plastic tanks available as a standard product. If a special tank is required please contact our Sales Department. Steel tanks have Black paint finish and are suitable for operating temperature range -15°C / +80°C (5°F / 176°F). Plastic tanks are obtained in one piece in order to avoid welded parts that are weak points at extreme temperature and vibrations. Plastic tanks are suitable for operating temperature range -15°C / +70°C (5°F / 158°F).

Note

even if the plastic tank mounting system is designed to avoid oil leakage the tank must be securely anchored when fitted in mobile equipment and when subject to shocks and heavy vibrations. Please check that the anchorages do not stress or deform the tank.

Note

All the components shown in the catalogue ARE NOT suitable for use in potentially explosive atmosphere.

Technical information

Below you will find the most common equations used in hydraulics:

	Common Units	Symbols	Equations
Flow	l/min	Q	$Q = \frac{D \times n}{1000} \times 0,95$
Operating pressure	bar	P	$P = \frac{F}{0,1 \times A}$
Internal diameter hydraulic cylinder	mm	d	–
Area of hydraulic cylinder	mm ²	A	$A = \frac{\pi \times d^2}{4}$
Piston force	N	F	–
Drive shaft	rev/min	n	–
Power requirement for motor	kW	N	$N = \frac{P \times Q}{612}$
Pump displacement	cm ³ /rev	D	–
Torque requirement	Nm	M	$M = \frac{D \times P}{62,8 \times 0,87}$

Modular stackable elements

Our modular system offers a wide range of standardised elements. They are divided in two main series:
 Modular Elements “N” series: Modular blocks for different mounting position with mechanical valve or interface for CETOP valves to create parallel or series circuits.
 Modular Elements “V” series: Modular blocks that incorporate solenoid operated cartridge valves 2,3,4 way. All the Modular Elements are made in extruded aluminum alloy.
 In the catalogue you will find a selection of the main used models.
 Note: To reduce the complexity of the system and optimize the available space, special Modular Elements can be designed and manufactured following the customers needs. In this case please contact our Sales Department.

European machine directive 2006/42/CE

According to the Machine Directive 2006/42/CE, a complete power module, as described in paragraph 15 and made available to the European market, enters into the definition of “partly completed machinery”.
 Instead, the power module sub-assemblies (motor, pump, reservoir, central manifold,...), when not assembled into a complete power pack, are considered “components” which can be employed in a “machinery” or a “partly completed machinery”. In this case, the DCOC components and sub-assemblies must be fitted in compliance with all the relevant technical data sheet applicable to the product, and shall not be operated, adjusted or disassembled before the complete machinery where they are incorporated has been declared to be in compliance with the Machine Directive 2006/42/CE.

Compact Power Module Type

ME

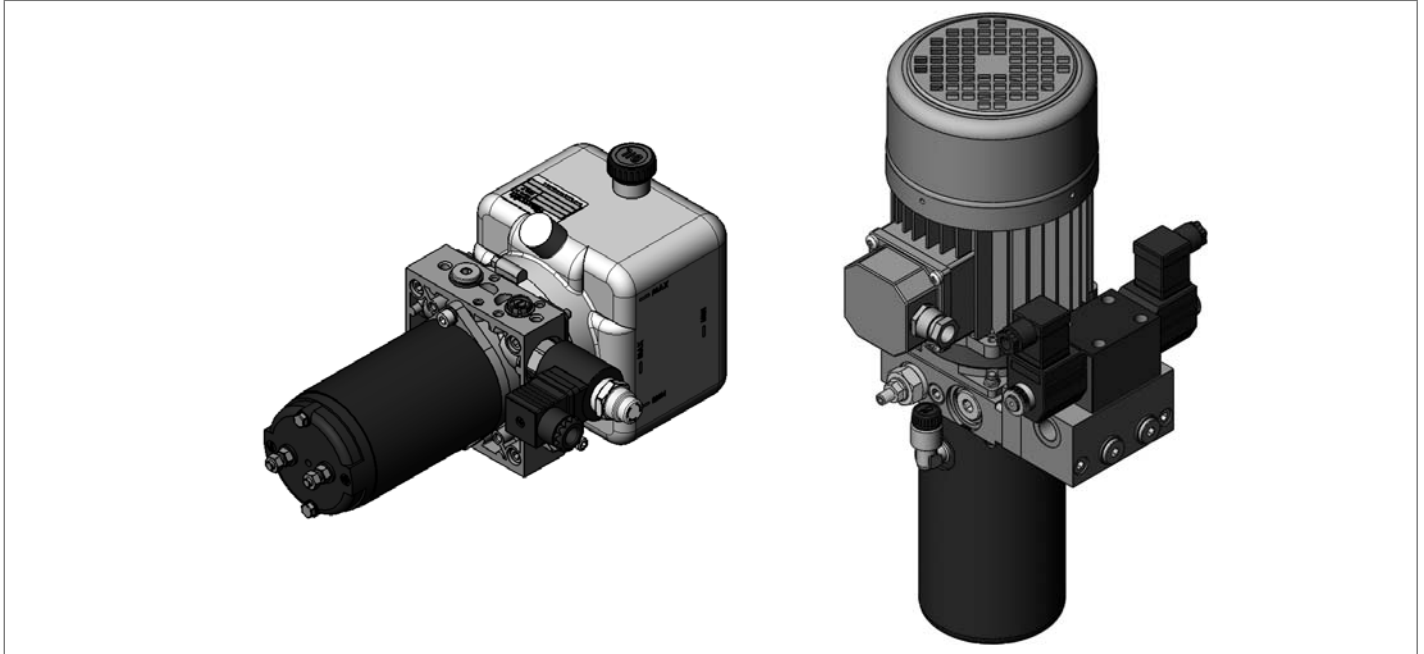
Smallest overall dimensions.

DC motors up to 2200 W (2,95 hp).

AC motors up to 1100 W (1,48 hp).

Pump displacement up to 1,5 cm³ (0,09 inch³).

Pressure up to 230 bar (3336 psi).



Reversible Type **MR series**

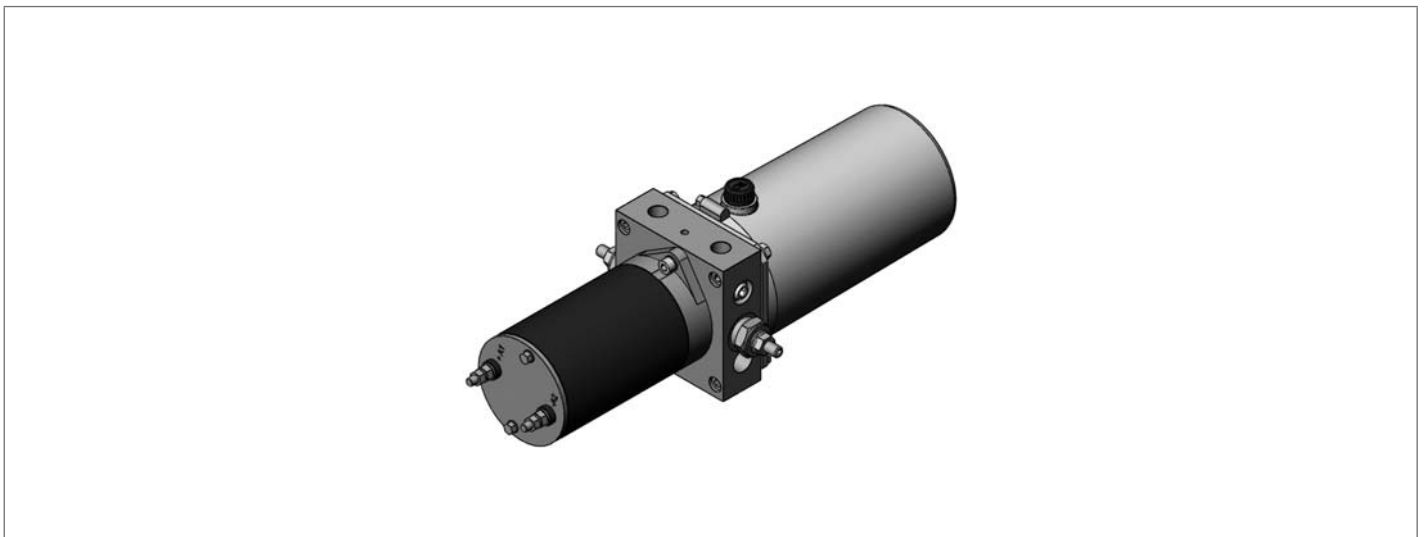
Smallest overall dimensions.

DC motors up to 800 W (1,1 hp).

AC motors up to 370 W (0,5 hp).

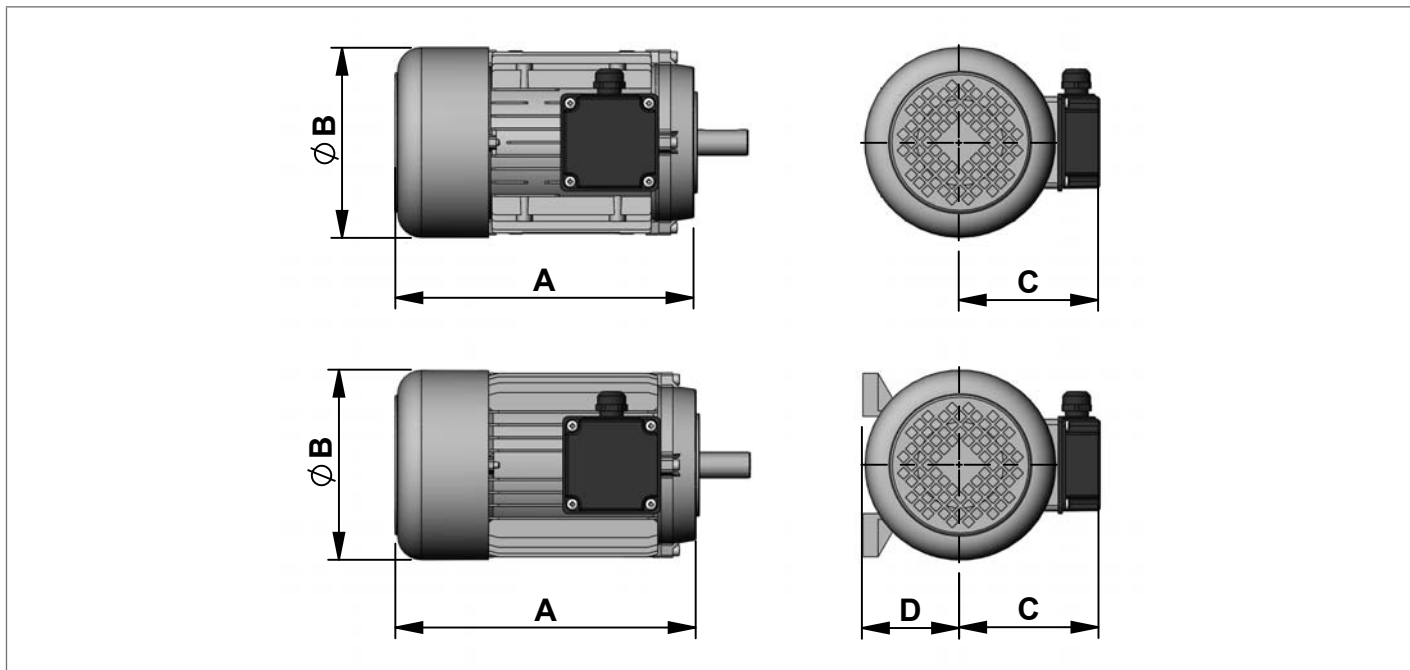
Pump displacement up to 1,5 cm³ (0,09 inch³).

Pressure up to 190 bar (2756 psi).



A.C. Electric Motor Standard Flange

Standard A.C. Motors in B14 form.

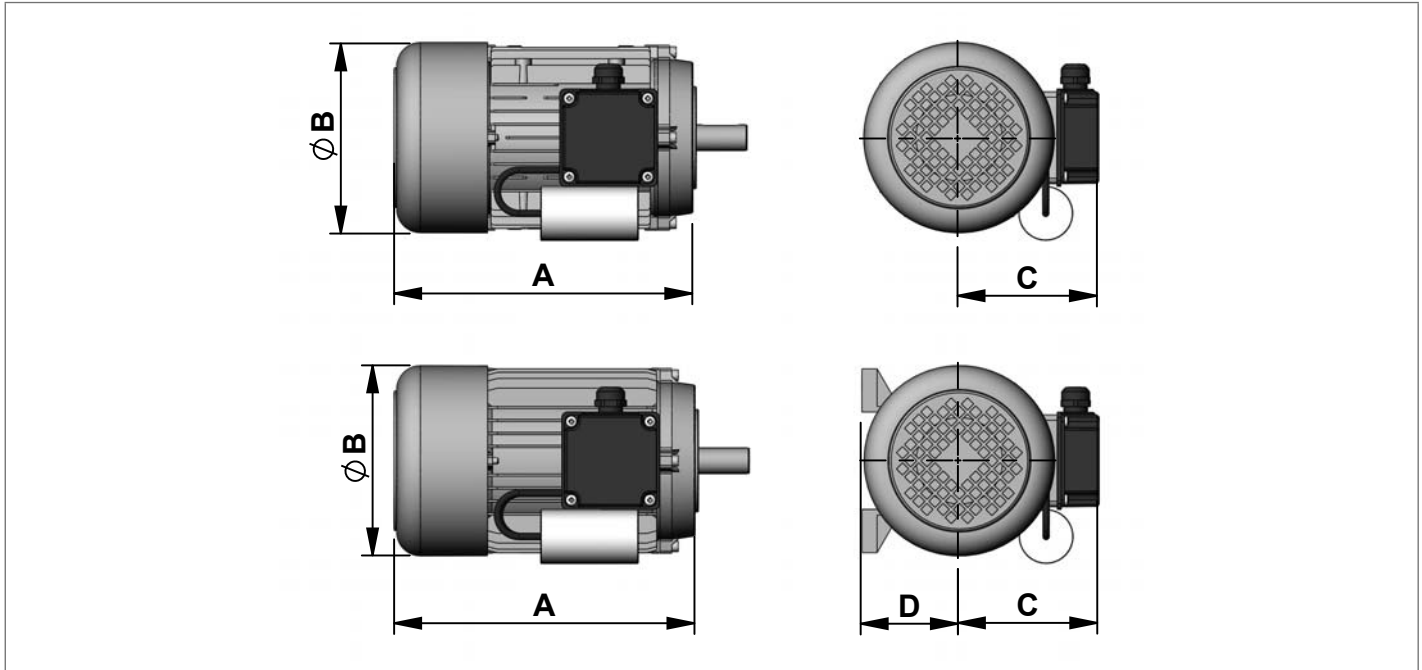


4 Poles Three Phase

Current Motors 230/400V 50Hz 278-/480V 60Hz Form B14 Protection IP54 (1450 rpm at 50Hz)

Code	Type	Material Number	Power [kW]	Power [hp]	Size IEC	Duty Cycle	A mm (inch)	ØB mm (inch)	C mm (inch)	D mm (inch)	Efficiency Classe
400	C1622S1107	R932000308	0,09	0,12	56	S1	169 (6,65)	110 (4,33)	95 (3,74)	56 (2,20)	-
401	C162266000	R932000490	0,18	0,25	63	S1	189 (7,44)	124 (4,88)	104 (4,09)	63 (2,48)	-
402	C1622670DR	R932008027	0,25	0,35	71	S1	218 (8,58)	140 (5,51)	109 (4,29)	71 (2,79)	-
403	C1622680DR	R932006105	0,37	0,5	71	S1	212 (8,35)	140 (5,51)	113 (4,45)	71 (2,79)	-
404	C1622150DR	R932006106	0,55	0,75	80	S1	250 (9,84)	156 (6,14)	125 (4,92)	80 (3,15)	-
405	C1622160DR	R932006107	0,75	1	80	S2 60MIN.	250 (9,84)	156 (6,14)	125 (4,92)	80 (3,15)	IE1

Standard A.C. Motors in B14 form.



On request motors in B34 form are available. In this cases, please put “B34” after the code of the motor when filling in the description. Example “408MB34”.

4 Poles Single Phase

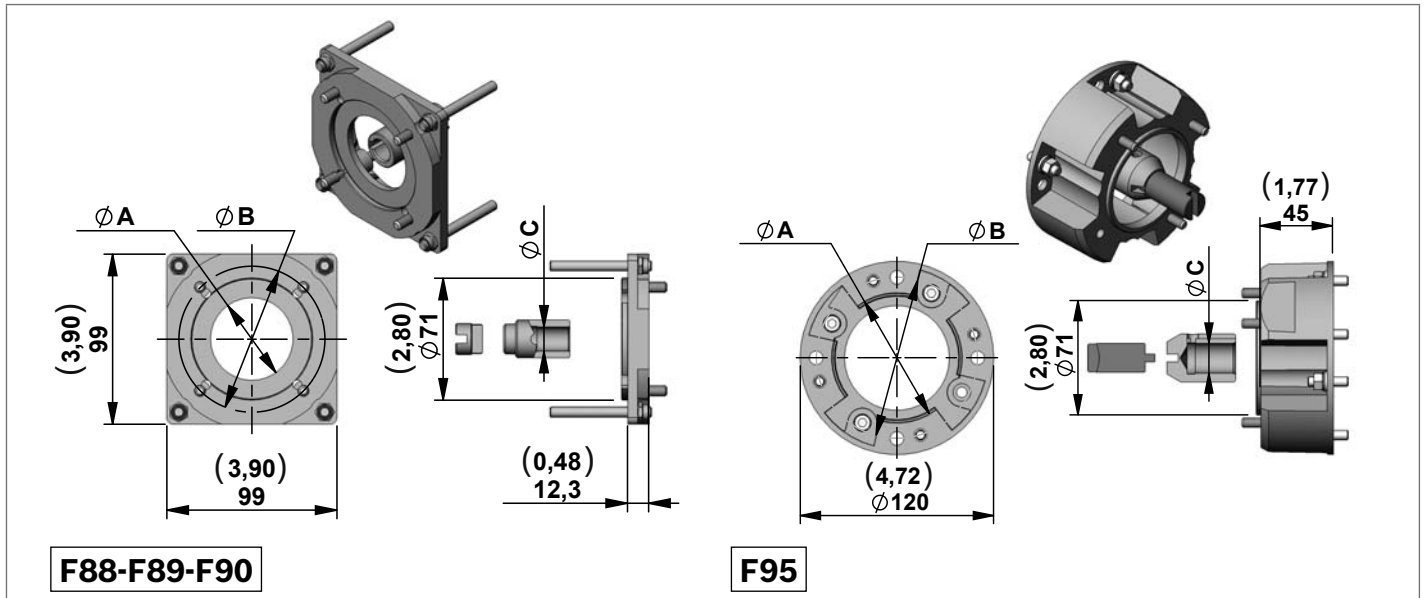
Current Motors 230V 50Hz Form B14 Protection IP54 (1450 rpm at 50Hz)

Code	Type	Material Number	Power [kW]	Power [hp]	Size IEC	Duty Cycle	A mm (inch)	ØB mm (inch)	C mm (inch)	D mm (inch)
401M	C162270000	R932000495	0,18	0,25	63	S1	189 (7,44)	124 (4,88)	104 (4,09)	63 (2,48)
402M	C162271000	R932000496	0,25	0,35	71	S1	218 (8,58)	140 (5,51)	109 (4,29)	71 (2,80)
403M	C162272000	R932000497	0,37	0,5	71	S1	212 (8,35)	140 (5,51)	113 (4,45)	71 (2,80)
404M	C162239000	R932000471	0,55	0,75	80	S1	250 (9,84)	156 (6,14)	125 (4,92)	80 (3,15)
405M	C162240000	R932000472	0,75	1	80	S1	250 (9,84)	156 (6,14)	125 (4,92)	80 (3,15)

Note

The electric motors with standard flange shown in this pages are delivered by different certified suppliers. This means the indicated dimensions could change a little, depending on which manufacturer will be assembled. On the CPM the choice of the manufacturer is based on our stock availability.

Junction Elements for A.C. Electric Motor Standard Flange



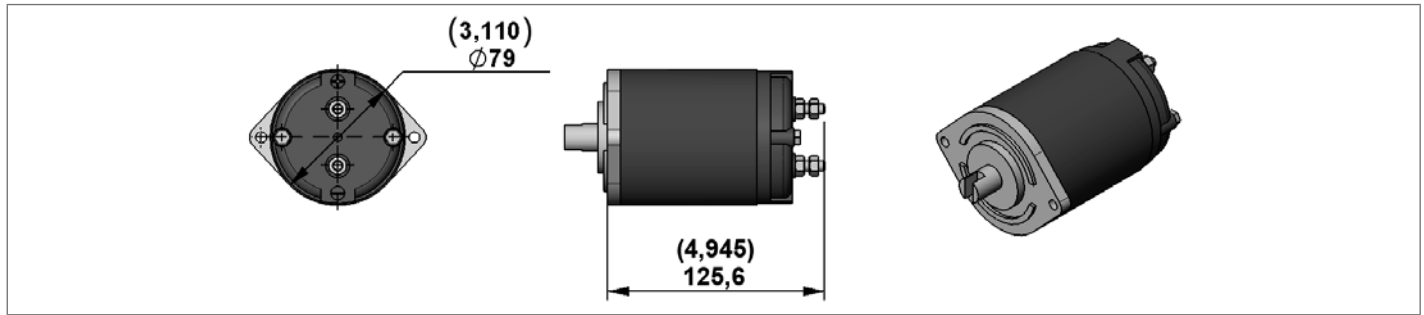
Junction Elements for manifolds ME - MR series (STD COUPLINGS)

Code	Motor Codes	Size IEC	A mm (inch)	B mm (inch)	C mm (inch)	H mm (inch)	Type	Material Number
F88	400	56	50 (1,97)	65 (2,56)	9 (0,35)	12,5 (0,49)	K01X3970TR097	R932002068
F89	401-401M	63	60 (2,36)	75 (2,95)	11 (0,43)	12,5 (0,49)	K01X3970TR098	R932002069
F90	402-403-402M-403M	71	70 (2,76)	85 (3,35)	14 (0,55)	12,5 (0,49)	K01X3970TR099	R932002070
F95	404-405 404M-405M	80	80 (3,15)	100 (3,94)	19 (0,75)	-	K01X3970TR100	R932002071

Note

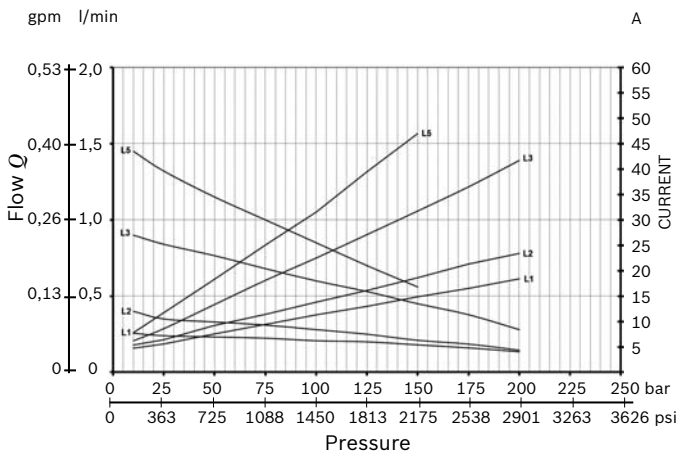
The junction element F95 is not usable with manifold MR serie.

D.C. Electric Motors Standard Performance

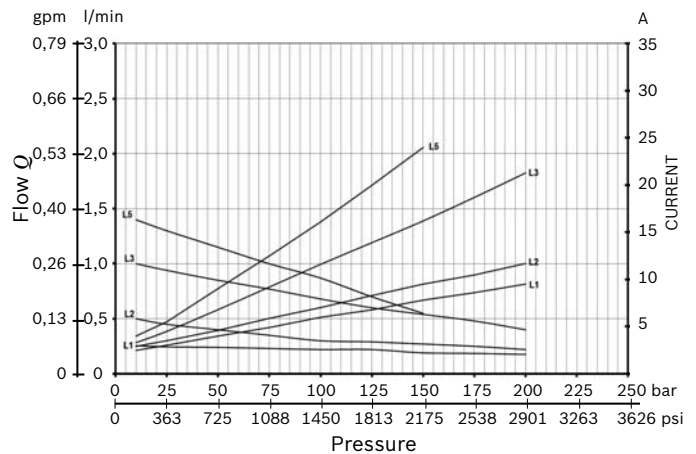


Code	Voltage [V]	Power [W]	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Direction of rotation	Type	Material Number
C177	12	150	10% 2,5min	NO	YES	IP 54	<->	C1620S1077M	R930056881
C178	24	150	10% 2,5min	NO	YES	IP 54	<->	C1620S1078M	R930056882

Electric Motor C177 (12V – 150W) Diagrams



Electric Motor C178 (24V – 150W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
20	8	20%
30	4	8%
50	1,5	3%

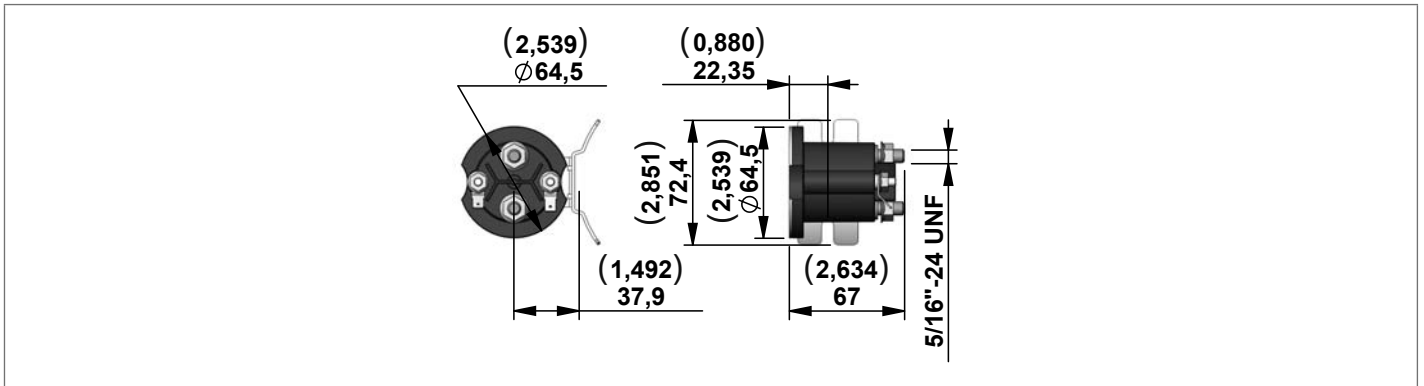
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
10	4	10%
20	1,5	3%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



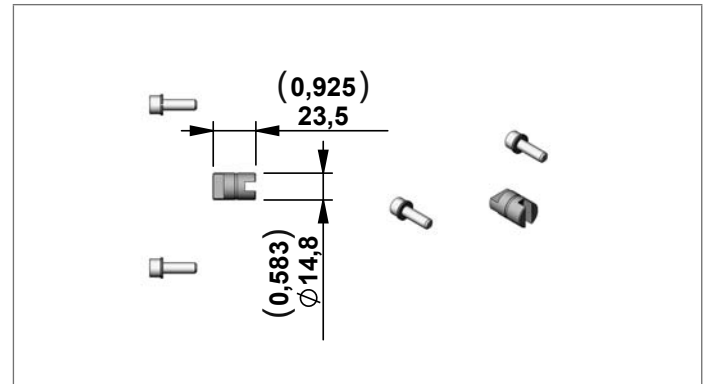
Starting Relay **Standard Performance**

Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693
L	24	150	350	IP66	YES	C165540000	R932008749

Kit Motor + Relay



Junction Elements for D.C. Electric Motor

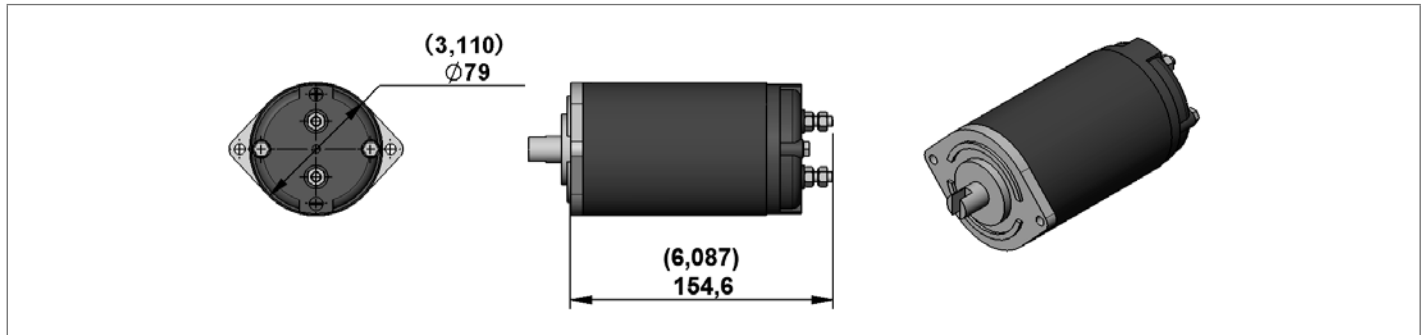


Junction Elements for manifolds **ME - MR series**

Motor + Relay	Type	Material Number
C177+relay 12V STANDARD performance	K396812177MPSF	R930060797
C178+relay 24V STANDARD performance	K396824178MPSF	R930061384
C178+relay 24V STANDARD performance UL certified	K396824178MPSUL	R930061385

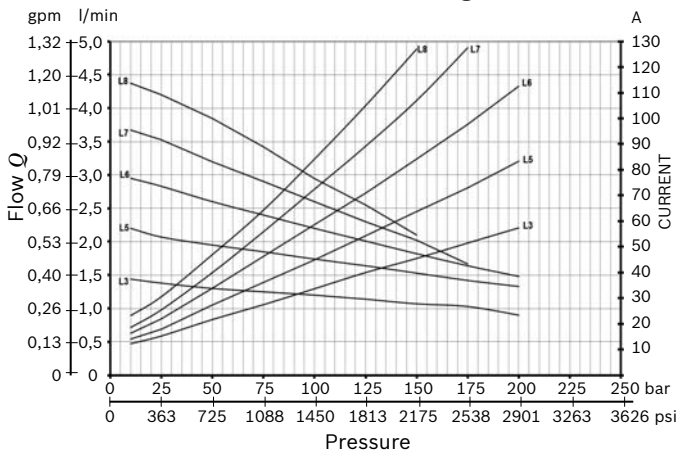
Code	Type	Material Number
E67	K01X3970TR095	R932002066

D.C. Electric Motors Standard Performance

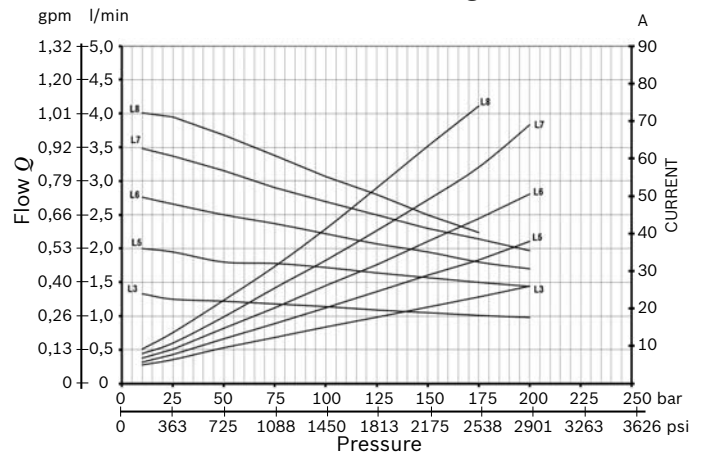


Code	Voltage [V]	Power [W]	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Direction of rotation	Type	Material Number
C179	12	500	10% 2,5min	NO	YES	IP 54	<->	C1620S1079M	R930056883
C180	24	500	10% 2,5min	NO	YES	IP 54	<->	C1620S1080M	R930056884

Electric Motor C179 (12V – 500W) Diagrams



Electric Motor C180 (24V – 500W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
50	10	25 %
75	5	10 %
100	2	3 %

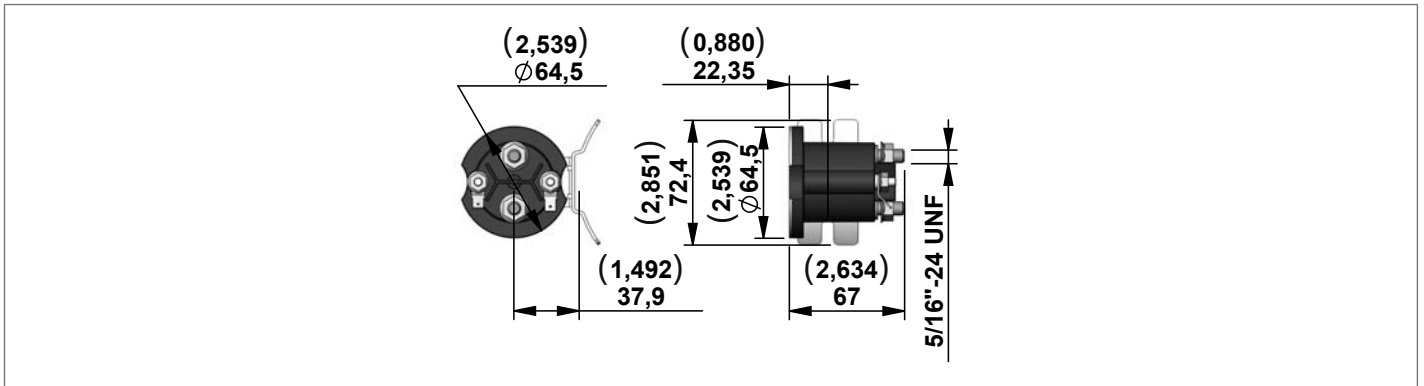
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
20	10	25 %
40	5	10 %
60	2	2 %

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



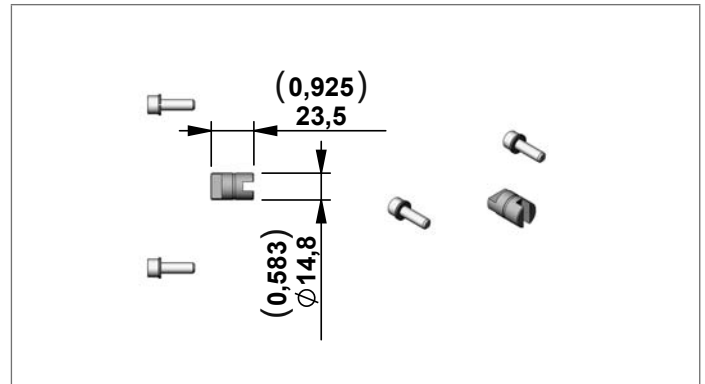
Starting Relay **Standard Performance**

Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693
L	24	150	350	IP66	YES	C165540000	R932008749

Kit Motor + Relay



Junction Elements for D.C. Electric Motor

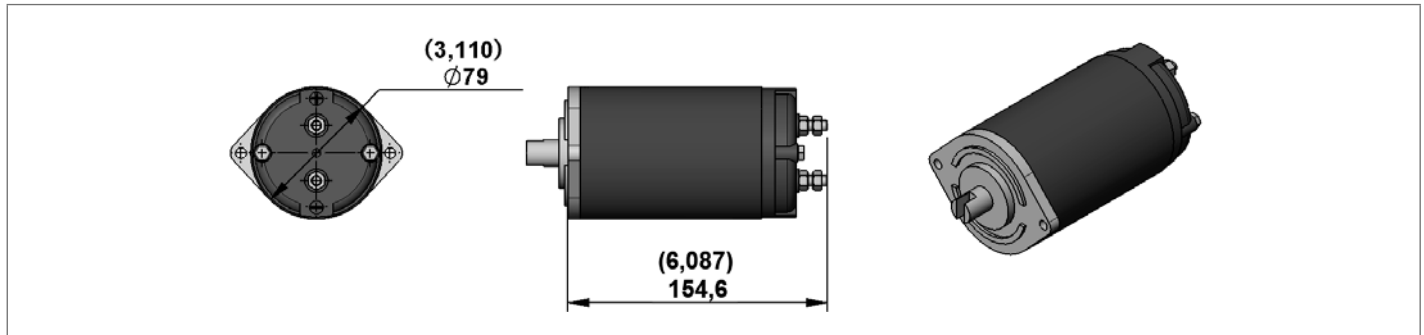


Junction Elements for manifolds **ME - MR series**

Motor + Relay	Type	Material Number
C179+relay 12V STANDARD performance	K396812179MPSF	R930061386
C180+relay 24V STANDARD performance	K396824180MPSF	R930061387
C180+relay 24V STANDARD performance UL certified	K396824180MPSUL	R930061388

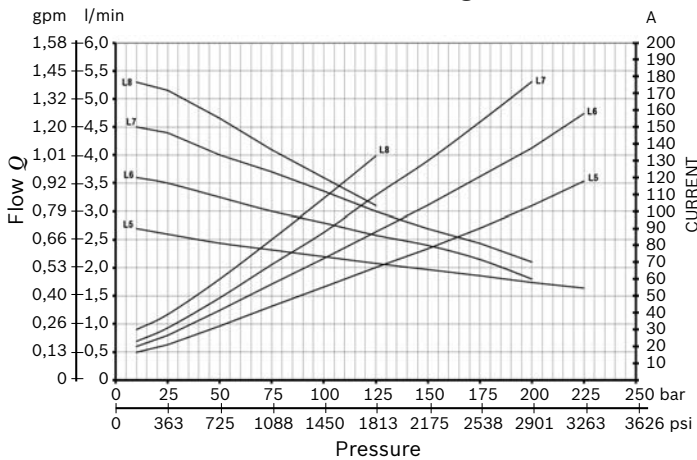
Code	Type	Material Number
E67	K01X3970TR095	R932002066

D.C. Electric Motors Standard Performance

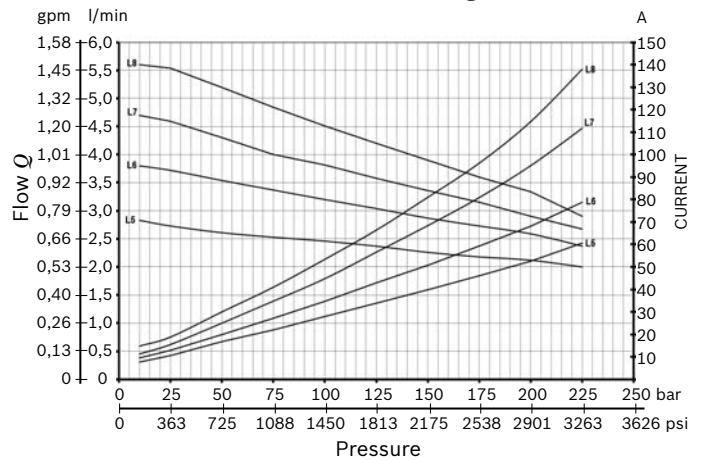


Code	Voltage [V]	Power [W]	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Direction of rotation	Type	Material Number
C181	12	800	10% 2,5min	NO	YES	IP 54	<->	C1620S1081M	R930056885
C182	24	800	10% 2,5min	NO	YES	IP 54	<->	C1620S1082M	R930056886

Electric Motor C181 (12V – 800W) Diagrams



Electric Motor C182 (24V – 800W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
50	10	25 %
100	5	10 %
150	1,5	3 %

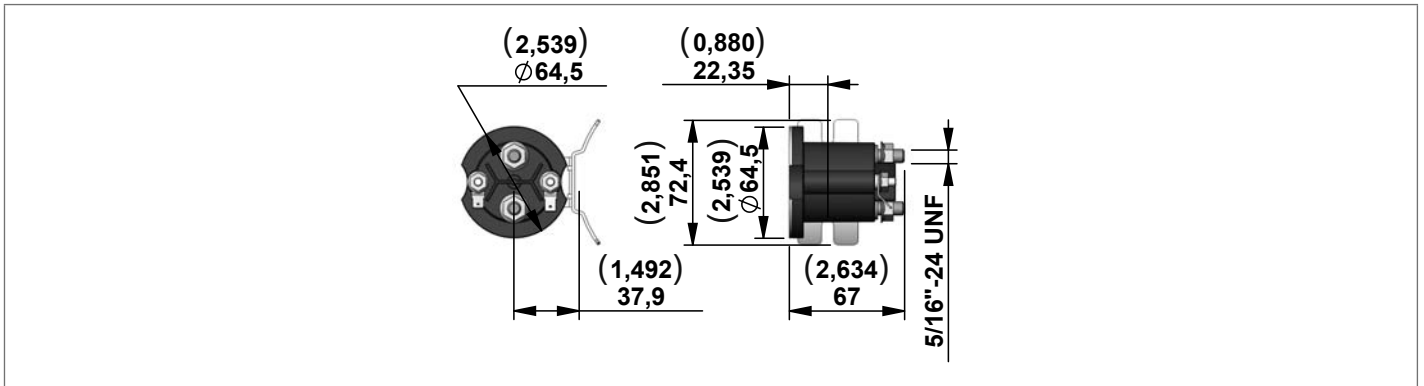
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
25	10	25 %
50	5	10 %
75	1,5	3 %

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



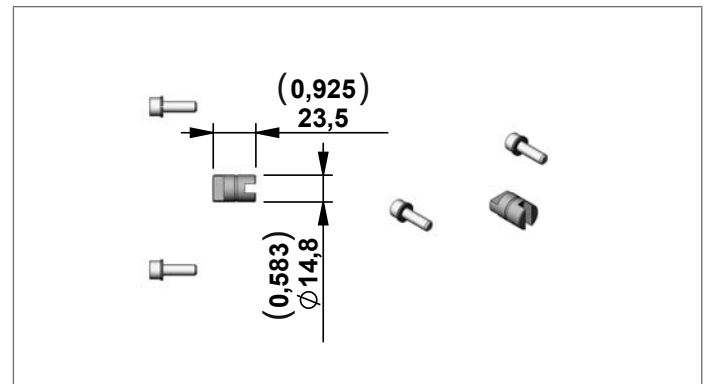
Starting Relay **Standard Performance**

Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693
L	24	150	350	IP66	YES	C165540000	R932008749

Kit Motor + Relay



Junction Elements for D.C. Electric Motor

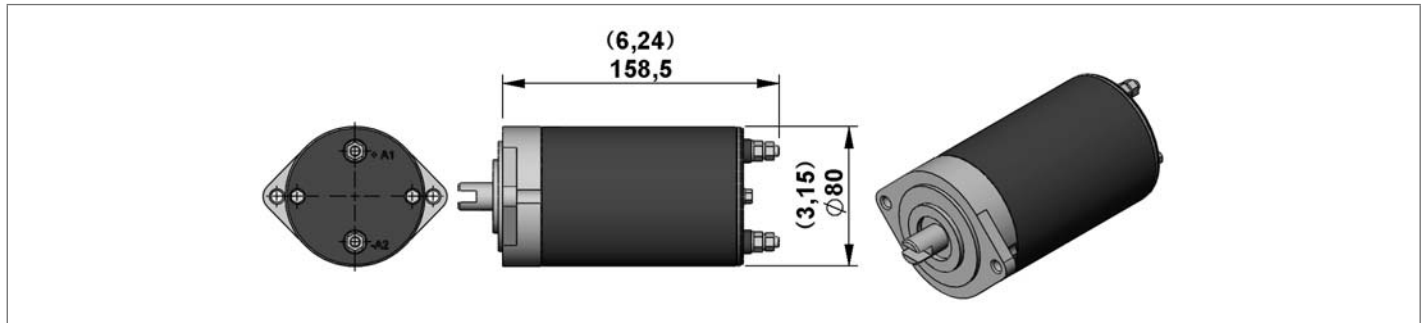


Junction Elements for manifolds **ME - MR series**

Motor + Relay	Type	Material Number
C181+relay 12V STANDARD performance	K396812181MPSF	R930061389
C182+relay 24V STANDARD performance	K396824182MPSF	R930061390
C182+relay 24V STANDARD performance UL certified	K396824182MPSUL	R930061391

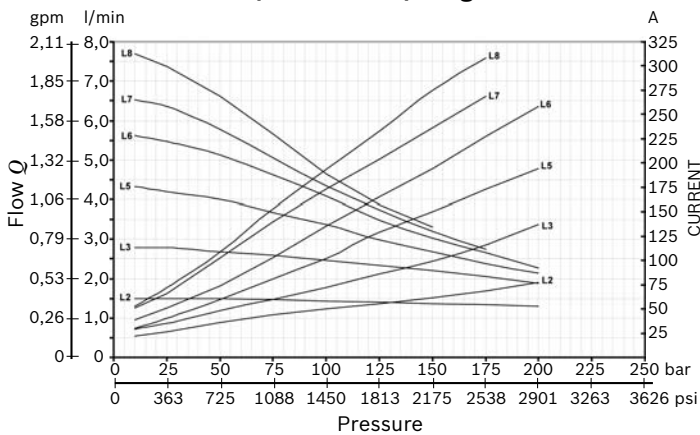
Code	Type	Material Number
E67	K01X3970TR095	R932002066

D.C. Electric Motors Standard Performance

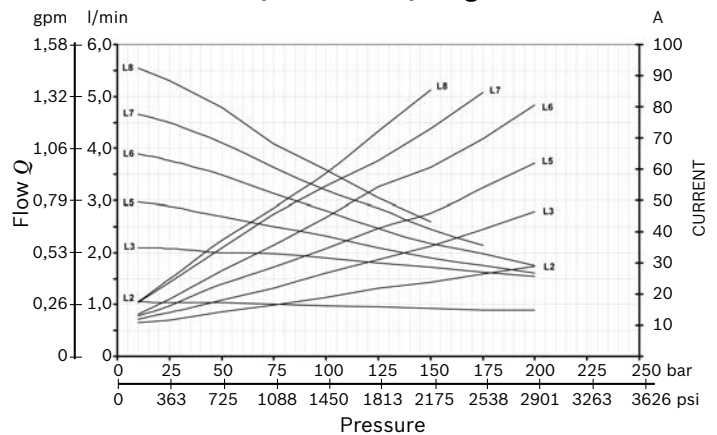


Code	Voltage [V]	Power [W]	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Direction of rotation	Type	Material Number
C123	12	800	9% 4min	YES	NO	IP 54	Clockwise	C1620S1023	R932000220
C122	24	800	10% 4min	YES	NO	IP 54	Clockwise	C1620S1022	R932000219

Electric Motor C123 (12V – 800W) Diagrams



Electric Motor C122 (24V – 800W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
50	14	35 %
100	6	12 %
150	2	3 %

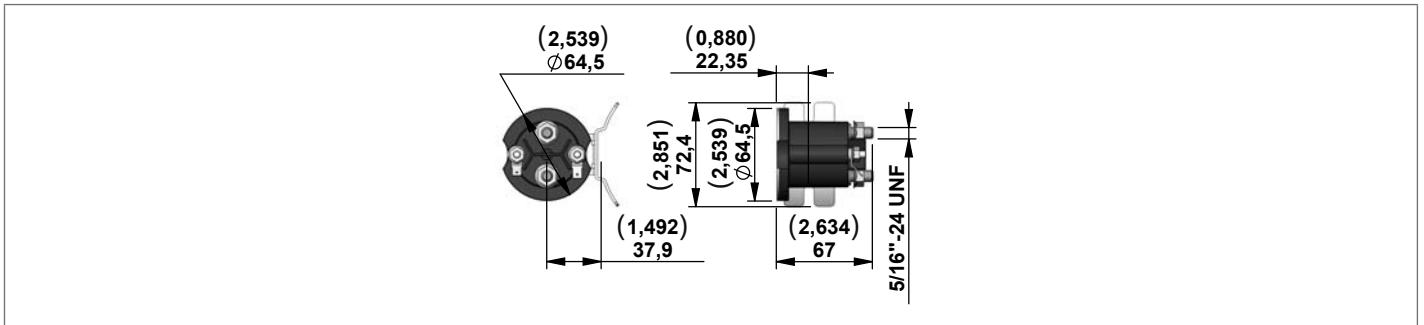
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
25	16	35 %
50	7	15 %
75	2	3 %

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



Starting Relay **Standard Performance**

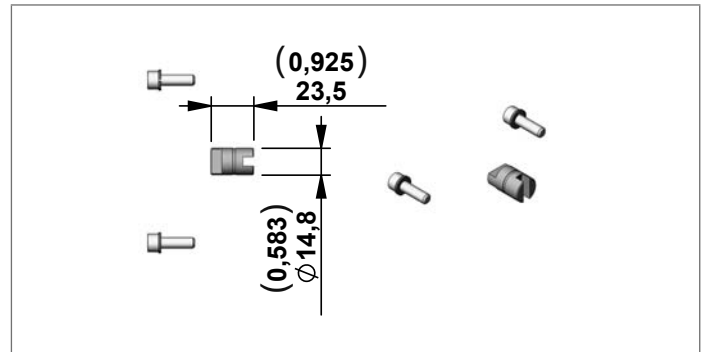
Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693

Kit Motor + Relay



Motor + Relay	Type	Material Number
C123+relay 12V STANDARD performance	K396812123PSF	R930051984
C122+relay 24V STANDARD performance	K396824122PSF	R930051967

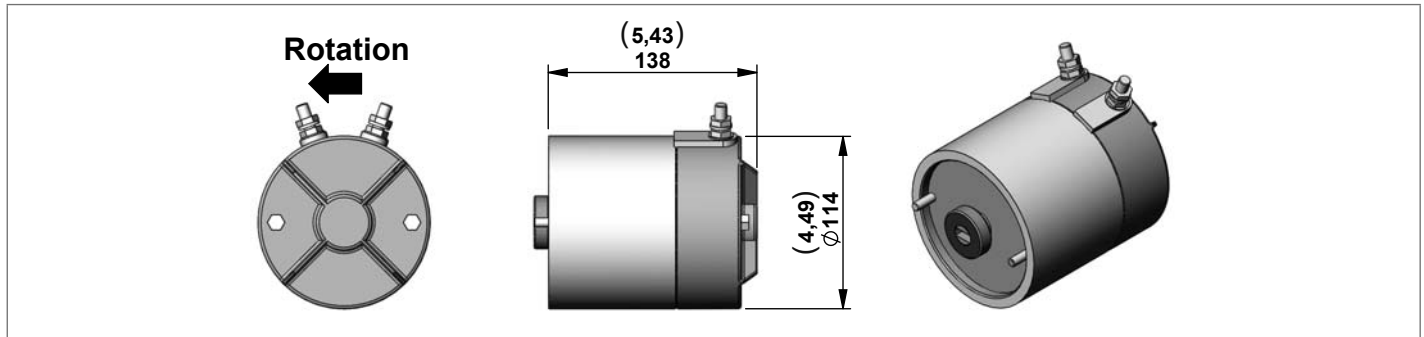
Junction Elements for D.C. Electric Motor



Junction Elements for manifolds **ME - MR series**

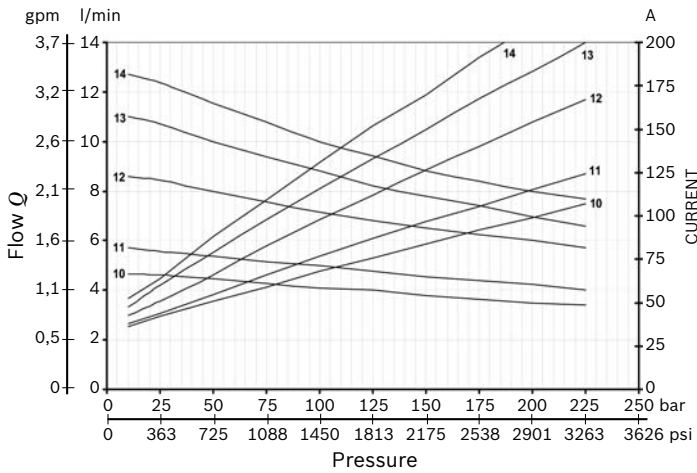
Code	Type	Material Number
E67	K01X3970TR095	R932002066

D.C. Electric Motors Standard Performance



Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C200	24	1200	4,5% 1,2 min	no	yes	IP 54	C1620S1200	R930059616

Electric Motor C200 (24V – 1300W) Diagrams

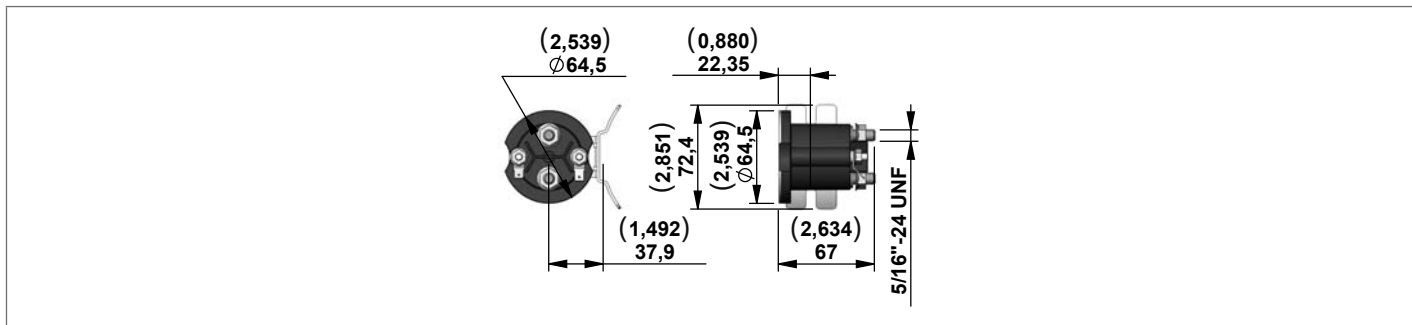


S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	6	17%
100	4	11%
125	2,4	7,5%
150	1,5	5%
175	1	3,5%

Note
The values of the curves may change slightly depending on the brand / model of pump that is mounted.

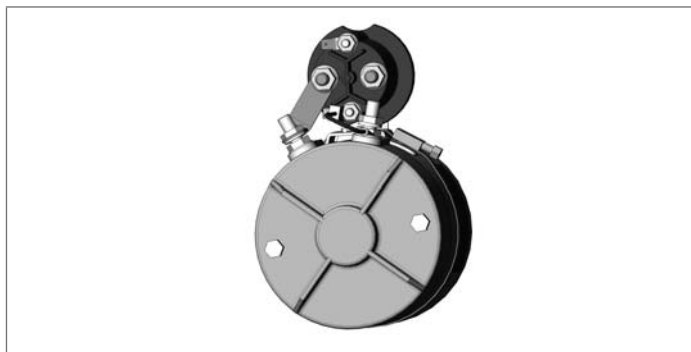
Relay



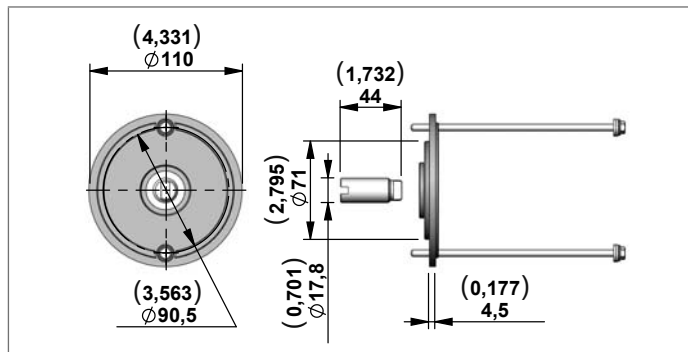
Starting Relay **Standard Performance**

Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
H	24	150	350	IP66	NO	C165535000	R932000693
L	24	150	350	IP66	YES	C165540000	R932008749

Kit Motor + Relay



Junction Elements for D.C. Electric Motor



Junction Elements for manifolds **ME**

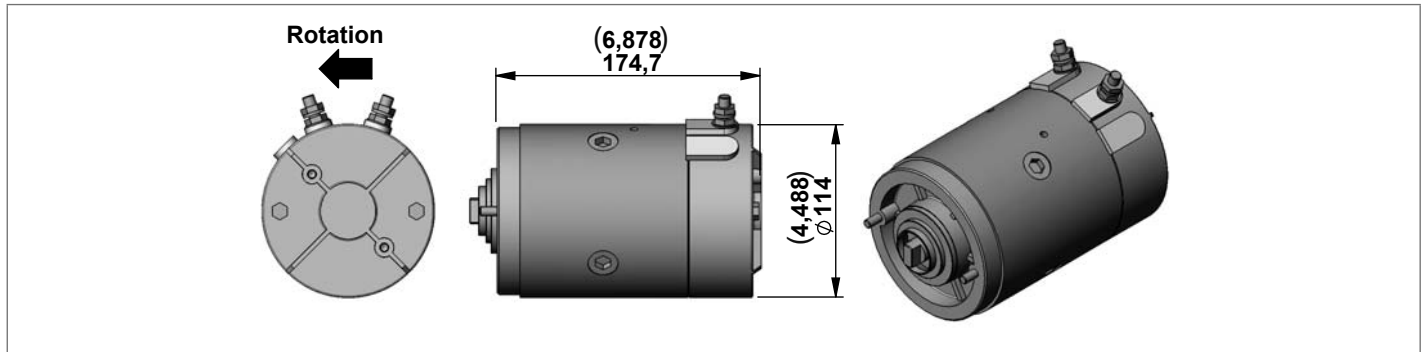
Motor + Relay	Type	Material Number
C200+relay 24V STANDARD performance	K396824200PSF	R930071143
C200+relay 24V STANDARD performance UL certified	K396824200PSFUL	R930071144

Code	Type	Material Number
E71	K01X3970TR109	R932009727

Note

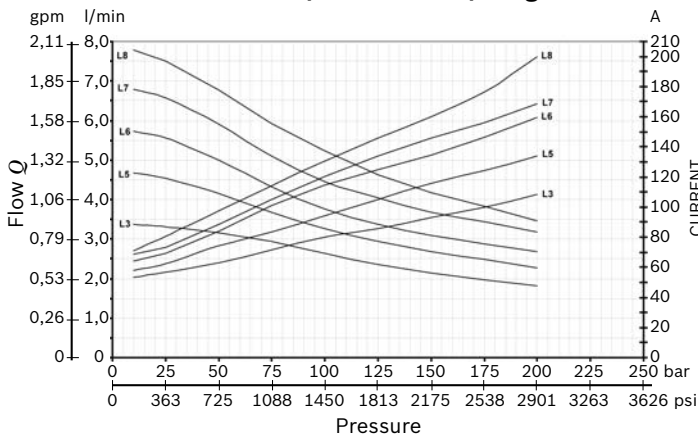
Change the standard screws supplied with the motor with the screws of the junction element E71.

D.C. Electric Motors Standard Performance

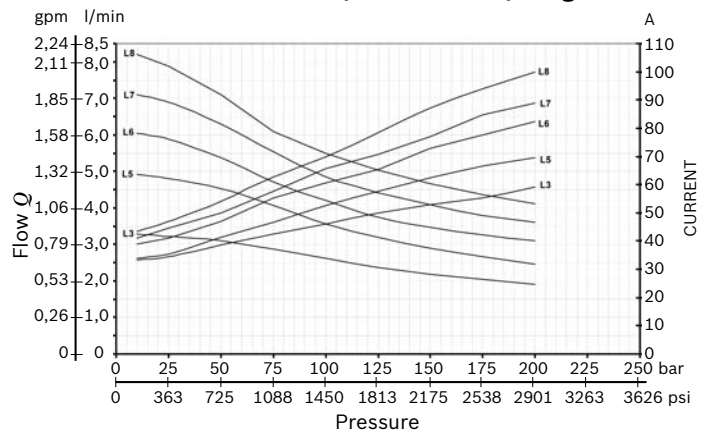


Code	Voltage [V]	Power [W]	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C190	12	1600	5% 2 min	no	yes	IP 54	C1620S1090	R930056392
C191	12	1600	5% 2 min	yes	yes	IP 54	C1620S1091	R930056391
C192	24	2200	5% 2 min	no	yes	IP 54	C1620S1092	R930056390
C193	24	2200	5% 2 min	yes	yes	IP 54	C1620S1093	R930056389

Electric Motor C190-191 (12V – 1600W) Diagrams



Electric Motor C192 - C193 (24V – 2200W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
150	5,5	12%
200	3,5	8%
250	2	6%
300	1,5	4%
350	1	3%

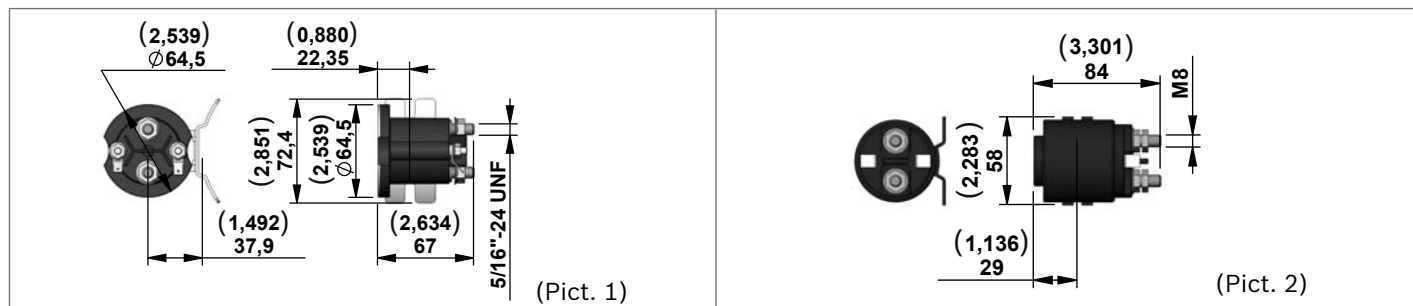
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	5	12%
100	3	7%
125	1,8	5%
150	1	4%
175	0,7	2,5%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



Starting Relay **Standard Performance** (Pict. 1)

Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693
L	24	150	350	IP66	YES	C165540000	R932008749

Starting Relay **High Performance** (silver plate contact) (Pict. 2)

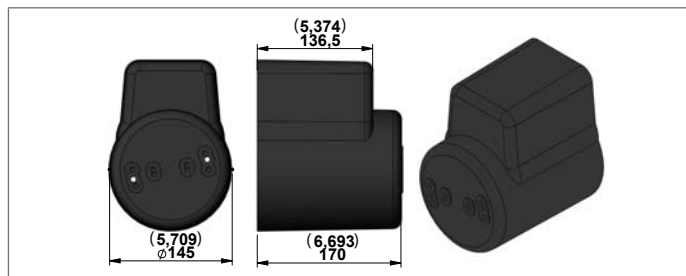
Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
C	12	150	350	IP54	NO	C165524000	R932000690
E	24	150	350	IP54	NO	C165525000	R932000691

Kit Motor + Relay



Motor + Relay	Type	Material Number
C190+relay 12V STANDARD performance	K396812190PSCUF	R930034093
C190+relay 12V HIGH performance	K396812190C	R930034094
C191+relay 12V STANDARD performance	K396812191PSCUF	R930034095
C191+relay 12V HIGH performance	K396812191C	R930034097
C192+relay 24V STANDARD performance	K396824192PSCUF	R930035261
C192+relay 24V STANDARD performance UL certified	K396824192PSUL	R930034098
C192+relay 24V HIGH performance	K396824192E	R930034101
C193+relay 24V STANDARD performance	K396824193PSCUF	R930034102
C193+relay 24V STANDARD performance UL certified	K396824193PSUL	R930035112
C193+relay 24V HIGH performance	K396824193E	R930035252

Plastic Protection

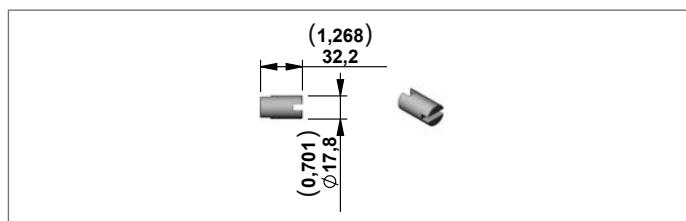


Code	Type	Material Number
0	Without Protection -	-
1	With Protection	K229701000 R932002246

Kit for assembly plastic protection

Type	Material Number
K01K211565000	R930059147

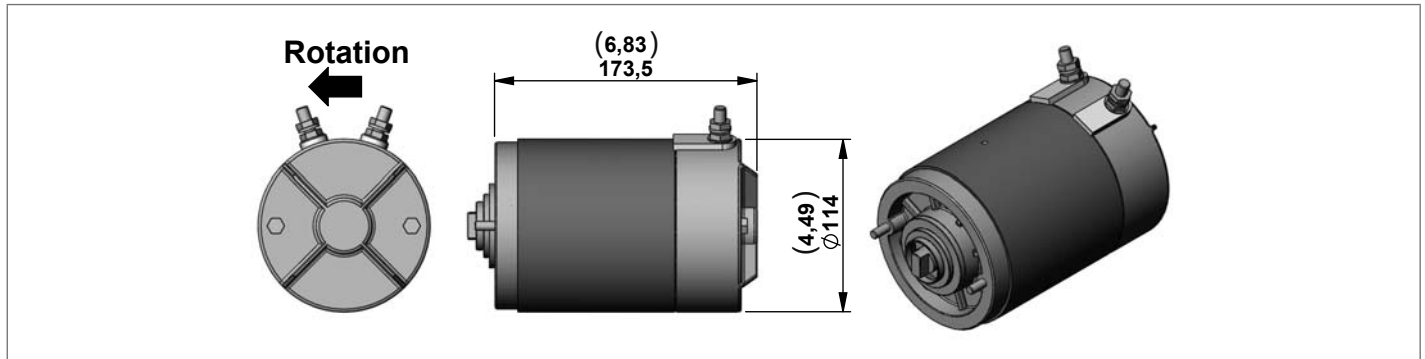
Junction Elements for D.C. Electric Motor



Junction Elements for manifolds **ME** series

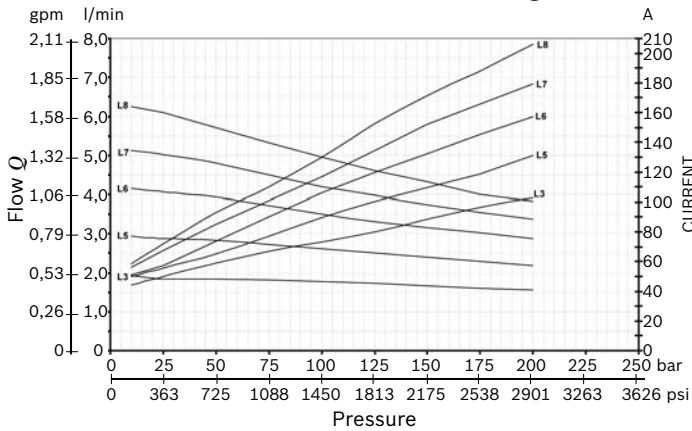
Code	Type	Material Number
E31	K01K3970TR008	R932001907

D.C. Electric Motors High Performance

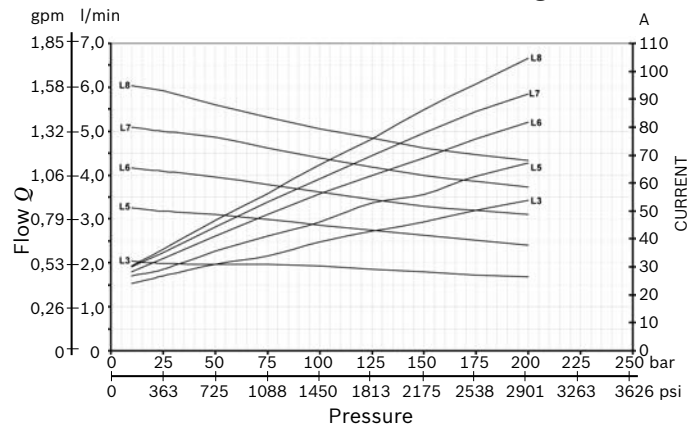


Code	Voltage [V]	Power [W]	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C91	12	1600	7,5% 3 min	NO	NO	IP 54	C162090000	R932000272
C102	12	1600	7,5% 3 min	YES	NO	IP 54	C1620S1002	R932000201
C92	24	2200	4,5% 1,2 min	NO	NO	IP 54	C162091000	R932000273
C103	24	2200	4,5% 1,2 min	YES	NO	IP 54	C1620S1003	R932000202

Electric Motor C91-C102 (12V - 1600W) Diagrams



Electric Motor C92-C103 (24V - 2200W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
150	5,5	12%
200	3,5	8%
250	2	6%
300	1,5	4%
350	1	3%

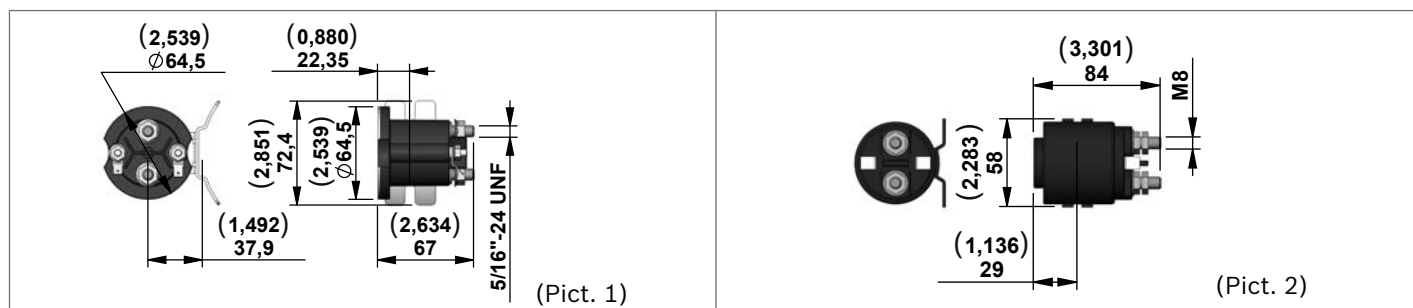
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	5	12%
100	3	7%
125	1,8	5%
150	1	4%
175	0,7	2,5%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



Starting Relay **Standard Performance** (Pict. 1)

Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693

Starting Relay **High Performance** (silver plate contact) (Pict. 2)

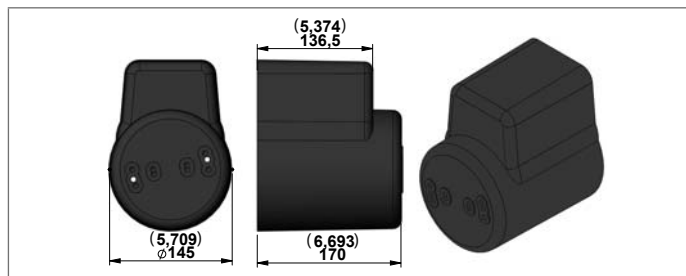
Code	Voltage [V]	Nominal Current [A]	Short time Current [A]	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
C	12	150	350	IP54	NO	C165524000	R932000690
E	24	150	350	IP54	NO	C165525000	R932000691

Kit Motor + Relay



Motor + Relay	Type	Material Number
C91+relay 12V STANDARD performance	K39681291PSCUF	R932007960
C91+relay 12V HIGH performance	K39681291CF	R932002749
C102+relay 12V STANDARD performance	K396812102PSCUF	R932007969
C102+relay 12V HIGH performance	K396812102CF	R932002715
C92+relay 24V STANDARD performance	K39682492PSCUF	R932007961
C92+relay 24V HIGH performance	K39682492EF	R932002818
C103+relay 24V STANDARD performance	K396824103PSCUF	R932007968
C103+relay 24V HIGH performance	K396824103EF	R932002771

Plastic Protection

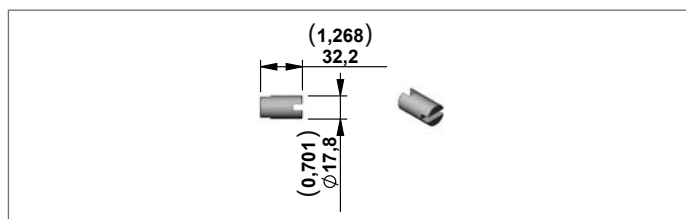


Code	Type	Material Number
0	Without Protection -	-
1	With Protection	K229701000 R932002246

Kit for assembly plastic protection

Type	Material Number
K01K211518000	R932009439

Junction Elements for D.C. Electric Motor

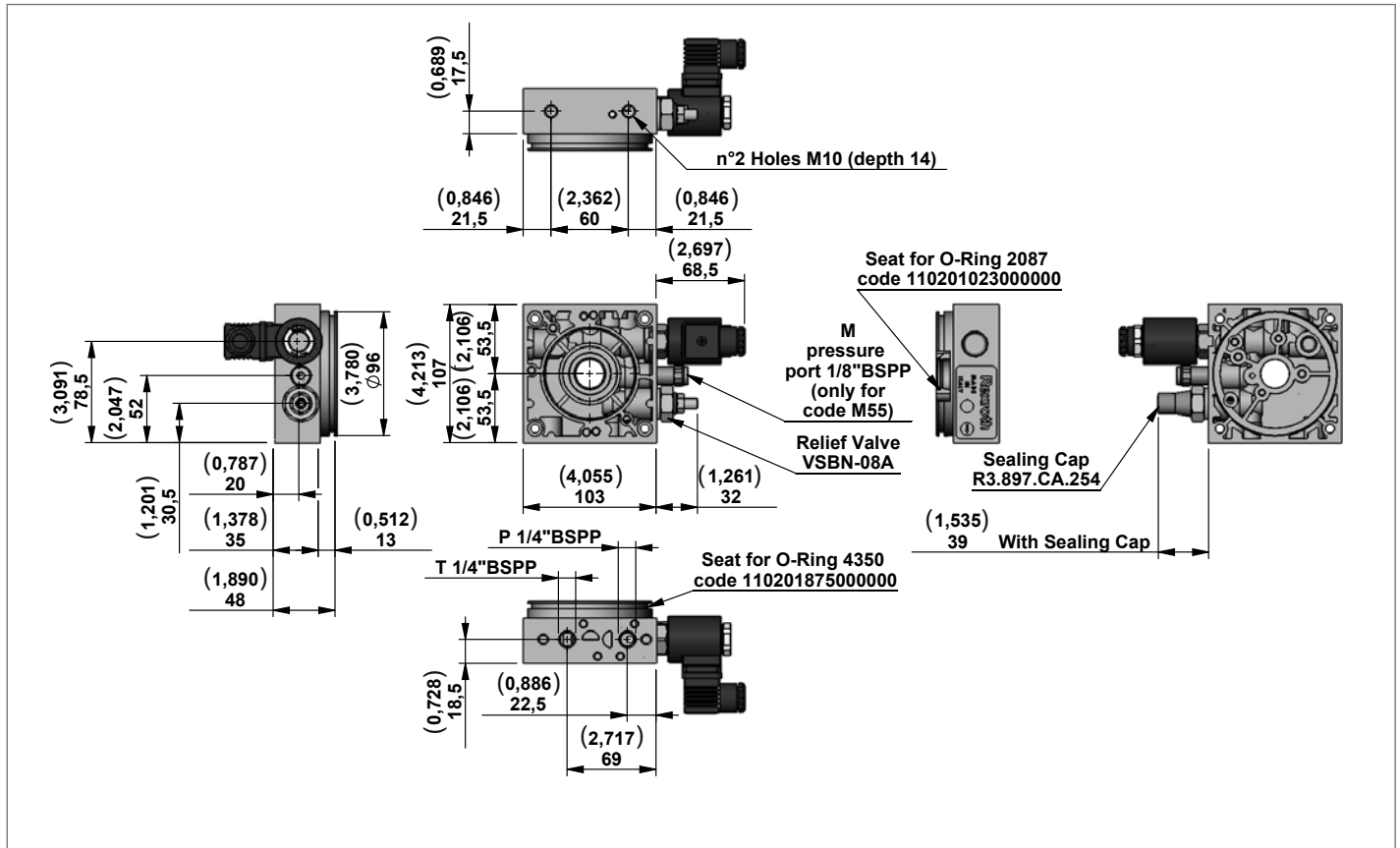


Junction Elements for manifolds **ME** series

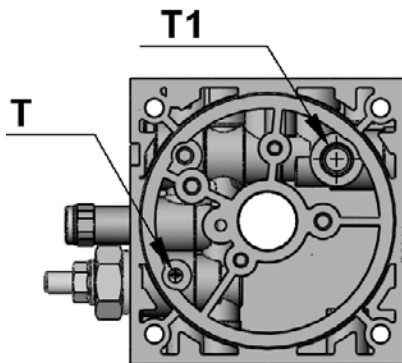
Code	Type	Material Number
E31	K01K3970TR008	R932001907

Central Manifold ME

M52 - M55

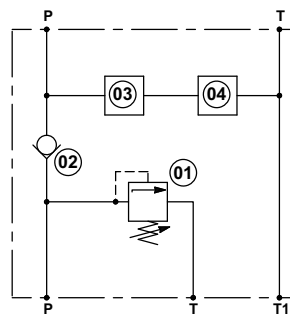


View Manifold Tank side

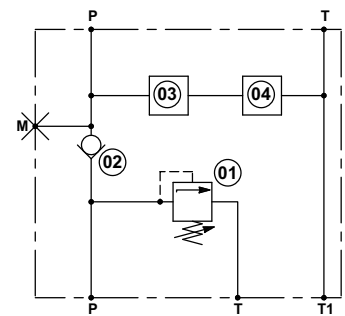


Manifold Hydraulic Diagram

M52



M55

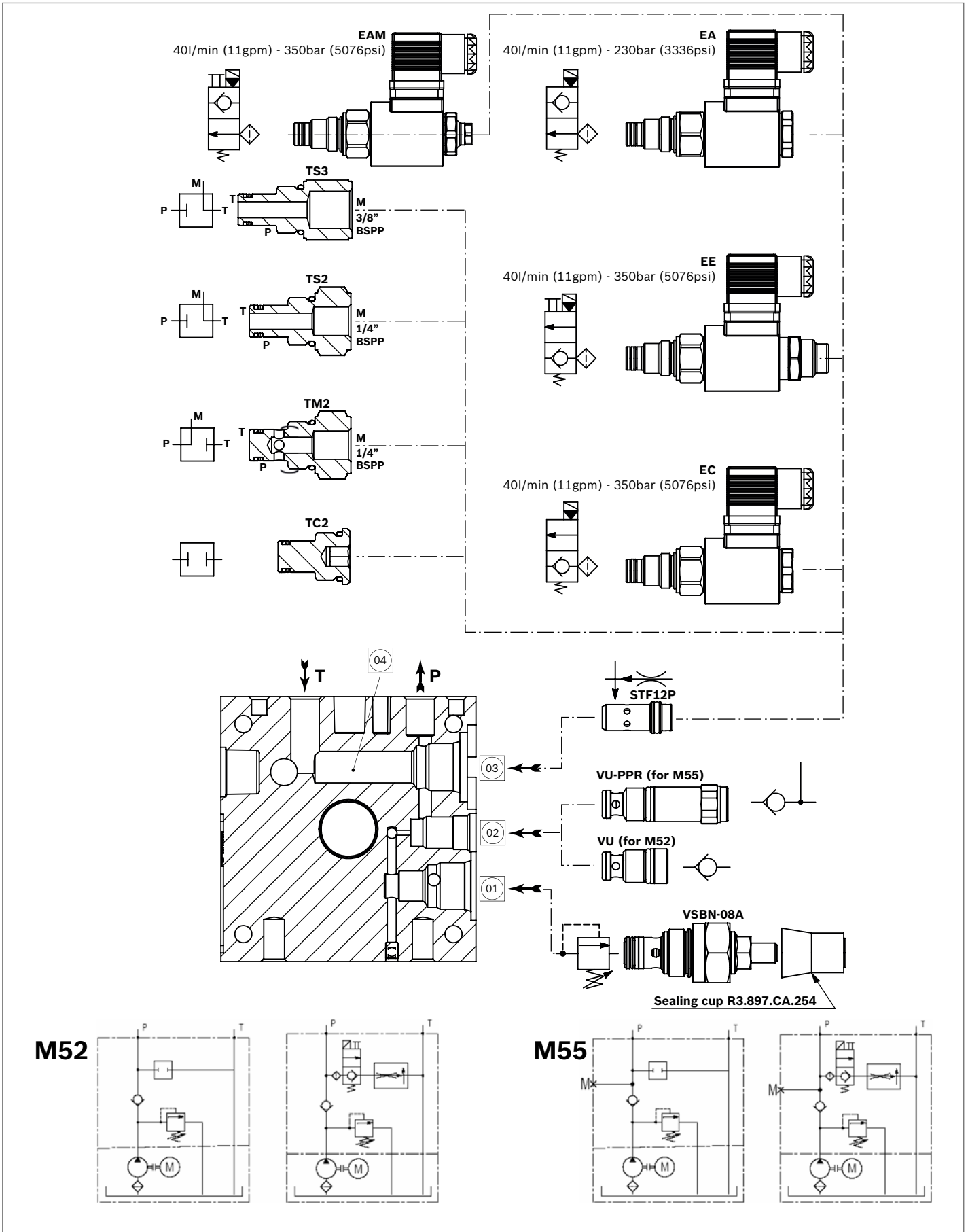


M52

Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M52/05	10-70 (145-1015)	452A000	R932008635
M52/10	35-140 (508-2030)	452B000	R932008636
M52/20	105-210 (1523-3046)	452C000	R932008637
M52/35	175-350 (2538-5076)	452D000	R932008638

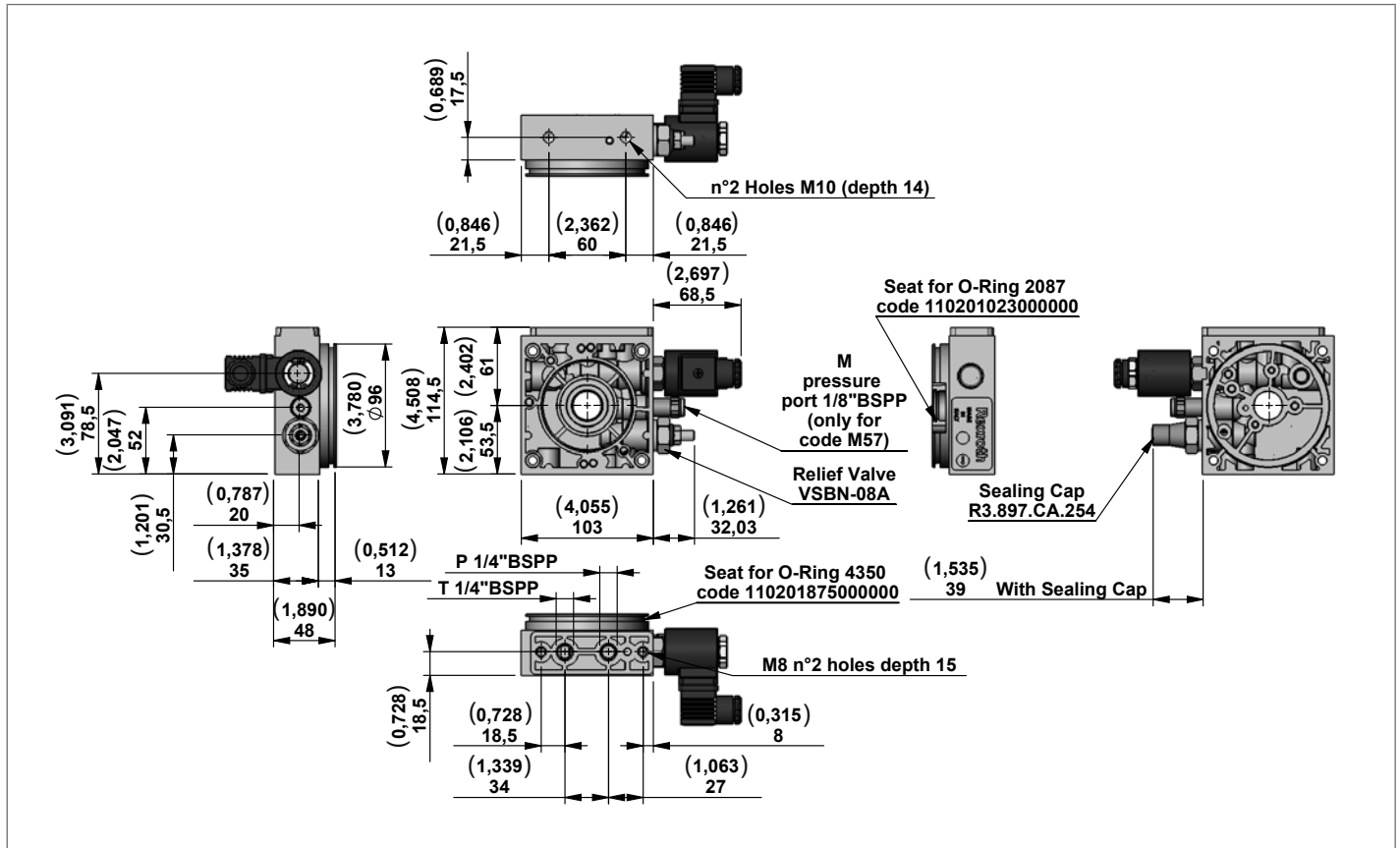
M55

Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M55/05	10-70 (145-1015)	455A000	R932008639
M55/10	35-140 (508-2030)	455B000	R932008640
M55/20	105-210 (1523-3046)	455C000	R932008641
M55/35	175-350 (2538-5076)	455D000	R932008642

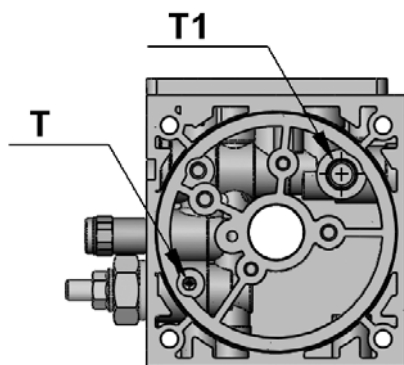


Central Manifold ME

M53 - M57



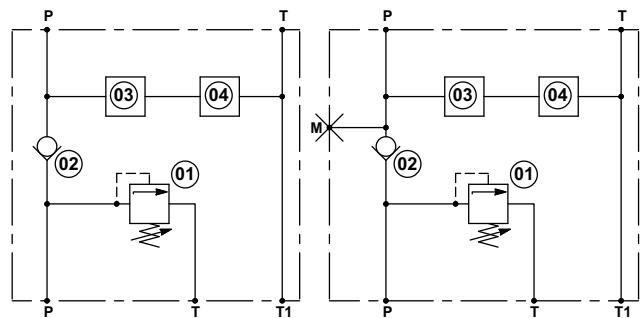
View Manifold Tank side



Manifold Hydraulic Diagram

M53

M57

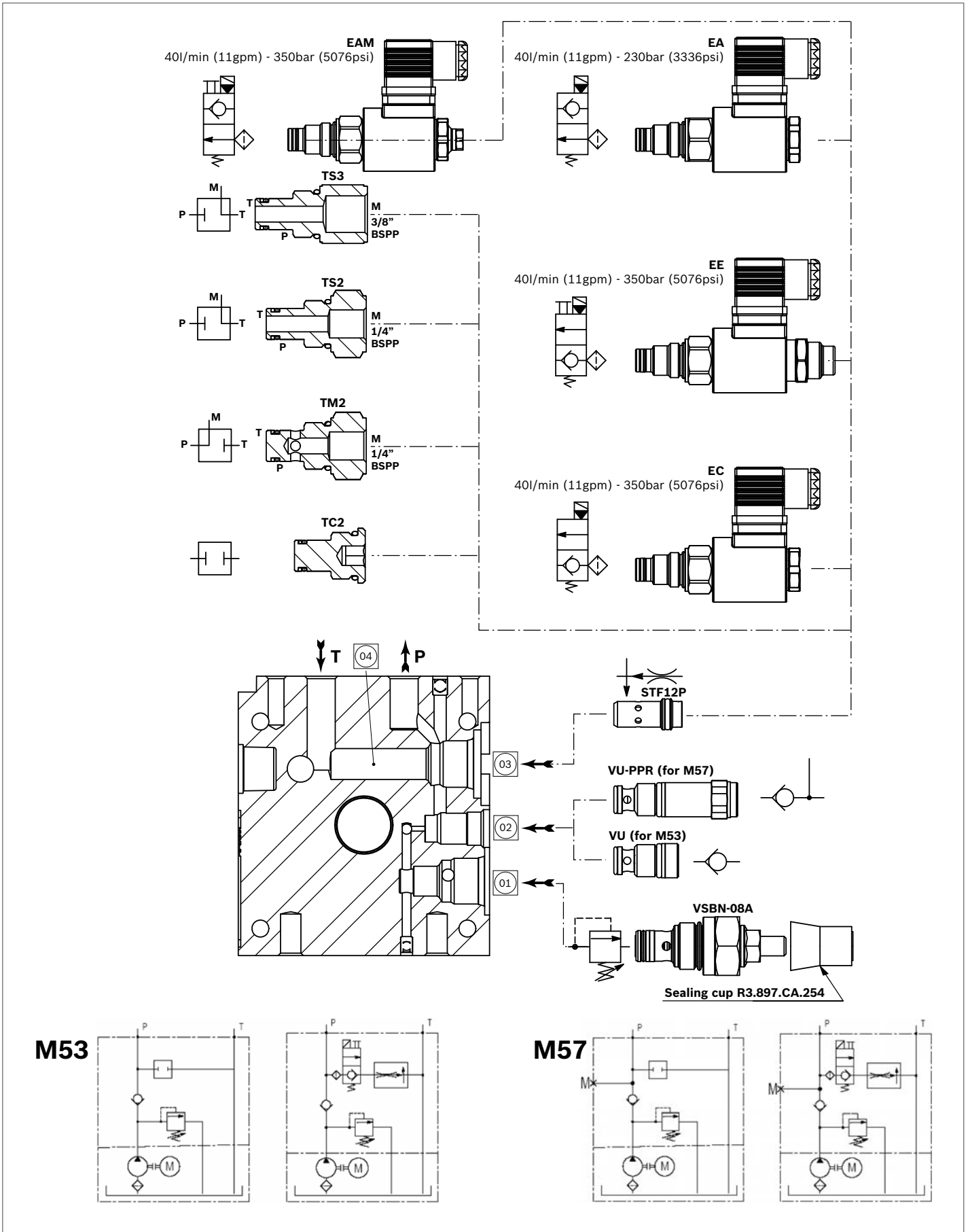


M53

Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M53/05	10-70 (145-1015)	453A000	R932008627
M53/10	35-140 (508-2030)	453B000	R932008628
M53/20	105-210 (1523-3046)	453C000	R932008629
M53/35	175-350 (2538-5076)	453D000	R932008630

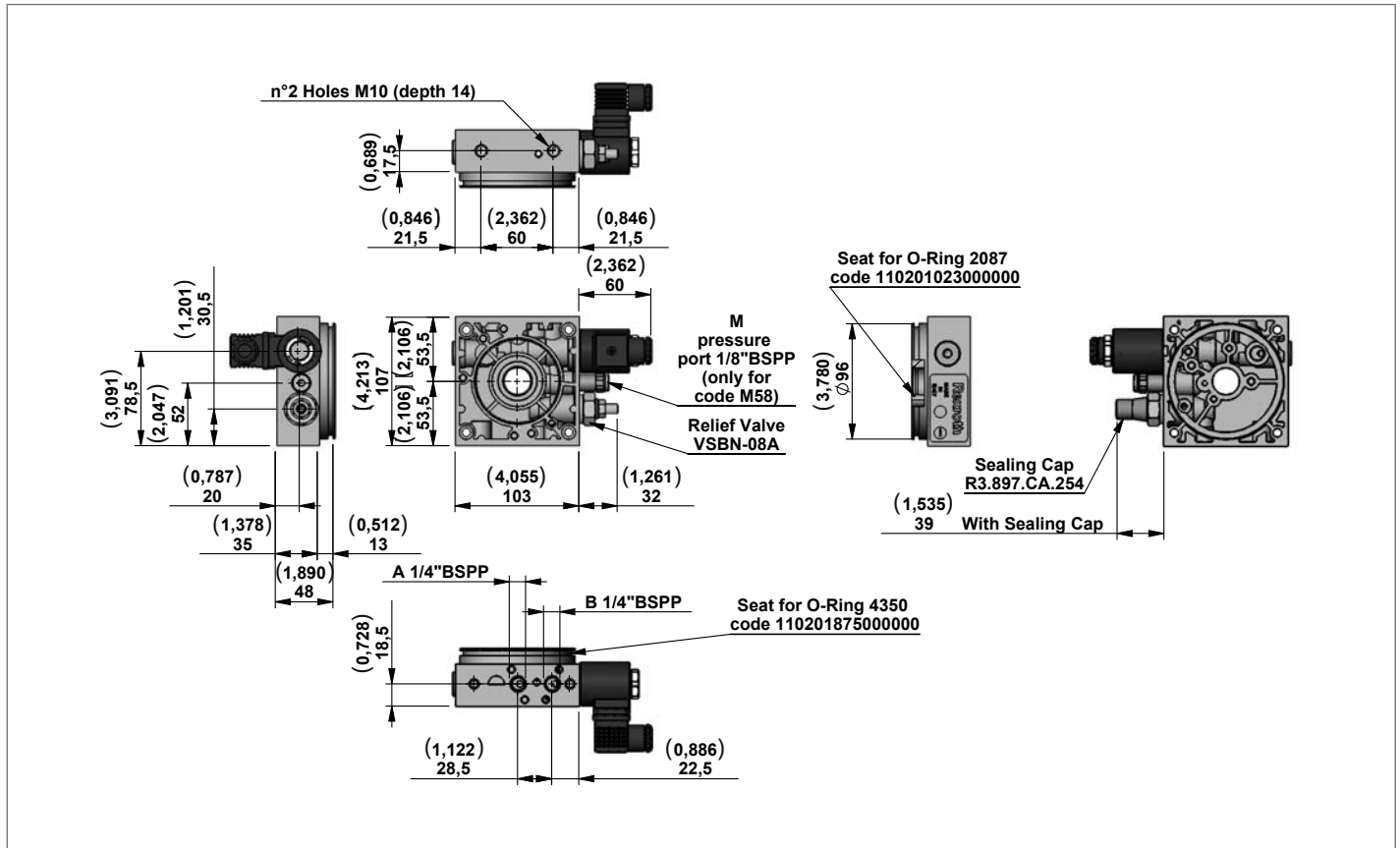
M57

Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M57/05	10-70 (145-1015)	457A000	R932008631
M57/10	35-140 (508-2030)	457B000	R932008632
M57/20	105-210 (1523-3046)	457C000	R932008633
M57/35	175-350 (2538-5076)	457D000	R932008634

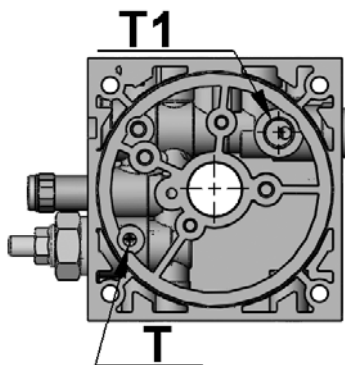


Central Manifold ME

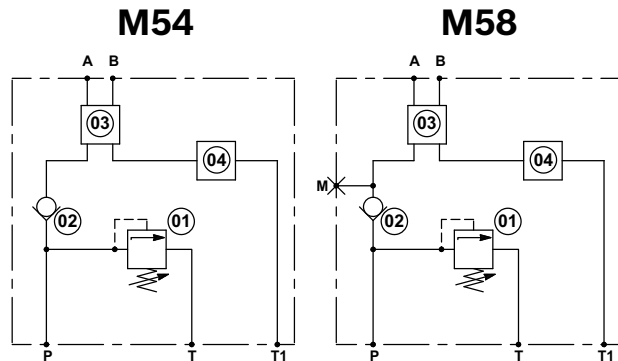
M54 - M58



View Manifold Tank side



Manifold Hydraulic Diagram

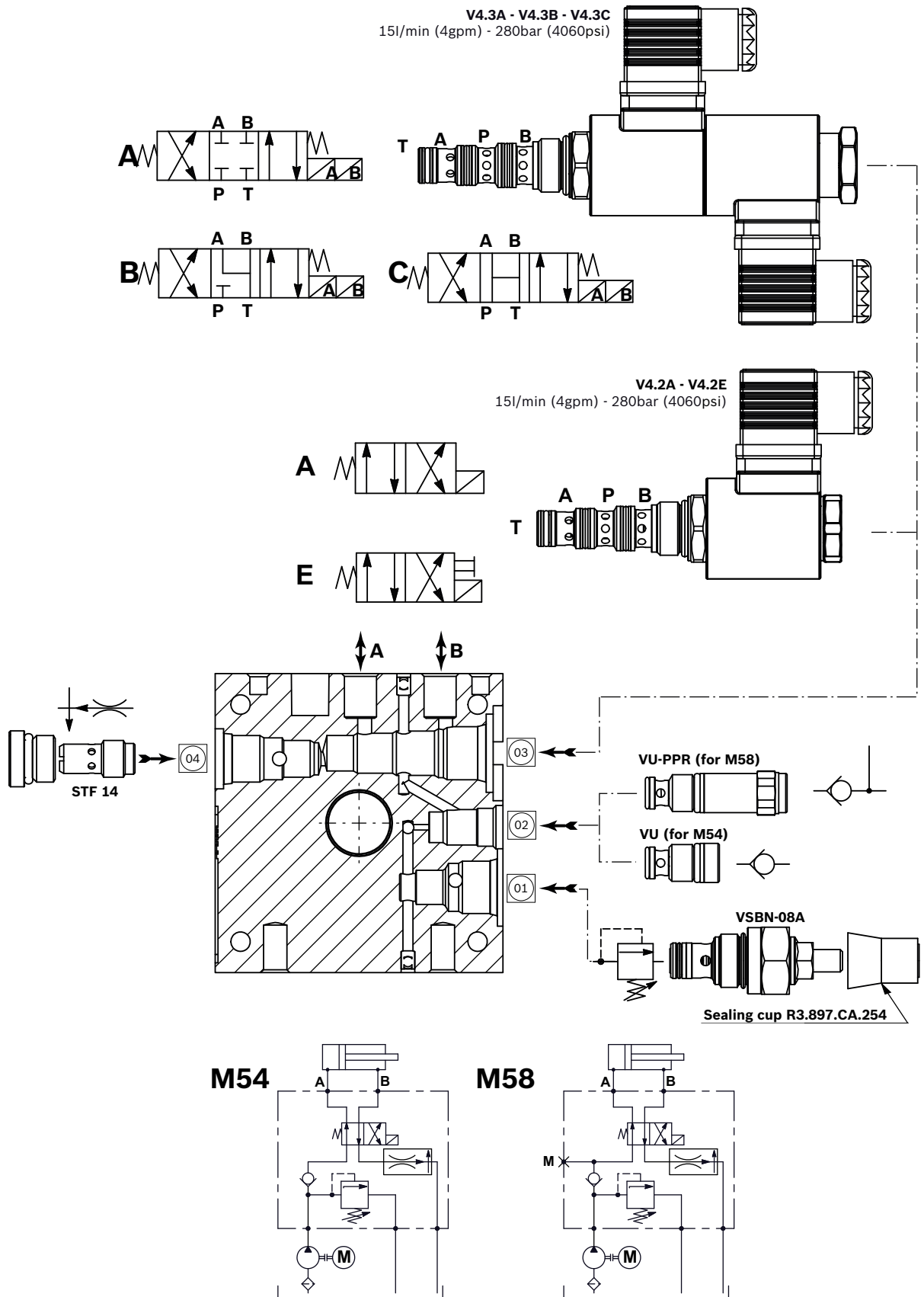


M54

Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M54/05	10-70 (145-1015)	454A000	R932008619
M54/10	35-140 (508-2030)	454B000	R932008620
M54/20	105-210 (1523-3046)	454C000	R932008621
M54/35	175-350 (2538-5076)	454D000	R932008622

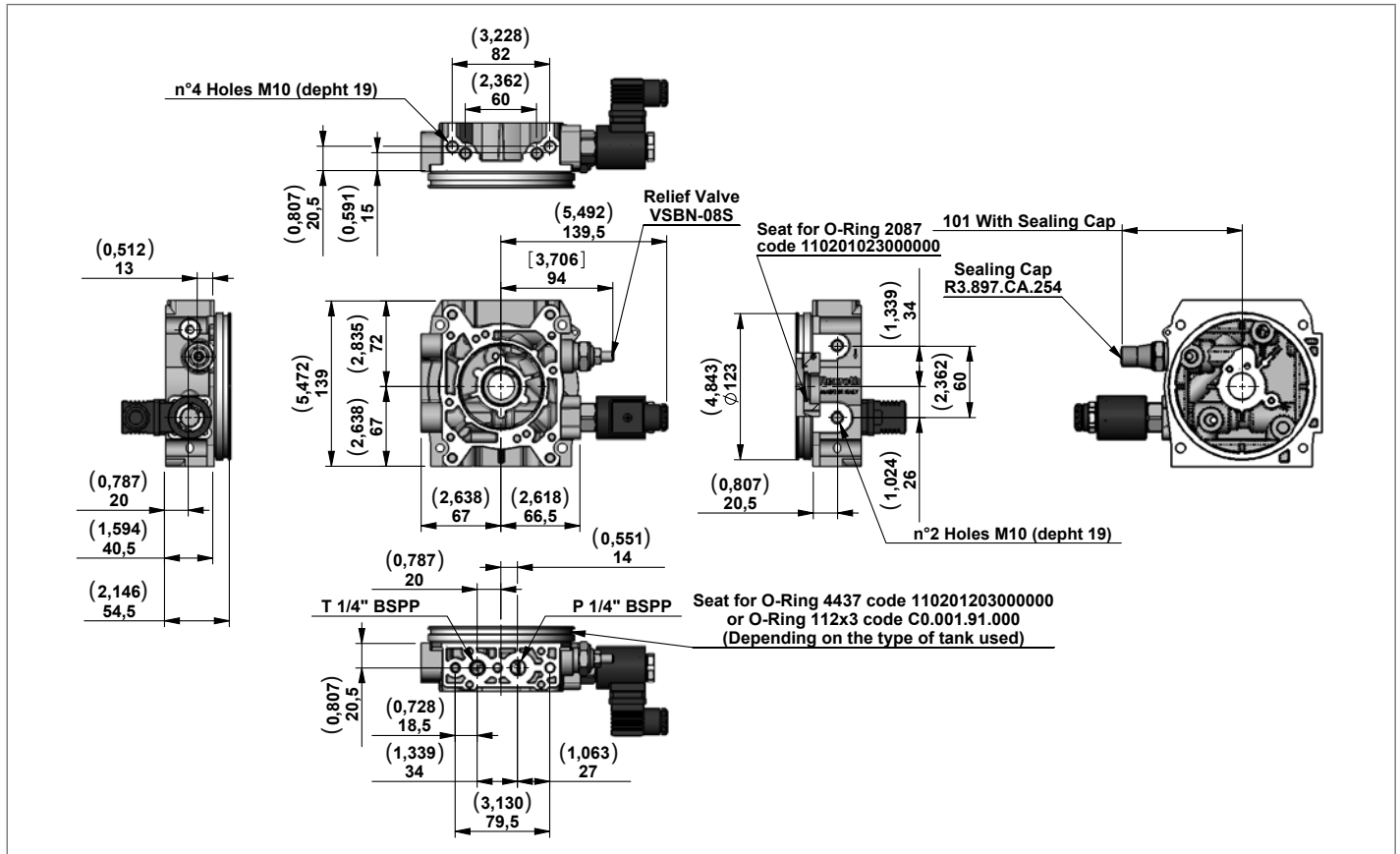
M58

Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M58/05	10-70 (145-1015)	458A000	R932008623
M58/10	35-140 (508-2030)	458B000	R932008624
M58/20	105-210 (1523-3046)	458C000	R932008625
M58/35	175-350 (2538-5076)	458D000	R932008626

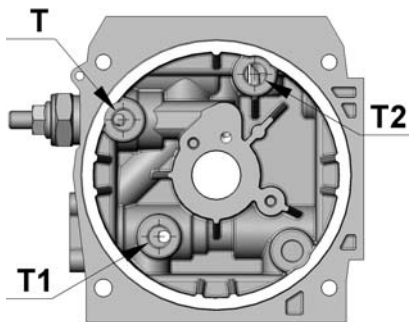


Central Manifold ME

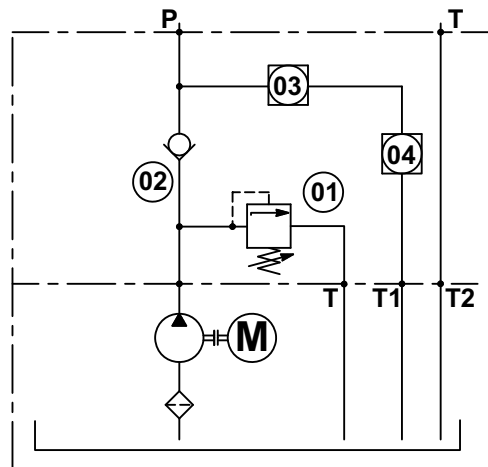
A16



View Manifold Tank side

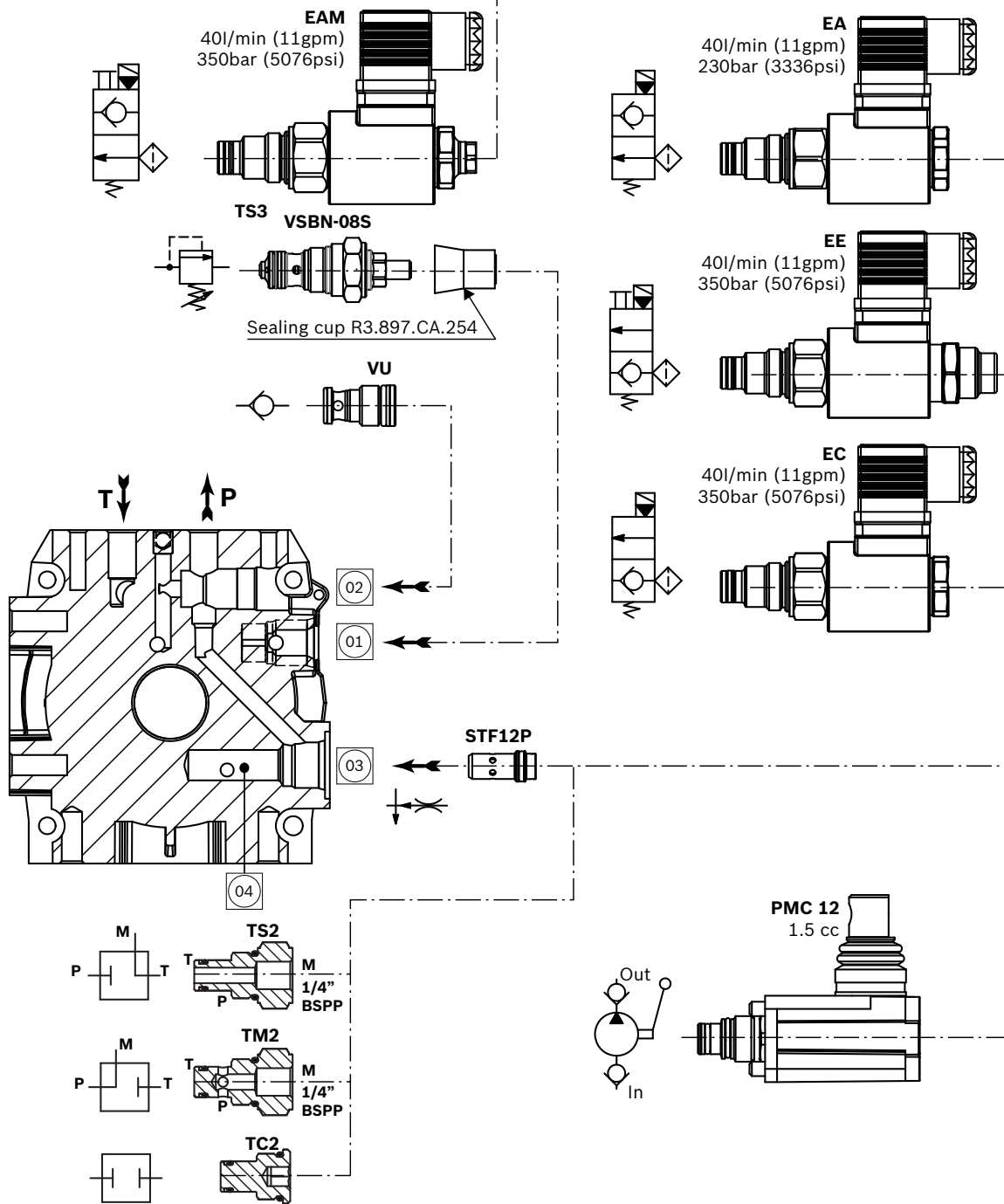


Manifold Hydraulic Diagram



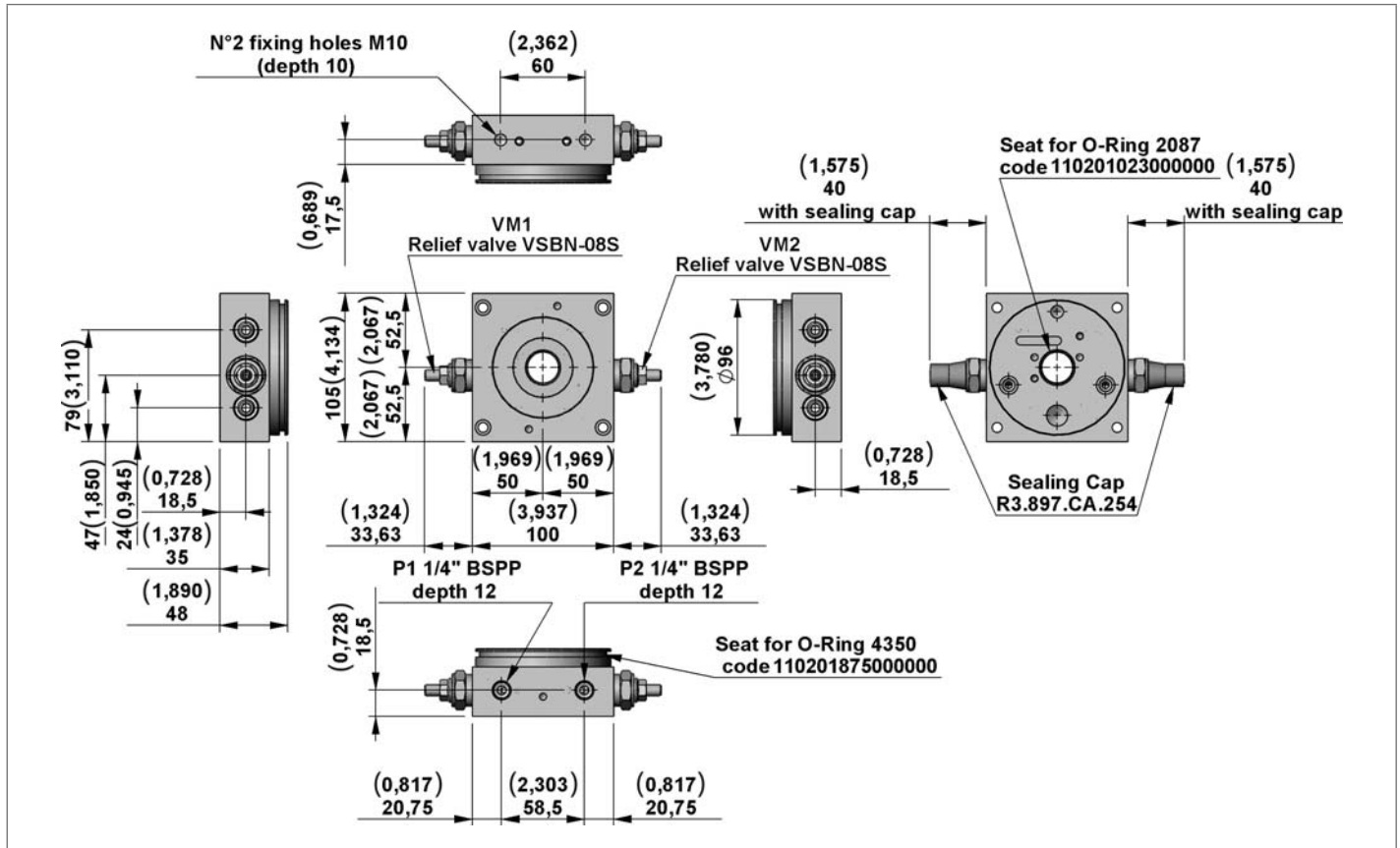
A16

Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
A16/05	10-55 (145-798)	116A000A	R930052174
A16/10	35-100 (508-1450)	116B000A	R930052184
A16/20	90-250 (1305-3626)	116C000	R932008693

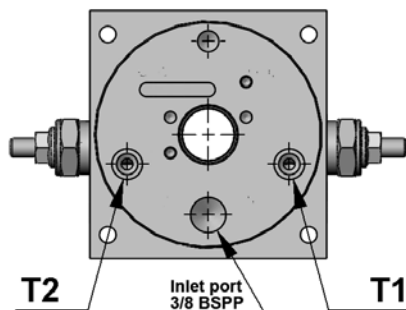


Central Manifold MR

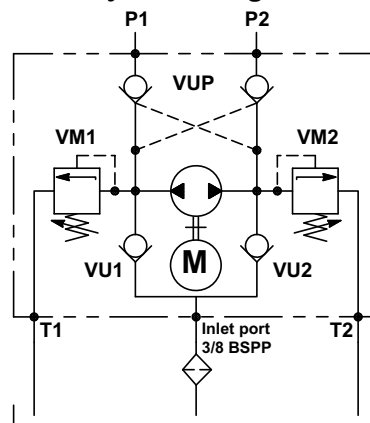
10



View Manifold Tank side



Manifold Hydraulic Diagram



10

Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
A10/05	10-55 (145-798)	810A000A	R930053852
A10/10	35-100 (508-1450)	810B000A	R930053853
A10/20	90-250 (1305-3626)	810C000	R932009780

Note

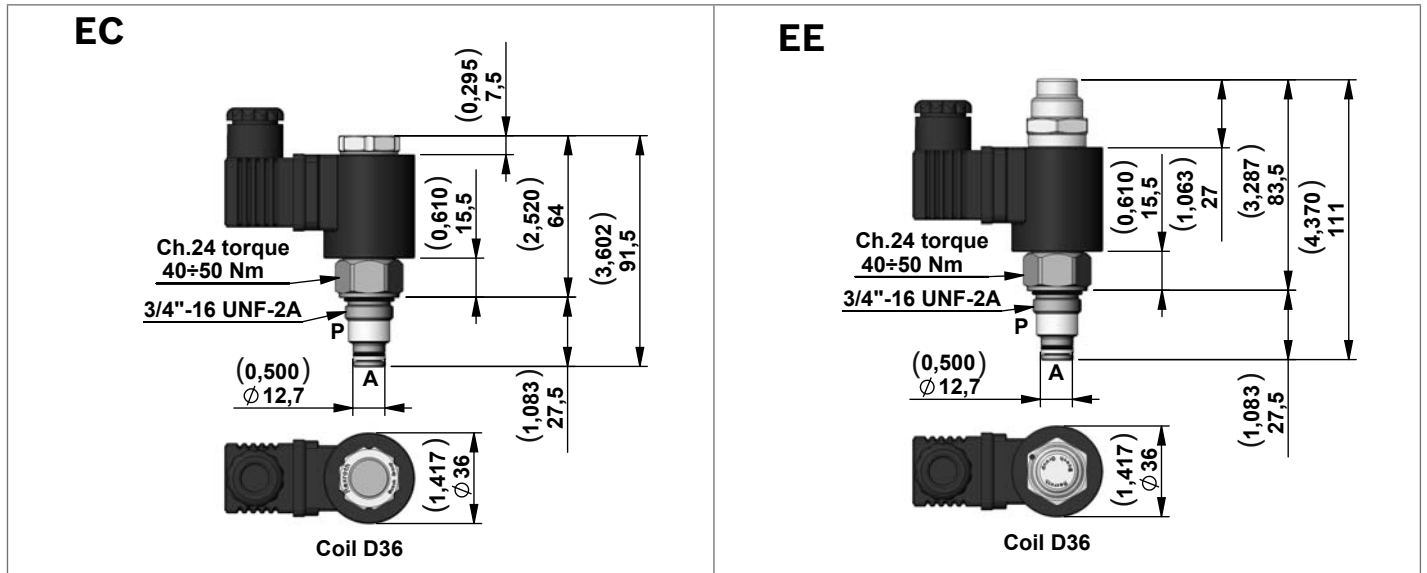
In this central manifold use only reversible pump "R" series.

Note

In the central manifold MR series is possible connect only the following motors:
DC motor code: C177 - C178 - C179 - C180 - C181 - C182
AC motor from size IEC56 to size IEC71.

Built-in Valve

EC-EE Series



2 Way Pilot Operated Solenoid Valves, Normally Closed for D.C. current

Code	Type	Material Number
EC	OD150718A000000	R930058338
EE	OD150718DP00000	R930058529

Description

This is a standard 2 way pilot operated valves poppet style.

- **Only for D.C. current.**
- Internal leakage: see technical data.
- Minimum operating voltage: 90% of nominal.
- Screen on P 300 Micron.
- Screw Type Emergency on EE.

Valve symbol

Code	Symbol	Operating features with solenoid	
		De-energized	Energized
EC		P ◊ A	P <-> A
EE		P ◊ A	P <-> A

Technical Data

General		
Operating time	ms	Opening 50 Closing 100
Max. working pressure	bar (psi)	350 (5076)
Max. flow	l/min (gpm)	40 (11)

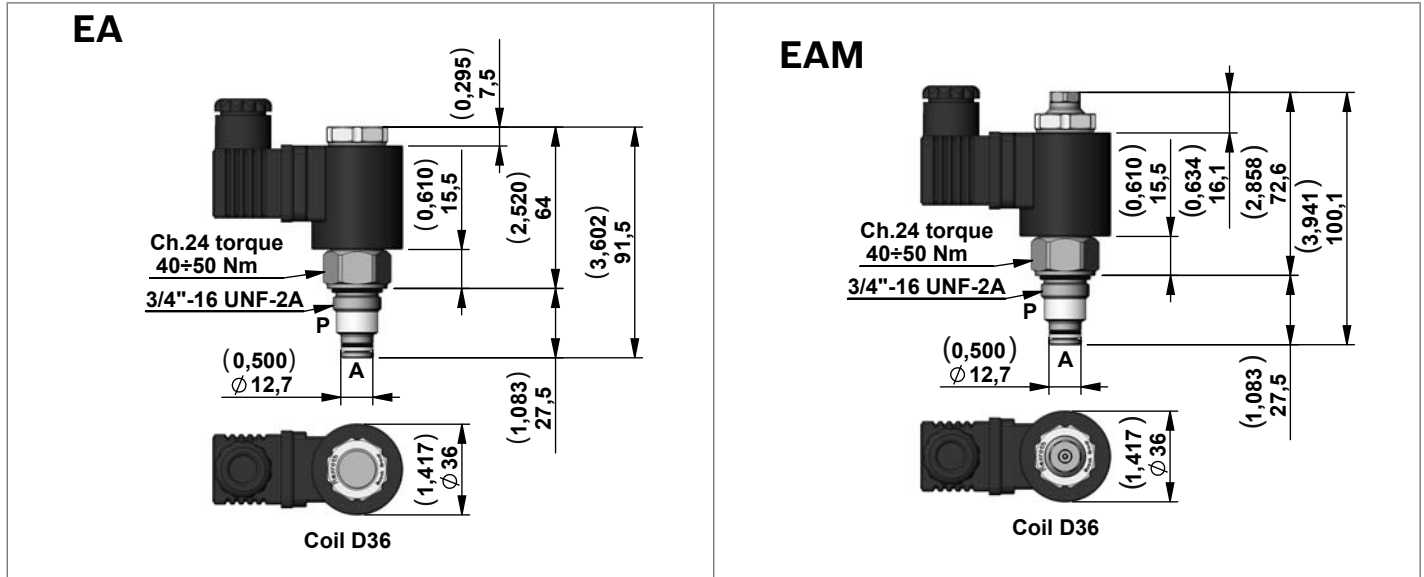
D36 Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
48 Volts D.C.
96 Volts D.C.
205 Volts D.C.

Note

For more info see Data Sheet RE18323-25

EA-EAM Series



2 Way Pilot Operated Solenoid Valves, Normally Open

Code	Type	Material Number
EA	OD150818A000000	R930058337
EAM	OD150818B000000	R930058340

Technical Data

General		
Max. working pressure	bar (psi)	350 (5000)
Max. flow	l/min (gpm)	40 (11)

Description

This is a standard 2 way pilot operated valves poppet style.

- **Only for D.C. current.**
- Internal leakage: see technical data.
- Minimum operating voltage: 90% of nominal.
- Screen on P 300 Micron.
- Push Type Emergency on EAM.

Valve symbol

Code	Symbol	Operating features with solenoid	
		De-energized	Energized
EA		P -> A	P ◊ A
EAM		P -> A	P ◊ A

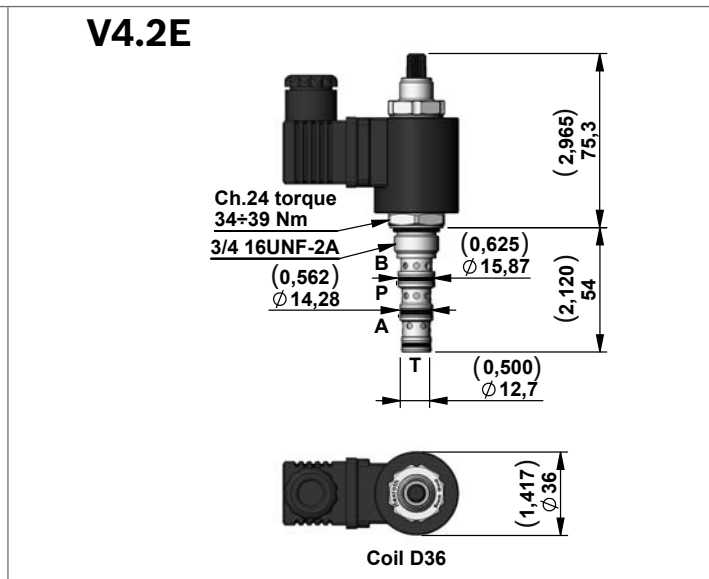
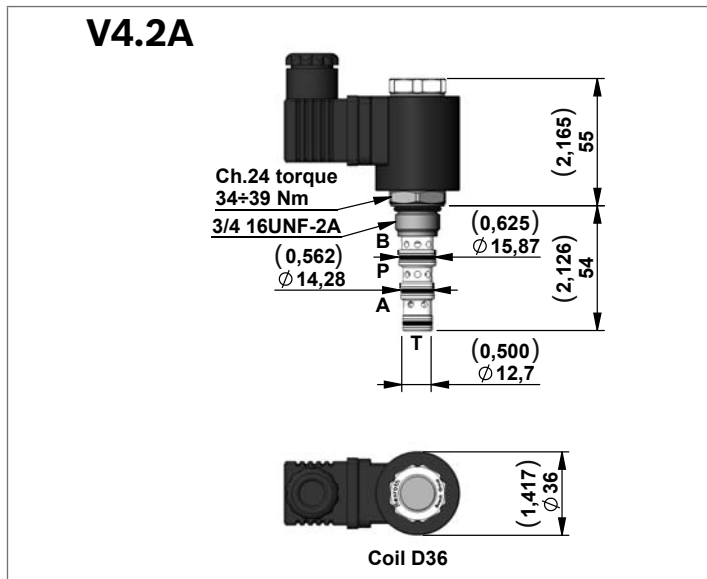
D36 Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
48 Volts D.C.
96 Volts D.C.
205 Volts D.C.

Note

For more info see Data Sheet RE18323-26

V4.2 Series



4 Way 2 Position Solenoid Valves Spool Type

Code	Type	Material Number
V4.2A	OD144058A000000	R930058339
V4.2E	OD144058D000000	R930058713

Technical Data

General		
Max. working pressure	bar (psi)	280 (4060)
Max. flow	l/min (gpm)	20 (5)

Description

4 Way 2 Position Solenoid Valves Spool Type

- **Only for D.C. current.**
- Minimum operating voltage: 90% of nominal.
- Screw Type Emergency on V4.2E.

Valve symbol

Code	Symbol	Operating features with solenoid	
		De-energized	Energized
V4.2A		P ↔ A B ↔ T	P ↔ B A ↔ T
V4.2E		P ↔ A B ↔ T	P ↔ B A ↔ T

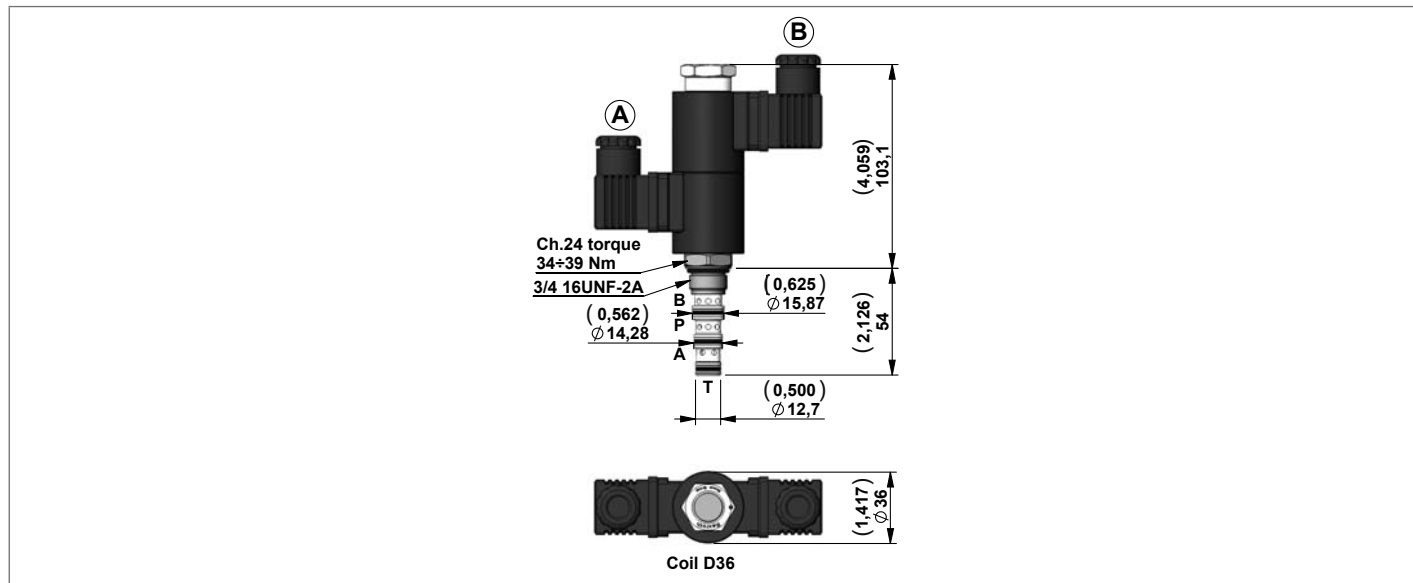
D36 Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
48 Volts D.C.
96 Volts DC
205 Volts DC

Note

For more info see Data Sheet RE18324-09

V4.3 Series



4 Way 3 Position Solenoid Valves Spool Type

Code	Type	Material Number
V4.3A	OD143158A000000	R930063202
V4.3B	OD143258A000000	R930063203
V4.3C	OD143458A000000	R930063205

Technical Data

General		
Max. working pressure	bar (psi)	280 (4060)
Max. flow	l/min (gpm)	15 (4)

Description

4 Way 3 Position Solenoid Valves Spool Type

- **Only for D.C. current.**

- Minimum operating voltage: 90% of nominal.

Valve symbol

Code	Symbol	Operating features with solenoid		
		Energized A	De-energized	Energized B
V4.3A		P → B A → T	P P A ↔ A B B T T	P → A B → T
V4.3B		P → B A → T	A → T B → T P ∅	P → A B → T
V4.3C		P → B A → T	P P A ↔ A B B T T	P → A B → T

D36 Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
48 Volts D.C.
96 Volts DC
205 Volts DC

Note

For more info see Data Sheet RE18324-10

Coils - Connectors**Coil D36 - CLASS H - 20 W****Technical Data**

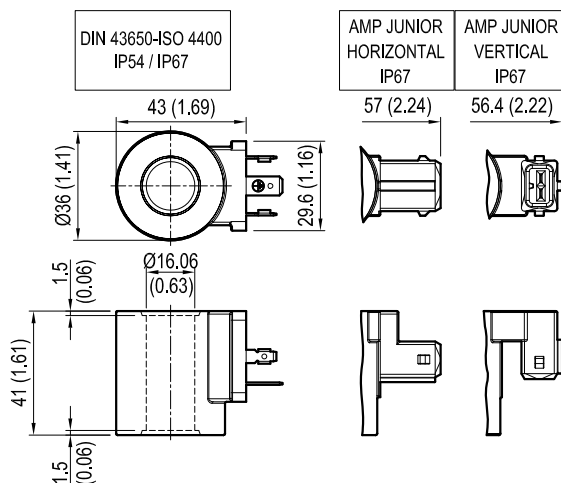
Weight: 0.18 kg (0.40 lbs)

Power: 20 W

Heat insulation Class H: 180°C (356°F)

Ambient temperature range: -30/+90°C (-22/+194°F)

Further performance limits in terms of temperature and voltage fluctuations: please refer to data sheet of the solenoid valve where D36 coil is mounted.

**Coils D36 DIN 43650**

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OB	12 Volts D.C.	H (180 °C) (356 °F)	OD02360130OB00	R901393412
OC	24 Volts D.C.	H (180 °C) (356 °F)	OD02360130OC00	R901393577
OD	48 Volts D.C.	H (180 °C) (356 °F)	OD02360130OD00	R901394117
OU*	96 Volts D.C.	H (180 °C) (356 °F)	OD02360130OU00	R901394229
AH*	205 Volts D.C.	H (180 °C) (356 °F)	OD02360130AH00	R901394231

Note

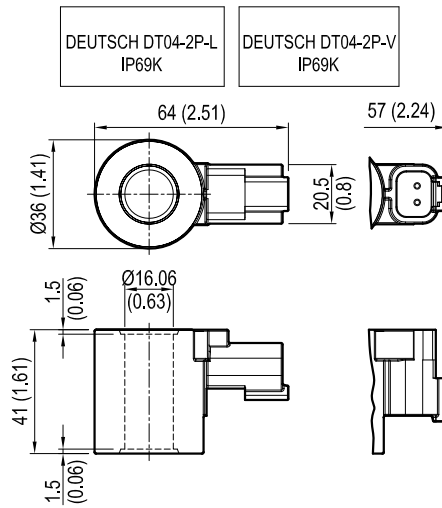
* OU and AH versions especially designed in cases of AC supply voltage (respectively for 110AC and 220 AC) to be used in conjunction with connector with circuit including wave rectifier. Ambient temperature range for OU and AH versions: -30°C / + 75°C

Coils D36 AMP H

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBA	12 Volts D.C.	H (180 °C) (356 °F)	OD02360730OB00	R901435508
OCA	24 Volts D.C.	H (180 °C) (356 °F)	OD02360730OC00	R901435506

Coils D36 AMP V

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBAV	12 Volts D.C.	H (180 °C) (356 °F)	OD0236073POB00	R901394950
OCAV	24 Volts D.C.	H (180 °C) (356 °F)	OD0236073POC00	R901394955

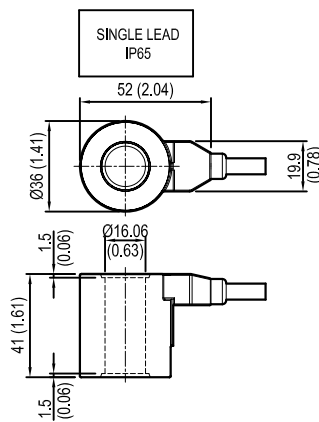


Coils D36 Deutsch L

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBDL	12 Volts D.C.	H (180 °C) (356 °F)	OD02362030OB00	R901435524
OCDL	24 Volts D.C.	H (180 °C) (356 °F)	OD02362030OC00	R901435526

Coils D36 Deutsch V

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBD	12 Volts D.C.	H (180 °C) (356 °F)	OD0236203POB00	R901394391
OCD	24 Volts D.C.	H (180 °C) (356 °F)	OD0236203POC00	R901394393



Coils D36 Single Lead

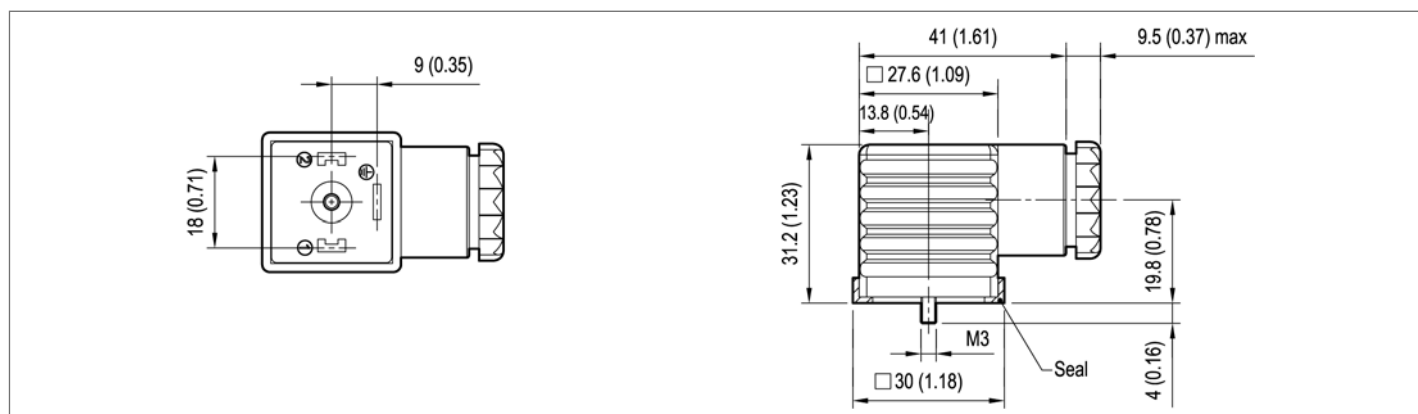
CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBL	12 Volts D.C.	H (180 °C) (356 °F)	OD02360G03OB00	R901435529
OCL	24 Volts D.C.	H (180 °C) (356 °F)	OD02360G03OC00	R901435533

Note

For more info see Data Sheet RE18325-90

CONNECTOR IP67 - EN175000 (DIN 4350-A) / ISO 4400

Ambient temperature - Standard	°C (°F)	- 20 to + 60 (-4 to +140°F)
Type of protection according to DIN 40050		IP67 with cable socket mounted and locked
Operating voltage	V	Choose the proper ordering code according to the circuit
Maximum operating current	Standard	A 16
	With rectifier	A 1
Number of pins		2 + PE
Clamping range for cables having an outer diameter of	mm (inch)	5, up to 10 (0,2 up to 0,4)
Cable entry		Pg9 / Pg11 (unified)
Maximum cable cross-section	mm ² (inch ²)	1.5 (0,002)



Standard Circuit

Code	Colour	Cable entry	Type	Material Number
WC	Without Connector			
CS	black	Pg9 / Pg11	OD01690100000	R934004344
	grey	Pg9 / Pg11	OD01690100003	R934004346

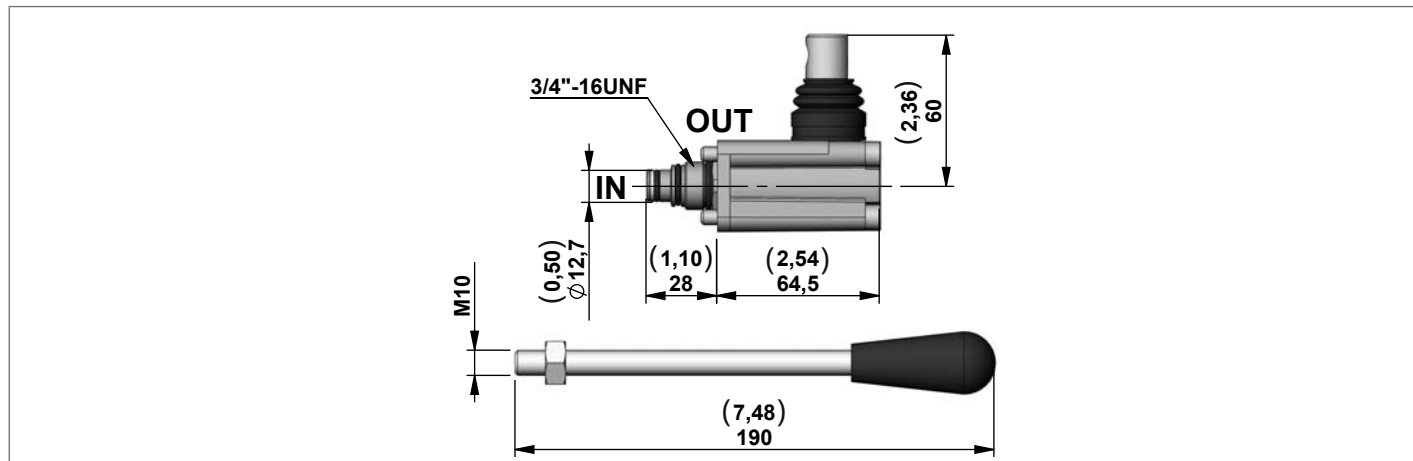
Circuit with VDR + Wave Rectifier

Code	Voltage V		Diode Capacity I max	Colour	Cable entry	Type	Material Number
	AC	DC					
CR	230	/	1A	black	Pg9 / Pg11	OD016902010Z00	R934004353

Note

Diode with capacity max 1 Amp.

PMC12 Order Code for Lever (only for manifold code A16)



Type	Material Number
K250113000	R932002448

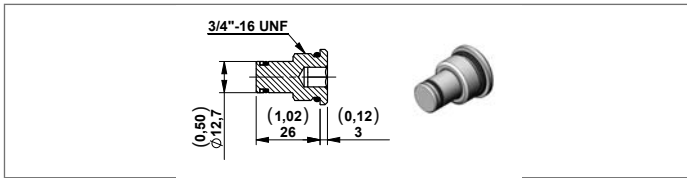
Technical Data

General		
Max. working pressure	bar (psi)	300 (4500)
Displacement	cc	1,5

Hand pump (1.5cc)

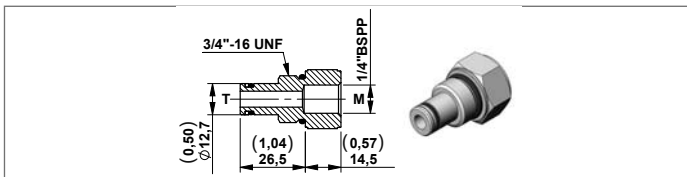
Code	Diagram	Type with lever	Material Number with lever
PMC12		K01V388540LV190	R932009298

Plug for Cavity



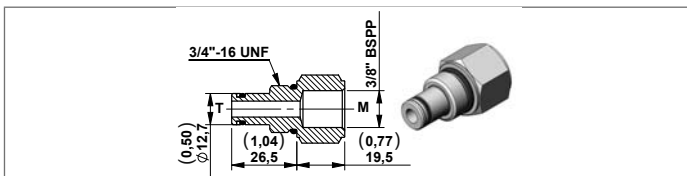
Code	Diagram	Type	Material Number
TC2		R3897TA001	R932003193

1/4" Auxiliary Return Port



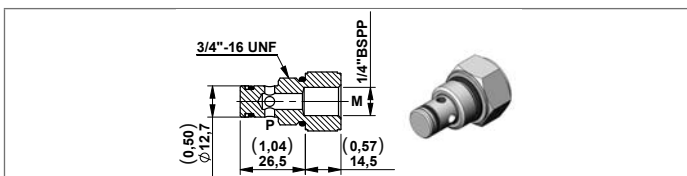
Code	Diagram	Type	Material Number
TS2	"/>	R3897TA304	R932003214

3/8" Auxiliary Return Port



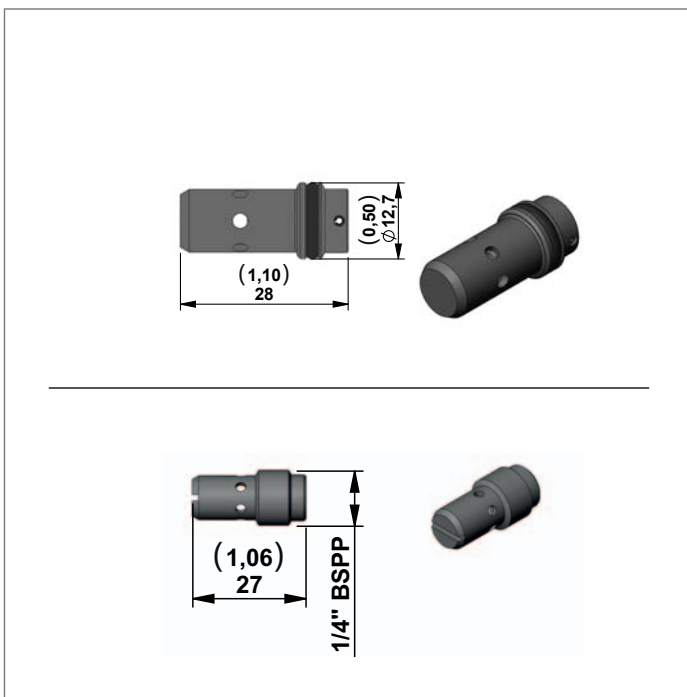
Code	Diagram	Type	Material Number
TS3	"/>	R3897TA147	R932003195

1/4" Auxiliary Pressure Port



Code	Diagram	Type	Material Number
TM2	"/>	R3897TA305	R932003215

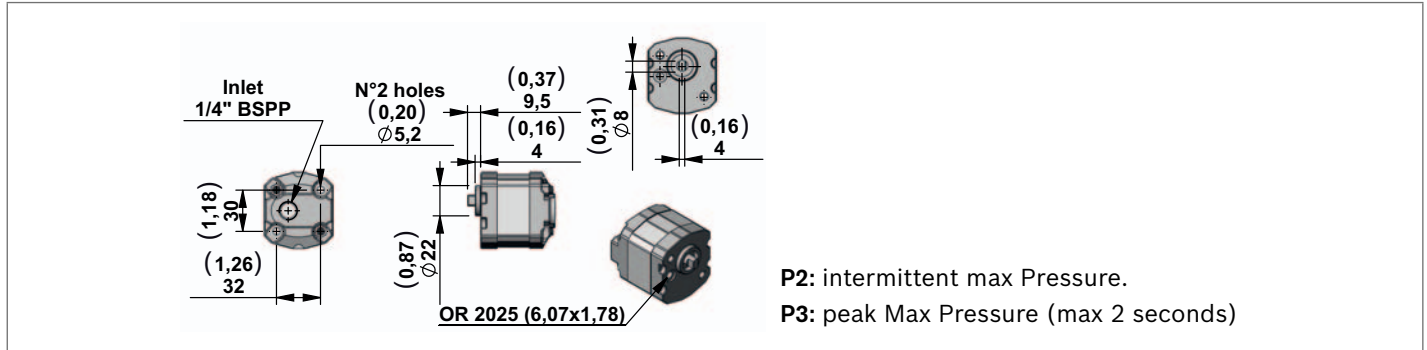
Flow Control Valves Pressure Compensated



Code		l/min (gpm)	Diagram	Type	Material Number
STF12P	A	1 (0,3)		V38953600A	R932003940
	B	2 (0,5)		V38953600B	R932003941
	C	3 (0,8)		V38953600C	R932003942
	D	4 (1,1)		V38953600D	R932003943
	E	5 (1,3)		V38953600E	R932003944
	F	6 (1,6)		V38953600F	R932003945
	G	7 (1,9)		V38953600G	R932003946
	H	8 (2,1)		V38953600H	R932003947
	I	9 (2,4)		V38953600I	R932003948
	L	10 (2,6)		V38953600L	R932003949
STF14	A	1 (0,3)		V38950100A	R932003836
	B	2 (0,5)		V38950100B	R932003837
	C	3 (0,8)		V38950100C	R932003838
	D	4 (1,1)		V38950100D	R932003839
	E	5 (1,3)		V38950100E	R932003840
	F	6 (1,6)		V38950100F	R932003841
	G	7 (1,9)		V38950100G	R932003842
	H	8 (2,1)		V38950100H	R932003843
	I	9 (2,4)		V38950100I	R932003844
	L	10 (2,6)		V38950100L	R932003846

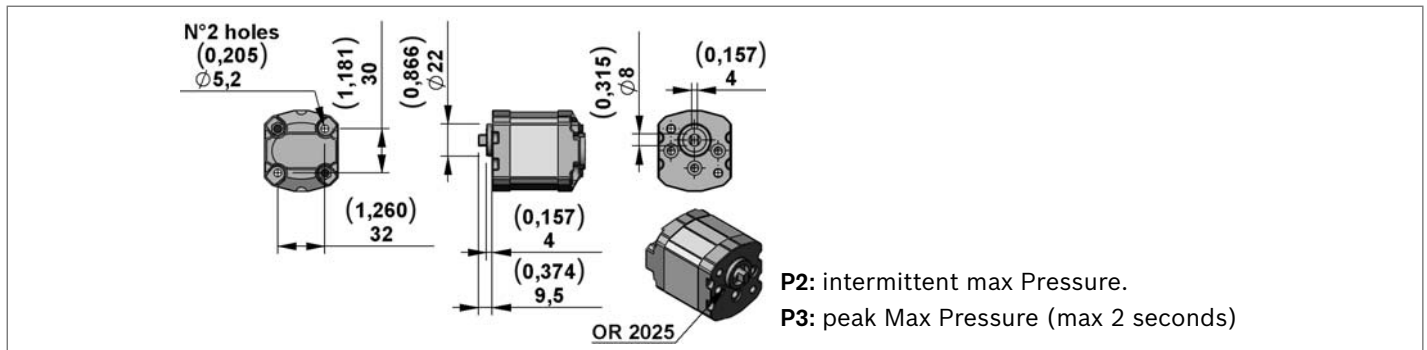
Gear Pumps

Gear Pumps Group 0.5 for ME



Code	Displacement cc/rev	Flow at 1500 rpm l/min (gpm)	P2 bar (psi)	P3 bar (psi)	Type	Material Number
L1	0,18	0,27 (0,07)	190 (2756)	230(3336)	K01CV641L1000	R932007490
L2	0,25	0,37 (0,10)	190 (2756)	230(3336)	K01CV641L200C	R932007491
L3	0,50	0,75 (0,20)	190 (2756)	230(3336)	K01CV641L300C	R932007492
L5	0,75	1,12 (0,30)	190 (2756)	230(3336)	K01CV641L500C	R932007494
L6	1,00	1,50 (0,40)	190 (2756)	230(3336)	K01CV641L600C	R932007495
L7	1,25	1,87 (0,50)	190 (2756)	230(3336)	K01CV641L700C	R932007496
L8	1,50	2,25 (0,60)	190 (2756)	230(3336)	K01CV641L800C	R932007497

Reversible Gear Pumps Group 0.5 for MR



Code	Displacement cc/rev	Flow at 1500 rpm l/min (gpm)	P2 bar (psi)	P3 bar (psi)	Type	Material Number
R1	0,24	0,36 (0,09)	170 (2465)	190 (2756)	C1641R100M	R932000678
R2	0,48	0,72 (0,19)	170 (2465)	190 (2756)	C1641R200M	R932000681
R3	0,61	0,92 (0,24)	170 (2465)	190 (2756)	C1641R300M	R932000682
R4	0,84	1,26 (0,33)	170 (2465)	190 (2756)	C1641R400M	R932000683
R5	0,97	1,50 (0,40)	170 (2465)	190 (2756)	C1641R500M	R932000684
R6	1,22	1,83 (0,48)	170 (2465)	190 (2756)	C1641R6000	R932008245
R7	1,50	2,25 (0,59)	170 (2465)	190 (2756)	C1641R700M	R932000685

Note

All pumps have anti-clockwise rotation.

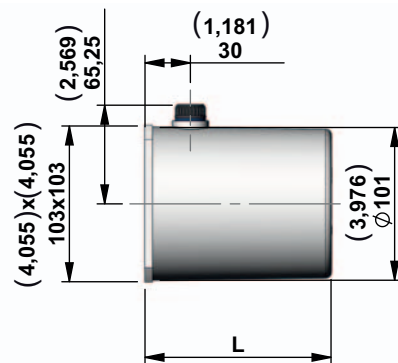
Oil Tanks

Technical Data for Plastic Tanks

Temperature range	°C (°F)	-15....+70 (5....158)
Materials	PE=Polyethylene - PP=Polypropilene	
Seal	For all the plastic Tanks use O-ring 4350 (Ø88,5x3,53) Code: 110201875000000 Material-Number: R932000191	

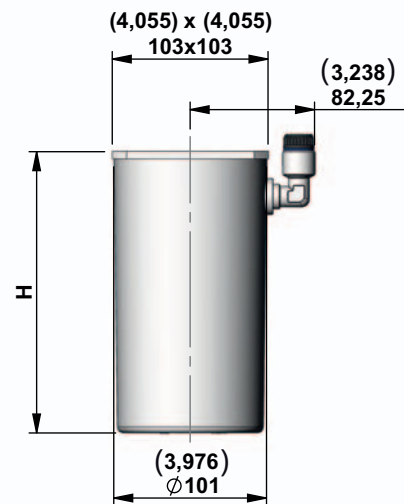
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number
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S284	0,5 (0,13)	0,4 (0,11)	123 (4,84)	PP	K01M3976SE318	R932002054
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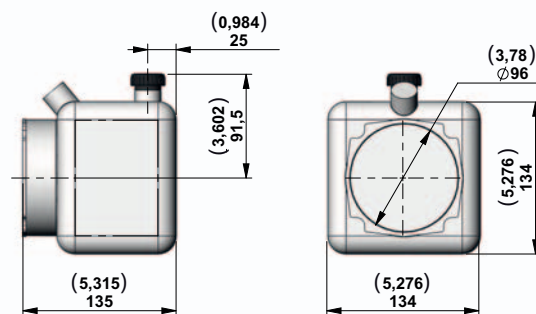
S286	1 (0,26)	0,7 (0,18)	186 (7,32)	PP	K01M3976SE320	R932002056
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S285	0,5 (0,13)	0,4 (0,11)	123 (4,84)	PP	K01M3976SE319	R932002055
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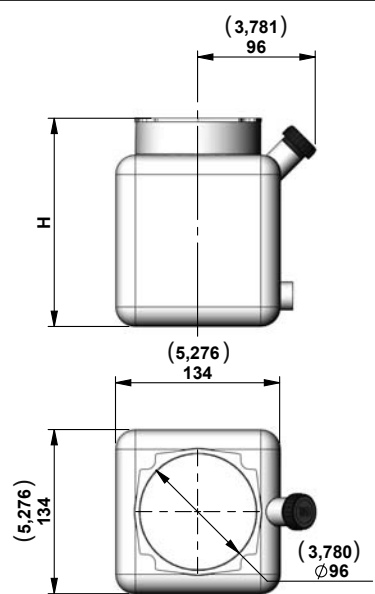
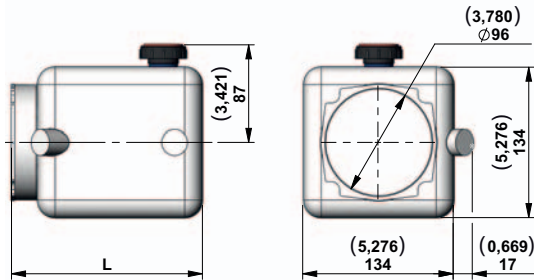
S287	1 (0,26)	0,7 (0,18)	186 (7,32)	PP	K01M3976SE321	R932002057
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S270	1 (0,26)	0,9 (0,24)	-	PE	K01X3976SE303	R932002077
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Plastic Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number
S271	1,8 (0,48)	1,6 (0,42)	170 (6,71)	PE	K01X3976SE304	R932002078
S272	2,5 (0,66)	2,2 (0,58)	240 (9,45)	PE	K01X3976SE305	R932002079
S273	1 (0,26)	0,9 (0,24)	135 (5,31)	PE	K01X3976SE306	R932002080
S274	1,8 (0,48)	1,6 (0,42)	170 (6,71)	PE	K01X3976SE307	R932002081
S275	2,5 (0,66)	2,2 (0,58)	240 (9,45)	PE	K01X3976SE308	R932002082



Assembly Kit for Plastic Tank - ME

Please make sure that the tank and motor are mounted correctly

Code	Type	Material Number
S270 - S271 - S272 - S273 - S274 - S275	K2501VT005	R932002435
S284 - S285 - S286 - S287	K2501VT009	R932002438

Technical Data for Steel Tanks

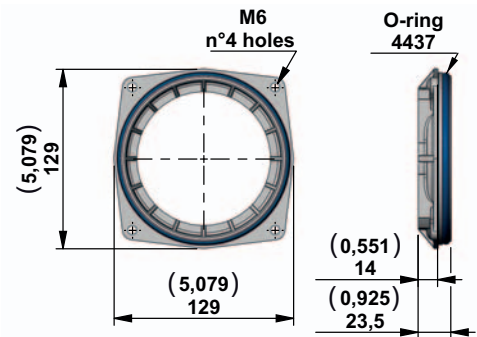
Temperature range	°C (°F)	-15....+80 (5....176)
Materials		Steel
Colors		Black paint finish
Seal		For all the steel tanks with Ø99 is necessary to use O-Ring 4350 (Ø88,5x3,53) on the central manifold. Code:110201875000000 - Material-Number:R932000191. If is necessary to use a tank designed for KE-K (Ø123mm) must use the O-ring 4350 on the manifold and add the flange S81.

Collar for Tanks

Code	Description	Type	Material Number
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S81 This adaptor allows you to use steel tanks designed for KE-K (Ø123 mm) with ME manifolds (Ø96 mm)

K01X3976SM091 R932002053



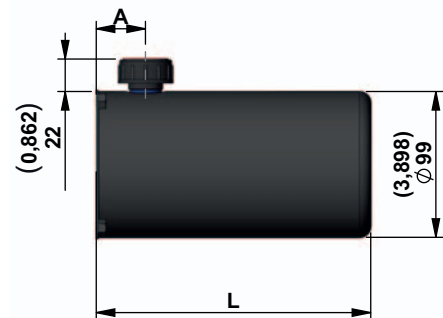
Steel Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	A mm (inch)	Type	Material Number
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S266 0,5 (0,13) 0,4 (0,11) 120 (4,72) 32 (1,26) K01X3976SE299 R932002073

S267 1 (0,26) 0,7 (0,18) 184 (7,24) 32 (1,26) K01X3976SE300 R932002074

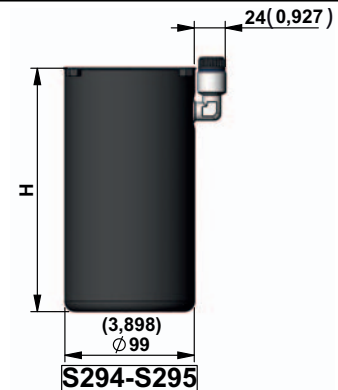
S183 1 (0,26) 0,7 (0,18) 184 (7,24) 154 (6,06) K01X3976SE213 R932002072



Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	Type	Material Number
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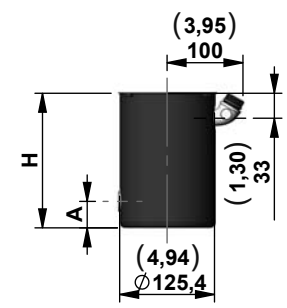
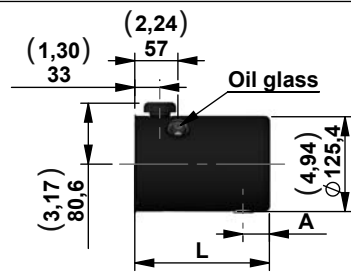
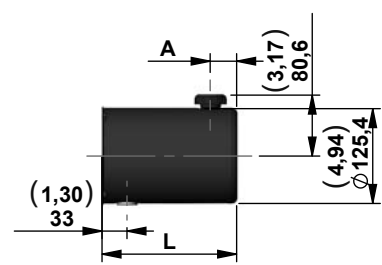
S294 0,5 (0,13) 0,4 (0,11) 120 (4,72) K01X3976SE328 R932002083

S295 1 (0,26) 0,7 (0,18) 184 (7,24) K01X3976SE329 R932002084



Steel Tanks

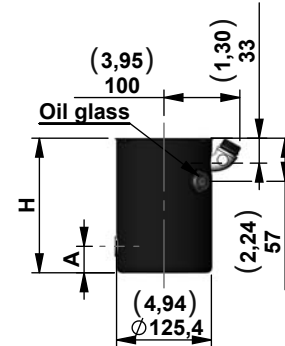
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	A mm (inch)	Type	Material Number
S01	1 (0,26)	0,7 (0,18)	133 (5,24)	35 (1,38)	K01K3976SE001	R932001937
S20	1,8 (0,48)	1,2 (0,32)	178 (7,01)	35 (1,38)	K01K3976SE026	R932001953
S02	2,5 (0,66)	1,7 (0,45)	238 (9,37)	60 (2,36)	K01K3976SE003	R932001939
S161	3 (0,79)	2,3 (0,61)	280 (11,02)	60 (2,36)	K01K3976SE186	R932001987
S107	4 (1,06)	3,2 (0,84)	409 (16,10)	60 (2,36)	K01K3976SE119	R932001970
S144	1,8 (0,48)	1,2 (0,32)	178 (7,01)	35 (1,38)	K01K3976SE168	R932001983
S142	2,5 (0,66)	1,7 (0,45)	238 (9,37)	60 (2,36)	K01K3976SE166	R932001981
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	A mm (inch)	Type	Material Number
S216	1 (0,26)	0,6 (0,16)	133 (5,24)	35 (1,38)	K01K3976SE246	R932002011
S217	1,8 (0,48)	1,1 (0,29)	178 (7,01)	35 (1,38)	K01K3976SE247	R932002012
S218	2,5 (0,66)	1,7 (0,45)	238 (9,37)	60 (2,36)	K01K3976SE248	R932009269
S239	3 (0,79)	2,3 (0,61)	280 (11,02)	60 (2,36)	K01K3976SE269	R932002015
S107V	4 (1,06)	3,2 (0,84)	409 (16,10)	60 (2,36)	K01K3976SE161	R932001976



Steel Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	A mm (inch)	Type	Material Number
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S20V	1,8 (0,48)	1,1 (0,29)	178 (7,01)	35 (1,38)	K01K3976SE027	R932001954
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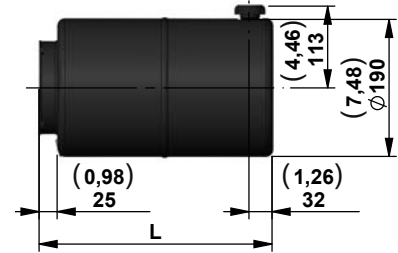
S02V	2,5 (0,66)	1,7 (0,45)	238 (9,37)	60 (2,36)	K01K3976SE004	R932001940
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Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Type	Material Number
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S03	5 (1,32)	4 (1,06)	219 (8,62)	K01K3976SE005	R932001941
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S34	7 (1,85)	5,4 (1,43)	271 (10,67)	K01K3976SE041	R932001956
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S04	8 (2,11)	6,6 (1,74)	323 (12,72)	K01K3976SE007	R932001943
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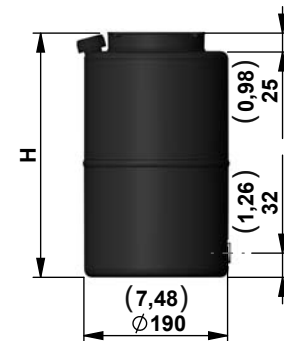


Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	Type	Material Number
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S03V	5 (1,32)	3 (7,9)	219 (8,62)	K01K3976SE006	R932001942
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S34V	7 (1,85)	4,4 (1,16)	271 (10,67)	K01K3976SE042	R932001957
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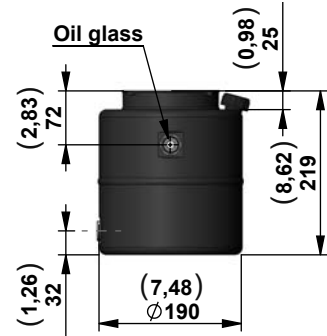
S04V	8 (2,11)	5,8 (1,53)	323 (12,72)	K01K3976SE008	R932001944
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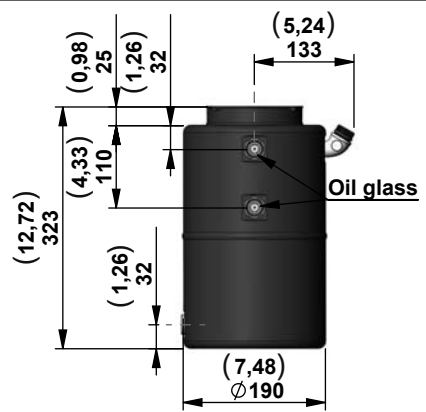
Steel Tanks

Code	Tank capacity I (USgal)	Useable capacity I (USgal)	Type	Material Number
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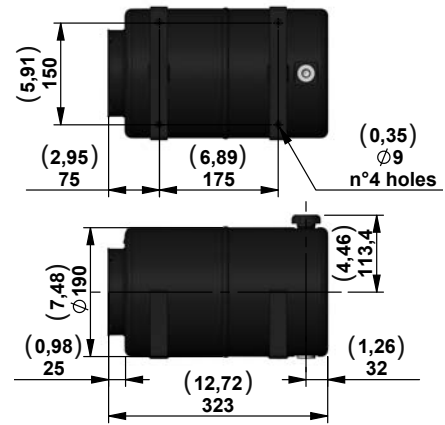
S106 5 (1,32) 3 (7,9) K01K3976SE215 R932001997



S108 8 (2,11) 5,8 (1,53) K01K3976SE120 R932001971



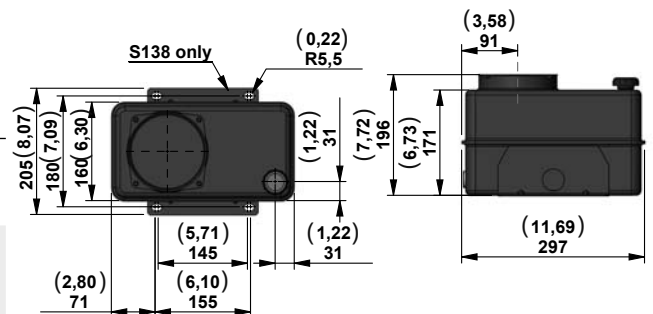
S94 8 (2,11) 6,6 (1,74) K01K3976SE106 R932001965



Code	Tank capacity I (USgal)	Useable capacity I (USgal)	Brackets	Type	Material Number
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S07 6 (1,58) 4 (1,06) No K01K3976SE013 R932001945

S138* 6 (1,58) 4 (1,06) Yes K01K3976SE162 R932001977



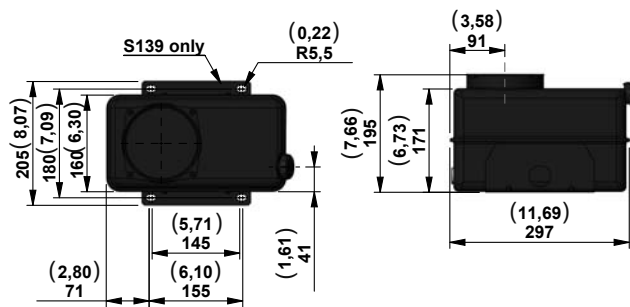
***Note** In order to avoid to support the weight of motor by the collar of the tank when the tanks with fixing brackets are used, it is strongly suggested to support also the central manifold.

Steel Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	Brackets	Type	Material Number
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S48 6 (1,58) 4 (1,06) No K01K3976SE056 R932001959

S139* 6 (1,58) 4 (1,06) Yes K01K3976SE163 R932001978

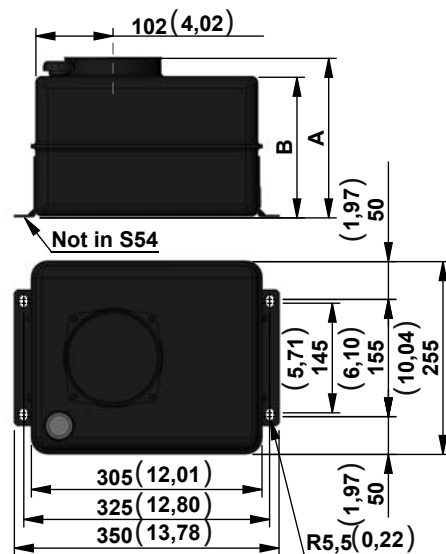


Code	Tank capacity l (USgal)	Useable capacity l (USgal)	A mm (inch)	B mm (inch)	Type	Material Number
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S223* 8 (2,11) 6 (1,58) 156 (6,14) 131 (5,16) K01K3976SE253 R932002013

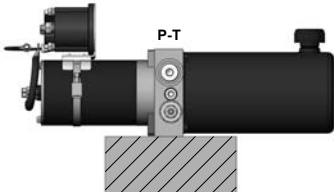
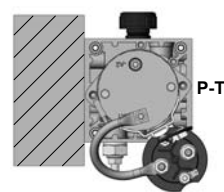
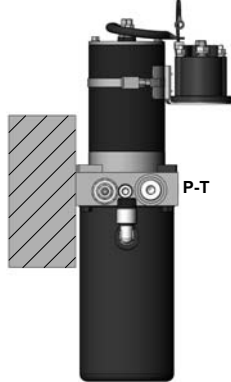
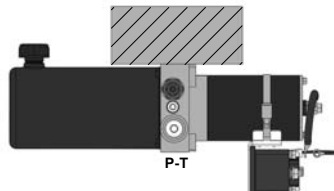
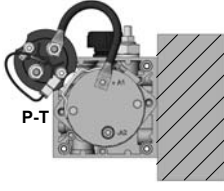
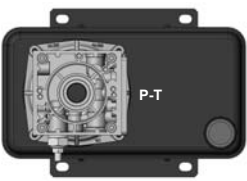
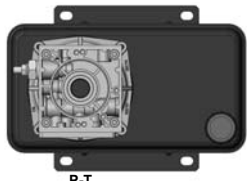
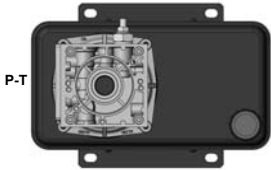
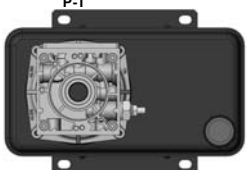
S54 12 (3,17) 9,5 (2,51) 210 (8,27) 186 (7,32) K01K3976SE063 R932001960

S140* 12 (3,17) 9,5 (2,51) 210 (8,27) 186 (7,32) K01K3976SE164 R932001979

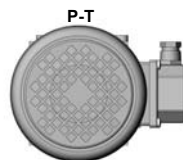

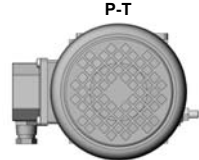



***Note** In order to avoid to support the weight of motor by the collar of the tank when the tanks with fixing brackets are used, it is strongly suggested to support also the central manifold.

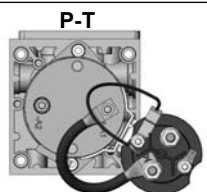
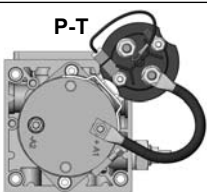
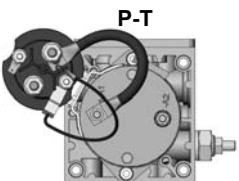
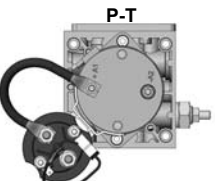
Mounting position

Code	Code	Code
O1	O3	V1
		
O2	O4	
		
-	O6	
		
O7	O8	
		





Terminal Box Position for A.C. Motors

-	M2
	
M3	M4
	

Relay Position for D.C. Motors


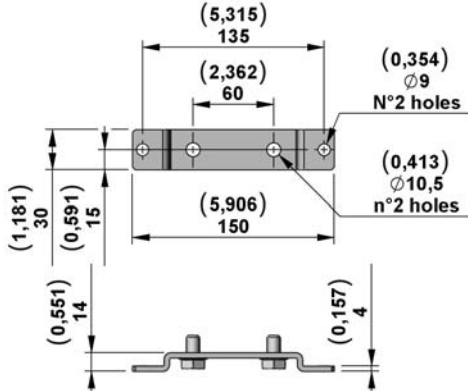
-	R2
	
R3	R4
	

Oil Cap Position for V1 only


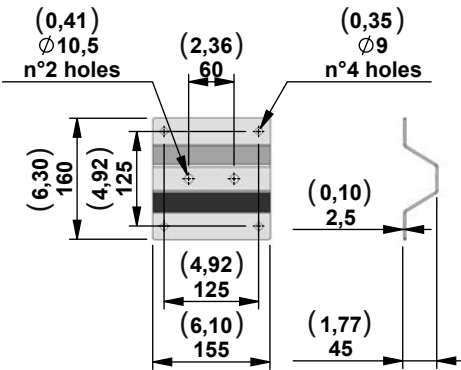

Code		Code	
-		LU	
LO		LP	

Mounting Brackets

Support for Manifold ME - MR Series

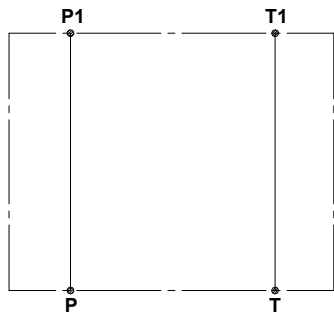
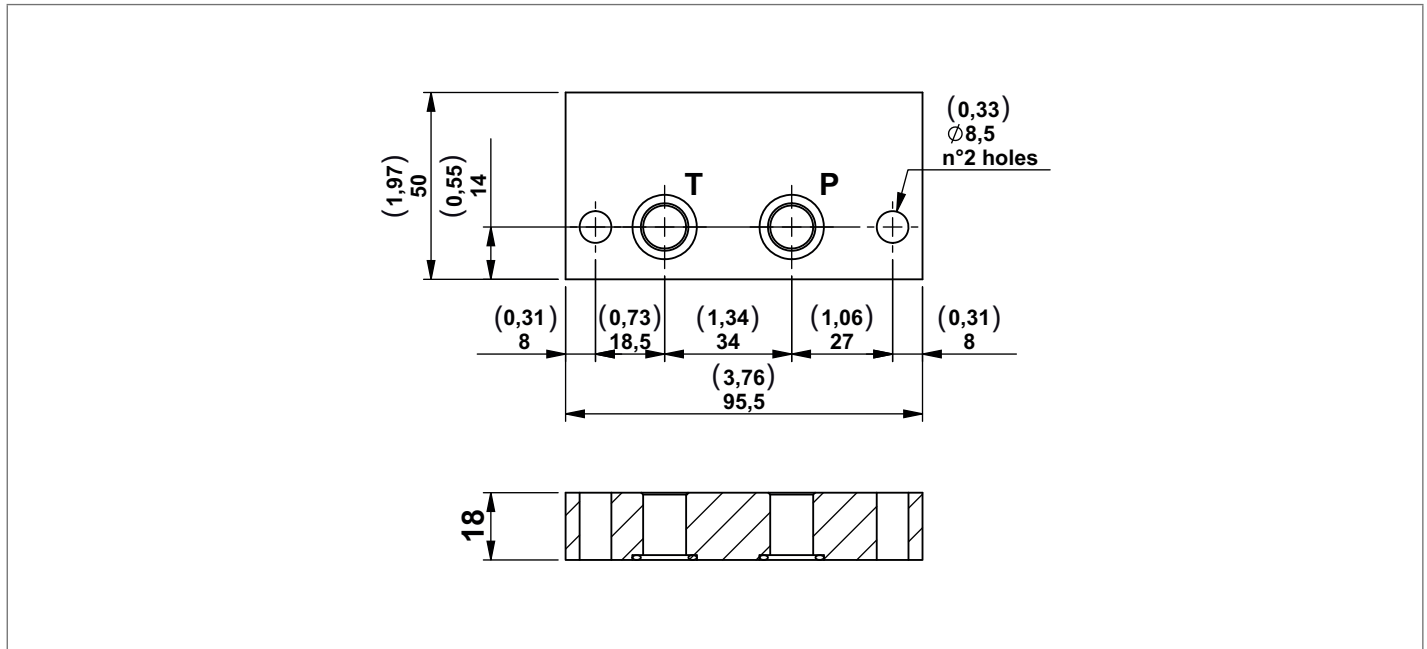
Code	Central manifold	Type	Material number		
G06	ME	K01X331518000	R932009734		

Support for Manifold Code A16

Code	Central manifold	Type	Material number		
G07	K	K01K331507000	R932009393		
G07L	K	K01K331507000	R932009393		

Modular Stackable Elements

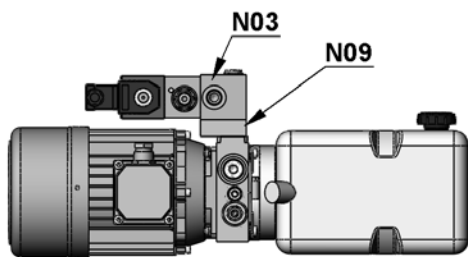
Space Modular Block



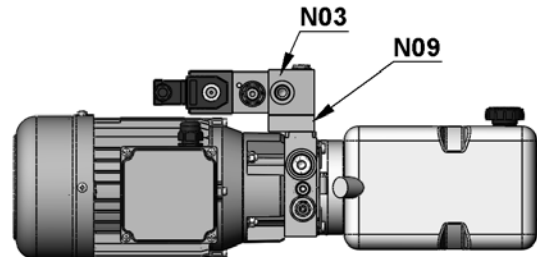
These modular blocks have been designed to have the ability to be assembled as a stack to allow clearance between flanges and motors of different sizes and types. Each block includes 2 OR 3056 gaskets.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N09	Space modular block	300 (4351)	40 (10,57)	G386010000	R932001058

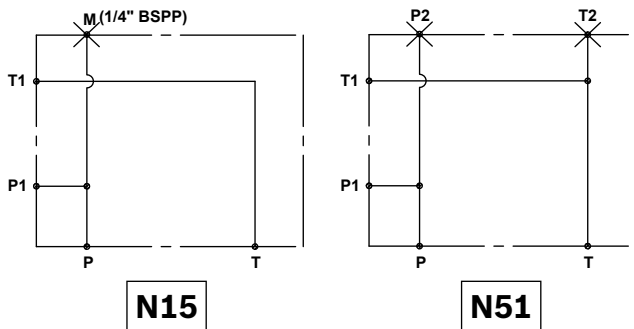
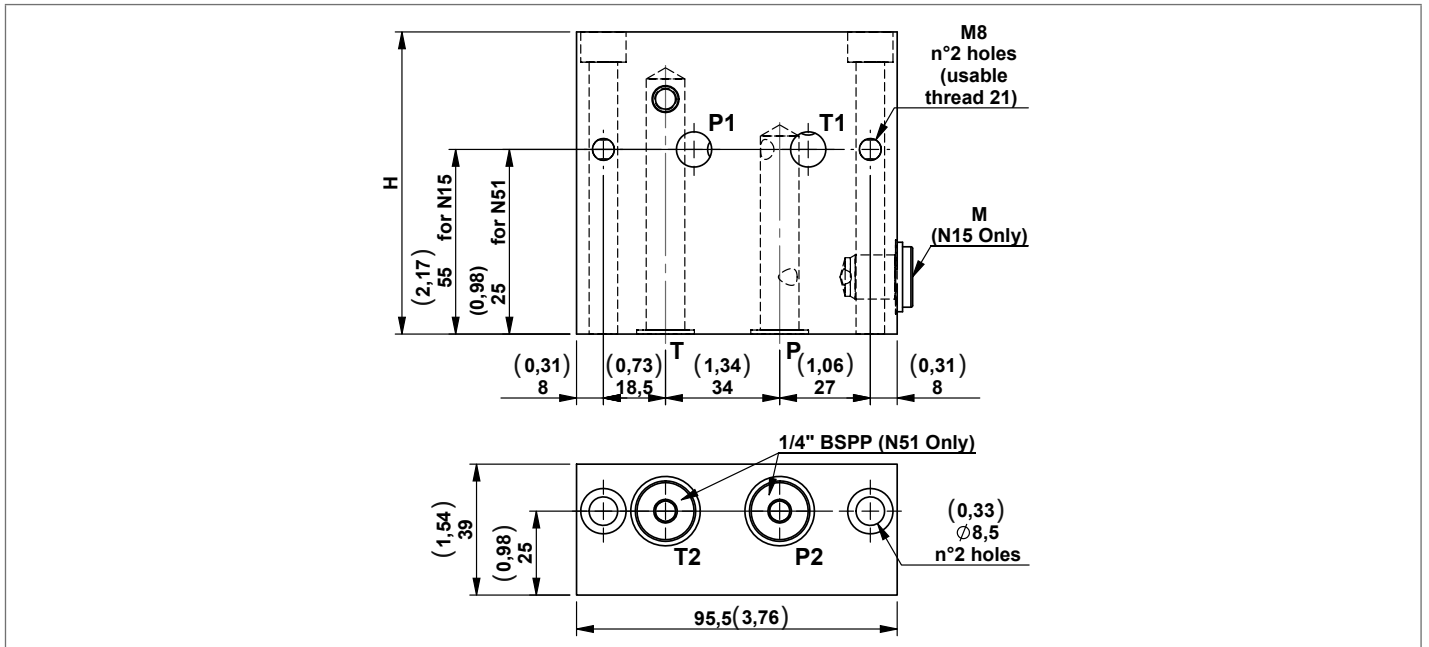
Motor IEC71 frame Coupling F90



Motor IEC80 frame Coupling F95



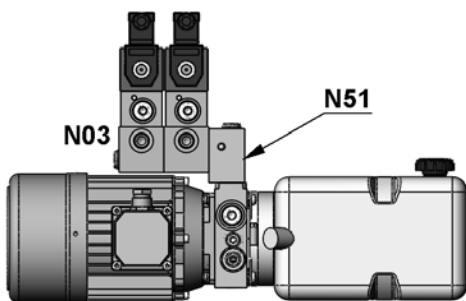
90° modular block allowing horizontal mounting (motor side)



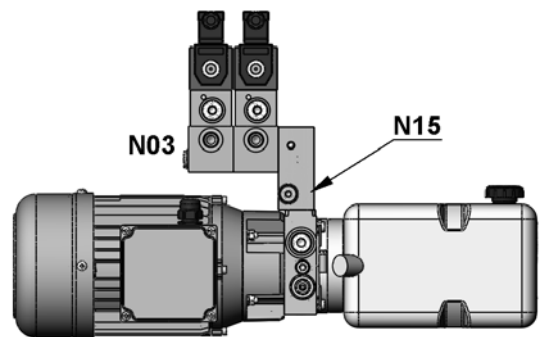
A modular block that is able to turn the standard assembling of 90°, in order to place other manifold blocks over the motor.
The “N15” block has a 1/4” BSPP port for Pressure Gauge.
Each block includes 2 OR 2056 gaskets.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N15	90° modular block allowing horizontal mounting (motor side) H=90	300 (4351)	35 (9,25)	G386014000	R932001087
N51	90° modular block allowing horizontal mounting (motor side) H=60	300 (4351)	35 (9,25)	G386050000	R932001146

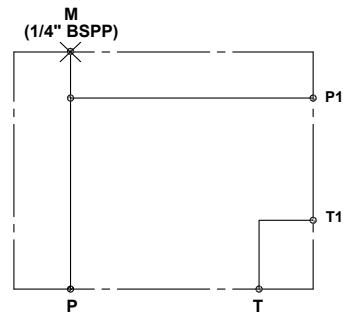
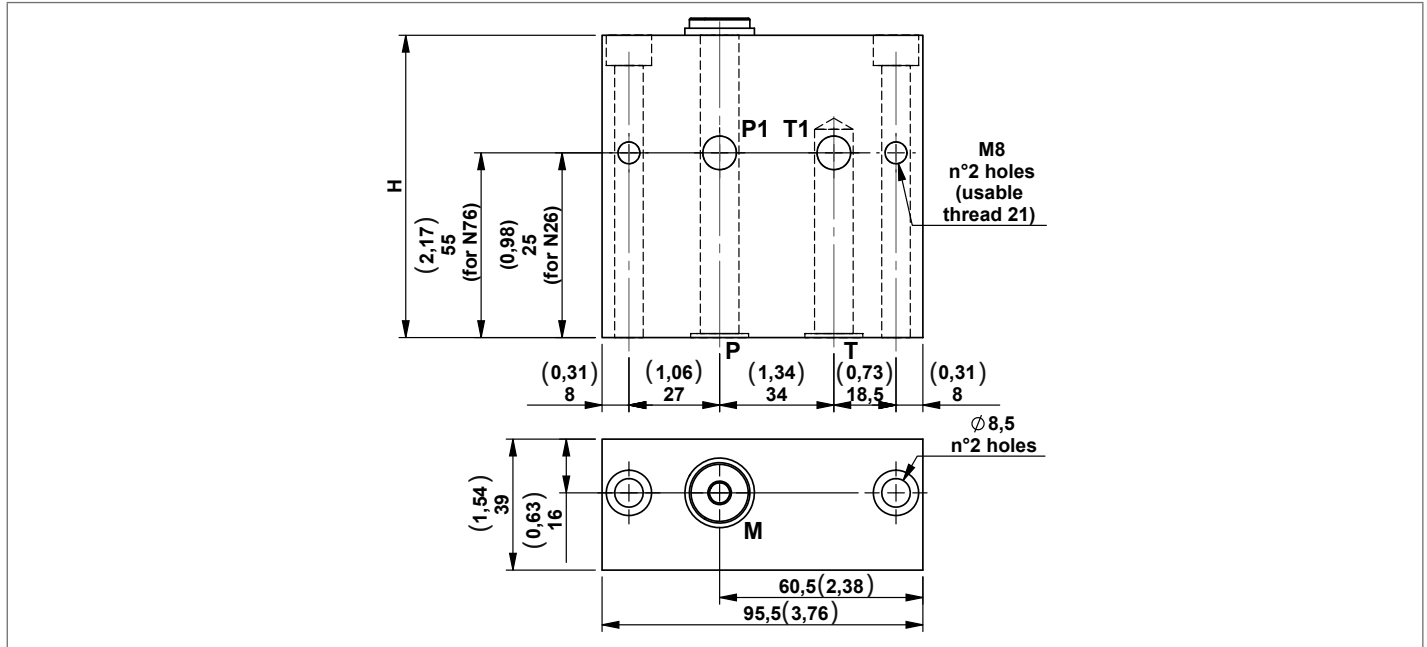
Motor IEC71 frame Coupling F90



Motor IEC80 frame Coupling F95



90° modular block allowing horizontal mounting (tank side)

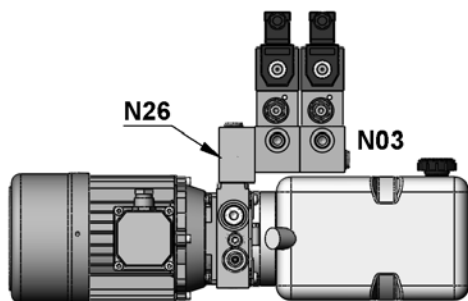


A modular block that is able to turn the standard assembling of 90°, in order to place other blocks over the tank.

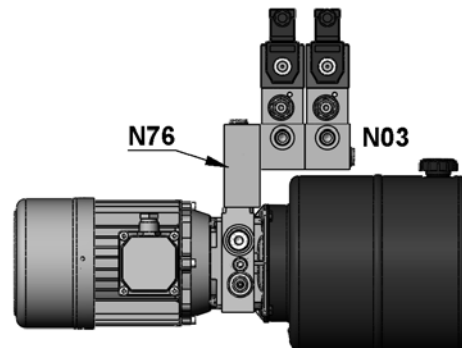
The blocks have a 1/4" BSPP port for Pressure Gauge. Each block includes 2 OR 2056 gaskets.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N76	90° modular block allowing horizontal mounting (tank side) H=90	300 (4351)	35 (9,25)	G386075000	R932001153
N26	90° modular block allowing horizontal mounting (tank side) H=60	300 (4351)	35 (9,25)	G386025000	R932001100

Tank H=134



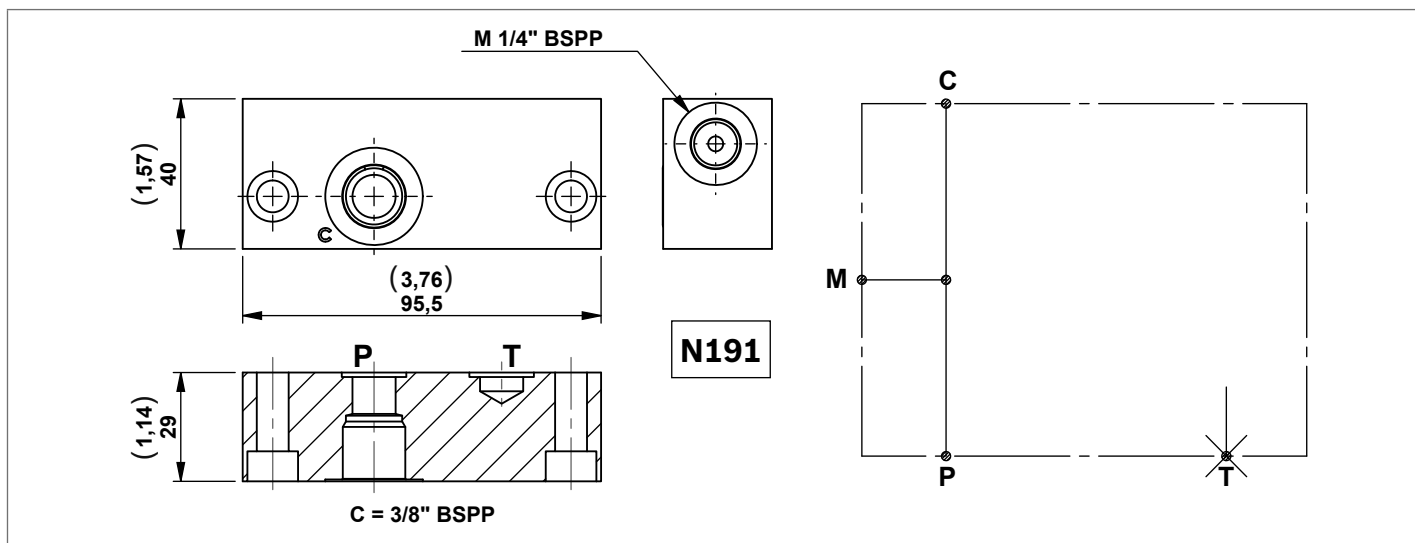
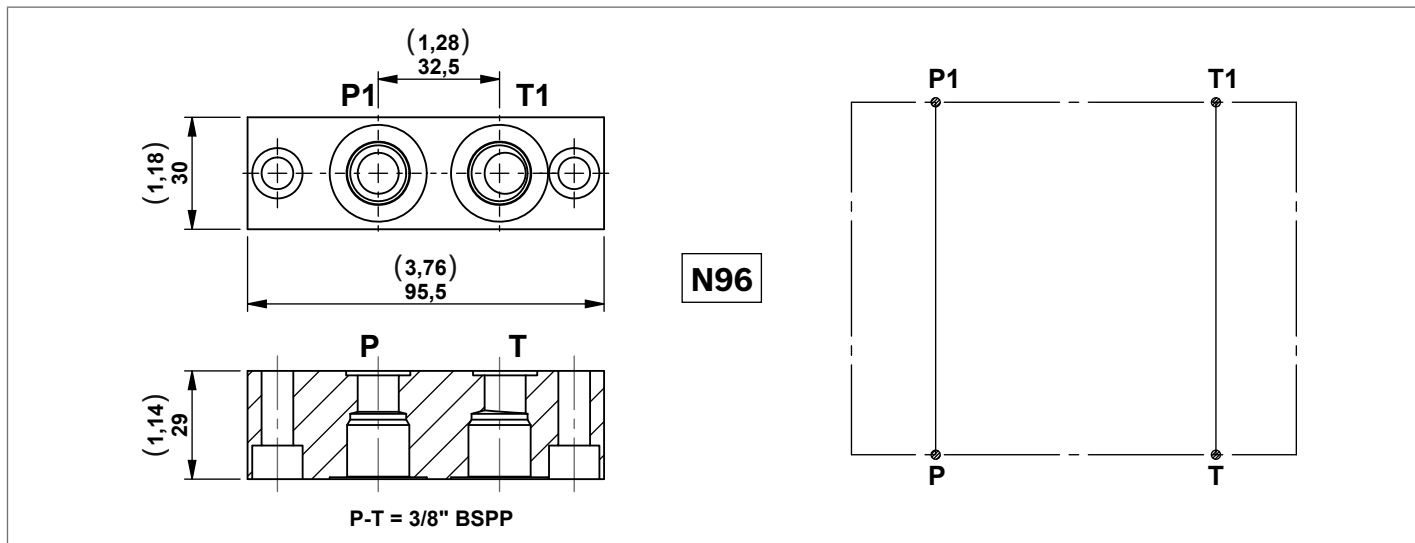
Tank Diameter Ø190



Modular blocks with threaded ports

Modular blocks with exit 3/8" BSPP.

Each block includes 2 OR 2056 gaskets.

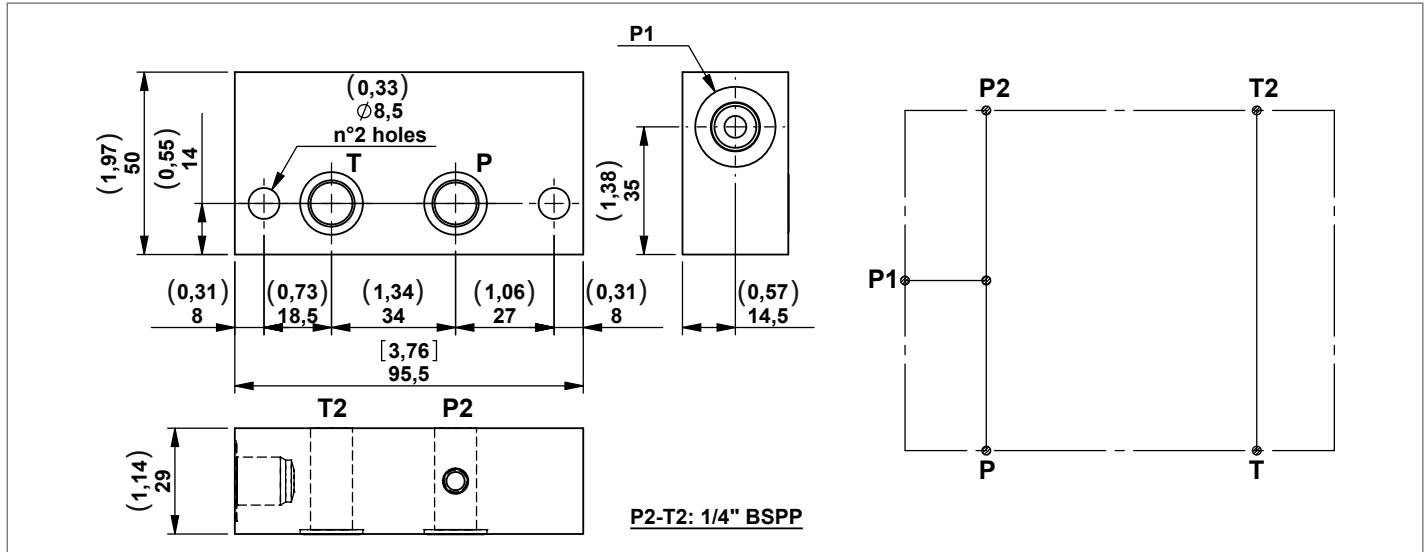


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N96	Modular block with threaded ports	300 (4351)	35 (9,25)	G386095000	R932001173
N191	Modular block with threaded ports	300 (4351)	35 (9,25)	G386191000	R932001284

Modular spacer block with extra "P1" port

A modular block with an extra port.

Each block includes 2 OR 2056 gaskets.

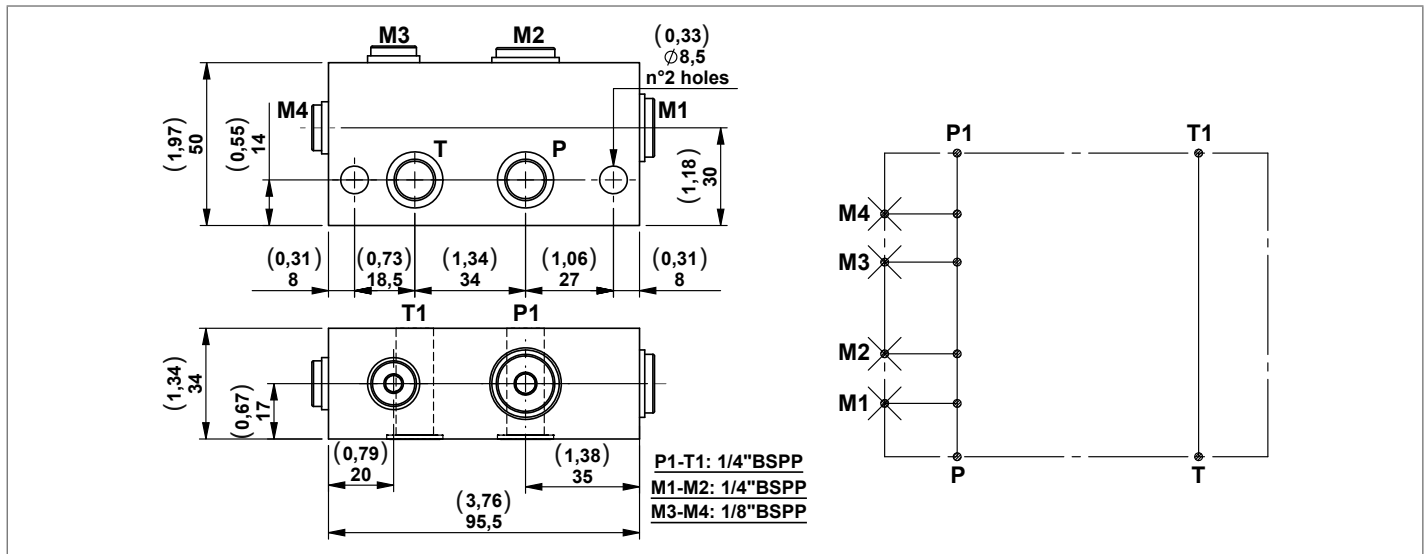


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N46-14	Modular spacer block with extra "P1" port 1/4" BSPP	300 (4351)	20 (5,28)	G386045000	R932001142
N46-38	Modular spacer block with extra "P1" port 3/8" BSPP	300 (4351)	20 (5,28)	1386000053	R932009506

Modular spacer block with two 1/8" BSPP and two 1/4" BSPP ports

A modular block with 4 extra ports.

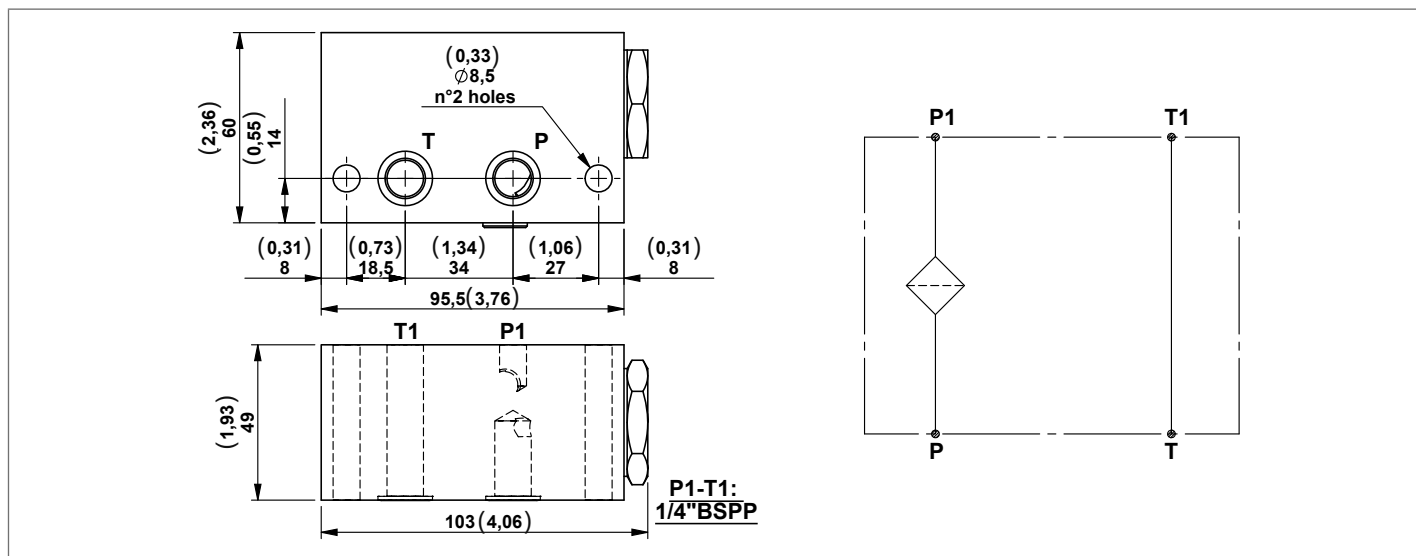
Each block includes 2 OR 2056 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N128	Modular spacer block with two 1/8" BSPP ports and two 1/4" BSPP ports	300 (4351)	35 (9,25)	G386128000	R932001241

Modular block with filter on pressure line

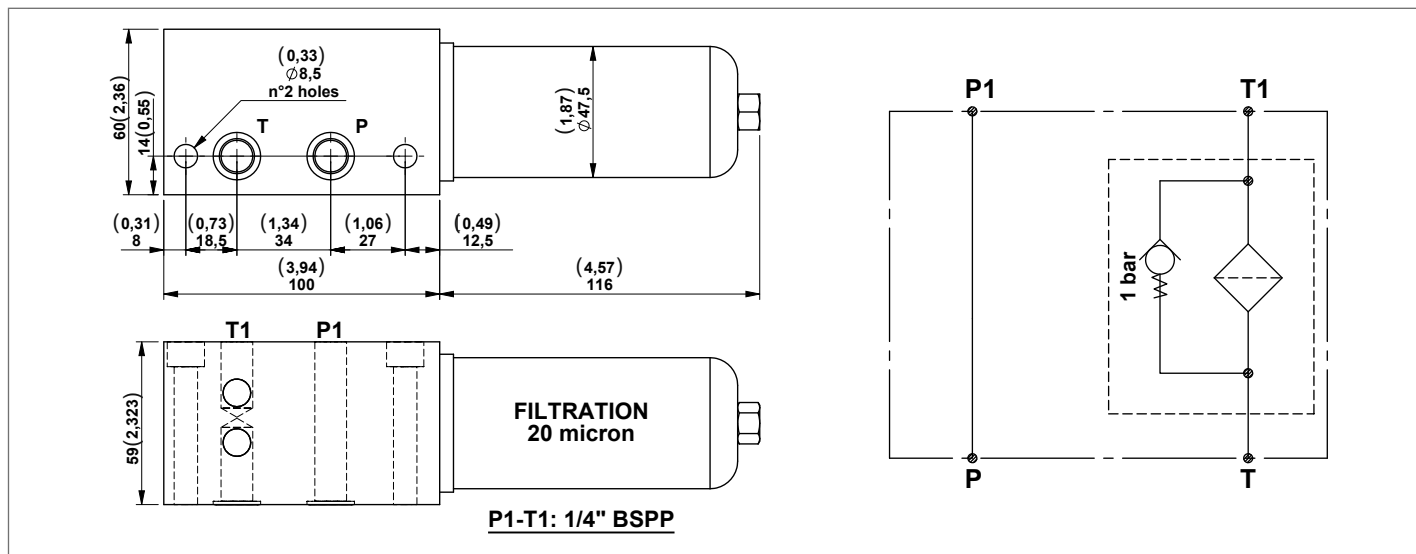
A modular block with a filter on the pressure line. This is recommended for applications where valve may be subjected to contamination. Each block includes 2 OR 2056 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N39-25	Modular block with filter (25 micron) on pressure line	230 (3336)	10 (2,64)	G386038010	R932001123
N39-60	Modular block with filter (60 micron) on pressure line	230 (3336)	10 (2,64)	G386038020	R932001124

Modular block with filter on the return line

A modular block with filter on return line. This is recommended for applications where valves may be subjected to contamination. Each block includes 2 OR 2056 gaskets. By-pass valve set at a pressure of 1 bar.

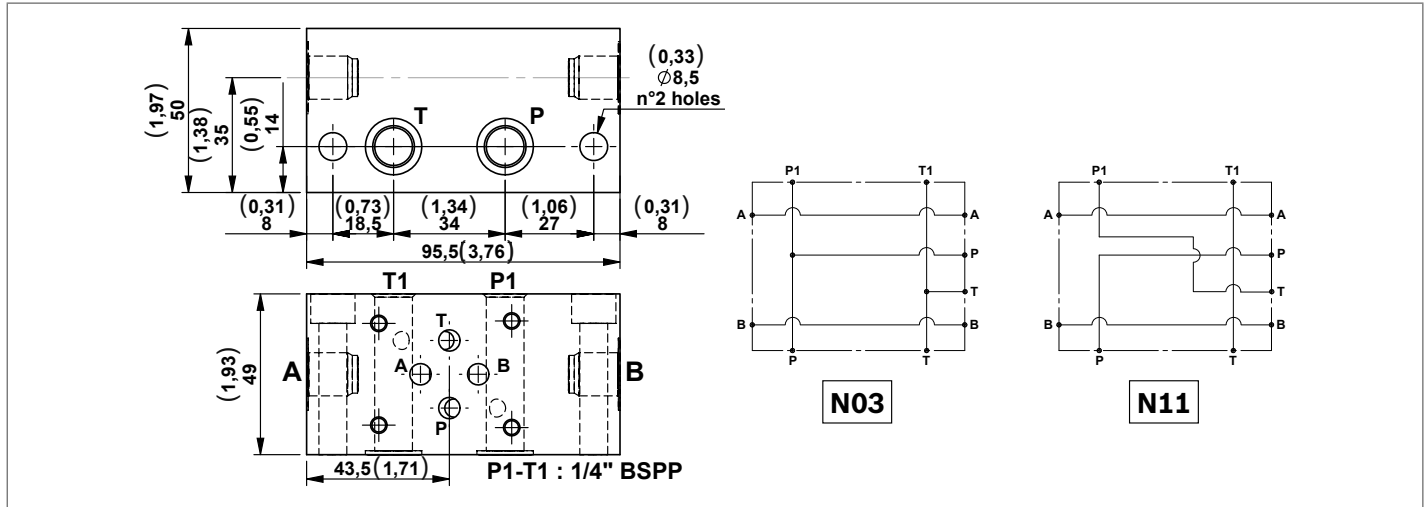


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N116	Modular block with filter on the return line (20 micron)	6 (87)	20 (5,28)	G386116010	R932001214

Modular block for CETOP 3 (2143) configuration valves

Modular blocks for CETOP 3 (2143) electrovalves for parallel or series circuits.

Each block includes 2 OR 2056 gaskets.

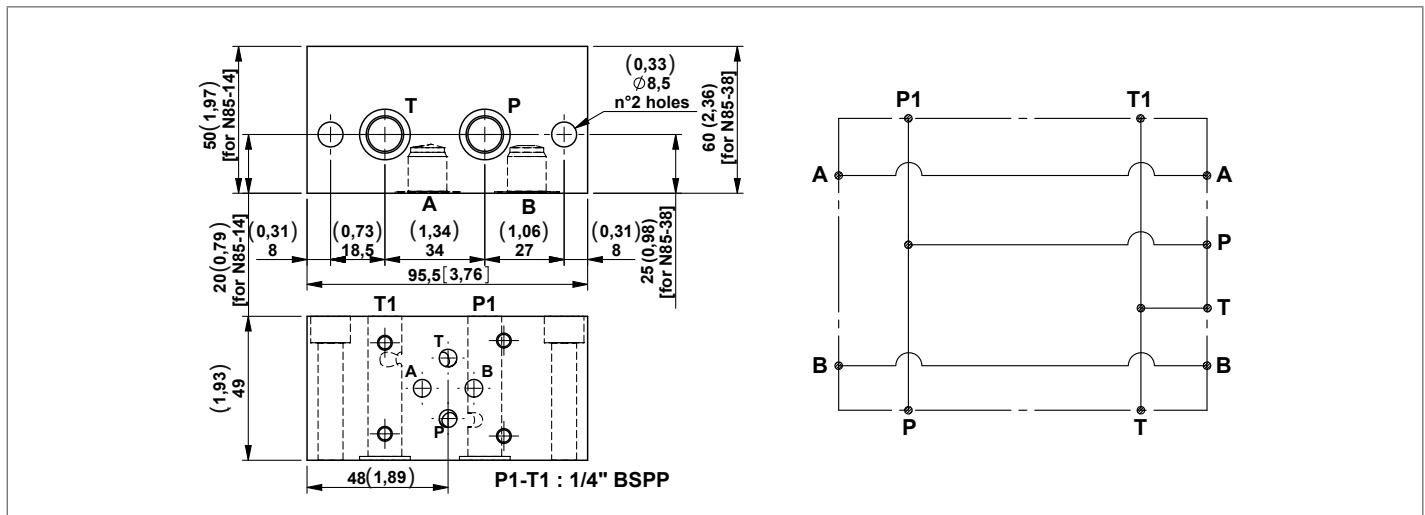


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N03-14	Modular block for CETOP3 (2143) configuration valves with A-B 1/4" BSPP (parallel circuit)	300 (4351)	40 (10,57)	G386002010	R932001010
N03-38	Modular block for CETOP3 (2143) configuration valves with A-B 3/8" BSPP (parallel circuit)	300 (4351)	40 (10,57)	G386002020	R932001011
N11-14	Modular block for CETOP3 (2143) configuration valves with A-B 1/4" BSPP (series circuit)	300 (4351)	40 (10,57)	G386009010	R932001054
N11-38	Modular block for CETOP3 (2143) configuration valves with A-B 3/8" BSPP (series circuit)	300 (4351)	40 (10,57)	G386009020	R932001056

Modular block for CETOP 3 (2143) configuration valves

A modular block that is for CETOP 3 (2143) electrovalves for a parallel circuit with ports on the oppsite side of the valve.

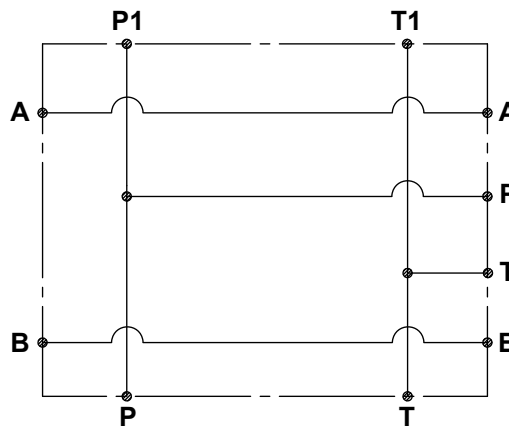
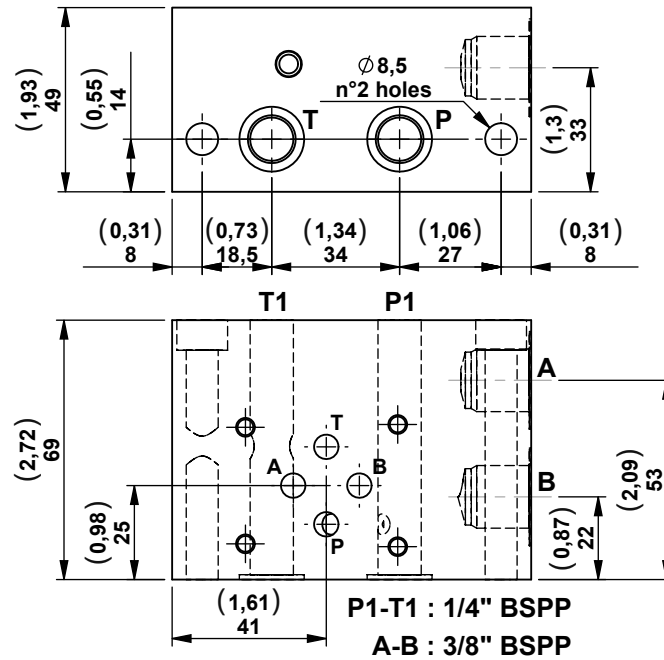
Each block includes 2 OR 2056 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N85-14	Modular block for CETOP3 (2143) configuration valves with A-B 1/4" BSPP (parallel circuit)	300 (4351)	40 (10,57)	G386084010	R932001158
N85-38	Modular block for CETOP3 (2143) configuration valves with A-B 3/8" BSPP (parallel circuit)	300 (4351)	40 (10,57)	G386084020	R932001159

Modular block for CETOP 3 (2143) configuration valves with side ports

A modular block that is for CETOP 3 (2143) electrovalves for parallel circuit with side device ports on one face. Each block includes 2 OR 2056 gaskets.



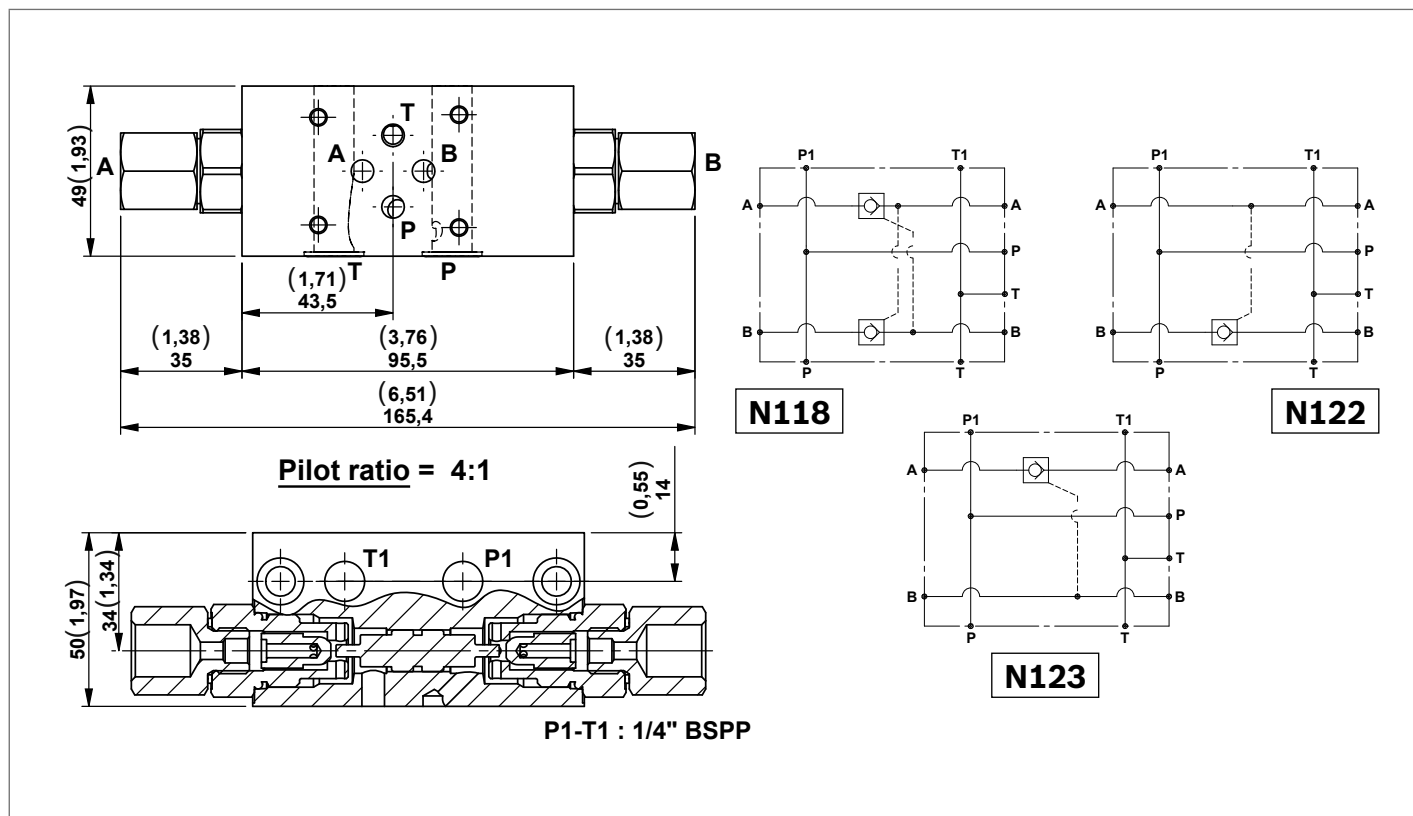
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N142	Modular block for CETOP 3 (2143) configuration valves with side ports	300 (4351)	40 (10,57)	G386142000	R932001252

Modular block with poppet type P.O. check valves for CETOP 3 (2143) configuration valves (parallel circuit)

A selection of modular block with P.O. check valves for block CETOP 3 (2143) electrovalves.

Each block includes 2 OR 2056 gaskets.

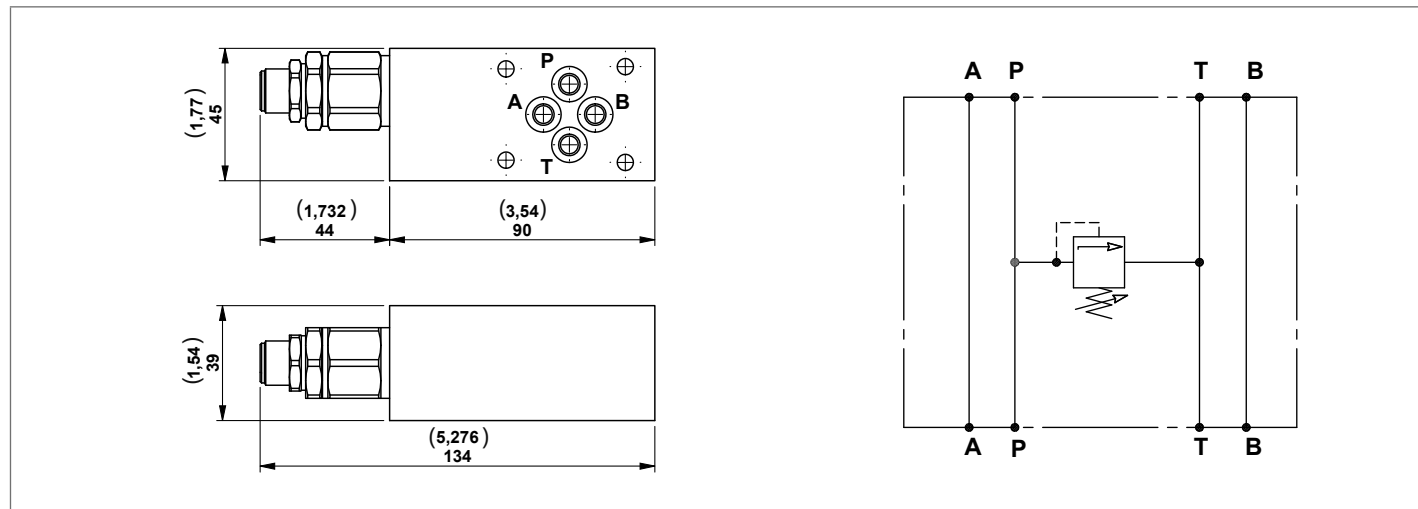
Possibility to have an OR gasket on the piloting piston for application with low flow.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N118-38	Modular block with poppet type P.O. check valves on A-B for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 3/8" BSPP)	300 (4351)	20 (5,28)	G386118A02	R932001217
N118G-38	Modular block with poppet type P.O. check valves on A-B for CETOP 3 (2143) configuration valves (with O-ring on pilot piston and A-B 3/8" BSPP)	300 (4351)	20 (5,28)	G386118B02	R932001222
N118-14	Modular block with poppet type P.O. check valves on A-B for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 1/4" BSPP)	300 (4351)	20 (5,28)	G386118A03	R932001218
N118G-14	Modular block with poppet type P.O. check valves on A-B for CETOP 3 (2143) configuration valves (with O-ring on pilot piston and A-B 1/4" BSPP)	300 (4351)	20 (5,28)	G386118B03	R932001223
N122-38	Modular block with poppet type P.O. check valve on B for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 3/8" BSPP)	300 (4351)	20 (5,28)	G386122A02	R932001233
N122-14	Modular block with poppet type P.O. check valve on B for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 1/4" BSPP)	300 (4351)	20 (5,28)	G386122A01	R932001232
N123-38	Modular block with poppet type P.O. check valves on A for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 3/8" BSPP)	300 (4351)	20 (5,28)	G386123A02	R932001237
N123-14	Modular block with poppet type P.O. check valves on A for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 1/4" BSPP)	300 (4351)	20 (5,28)	G386123A01	R932001236

Sandwich blocks with poppet type "VMD1" relief valves for CETOP 3 (2143) configuration valves

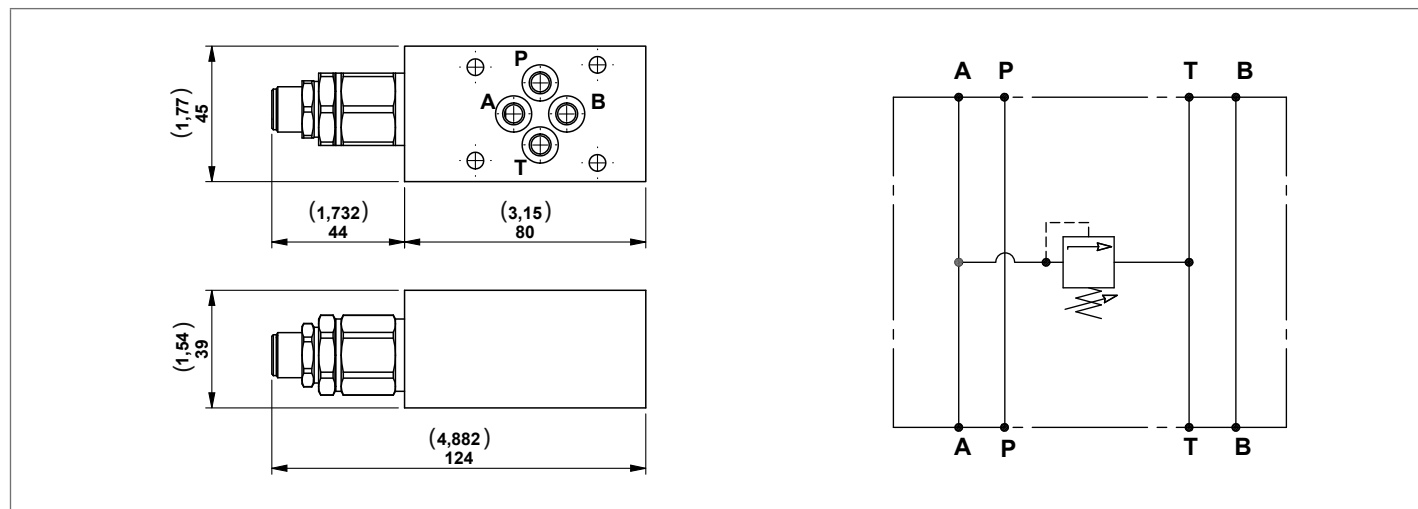
Each block includes 4 OR 108 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N99-10	Sandwich block with poppet type "VMD1" relief valve P in T (25-120 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386098A81A	R930071372
N99-20	Sandwich block with poppet type "VMD1" relief valve P in T (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386098A82A	R930071373
N99-35	Sandwich block with poppet type "VMD1" relief valve P in T (200-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386098A83A	R930071376

Sandwich blocks with poppet type "VMD1" relief valves for CETOP 3 (2143) configuration valves

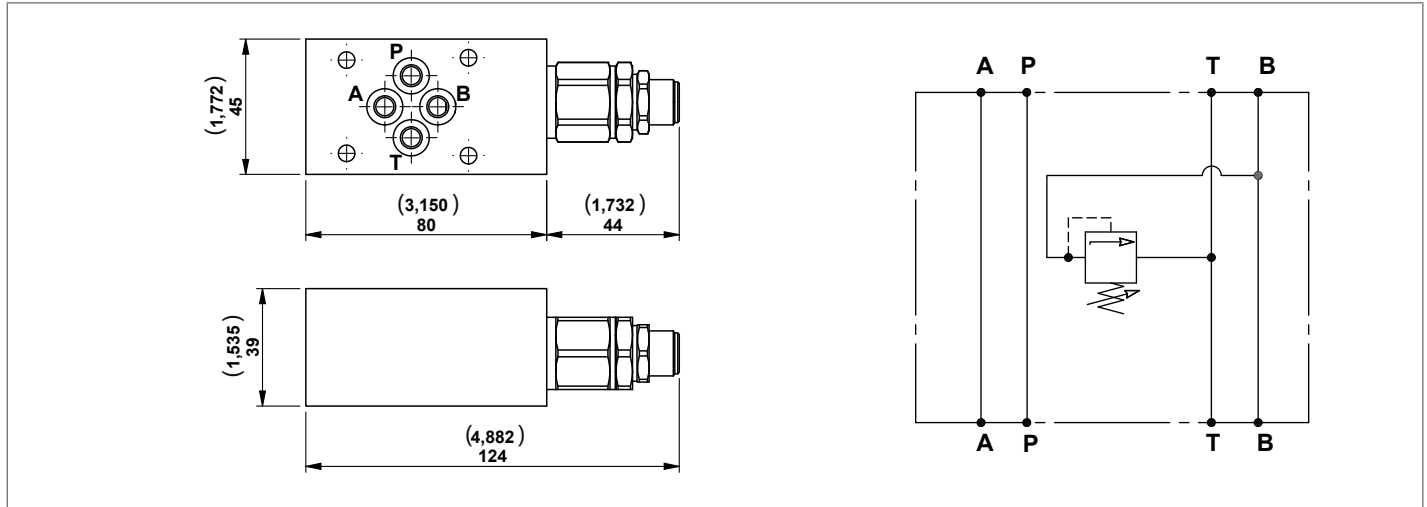
Each block includes 4 OR 108 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N100-10	Sandwich block with poppet type "VMD1" relief valve A in T (25-120 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386099A81A	R930071377
N100-20	Sandwich block with poppet type "VMD1" relief valve A in T (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386099A82A	R930071378
N100-35	Sandwich block with poppet type "VMD1" relief valve A in T (200-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386099A83A	R930071379

Sandwich blocks with poppet type "VMD1" relief valves for CETOP 3 (2143) configuration valves

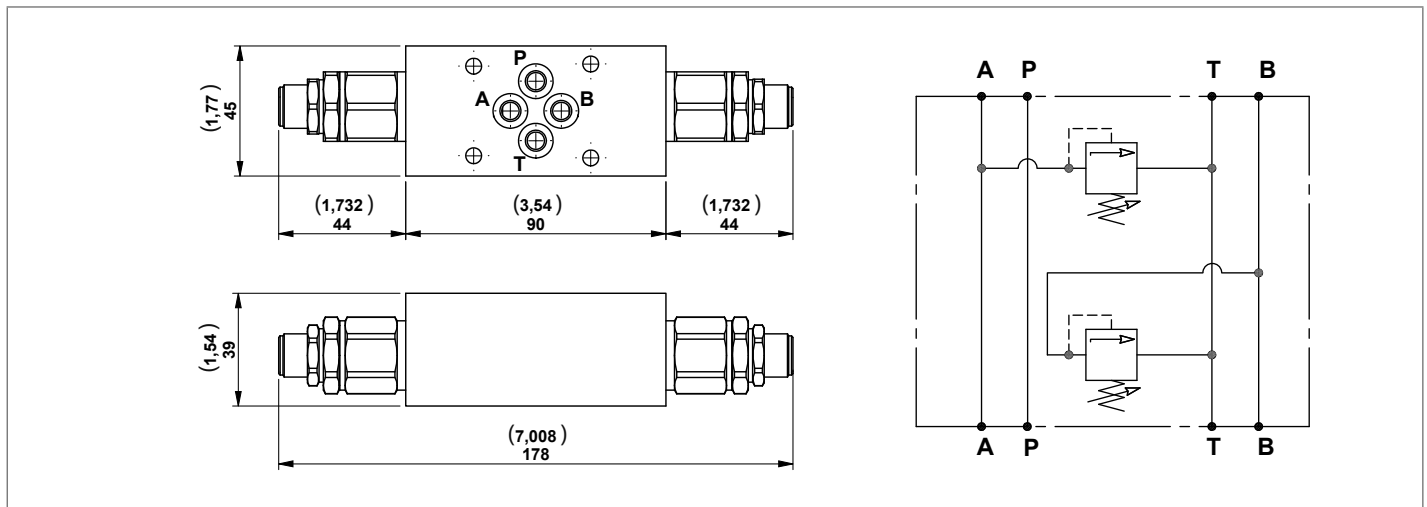
Each block includes 4 OR 108 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N101-10	Sandwich block with poppet type "VMD1" relief valve B in T (25-120 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386101A81A	R930071380
N101-20	Sandwich block with poppet type "VMD1" relief valve B in T (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386101A82A	R930071381
N101-35	Sandwich block with poppet type "VMD1" relief valve B in T (200-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386101A83A	R930071382

Sandwich blocks with poppet type "VMD1" relief valves for CETOP 3 (2143) configuration valves

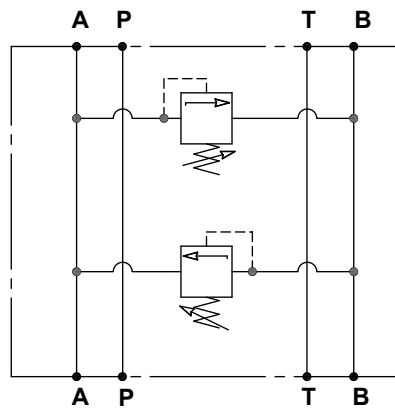
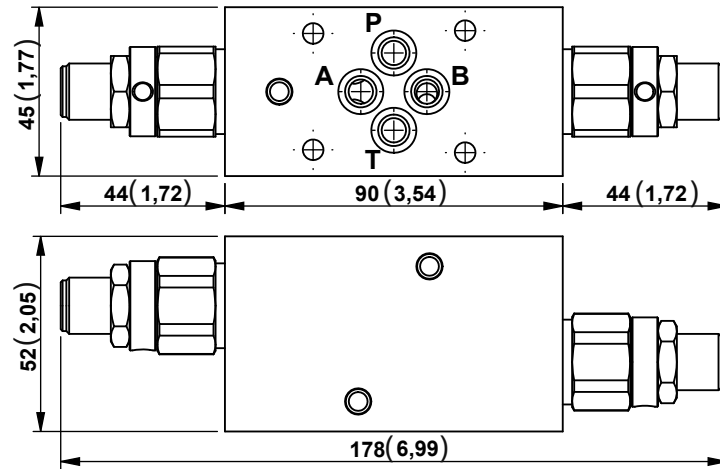
Each block includes 4 OR 108 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N102-10	Sandwich block with poppet type "VMD1" relief valves A-B in T (25-120 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386102A81A	R930071383
N102-20	Sandwich block with poppet type "VMD1" relief valves A-B in T (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386102A82A	R930071384
N102-35	Sandwich block with poppet type "VMD1" relief valves A-B in T (200-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386102A83A	R930071385

Sandwich blocks with poppet type “VM25” relief valves for CETOP 3 (2143) configuration valves

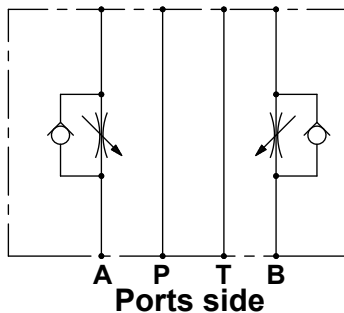
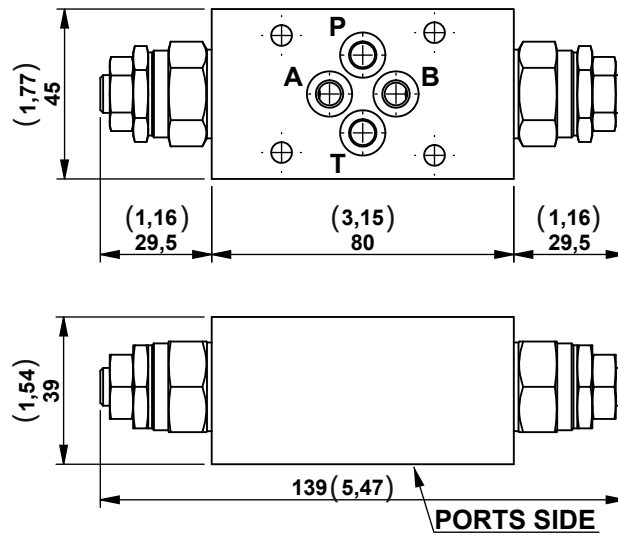
Each block includes 4 OR 108 gaskets.



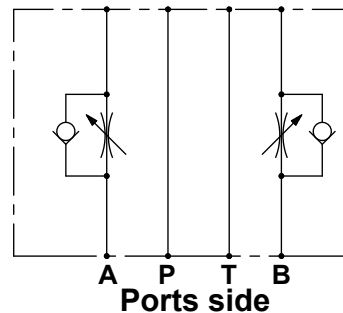
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N103-10	Sandwich block with poppet type "VM25" relief valves A in B and B in A (10-100 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386103A81	R932001202
N103-20	Sandwich block with poppet type "VM25" relief valves A in B and B in A (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386103A82	R932001203
N103-35	Sandwich block with poppet type "VM25" relief valves A in B and B in A (70-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386103A83	R932001204

Sandwich blocks with “ST-CU-06” adjustable flow control valves for CETOP 3 (2143) configuration valves

Each block includes 4 OR 108 gaskets.



N78

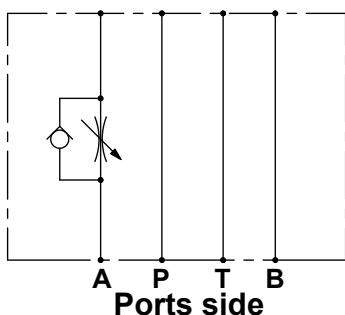
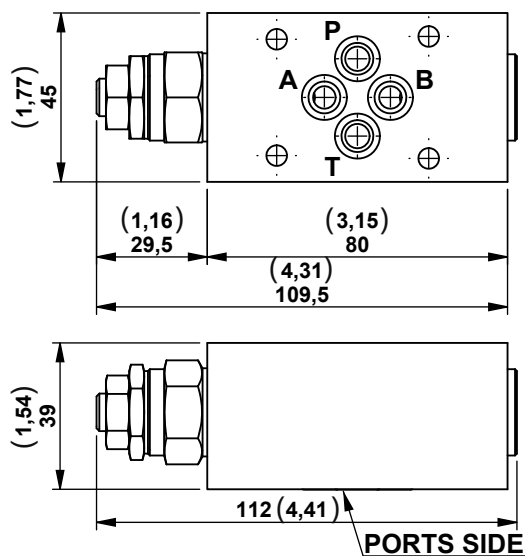


N104

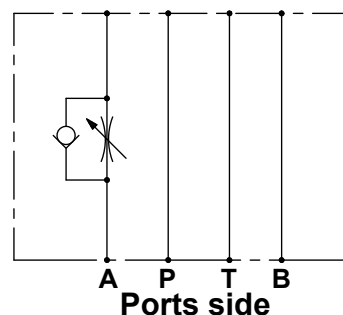
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N78	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the return to the tank of the A and B line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386077A81	R932001156
N104	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the delivery of the A and B line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386104A80	R932001205

Sandwich blocks with “ST-CU-06” adjustable flow control valves for CETOP 3 (2143) configuration valves

Each block includes 4 OR 108 gaskets.



N105

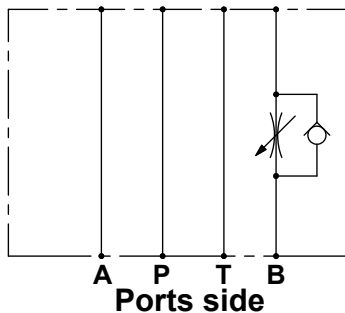
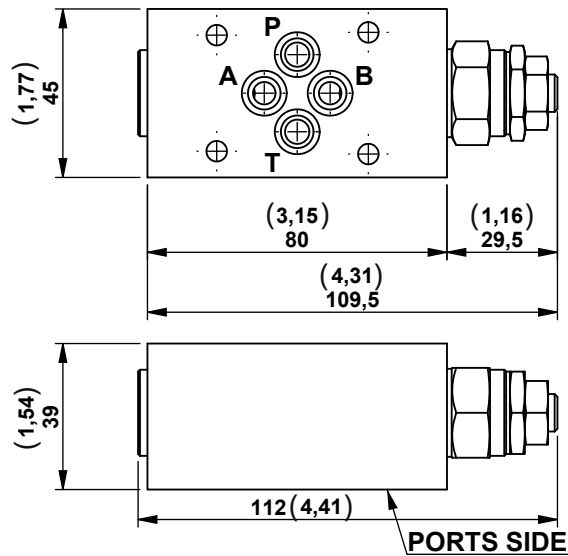


N107

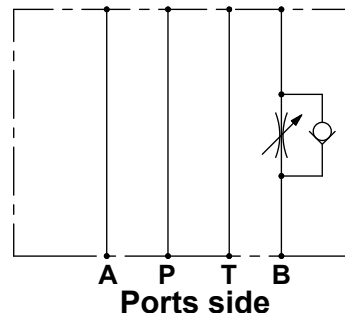
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N105	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the return to the tank of the A line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386105A81	R932000183
N107	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the delivery of the A line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386107A80	R932001211

Sandwich blocks with “ST-CU-06” adjustable flow control valves for CETOP 3 (2143) configuration valves

Each block includes 4 OR 108 gaskets.



N106

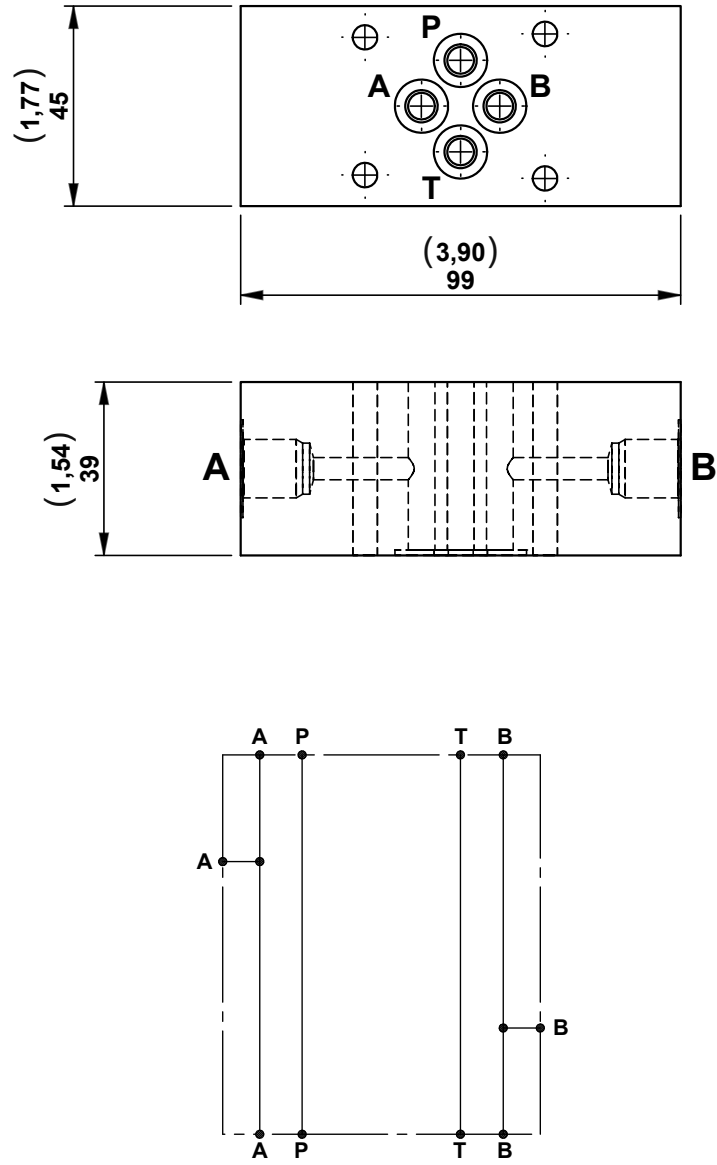


N108

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N106	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the return to the tank of the B line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386106A81	R932000184
N108	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the delivery of the B line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386108A80	R932001212

Sandwich block with ports on “A” and “B” line for CETOP 3 (2143) configuration valves

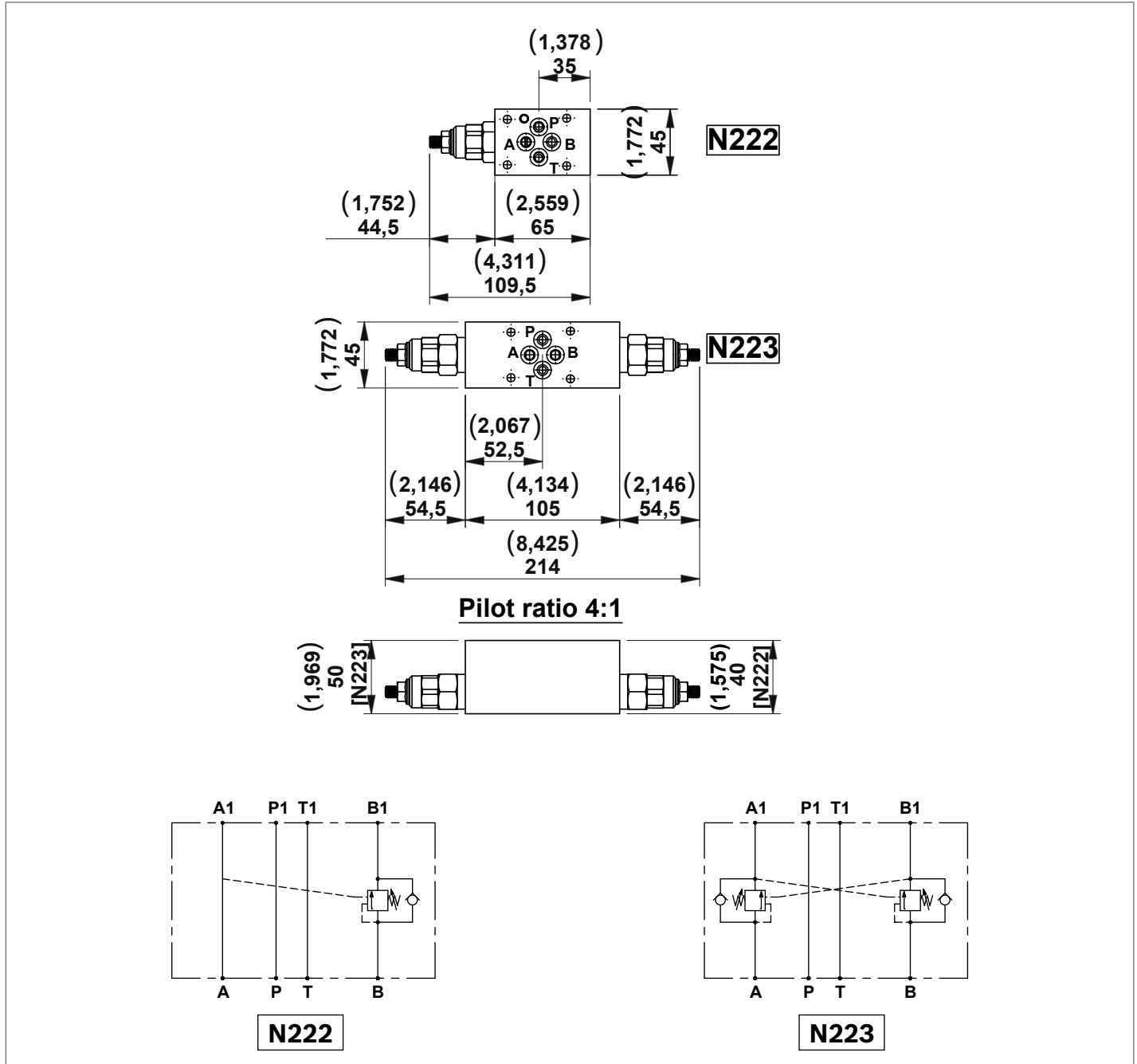
Each block includes 2 OR 2056 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N19-14	Sandwich block with 1/4" BSPP ports on A and B line for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386018010	R932001091

Sandwich blocks with overcenter valves for CETOP 3 (2143) configuration valves

Each block includes 4 OR 108 gaskets.

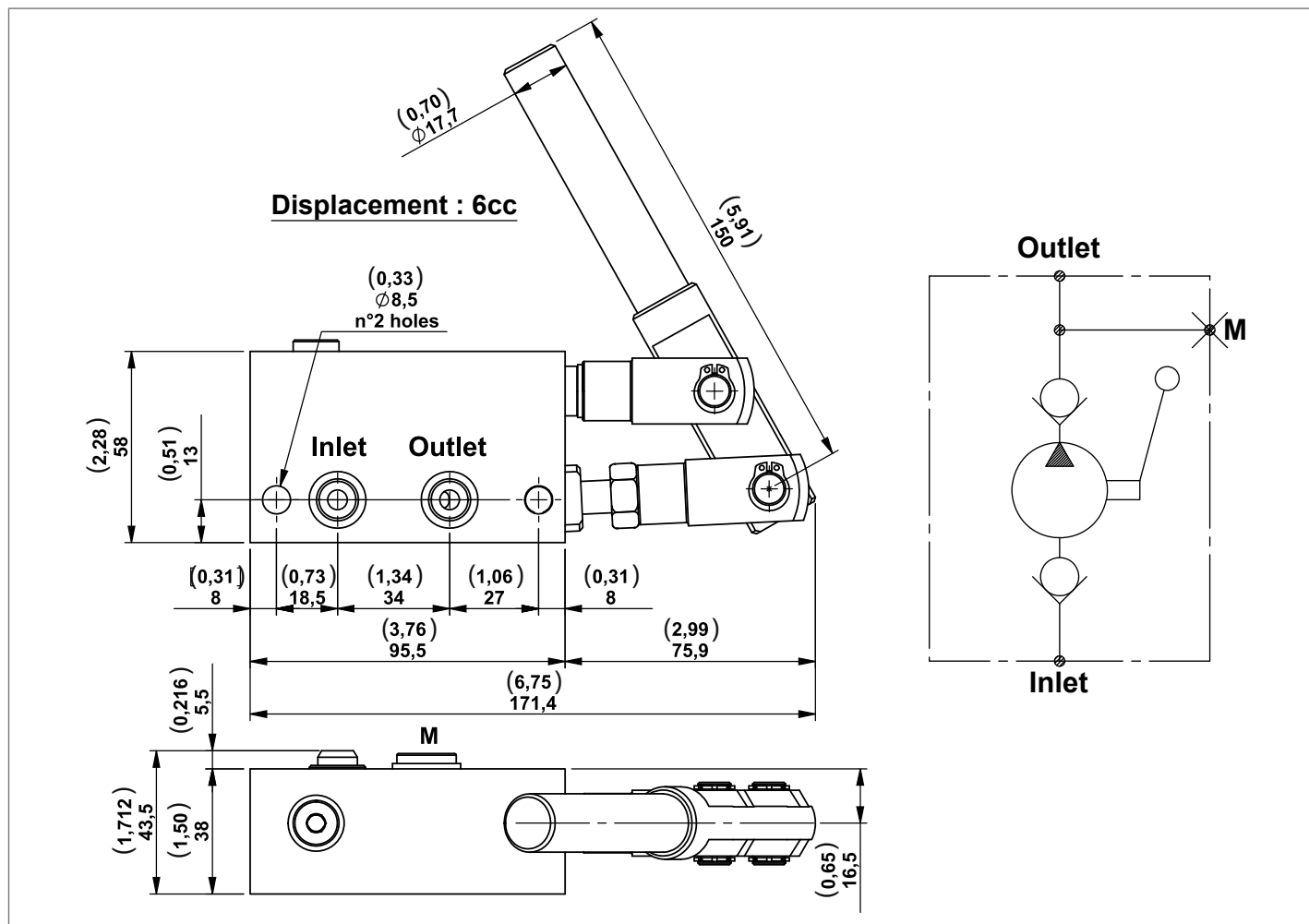


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N222.20	Sandwich block with Overcentre valve VBSN-08AA (100-210 bar) on B line for CETOP3	300 (4351)	30 (7,93)	G386222002	R932001326
N222.35	Sandwich block with Overcentre valve VBSN-08AA (200-350 bar) on B line for CETOP3	300 (4351)	30 (7,93)	G386222003	R932001327
N223.20	Sandwich block with Overcentre valves VBSN-08AA (100-210 bar) on A and B line for CETOP3	300 (4351)	30 (7,93)	G386223002	R932001329
N223.35	Sandwich block with Overcentre valves VBSN-08AA (200-350 bar) on A and B line for CETOP3	300 (4351)	30 (7,93)	G386223003	R932001330

Modular hand pump manifold block

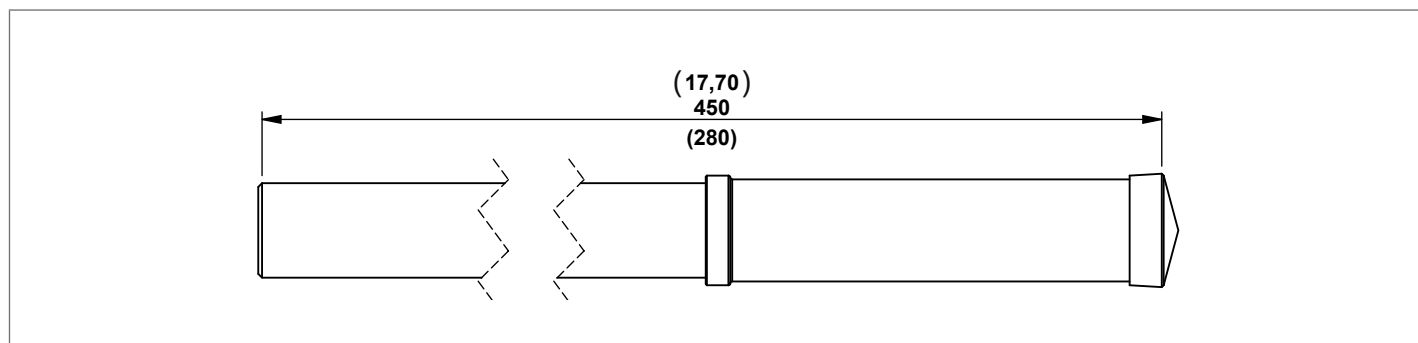
A single acting hand pump usually used for emergency.

Each block includes 5 OR 2050 gaskets.



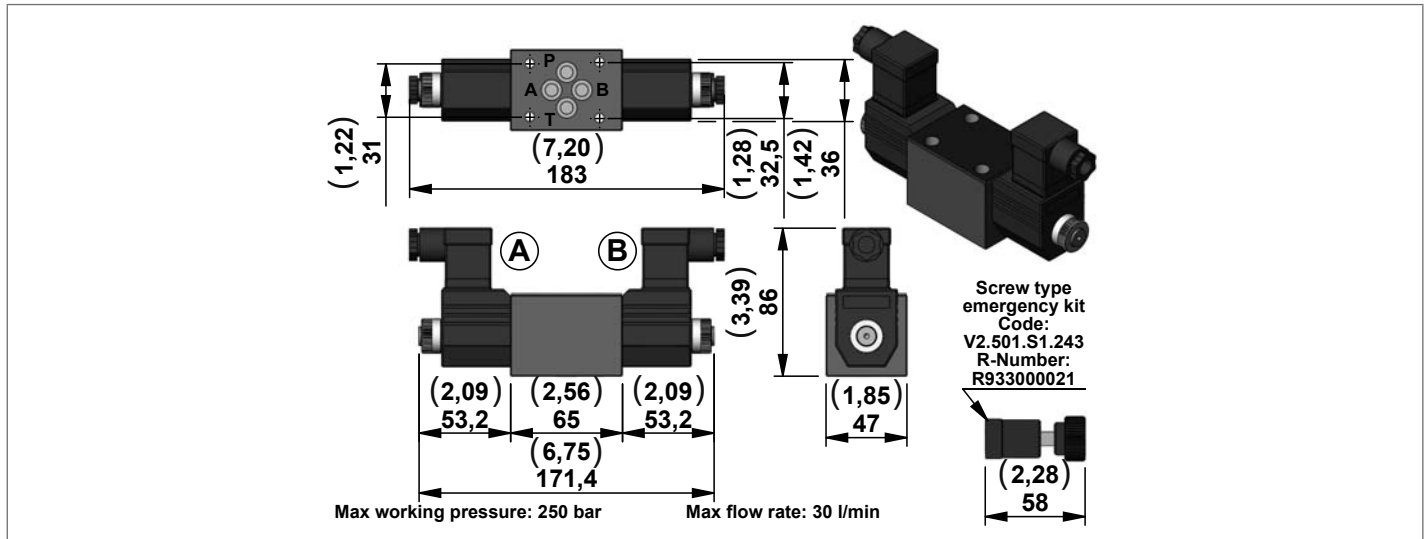
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N22	Modular hand pump manifold block	350 (5076)	-	G386021A10	R930067575

Lever Kit



Description	Type	Material number
Lever L= 450	K250133000	R932002452
Lever L= 280	K2501S1058	R932002407

CETOP 2143 (Ø6mm (0,24inch)) Solenoid Valves



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Material number	Diagram
E02Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004275	
E02Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004277	
E02Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004279	
E02Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004281	
E06Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004096	
E06Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004098	
E06Z-OD	CETOP3 solenoid valve 48V D.C.	250 (3626)	30 (7,92)	R933007830	
E06Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004102	
E06Z-OW	CETOP3 solenoid valve 110V RAC	250 (3626)	30 (7,92)	R933004103	
E06Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004104	
E07Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004131	
E07Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004133	
E07Z-OD	CETOP3 solenoid valve 48V D.C.	250 (3626)	30 (7,92)	R933004135	
E07Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004136	
E07Z-OW	CETOP3 solenoid valve 110V RAC	250 (3626)	30 (7,92)	R933004137	
E07Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004138	
E08Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004191	
E08Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004193	
E08Z-OD	CETOP3 solenoid valve 48V D.C.	250 (3626)	30 (7,92)	R933004197	
E08Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004198	
E08Z-OW	CETOP3 solenoid valve 110V RAC	250 (3626)	30 (7,92)	R933004199	
E08Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004200	
E10Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004057	
E10Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004061	
E10Z-OD	CETOP3 solenoid valve 48V D.C.	250 (3626)	30 (7,92)	R933004063	
E10Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004065	
E10Z-OW	CETOP3 solenoid valve 110V RAC	250 (3626)	30 (7,92)	R933004067	
E10Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004068	

Modular blocks with two lowering solenoid valves, check valves, and compensated flow control throttle valves (available upon request)

Modular blocks to operate a single acting cylinder in a parallel circuit or a double acting cylinder in regenerative.

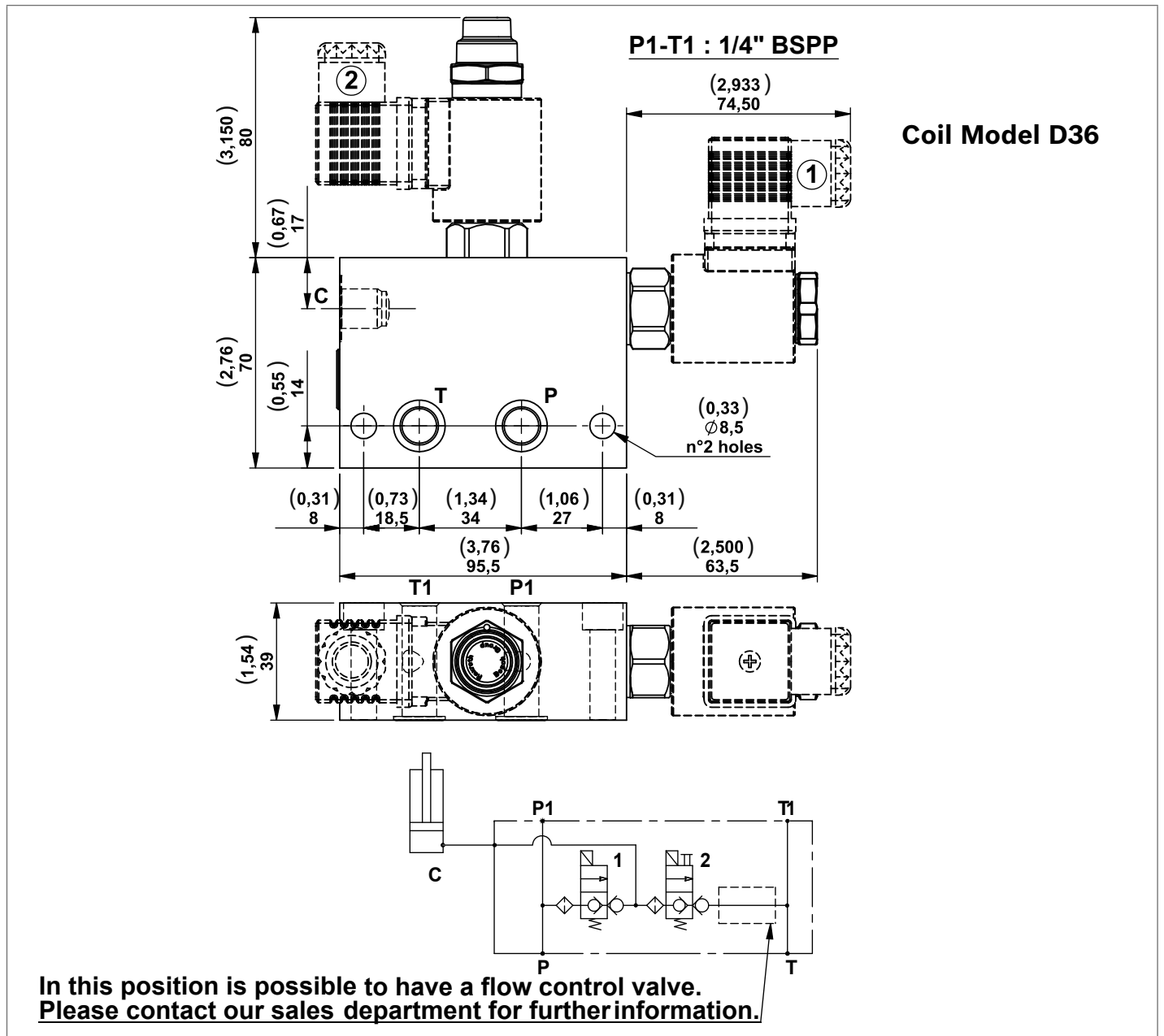
Each block includes 2 OR 2056 gaskets.

Minimum voltage required: 90% of nominal.

Coils not included, must be ordered separately.

For the selection of coil model and voltage please refer to page 41.

For the selection of connectors please refer to page 43.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
V07-14	Modular block with 2 VE with "C" port 1/4" BSPP	250 (3626)	25 (6,60)	G386507010A	R930062154
V07-38	Modular block with 2 VE with "C" port 3/8" BSPP	250 (3626)	25 (6,60)	G386507020A	R930064959

Modular blocks with four way three position solenoid valve. Spool type

A selection of modular blocks with 4/3 spool type solenoid valve for small double acting cylinders.

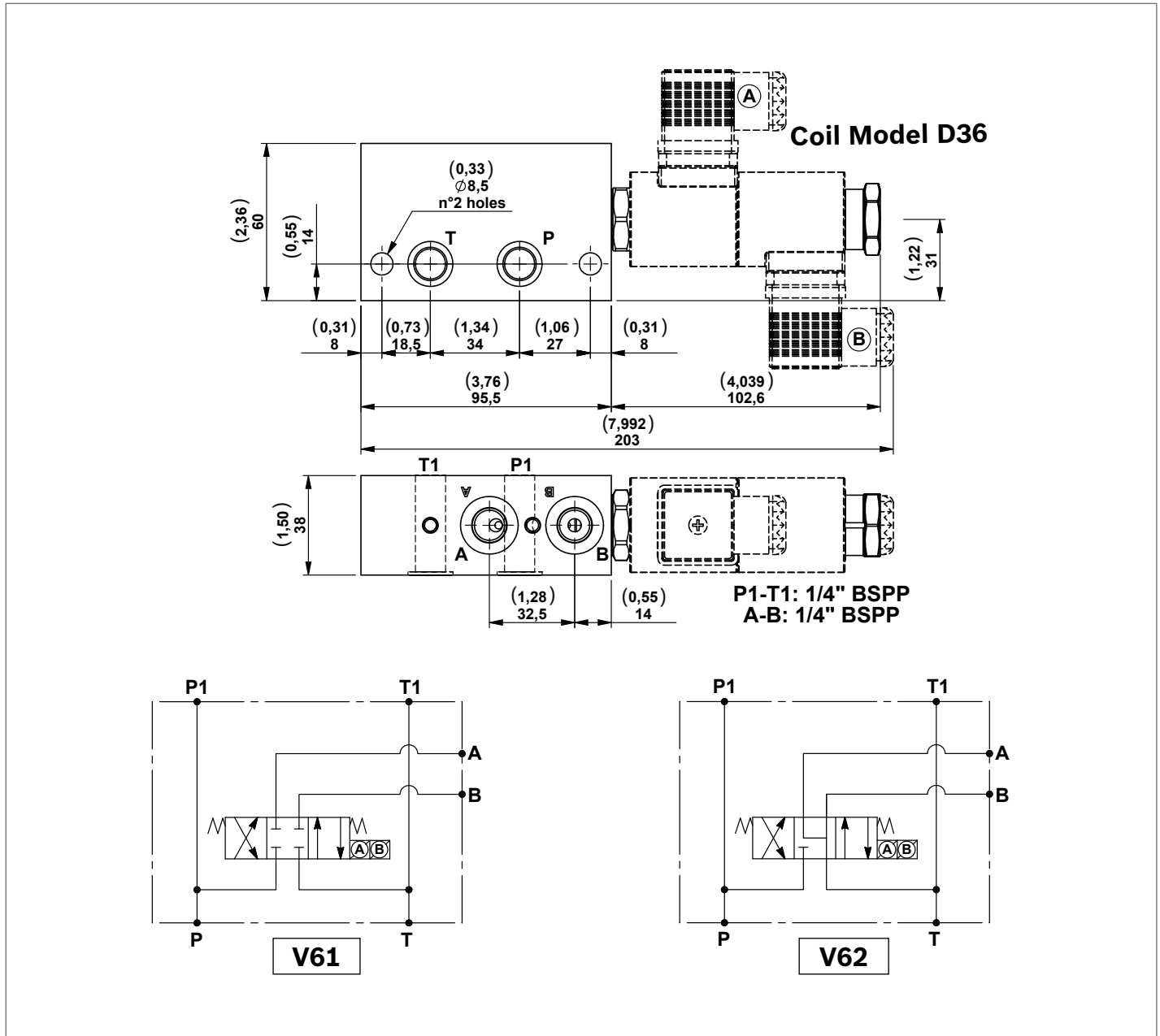
Each block includes 2 OR 2056 gaskets.

Minimum voltage required: 90% of nominal.

Coils not included, must be ordered separately.

For the selection of coil model and voltage please refer to page 41.

For the selection of connectors please refer to page 43.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
V61	Modular block with 4 way 3 position electric valve (V4.3A)	210 (3046)	10 (2,64)	G386562010A	R930063648
V62	Modular block with 4 way 3 position electric valve (V4.3B)	210 (3046)	10 (2,64)	G386563010A	R930067006

Modular block with four way three position solenoid valve and P.O. check valves on “A” and “B” line

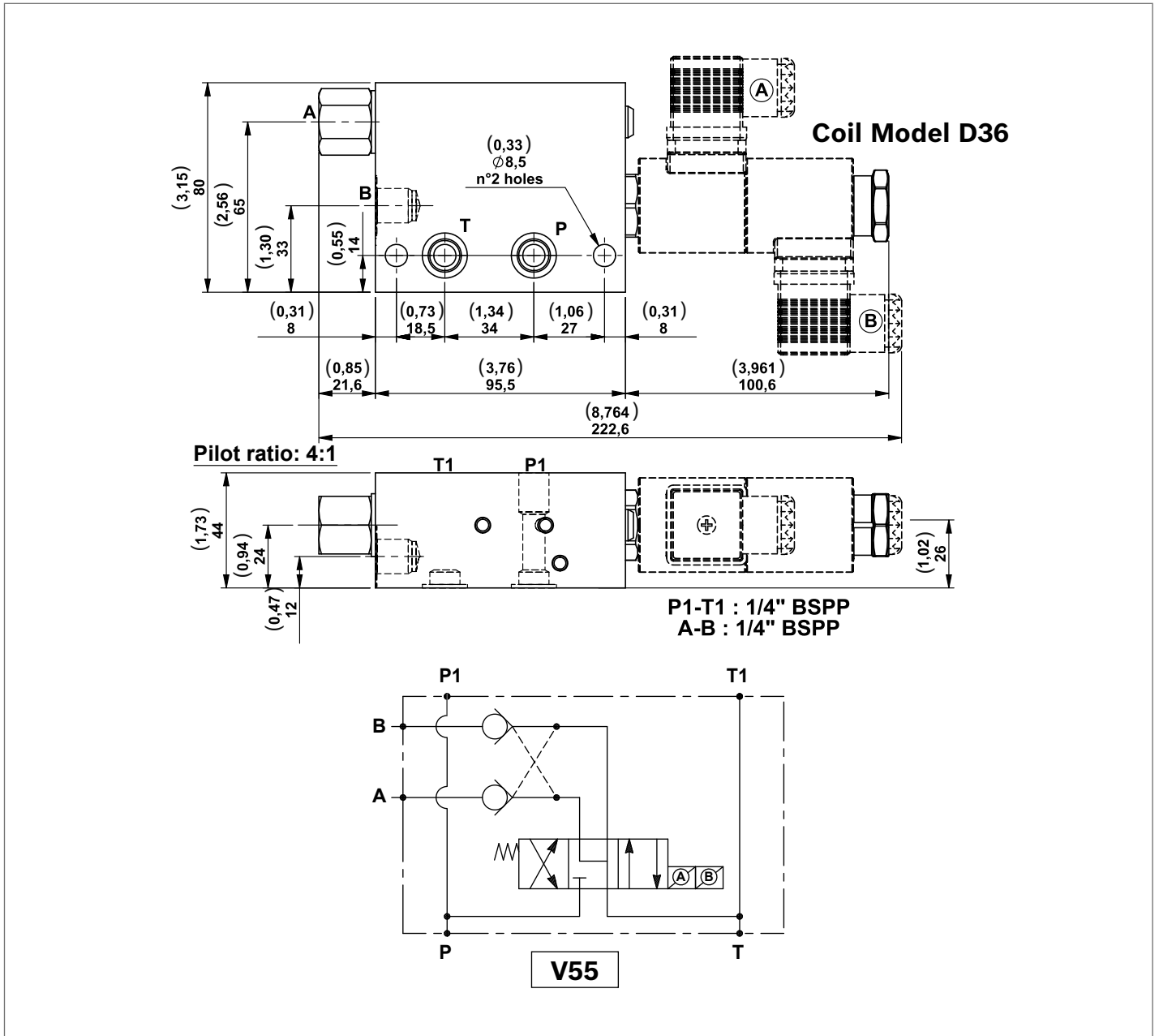
A modular block with 4/3 spool type solenoid valve and P.O. check valves on “A” and “B” line. For small double acting cylinders. Each block includes 2 OR 2056 gaskets.

Minimum voltage required: 90% of nominal.

Coils not included, must be ordered separately.

For the selection of coil model and voltage please refer to page 41.

For the selection of connectors please refer to page 43.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
V55	Modular block with 4 way 3 position electric valve and P.O. check valves on A and B without O-Ring on pilot piston	210 (3046)	10 (2,64)	G386591A10A	R930066516

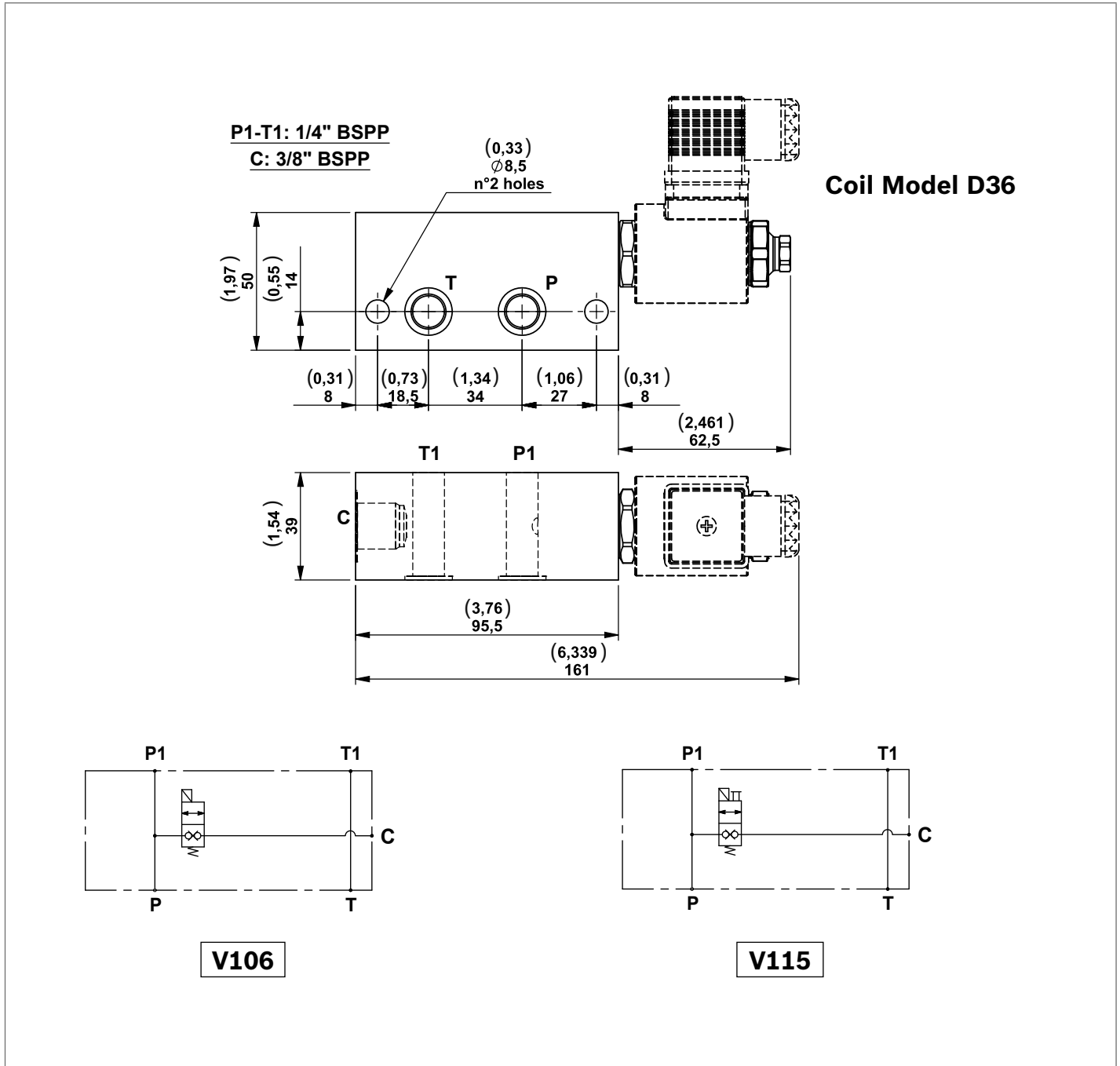
Modular blocks with double locking solenoid valve

Each block includes 2 OR 2056 gaskets.

Coils not included, must be ordered separately.

For the selection of coil model and voltage please refer to page 41.

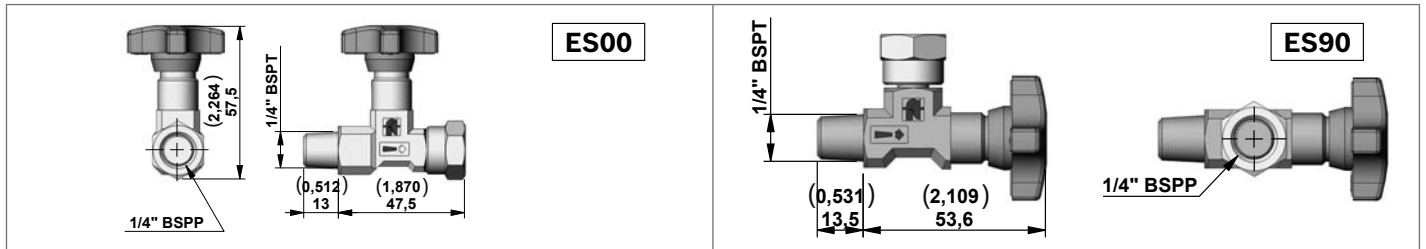
For the selection of connectors please refer to page 43.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
V106	Modular block with DT solenoid valve	250 (3626)	15 (3,96)	G386606020A	R930064757
V115	Modular block with DTE solenoid valve	250 (3626)	15 (3,96)	1586500023A	R930061374

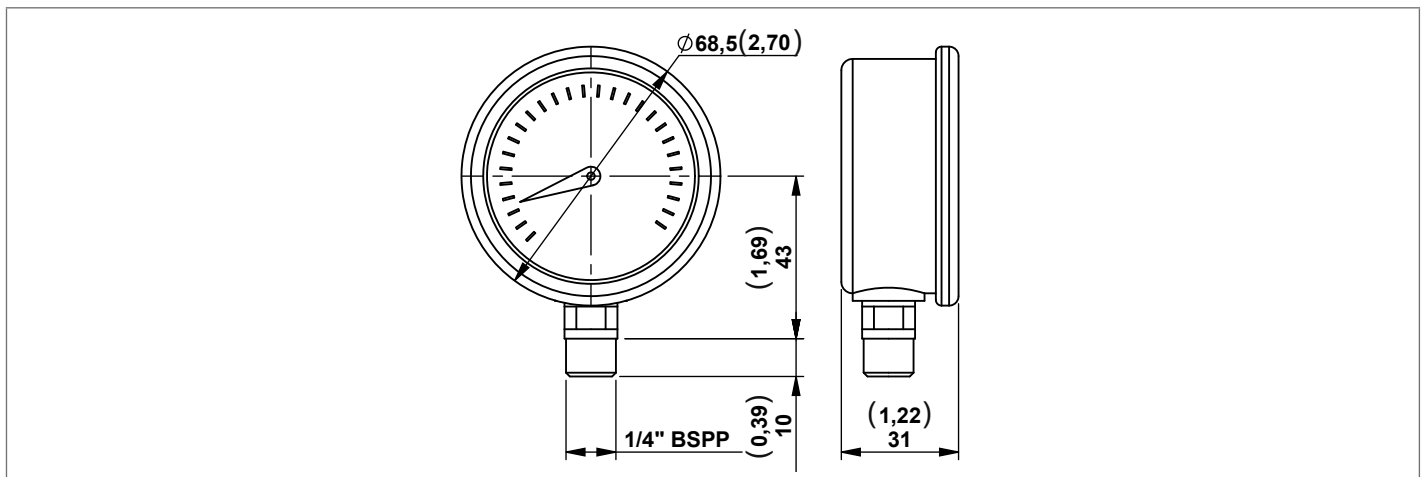
Accessories

Isolator



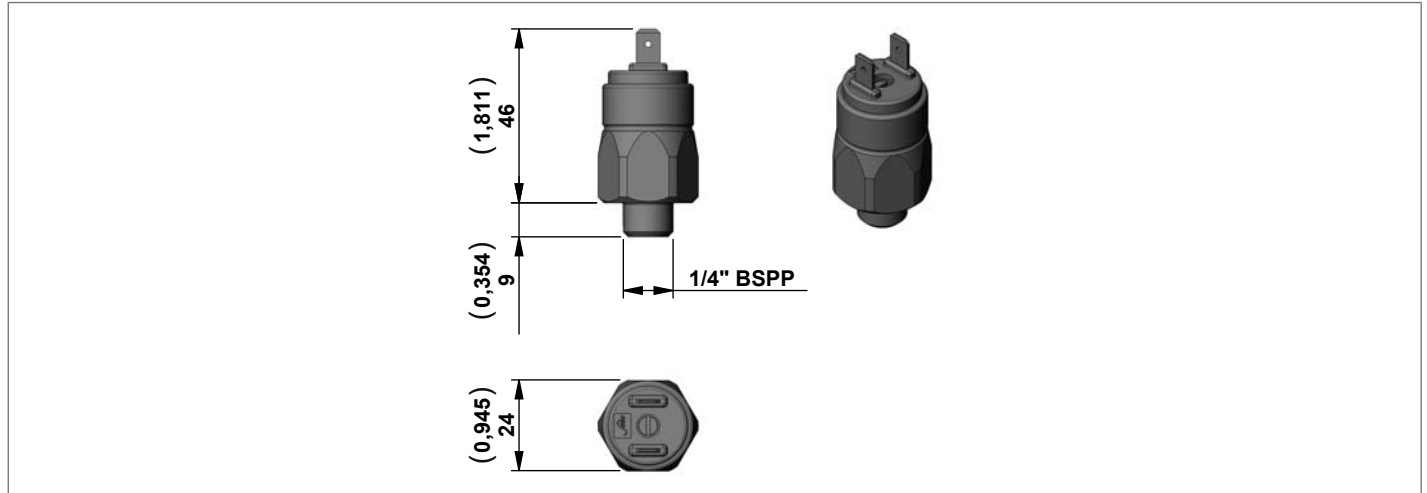
Code	Description	Type	Material Number
ES00	Straight isolator	EM14A	R930069418
ES90	90° isolator	EM14A-T	R930069419

Manometer



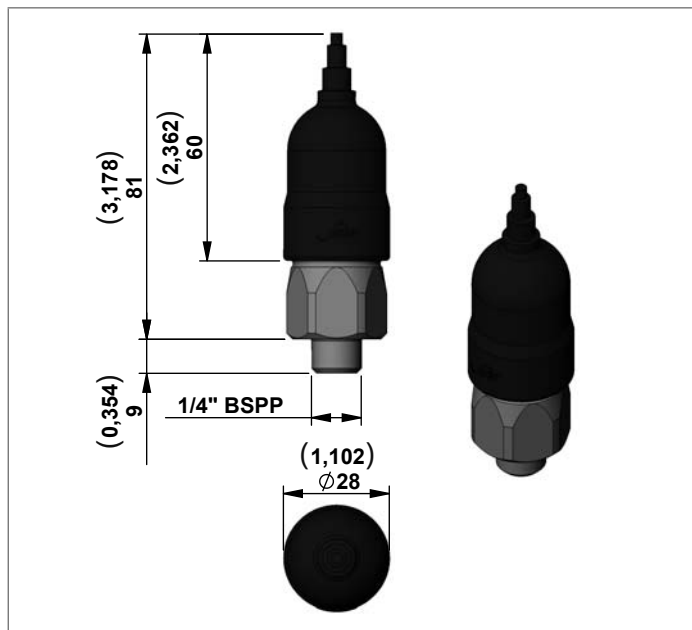
Code	Description	Pressure range bar (psi)	Type	Material Number
MN100	Pressure gauge	0-100 (0-1450)	C163017000	R932000582
MN160	Pressure gauge	0-160 (0-2320)	C163018000	R932000583
MN250	Pressure gauge	0-250 (0-3626)	C163019000	R932000584
MN315	Pressure gauge	0-315 (0-4568)	C163020000	R932000585

Pressure Switches



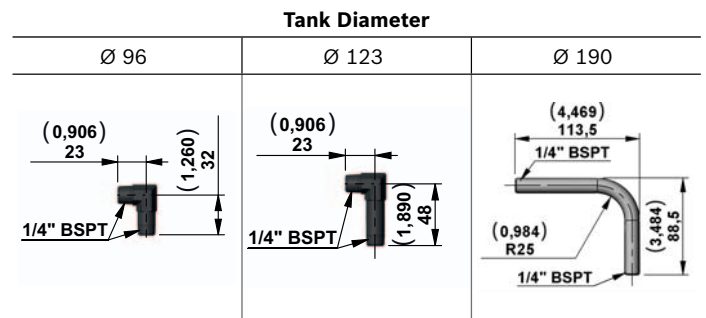
Code	Adjustment Range bar (psi)	Contact Type	Internal Features	Protection (with protective cap assembled)	Type	Material Number
PRNO20	10-20 (145-290)	N.O.	Diaphragm	IP65	C164761000	R932010002
PRNC20	10-20 (145-290)	N.C.	Diaphragm	IP65	C164766000	R932010001
PRNO50	20-50 (290-725)	N.O.	Diaphragm	IP65	C164767000	R932010003
PRNC50	20-50 (290-725)	N.C.	Diaphragm	IP65	C164768000	R932010004
PRNO150	50-150 (725-2175)	N.O.	Piston	IP65	C164769000	R932010005
PRNC150	50-150 (725-2175)	N.C.	Piston	IP65	C164770000	R932010006

Protective Cap for Pressure Switches

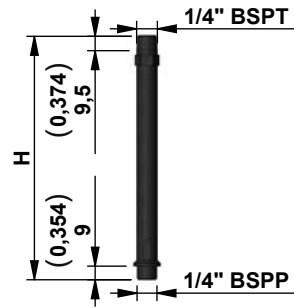


Code	Type	Material Number
CAP	F224013000	R932010000

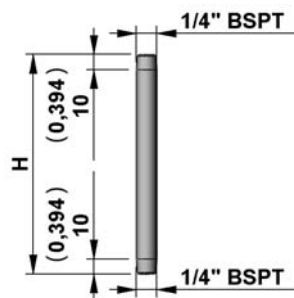
Horizontal Suction, Pipe



Central Manifold	Oil tank diameter mm (inch)	Type	Material Number
ME	90 (3,54)	K2340S2177	R932011066
	123 (4,84)	K2340S2175	R932011064
	190 (7,48)	M234048000	R932003086

Vertical Suction, Plastic Pipe

Central Manifold	Oil tank diameter mm (inch)	Type	Material Number
ME	33 (1,30)	K2340S2178	R932011067
	43 (1,70)	K2340S2179	R932011068
	49 (1,93)	K2340S2180	R932011069
	54 (2,13)	K2340S2181	R932011070
	61 (2,40)	K2340S2182	R932011071
	77 (3,03)	K2340S2183	R932011072
	87 (3,42)	K2340S2184	R932011073
	99 (3,90)	K2340S2185	R932011074
	114 (4,49)	K2340S2186	R932011075
	136 (5,35)	K2340S2187	R932011076
	161 (6,34)	K2340S2188	R932011077
	241 (9,49)	K2340S2189	R932011078
	321 (12,64)	K2340S2190	R932011079
	381 (15,00)	K2340S2191	R932011080

Vertical Suction, Steel Pipe

Central Manifold	H mm (inch)	Type	Material Number
ME	42 (1,65)	M234049000	R932003087
	52 (2,05)	K2340S2009	R932002254
	58 (2,28)	K234057000	R932002339
	63 (2,48)	M2340S2163	R932009736
	70 (2,76)	M234051000	R932003089
	86 (3,39)	M234052000	R932003090
	96 (3,78)	M234046000	R932003084
	108 (4,25)	M234050000	R932003088
	123 (4,84)	M234055000	R932003093
	145 (5,71)	M234054000	R932003092
	170 (6,69)	M234053000	R932003091
	250 (9,84)	M234095000	R932003095
	330 (12,99)	M234022000	R932003082

Suction Filter

Compatibility	Filtering Degree (µm)	Max Flow l/min (gpm)	Type	Material Number	Drawing
ME	90	8 (2,11)	K225583000	R932010867	

Horizontal Return, Steel Pipe

L mm (inch)	H mm (inch)	Type	Material Number	Drawing
120 (4,72)	45 (1,77)	K234716000	R932002375	
134 (5,28)	90 (3,54)	K234717000	R932002376	
170 (6,69)	90 (3,54)	K234727000	R932002383	

Vertical Return, Plastic Pipe

H mm (inch)	Type	Material Number	Drawing ref.	Drawing
100 (3,94)	K234715000	R932002374	A	
110 (4,33)	K234780000	R932011081	B	
120 (4,72)	K234781000	R932011082	B	
150 (5,91)	K234714000	R932002373	A	
160 (6,30)	K234782000	R932011083	B	
200 (7,87)	K234713000	R932002372	A	
250 (9,84)	K234784000	R932011084	B	
300 (11,81)	K234785000	R932011085	B	
400 (15,75)	K234786000	R932011086	B	

Vertical Return, Steel Pipe

H mm (inch)	Type	Material Number	Drawing
250 (9,84)	K234718000	R932002377	
300 (11,81)	K234719000	R932002378	
400 (15,75)	K234722000	R932002379	

Compact power modules

KE, K and KS series

RE 18306-02

Edition: 11.2018

Replaces: 01.2017



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Ordering Details for Compact Power Modules with A.C. Motor

01	02	03	04	05	06	07	08	09	10	11	12
---	-	-	-	-	-	-	-	-	-	-	-

Family											
01	Power module type										KE K KS

Power module type of motor											
02	Without motor										0
	With 3ph motor										2
	With 1ph motor										3

A.C. Electric motor											
03	In the Power Module KE-KS type is possible to assemble every code of AC motor shown in the catalogue. In the Power Module K type is not possible to assemble AC Compact Mounting Style motors. (See pag.10-15)										

Junction Elements											
04	The code of the Junction Element is showing in the page after the selected AC motor.										

Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar											
05	Select the required Central manifold with the required pressure range of the Relief valve and put the required setting in bar beetwen bracket.										

Built-in Valves											
06	Insert the codes of the required valves following the number of the cavity in the Central Manifold (see page after the selected Central Manifold).										

Coil Model and Connector											
07	In case of selection of Solenoid Built-in Valve choice the required coil Voltage and the required Connector. (See page 72-73)										

Gears pump											
08	Is possible to select the required pump between Standard Version and Cast iron cover version. (See page 80)										

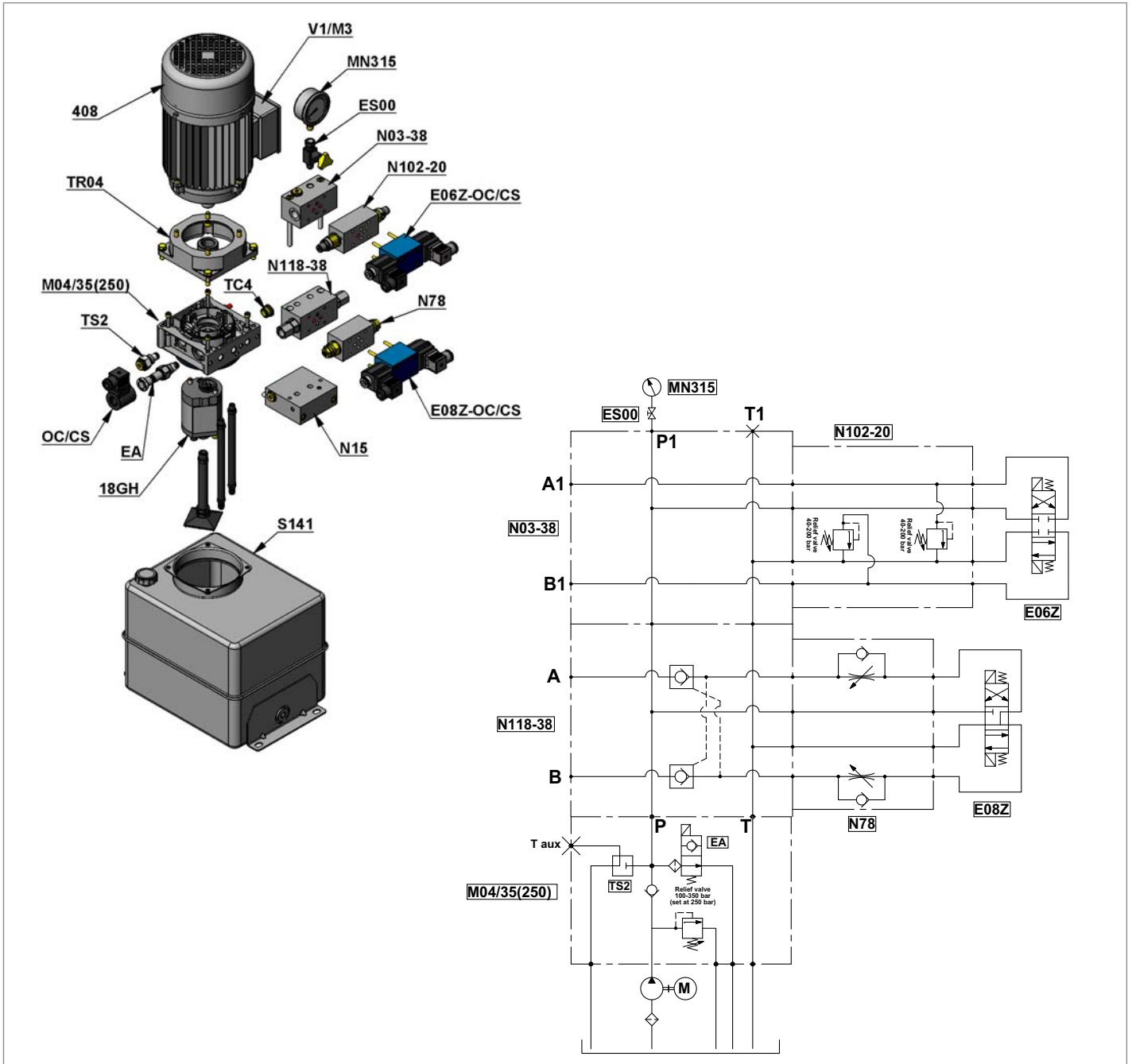
Oil Tank											
09	Select the required Oil Tank. (See pag.82-92)										

Mounting Position and Mounting Brackets											
10	Select the required working position of the Power Module and the position of the therminal box and Oil Filler cap in case of mounting position V1. If needed select the Mounting Bracket. (See pag.93-94)										

Modular Stackable Elements											
11	If needed select the additional Modular Stackable Elements.										

Accessories											
12	If needed select the additional Accessories.										

Example of Ordering Details for Compact Power Modules ME with A.C. Motor



Ordering Details for Compact Power Modules with AC Motor

01	02	03	04	05	06	07	08	09	10	11	12
KE	2	- 408	- TR04	- M04/35 (250)	- EA/TC4/ TS2	- OC/CS	- 18GH	- S141	- V1/M3	- N15/N118-38/N78/ E08Z-OC/CS/N03-38/ N102-20/E06Z-OC/CS	- ES00/MN315
Power Module Type	Power Module Type of Motor	AC Electric motor	Junction Element	Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar beetwen bracket	Built-in Valves in cavity n° 03-05-06	Coil Model and Connector	Gears pump	Oil Tank	Mounting Position and Mounting Brackets	Modular Stackable Elements Coil Voltage Connector	Accessories

Ordering Details for Compact Power Modules ME with D.C. Motor

01	02	03	04	05	06	07	08	09	10	11	12	13	14

Family													
01	Power module type												KE K KS

Power module type of motor													
02	With DC motor												1

D.C. Electric motor													
03	In the Power Module KE-KS type is possible to assemble every code of DC motor shown in the catalogue. In the Power Module K type is not possible to assemble DC motors without front flange. (See pag.16-30)												

Relay													
04	The available relays are shown in the page after the selected DC motor.												

Plastic Protection													
05	The possibility to assemble the plastic protection is shown in the page after the selected DC motor.												

Junction Elements													
06	The code of the Junction Element is showing in the page after the selected DC motor.												

Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar													
07	Select the required Central manifold with the required pressure range of the Relief valve and put the required setting in bar between bracket.												

Built-in Valves													
08	Insert the codes of the required valves following the number of the cavity in the Central Manifold. (see page after the selected Central Manifold)												

Coil Model and Connector													
09	In case of selection of Solenoid Built-in Valve choice the required coil Voltage and the required Connector. (See page 72-73)												

Gears pump													
10	Is possible to select the required pump between Standard Version and Cast iron cover version. (See page 80)												

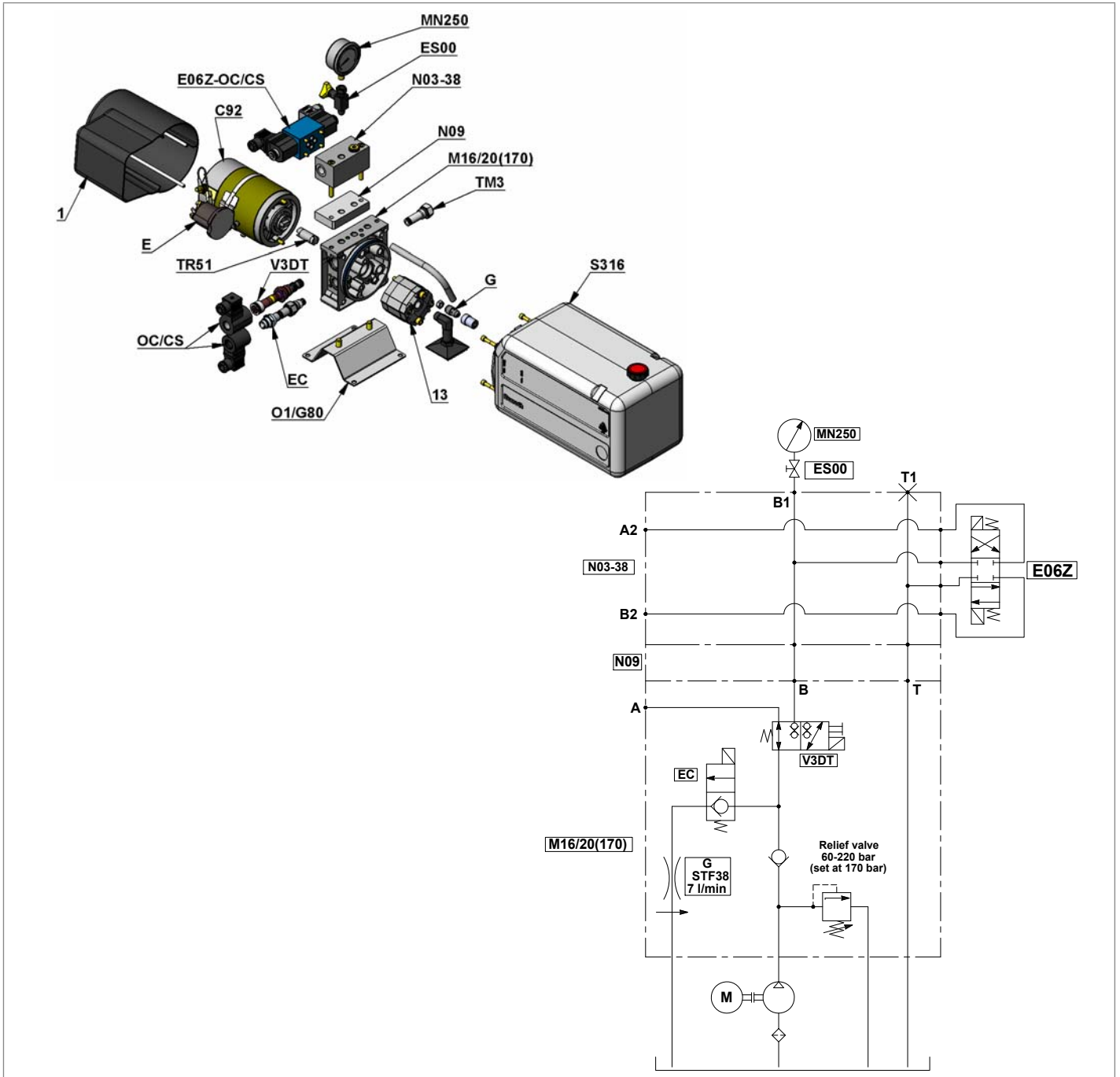
Oil Tank													
11	Select the required Oil Tank. (See pag.82-92)												

Mounting Position and Mounting Brackets													
12	Select the required working position of the Power Module and the position of Relay and Oil Filler cap in case of mounting position V1. If needed select the Mounting Bracket. (See pag.93-94)												

Modular Stackable Elements													
13	If needed select the additional Modular Stackable Elements												

Accessories													
14	If needed select the additional Accessories												

Example of Ordering Details for Compact Power Modules ME with D.C. Motor



Ordering Details for Compact Power Modules with AC Motor

	01	02	03	04	05	06	07	08	09	10	11	12	13	14											
KE	1	-	C92	-	E	-	1	-	TR51	-	M16/20(170)	-	V3DT/TM3/EC/G	-	OC/CS	-	13	-	S316	-	O1/G80	-	N09/N03-38/E06Z-OC/CS	-	ES00/MN250
Power Module Type	Power Module Type of Motor	DC Electric motor	Relay	Plastic Protection	Junction Element	Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar beetwen bracket	Built-in Valves in cavity n° 03-05-06	Coil Model and Connector	Gears pump	Oil Tank	Mounting Position and Mounting Brackets	Modular Stackable Elements	Accessories												

General Technical Data for Compact Power Module KE-K and KS series

Through the years DCOC has developed a highly evolved modular system resulting in powerful, flexible and cost effective power pack range, identified as “**compact power modules**”. In its easier configuration, a “compact power module” is an assembly of electric motor, central manifold with valves, pump, oil tank and a few connection elements. The central manifold, with its built-in valves, allows to achieve a large variety of hydraulic control circuits. If more complex circuits are needed, modular integrated blocks can be added by flange mounting, or interfacing, to the central manifold to extend its capabilities.

Typical applications

Passenger lift
Fork lift
Car and motorcycle lift
Lift table
Dumper
Tail gate
Scissor lift
Gangway and davits for boats
Material handling
Foods machinery

Power module selection

Choose the circuit which meets your application requirements.

Take note of all dimensions resulting from the basic components chosen for your application.

Note

dimensions may vary slightly and should be confirmed by DCOC, if the assembly is to be installed in a space with narrow clearance.

The tank capacity and the tank dimensions need to be large enough to assure proper pump suction: there must always be a reserve of oil in the tank when all cylinders are fully extended and avoid overflow when cylinders are fully retracted.

The tank must be evaluated also for best separation of air from oil, and for settling down oil contamination. It should be placed in a space with, at least, natural ventilation and it should permit enough heat dissipation to prevent high fluid temperature.

Select the electric motor by evaluating the power needed and the motor compliance with the heat developed during the expected run time (or “duty cycle”).

Hydraulic fluid for compact power module

Mineral oil based hydraulic fluids suitable for hydraulic systems can be used; they should have physical lubricating and chemical properties as specified by:

MINERAL OIL BASED HYDRAULIC FLUIDS HL
(DIN 51524 part 1)

MINERAL OIL BASED HYDRAULIC FLUIDS HL P
(DIN 51524 part 2)

For use of environmentally friendly fluids please consult DCOC.

Fluid viscosity, temperature range of the operating fluid, ambient temperature

The fluid viscosity should remain within the range 10 to 300 cSt (centistokes); recommended 15 to 120 cSt.

Permissive cold start viscosity is maximum 2000 cSt.

The fluid temperature should remain within the range -15°C and 80°C (5°F and 176°F).

Note

For compact power module with plastic tank the fluid temperature should remain within the range -15°C and 70°C (5°F and 158°F).

Ambient temperature -15°C +40°C (5°F and 104°F).

Fluid cleanliness requirements and maintenance

We recommend a cleanliness of the operating fluid according to ISO 4406 Class 20/18/15 or cleaner. All components of the hydraulic circuit, including hoses and actuators, must be flushed and cleaned before assembling, because the compact power module has a suction filter only.

The hydraulic fluid should be replaced after the first 50 hours, and then every 1000 hours, or, at least, once a year.

Power module installation

The mounting position (is basically un-restricted; just avoid installations that could compromise the pump suction, it is recommended to support the power module on vibration dampening blocks when the mounting structure is expected to vibrate.

Wiring and starting-up

The wiring between battery and electric motor should be selected in order to avoid excessive voltage drop (recommended less than 1 V).

It is strictly forbidden to allow the backwards rotation of the pump even at the first starting: to prevent reverse

rotation, the wiring polarities must be correctly connected (except for the reversible pumps).

Caution: when energized, the surface temperature of the electric motor could reach temperature levels of 60-80°C (140-176°F): care should be taken to avoid any accidental contact of people with the motor surface.

A.C. motors

The tolerances on the nominal voltage are:

Single phase motor: 230V +/-5% -

Three phase motor: 230-400V +/-10%.

Protection degree : IP54 (protection against dust and water splash).

Insulation class: F (155°C) (311°F).

All motors are aluminum alloy die cast without painting.

Note

Standard Single phase motors have a permanently connected run capacitor. If the motor starts with pressure in the circuit (load in the actuator) we suggest the use of specials dedicated manifolds KE series with integrated Start-Up valve (Manifold code M09 and M19).

D.C. Motors

DCOC has a wide range of D.C. motors. In the following pages you will find a selection of our standard range.

For further information about our complete range please contact our Sales department.

All the motors shown have clockwise rotation suitable for driving our counter clockwise gear pumps.

For each motor a diagram is shown that enables the customer to select the right pump displacement needed for the required flow and working pressure.

To be sure of selecting the best electric motor for the application, also the duty cycle has to be verified.

Following are the definitions of the type of duty cycles:

S2 = Short time duty cycle: indicate the number of minutes the motor can operate before reaching the maximum allowable temperature. After this time the motor must cool down until the ambient temperature is reached.

S3 = Intermittent duty cycle: indicate the maximum time percentage (%) based on 10 minute period within the motor can run until reaching the maximum allowable temperature. For example an S3 value of 15% = 1,5 minutes running time every 10 minutes period. For 8,5 minutes the motor is switched-off.

The S2 and S3 values are related to the current draw. On the label of motor are indicated the S2 and S3 values referred to the nominal power of the motor.

To check the S2 or S3 value at different conditions is necessary to find the value of current in the motor-pumps

diagram and related it with the represented list.

All the diagrams motor-pumps are obtained at the nominal voltage of 12 or 24 Volt using fluid ISO VG 46 at 20-30°C (68-86°F).

Central manifolds

All the Central Manifolds shown in the catalogue are made in die cast aluminium alloy except the manifold code 10 for CPM MR series that is made by extruded bar. The validation of the Central Manifolds follows a life-test with 250 bar (625 psi) pulsed pressure repeated for 300.000 cycles.

Built-in valves

A wide range of cartridge valves and special plugs is available to be assembled in our Central Manifolds. The cartridge valves shown are designed for use in our Compact Power Module and are manufactured using steel with high mechanical strength. Surface treatments protect the exposed parts to the external environment. Standard seals are NBR (BUNA-N) with backup rings in PTFE. The cartridge valves with "leak proof seat design" have an average leakage of 10-15 drops/minute (< 1 cm³/minute 0.06 in³/min.) at the maximum pressure using fluid ISO VG46 at 40°C (104°F). The validation of the cartridge valves follows a life-test at pulsed maximum pressure (indicated for each valve) repeated for 500.000 cycles.

All the solenoid cartridge valves are fitted with protective O-Rings installed between the pole tube and the coil. These O-Rings protect the internal parts from condensation and contaminants , which could cause malfunction.

All the solenoid cartridge valves are designed for operating in D.C.

Power supply in A.C. requires a connector with bridge rectifier included.

External gear pumps

DCOC offers a wide range of External Gear Pumps to cover different kinds of applications. The standard versions are suitable for the biggest part of applications. For applications requiring higher peaks of pressure (for example Car Lift and Presses) a version with cast iron covers is available. For applications requiring high numbers of Start&Stop or low noise feature the tapered shaft version for elastic coupling is preferred (available only for central manifold K series with A.C. motors). All the pumps are pressure compensated to guarantee the best efficiency.

Oil tanks

In this catalogue you will find a wide selection of steel and plastic tanks available as a standard product. If a special tank is required please contact our Sales Department. Steel tanks have Black paint finish and are suitable for operating temperature range -15°C / +80°C (5°F / 176°F). Plastic tanks are obtained in one piece in order to avoid welded parts that are weak points at extreme temperature and vibrations. Plastic tanks are suitable for operating temperature range -15°C / +70°C (5°F / 158°F).

Note

even if the plastic tank mounting system is designed to avoid oil leakage the tank must be securely anchored when fitted in mobile equipment and when subject to shocks and heavy vibrations. Please check that the anchorages do not stress or deform the tank.

Modular stackable elements

Our modular system offers a wide range of standardised elements. They are divided in two main series:
 Modular Elements “N” series: Modular blocks for different mounting position with mechanical valve or interface for CETOP valves to create parallel or series circuits.
 Modular Elements “V” series: Modular blocks that incorporate solenoid operated cartridge valves 2,3,4 way. All the Modular Elements are made in extruded aluminum alloy. In the catalogue you will find a selection of the main used models.

Note

To reduce the complexity of the system and optimize the available space, special Modular Elements can be designed and manufactured following the customers needs. In this case please contact our Sales Department.

European machine directive 2006/42/CE

According to the Machine Directive 2006/42/CE, a complete power module, as described in paragraph 15 and made available to the European market, enters into the definition of “partly completed machinery”.

Instead, the power module sub-assemblies (motor, pump, reservoir, central manifold,...), when not assembled into a complete power pack, are considered “components” which can be employed in a “machinery” or a “partly completed machinery”. In this case, the DCOC components and sub-assemblies must be fitted in compliance with all the relevant technical data sheet applicable to the product, and shall not be operated, adjusted or disassembled before the complete machinery where they are incorporated has been

declared to be in compliance with the Machine Directive 2006/42/CE.

Note

All the components shown in the catalogue ARE NOT suitable for use in potentially explosive atmosphere.

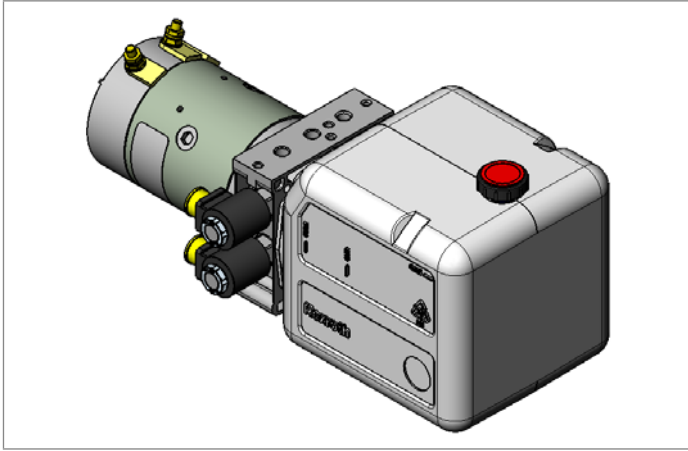
Technical information

Below you will find the most common equations used in hydraulics:

	Common Units	Symbols	Equations
Flow	l/min	Q	$Q = \frac{D \times n}{1000} \times 0,95$
Operating pressure	bar	P	$P = \frac{F}{0,1 \times A}$
Internal diameter hydraulic cylinder	mm	d	–
Area of hydraulic cylinder	mm ²	A	$A = \frac{\pi \times d^2}{4}$
Piston force	N	F	–
Drive shaft	rev/min	n	–
Power requirement for motor	kW	N	$N = \frac{P \times Q}{612}$
Pump displacement	cm ³ /rev	D	–
Torque requirement	Nm	M	$M = \frac{D \times P}{62,8 \times 0,87}$

Compact Power Module Type

Standard Type KE series



Complex circuits, direct flange AC motors.

DC motors up to 3000 W.

AC motors up to 4000 W (5,5 hp).

Pump displacement up to 7,9 cm³ (0,31 inch³).

Pressure up to 300 bar (4350 psi).

Optionals:

Start-up valve inside.

3-ways solenoid operated valve inside.

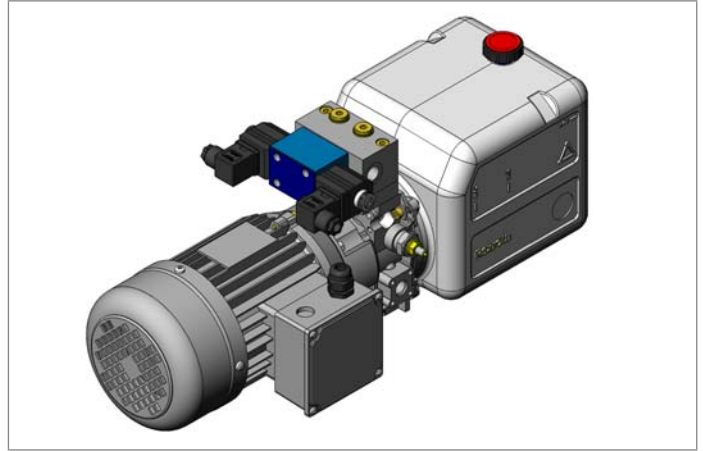
4-ways solenoid operated valve inside.

AC electric motor with direct coupling for smaller dimensions.

Gear pumps with splined shaft.

Low noise pumps.

Optional Type K series



Standardized central manifold for simple hydraulics circuits.

DC motors up to 3000 W.

AC motors up to 4000 W (5,5 hp).

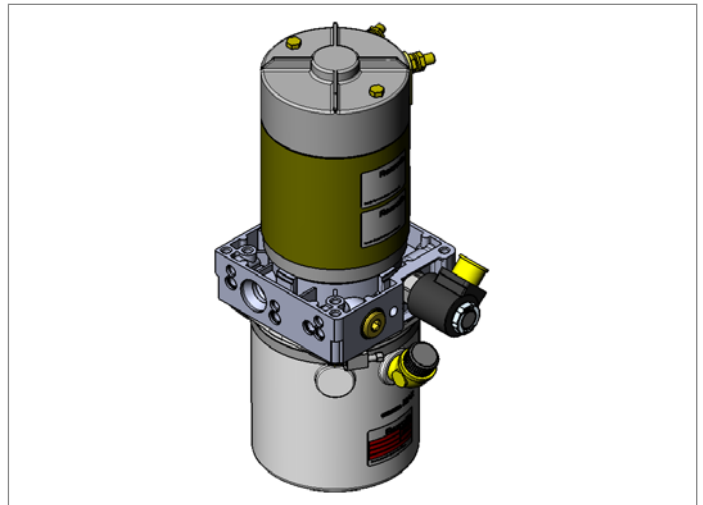
Pump displacement up to 7,9 cm³ (0,31 inch³).

Pressure up to 300 bar (4350 psi).

Optionals:

Elastic coupling.

Optional Type KS series



Designed for lifting applications.

Ready solution for simple acting circuits with the possibility of unloading valve.

DC motors up to 3000 W.

AC motors up to 4000 W (5,5 hp).

Pump displacement up to 7,9 cm³ (0,31 inch³).

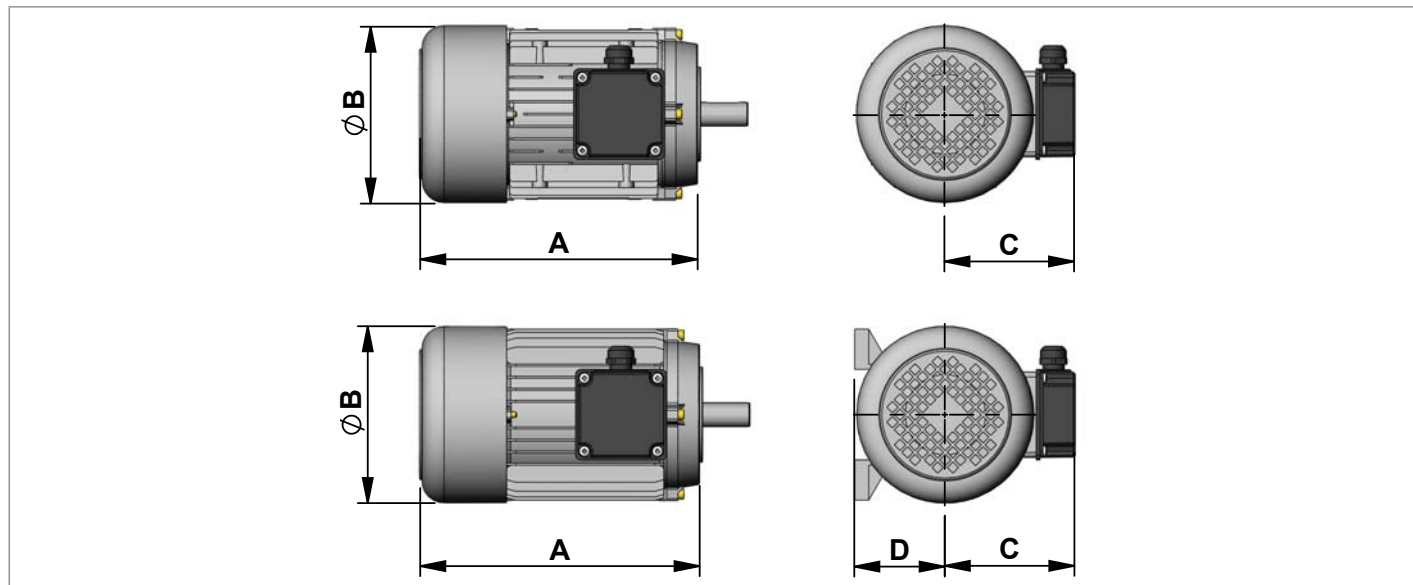
Pressure up to 300 bar (4350 psi).

Note

that every power module type can be mounted in horizontal or vertical position.

A.C. Electric Motors Standard Flange

Standard A.C. Motors in B14 form.

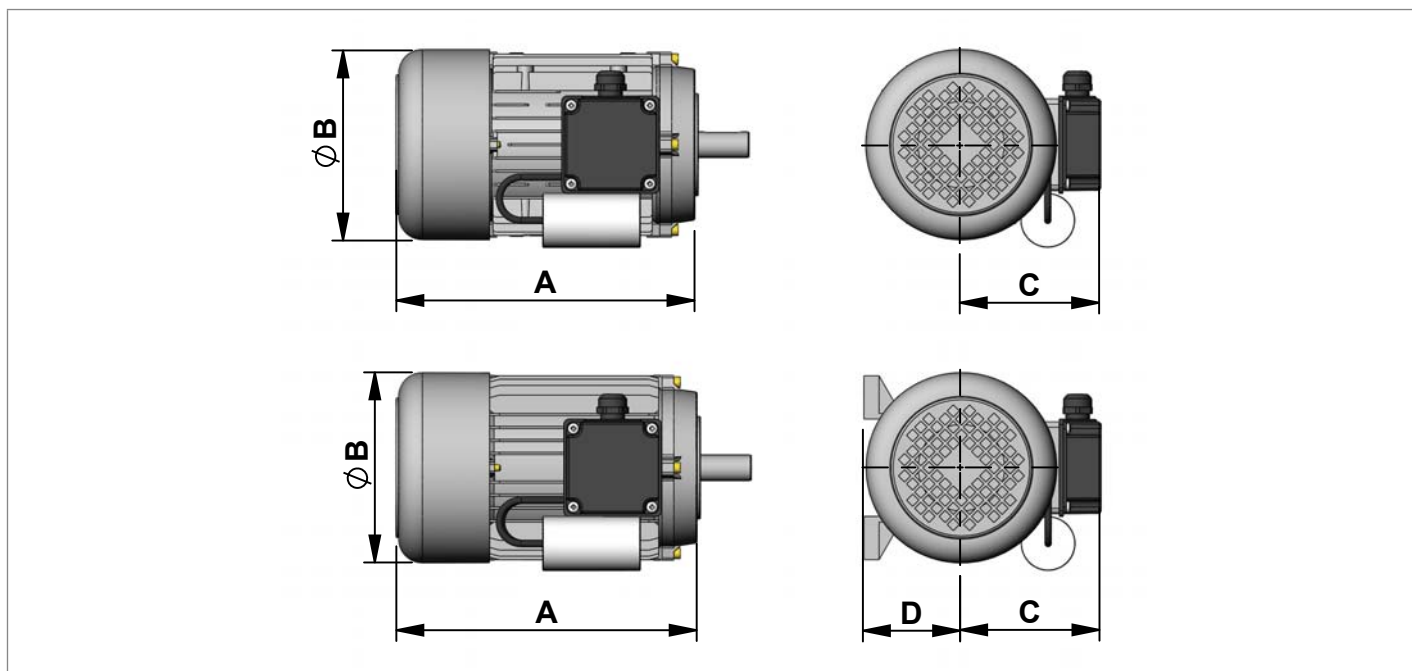


4 Poles Three Phase

Current Motors 230/400V 50Hz IP54 (1450 rpm at 50Hz)

Code	Type	Material Number	Power (kW)	Power (hp)	Size IEC	Duty Cycle	A mm (inch)	ØB mm (inch)	C mm (inch)	D mm (inch)	Efficiency Classe
402	C1622670DR	R932008027	0,25	0,35	71	S1	218 (8,58)	140 (5,51)	109 (4,29)	71 (2,80)	-
403	C1622680DR	R932006105	0,37	0,5	71	S1	212 (8,35)	140 (5,51)	113 (4,45)	71 (2,80)	-
404	C1622150DR	R932006106	0,55	0,75	80	S1	250 (9,84)	156 (6,14)	125 (4,92)	80 (3,15)	-
405	C1622160DR	R932006107	0,75	1	80	S2 60MIN.	250 (9,84)	156 (6,14)	125 (4,92)	80 (3,15)	IE1
406	C1622170DR	R932006108	1,1	1,5	90	S2 60MIN.	260 (10,24)	178 (7,00)	135 (5,32)	90 (3,54)	IE1
407	C1622180DR	R932006109	1,5	2	90	S2 60MIN.	282 (11,10)	178 (7,00)	135 (5,32)	90 (3,54)	IE1
408	C1622S1034DR	R932006110	2,2	3	90	S2 60MIN.	284 (11,18)	178 (7,00)	135 (5,32)	90 (3,54)	IE1
409	C1622200DR	R932006111	3	4	100	S2 60MIN.	305 (12,00)	195 (7,68)	145 (5,71)	100 (3,94)	IE1
410	C1622210DR	R932006112	4	5,5	112	S2 60MIN.	335 (13,19)	219 (8,62)	160 (6,30)	112 (4,41)	IE1

Standard A.C. Motors in B14 form.



On request motors in B34 form are available. In this cases, please put “B34” after the code of the motor when filling in the description. Example “408MB34”.

4 Poles Single Phase

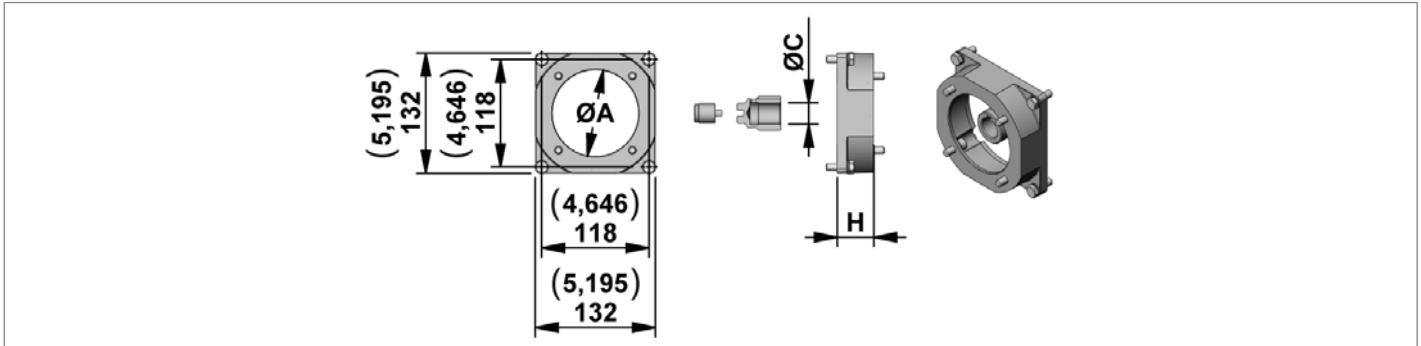
Current Motors 230V 50Hz Form B14 Protection IP54 (1450 rpm at 50Hz)

Code	Type	Material Number	Power (kW)	Power (hp)	Size IEC	Duty Cycle	A mm (inch)	ØB mm (inch)	C mm (inch)	D mm (inch)
402M	C162271000	R932000496	0,25	0,35	71	S1	218 (8,58)	140 (5,51)	109 (4,29)	71 (2,80)
403M	C162272000	R932000497	0,37	0,5	71	S1	212 (8,35)	140 (5,51)	113 (4,45)	71 (2,80)
404M	C162239000	R932000471	0,55	0,75	80	S1	250 (9,84)	156 (6,14)	125 (4,92)	80 (3,15)
405M	C162240000	R932000472	0,75	1	80	S1	250 (9,84)	156 (6,14)	125 (4,92)	80 (3,15)
406M	C162241000	R932000473	1,1	1,5	90	S1	260 (10,24)	178 (7,00)	135 (5,32)	90 (3,54)
407M	C162242000	R932000474	1,5	2	90	S1	282 (11,10)	178 (7,00)	135 (5,32)	90 (3,54)
408M	C162244000	R932000475	2,2	3	100	S1	309 (12,16)	195 (7,68)	145 (5,71)	100 (3,94)

Note

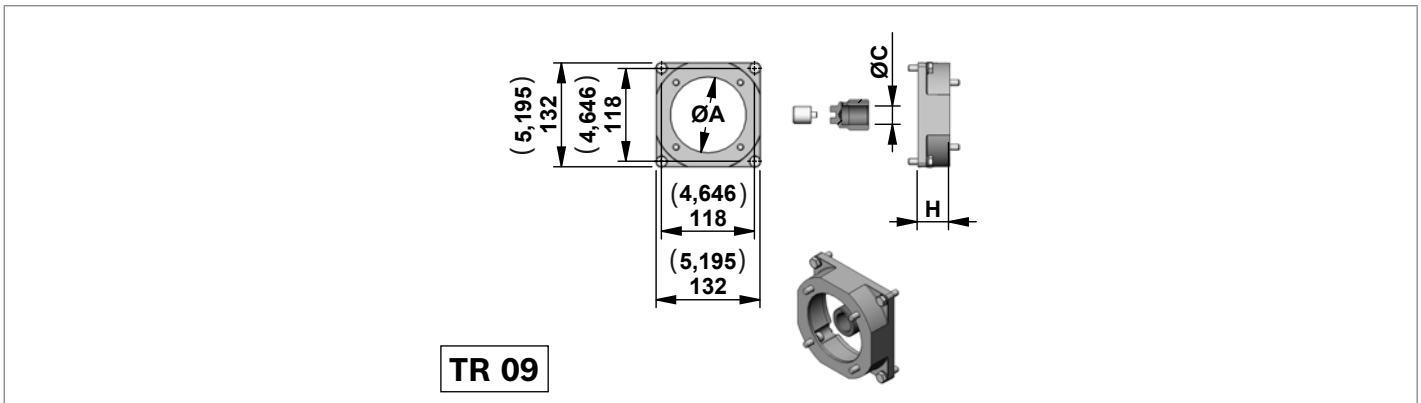
The electric motors with standard flange shown in this pages are delivered by different certified suppliers. This means the indicated dimensions could change a little, depending on which manufacturer will be assembled. On the CPM the choice of the manufacturer is based on our stock availability.

Junction Elements for A.C. Electric Motor Standard Flange



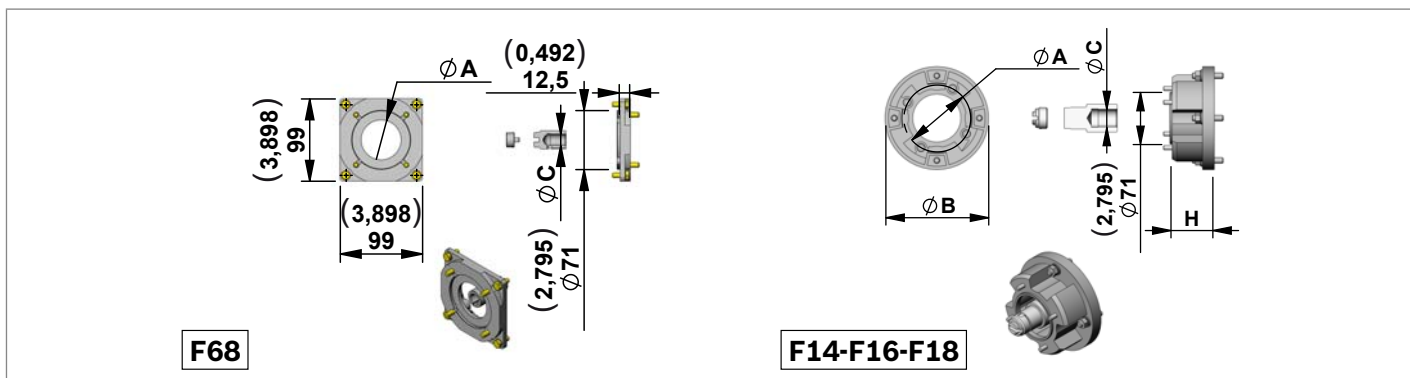
Junction Elements for manifolds KE and KS series (STD COUPLINGS)

Code	Motor Codes	Size IEC	A mm (inch)	C mm (inch)	H mm (inch)	Type	Material Number
TR02	402-402M 403-403M	71	70 (18,50)	14 (0,55)	20,5 (0,81)	K01KE970TR002	R932001894
TR03	404-404M 405-405M	80	80 (3,15)	19 (0,75)	29 (1,14)	K01KE970TR003	R932001895
TR04	406-406M 407-407M 408	90	95 (3,74)	24 (0,95)	40 (1,57)	K01KE970TR004	R932001896
TR05	409-408M 410	100 112	110 (4,33)	28 (1,10)	57 (2,24)	K01KE970TR005	R932001897



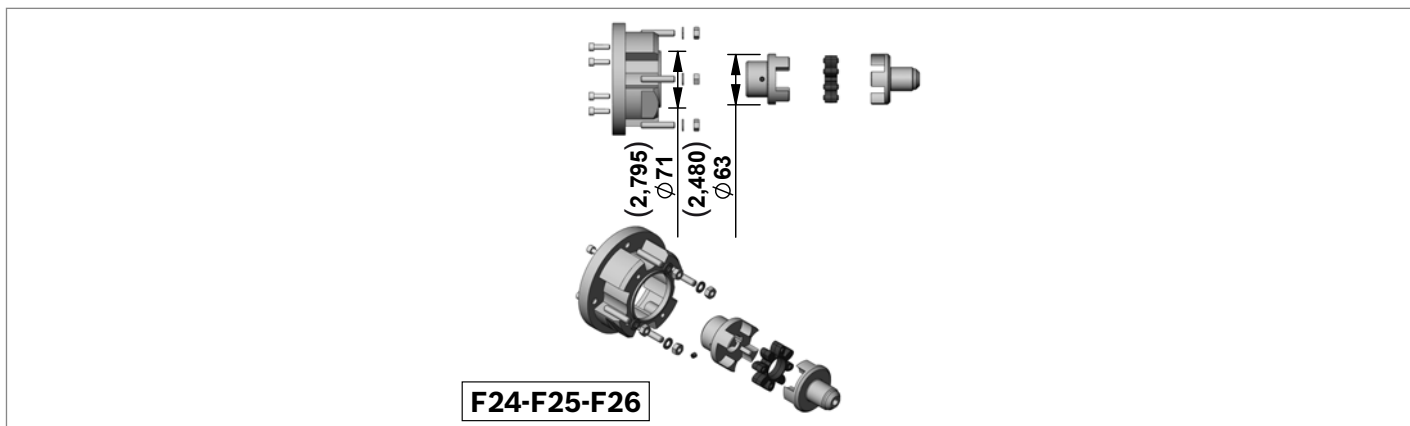
Junction Elements for manifolds KE and KS series (COUPLINGS FOR SPLINED SHAFT PUMPS)

Code	Motor Codes	Size IEC	A mm (inch)	C mm (inch)	H mm (inch)	Type	Material Number
TR11	402-402M 403-403M	71	70	14	20,5	KE970TR011	R930071160
TR10	404-404M 405-405M	80	80	19	29	KE970TR010	R930071012
TR12	406-406M 407-407M 408	90	95	24	40	KE970TR012	R930071161
TR09	409-408M 410	100 112	110	28	57	KE970TR009	R930042393



Junction Elements for manifolds K series (STD COUPLINGS)

Code	Motor Codes	Size IEC	A mm (inch)	B mm (inch)	C mm (inch)	H mm (inch)	Type	Material Number
F68	402-402M 403-403M	71	70 (18,50)	-	14 (0,55)	-	K01K3970TR056	R932001917
F14	404-404M 405-405M	80	80 (3,15)	120 (4,72)	19 (0,75)	45 (1,77)	K01K3970TR022	R932001909
F16	406-406M 407-407M 408	90	95 (3,74)	140 (5,51)	24 (0,95)	57 (2,24)	K01K3970TR021	R932001908
F18	409-408M 410	100 112	110 (4,33)	160 (6,30)	28 (1,10)	67 (2,64)	K01K3970TR025	R932001911



Junction Elements for manifolds K series (ELASTIC COUPLINGS)

Code	Motor Codes	Size IEC	Type	Material Number
F24	404-404M 405-405M	80	K01K3970TR026	R932001912
F25	406-406M 407-407M 408	90	K01K3970TR027	R932001913
F26	409-408M 410	100 112	K01K3970TR028	R932001914

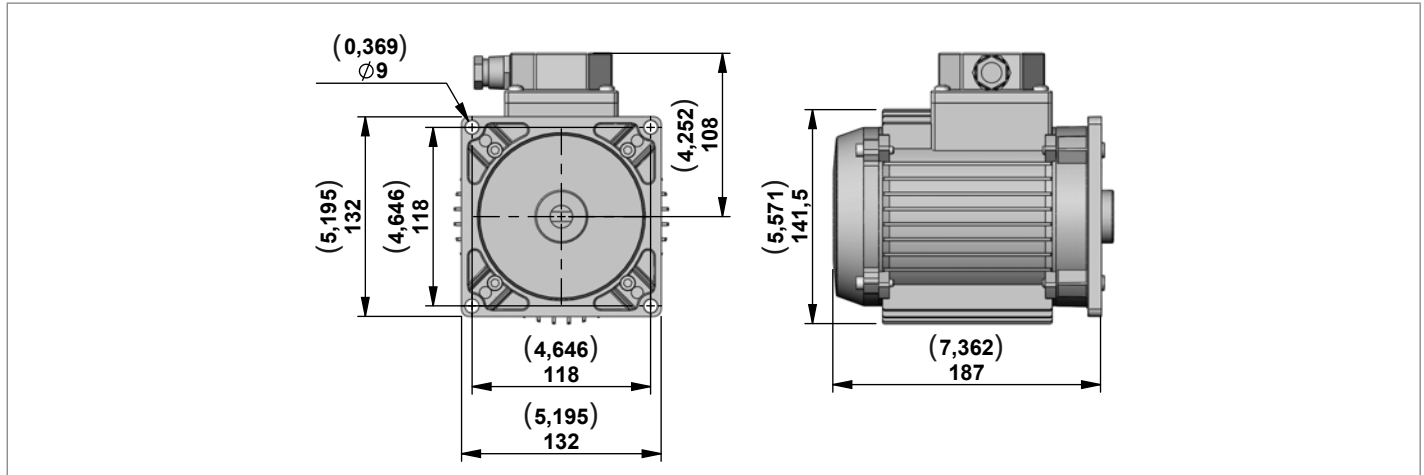
Note

The flanges shown in this page have the same dimensions as per the flanges used for standard couplings. The elastic couplings are suggested for applications requiring low noise and applications with high frequency of START/ STOP operations.

A.C. Electric Motor Compact Mounting Style for Power Module Type KE and KS

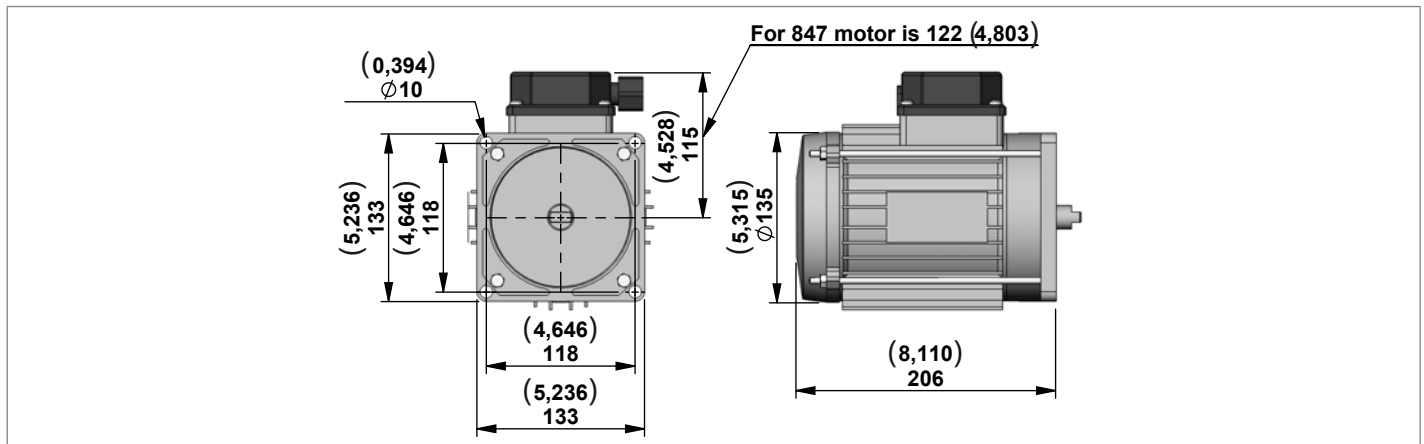
These motors are designed to reduce the overall dimensions and the cost of the junction elements.

They can be assembled only in the manifold KE and KS series.



Three Phase Current Motors 230/400V 50Hz IP54 Size IEC 71

Code	Type	Material Number	Power (kW)	Power (hp)	Poles	Rpm at 50Hz	Duty Cycle	Thermal Switch
724	C1622S1085C	R932000302	0,75	1	2	2900	S3 30%	no
724T	C1622S1368C	R932006634	0,75	1	2	2900	S3 30%	yes
725	C1622S1083C	R932000301	1,1	1,5	2	2900	S3 30%	no
725T	C1622S1374	R932000423	1,1	1,5	2	2900	S3 30%	yes



Three Phase Current Motors 230/400V 50Hz IP54 Size IEC 80

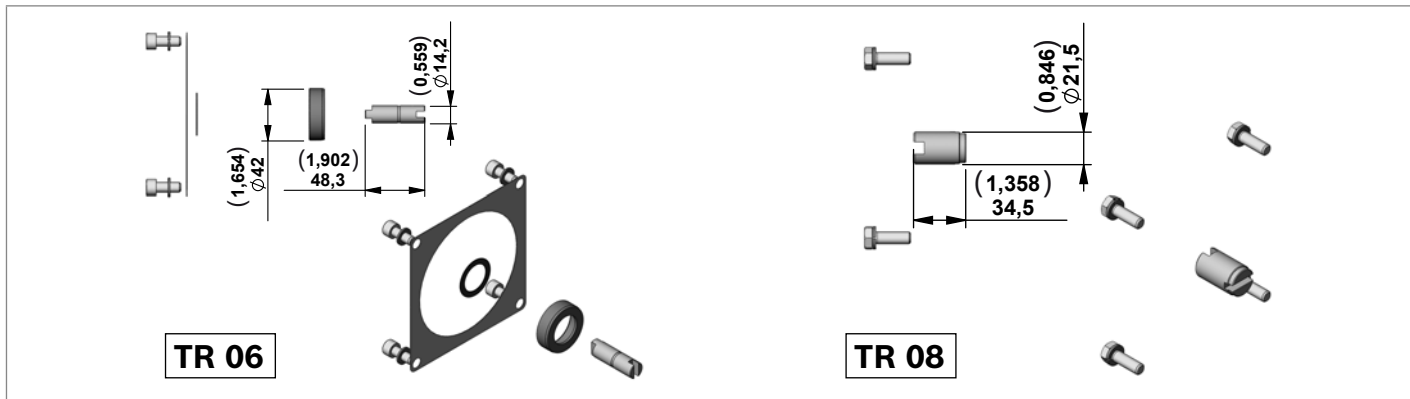
Code	Type	Material Number	Power (kW)	Power (hp)	Poles	Rpm at 50Hz	Duty Cycle	Thermal Switch
826T	C1622S1410C	R932011320	1,5	2,0	2	2800	S3 20%	yes
827T	C1622S1409C	R932011321	2,2	3,0	2	2800	S3 15%	yes
828T	C1622S1417C	R932011319	3,6	4,8	2	2800	S3 7%	yes
847T	C1622S1465	R930057220	1,5	2,0	4	1450	S3 20%	no

Junction Elements for A.C. Electric Motor Compact Mounting Style for Power Module Type KE and KS

Note

The motors shown in these tables are a selection of our range.
 In case of needs of different technical characteristics PLEASE CONTACT OUR SALES DEPARTEMENT.
 The electric motors with compact mounting style shown in this pages are delivered by different certified suppliers.
 This means the indicated dimensions could change a little, depending on which manufacturer will be assembled.
 On the CPM the choice of the manufacturer is based on our stock availability.

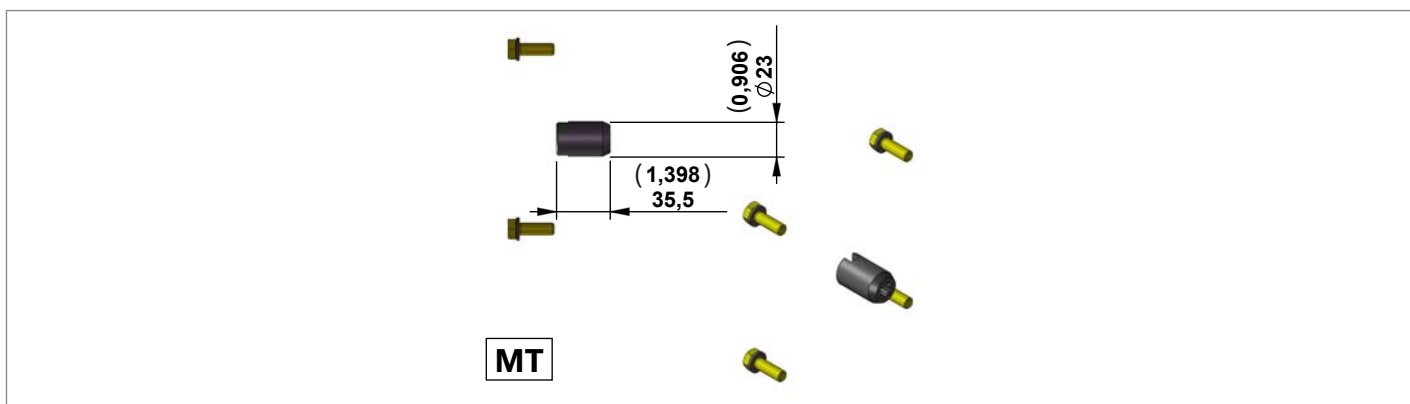
Junction Elements for A.C. Electric Motor Compact Mounting Style for Power Module Type KE and KS



Junction Elements for manifolds KE and KS series

Code	Motor Codes	Size IEC	Type	Material Number
TR06	724-724T-725-725T	71	K01KE970TR006	R932001899
TR08	826T-827T-828T-847T	80	K01KE970TR008	R932001900

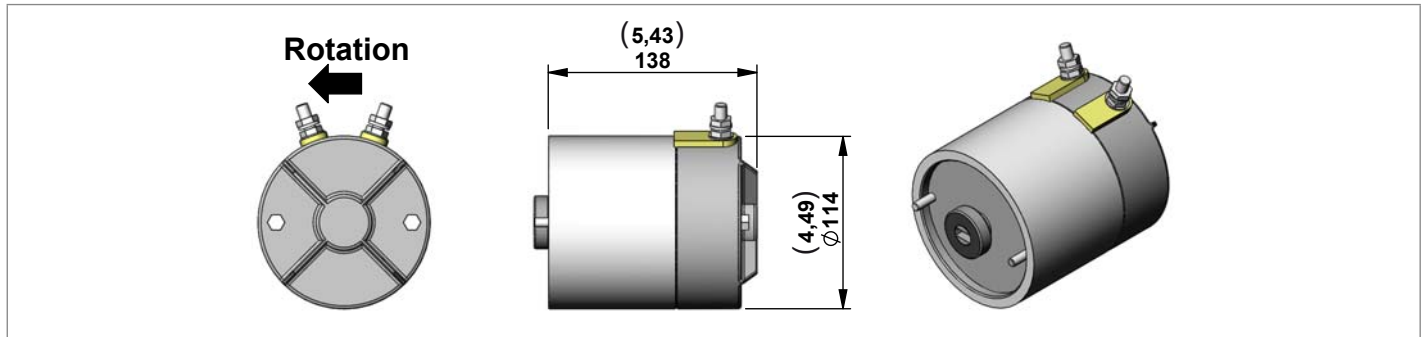
Junction Elements for A.C. Electric Motor Compact Mounting Style for Power Module Type KE and KS with splined shaft pumps



Junction Elements for manifolds KE and KS series

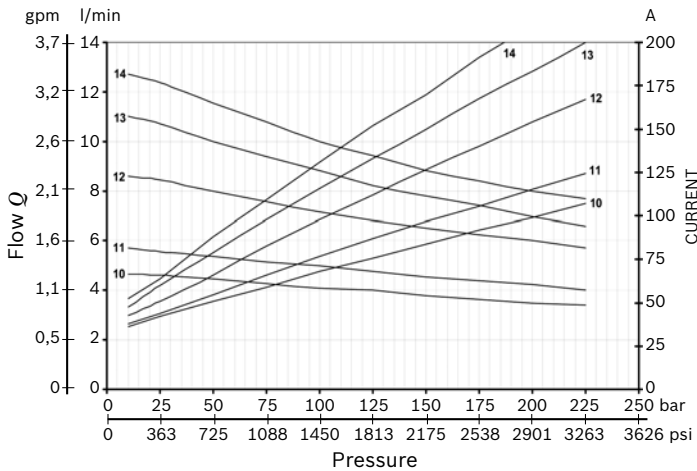
Code	Motor Codes	Size IEC	Type	Material Number
TMT	826T-827T-828T-847T	80	K01K3970TR114	R932011170

D.C. Electric Motors Standard Performance



Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C200	24	1200	4,5% 1,2 min	no	yes	IP 54	C1620S1200	R930059616

Electric Motor C200 (24V – 1300W) Diagrams



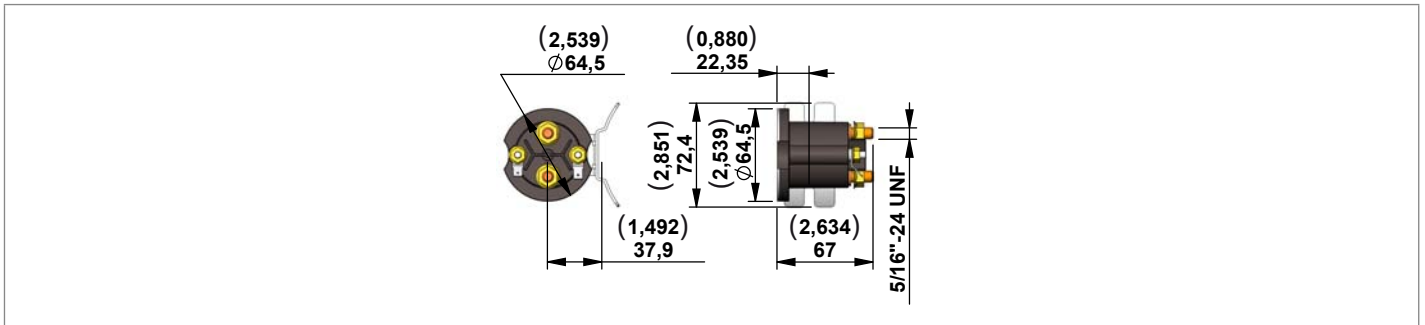
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	6	17%
100	4	11%
125	2,4	7,5%
150	1,5	5%
175	1	3,5%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

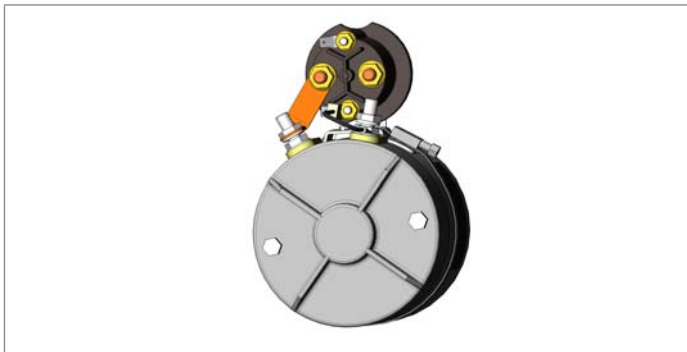
Relay



Starting Relay **Standard Performance**

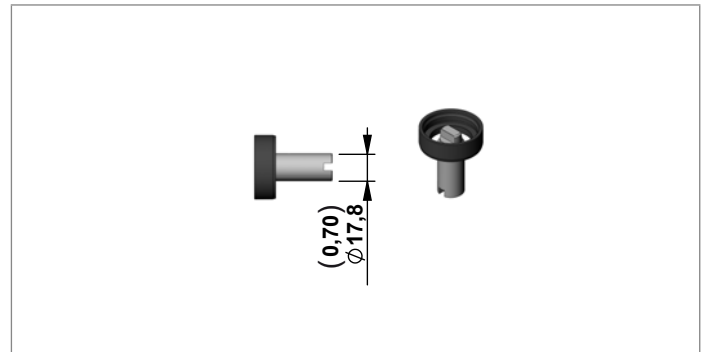
Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
H	24	150	350	IP66	NO	C165535000	R932000693
L	24	150	350	IP66	YES	C165540000	R932008749

Kit Motor + Relay



Motor + Relay	Type	Material Number
C200+relay 24V STANDARD performance	K396824200PSF	R930071143
C200+relay 24V STANDARD performance UL certified	K396824200PSFUL	R930071144

Junction Elements for D.C. Electric STD motor flange



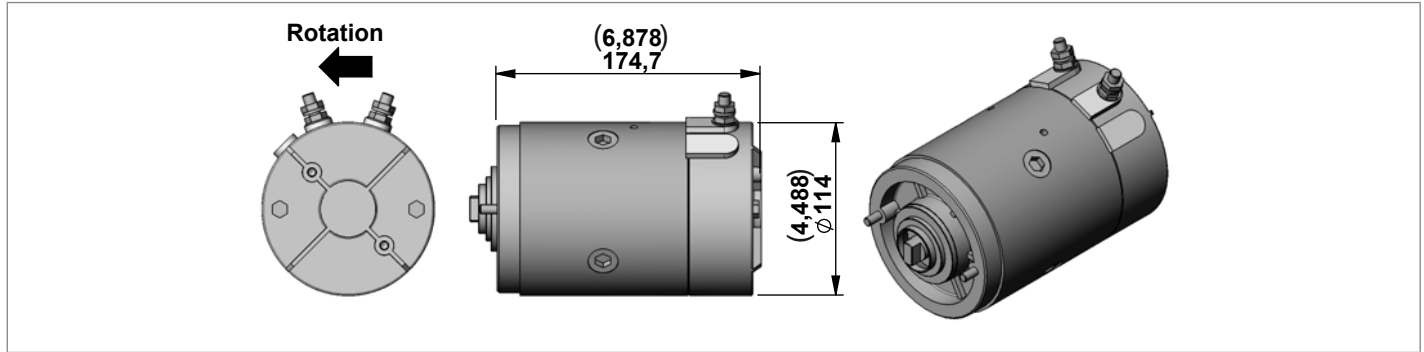
Junction Elements for manifolds **KE** and **KS** series

Code	Type	Material Number
TR65	K01KE970TR065	R932001905

Note

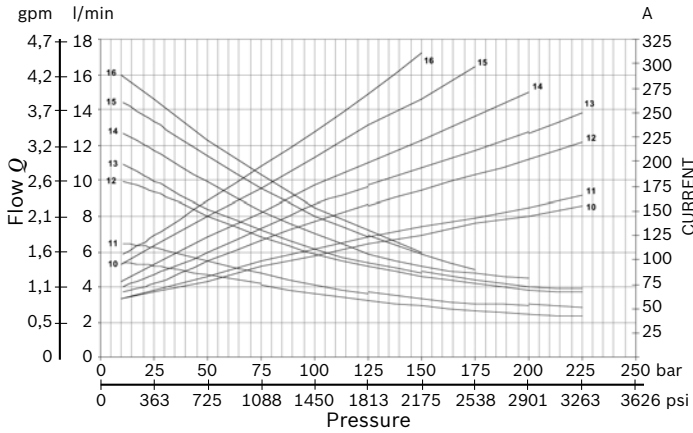
Suitable for KE and KS only.

D.C. Electric Motors Standard Performance

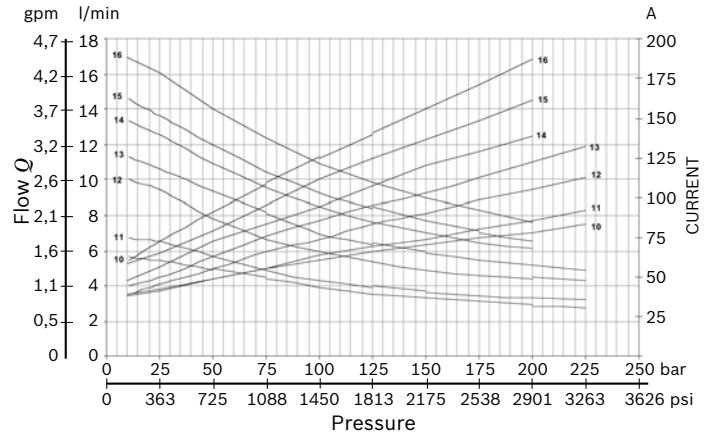


Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C190	12	1600	5% 2 min	no	yes	IP 54	C1620S1090	R930056392
C191	12	1600	5% 2 min	yes	yes	IP 54	C1620S1091	R930056391
C192	24	2200	5% 2 min	no	yes	IP 54	C1620S1092	R930056390
C193	24	2200	5% 2 min	yes	yes	IP 54	C1620S1093	R930056389

Electric Motor C190-191 (12V – 1600W) Diagrams



Electric Motor C192 - C193 (24V – 2200W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
150	5,5	12%
200	3,5	8%
250	2	6%
300	1,5	4%
350	1	3%

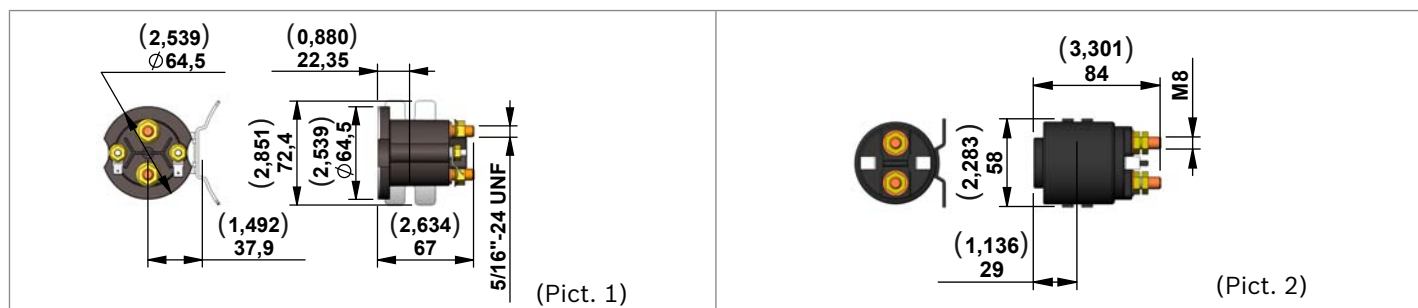
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	5	12%
100	3	7%
125	1,8	5%
150	1	4%
175	0,7	2,5%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



Starting Relay **Standard Performance** (Pict. 1)

Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693
L	24	150	350	IP66	YES	C165540000	R932008749

Starting Relay **High Performance** (silver plate contact) (Pict. 2)

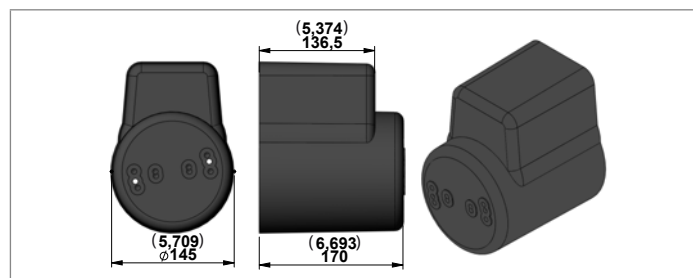
Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
C	12	150	350	IP54	NO	C165524000	R932000690
E	24	150	350	IP54	NO	C165525000	R932000691

Kit Motor + Relay



Motor + Relay	Type	Material Number
C190+relay 12V STANDARD performance	K396812190PSCUF	R930034093
C190+relay 12V HIGH performance	K396812190C	R930034094
C191+relay 12V STANDARD performance	K396812191PSCUF	R930034095
C191+relay 12V HIGH performance	K396812191C	R930034097
C192+relay 24V STANDARD performance	K396824192PSCUF	R930035261
C192+relay 24V STANDARD performance UL certified	K396824192PSUL	R930034098
C192+relay 24V HIGH performance	K396824192E	R930034101
C193+relay 24V STANDARD performance	K396824193PSCUF	R930034102
C193+relay 24V STANDARD performance UL certified	K396824193PSUL	R930035112
C193+relay 24V HIGH performance	K396824193E	R930035252

Plastic Protection

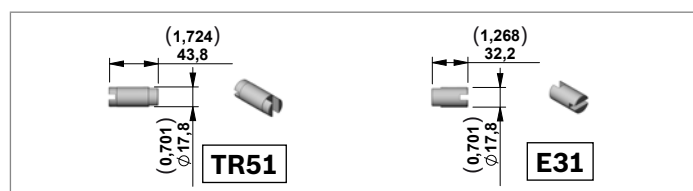


Code	Type	Material Number
0	Without Protection -	-
1	With Protection	K229701000 R932002246

Kit for assembly plastic protection

Type	Material Number
K01K211565000	R930059147

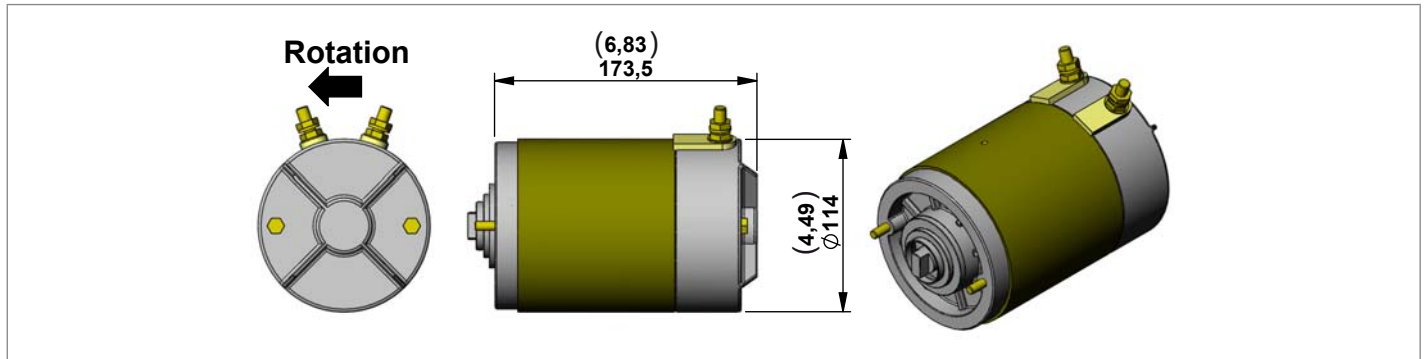
Junction Elements for D.C. Electric Motor



Junction Elements for manifolds

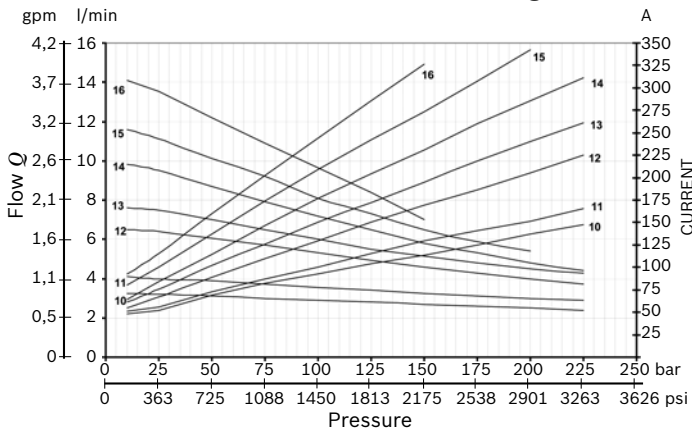
Code	Series	Type	Material Number
TR51	KE - KS	K01KE970TR051	R932001901
E31	K	K01K3970TR008	R932001907

D.C. Electric Motors High Performance

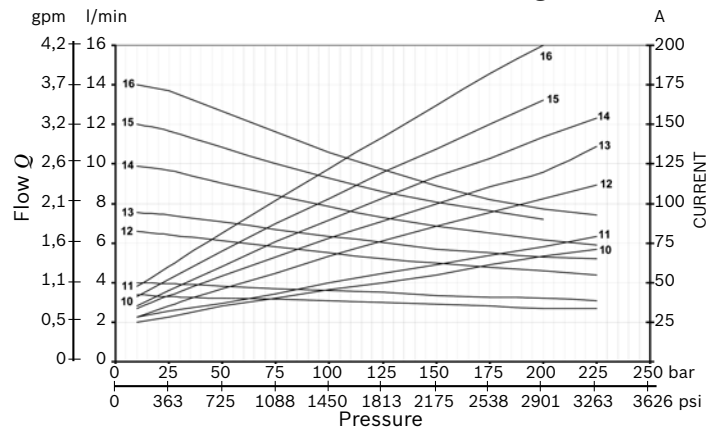


Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C91	12	1600	7,5% 3 min	NO	NO	IP 54	C162090000	R932000272
C102	12	1600	7,5% 3 min	YES	NO	IP 54	C1620S1002	R932000201
C92	24	2200	4,5% 1,2 min	NO	NO	IP 54	C162091000	R932000273
C103	24	2200	4,5% 1,2 min	YES	NO	IP 54	C1620S1003	R932000202

Electric Motor C91-C102 (12V – 1600W) Diagrams



Electric Motor C92-C103 (24V – 2200W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
150	5,5	12%
200	3,5	8%
250	2	6%
300	1,5	4%
350	1	3%

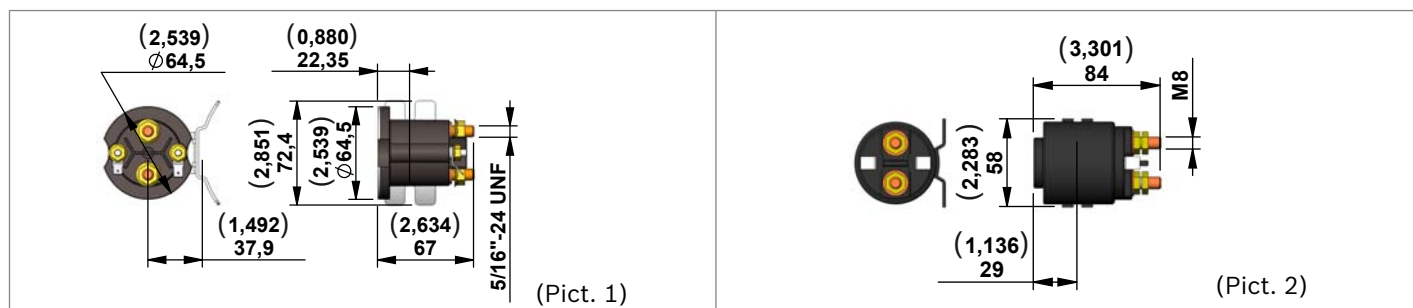
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	5	12%
100	3	7%
125	1,8	5%
150	1	4%
175	0,7	2,5%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



Starting Relay **Standard Performance** (Pict. 1)

Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693

Starting Relay **High Performance** (silver plate contact) (Pict. 2)

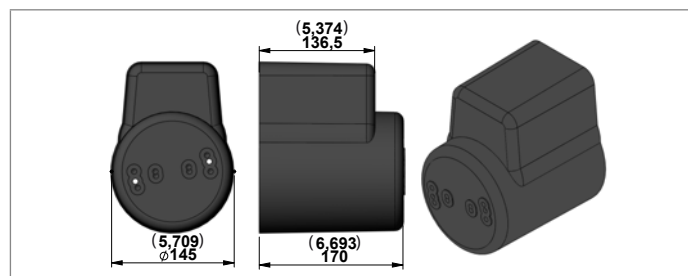
Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
C	12	150	350	IP54	NO	C165524000	R932000690
E	24	150	350	IP54	NO	C165525000	R932000691

Kit Motor + Relay



Motor + Relay	Type	Material Number
C91+relay 12V STANDARD performance	K39681291PSCUF	R932007960
C91+relay 12V HIGH performance	K39681291CF	R932002749
C102+relay 12V STANDARD performance	K396812102PSCUF	R932007969
C102+relay 12V HIGH performance	K396812102CF	R932002715
C92+relay 24V STANDARD performance	K39682492PSCUF	R932007961
C92+relay 24V HIGH performance	K39682492EF	R932002818
C103+relay 24V STANDARD performance	K396824103PSCUF	R932007968
C103+relay 24V HIGH performance	K396824103EF	R932002771

Plastic Protection

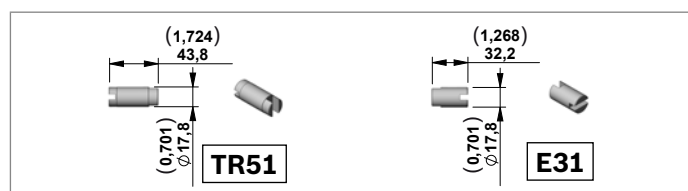


Code	Type	Material Number
0	Without Protection -	-
1	With Protection	K229701000 R932002246

Kit for assembly plastic protection

Type	Material Number
K01K211518000	R932009439

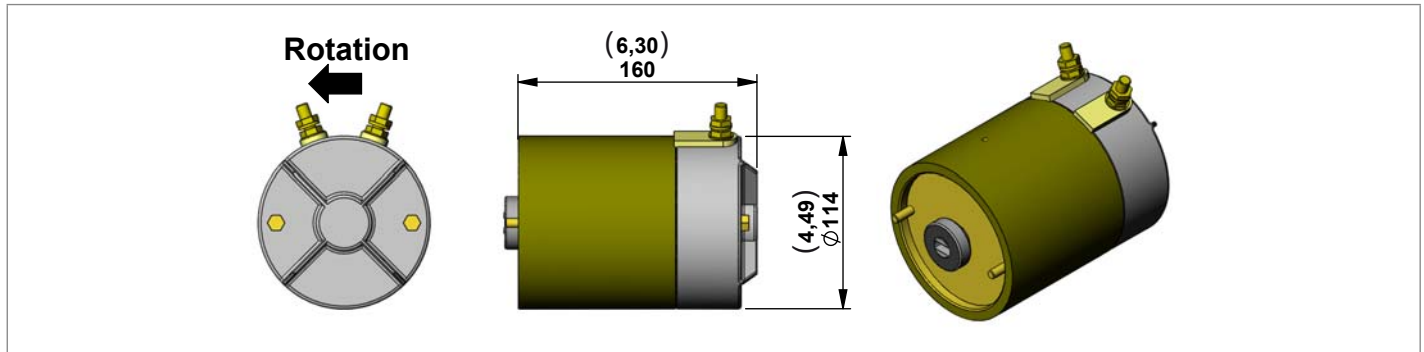
Junction Elements for D.C. Electric Motor



Junction Elements for manifolds

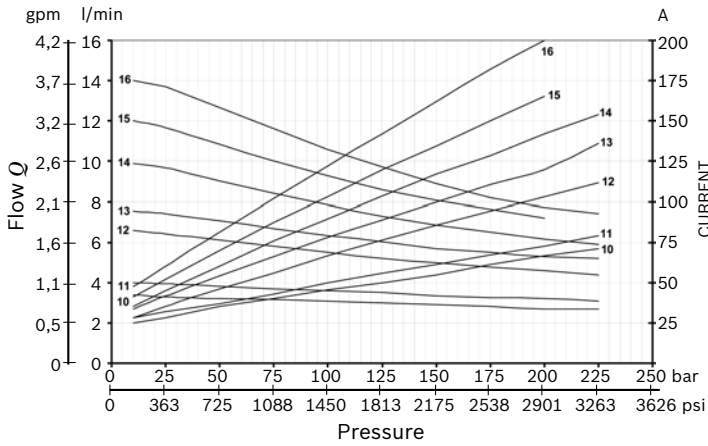
Code	Series	Type	Material Number
TR51	KE - KS	K01KE970TR051	R932001901
E31	K	K01K3970TR008	R932001907

D.C. Electric Motors Standard Performance Low Noise



Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C194	24	2200	5% 2 min	NO	YES	IP 54	C1620S1094	R930056388

Electric Motor C194 (24V – 2200W) Diagrams

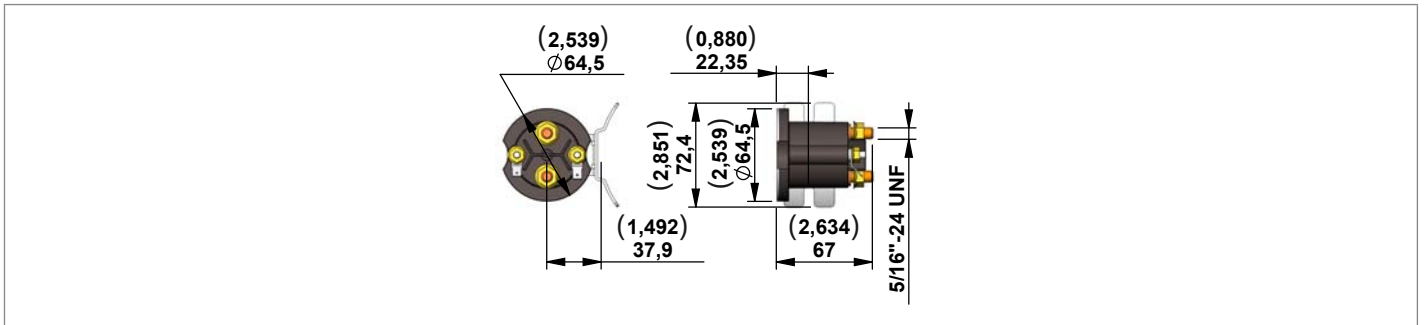


S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	5	12%
100	3	7%
125	1,8	5%
150	1	4%
175	0,7	2,5%

Note
 The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



Starting Relay **Standard Performance** (Pict. 1)

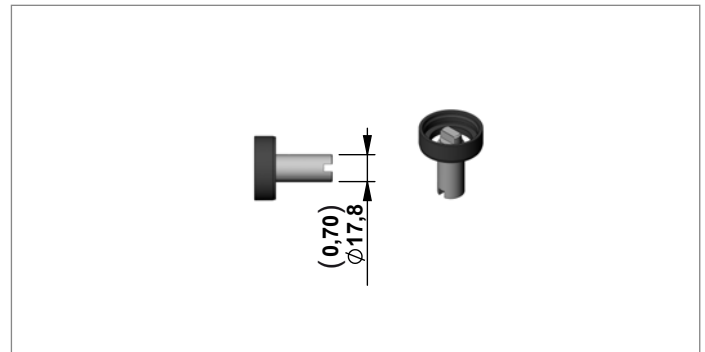
Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
H	24	150	350	IP66	NO	C165535000	R932000693
L	24	150	350	IP66	YES	C165540000	R932008749

Kit Motor + Relay



Motor + Relay	Type	Material Number
C194+relay 24V STANDARD performance	K396824194PS	R930071158
C194+relay 24V STANDARD performance UL certified	K396824194PSUL	R930071159

Junction Elements for D.C. Electric STD motor flange



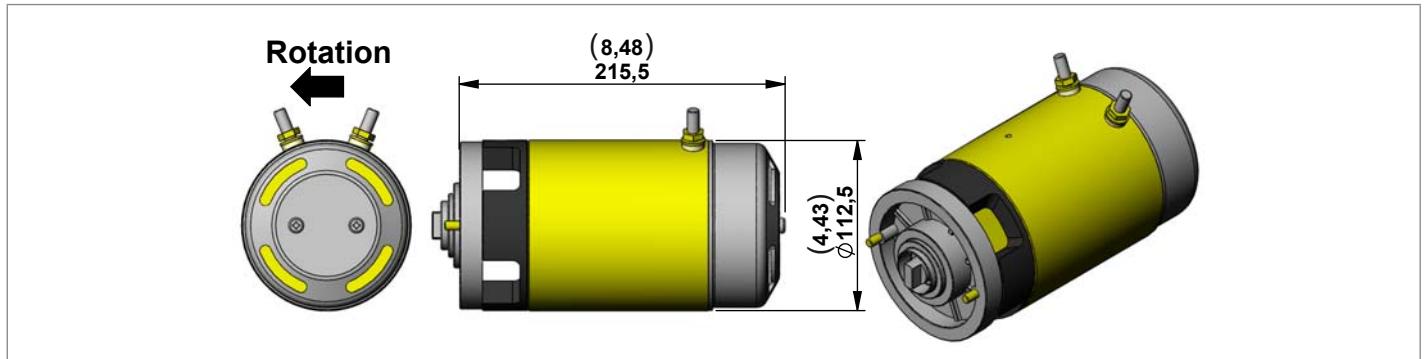
Junction Elements for manifolds **KE** and **KS series**

Code	Type	Material Number
TR65	K01KE970TR065	R932001905

Note

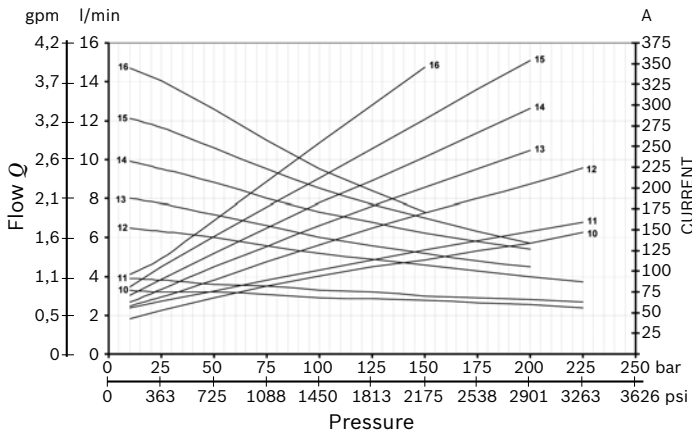
Suitable for KE and KS only.

D.C. Electric Motors High Performance Fan Cooled

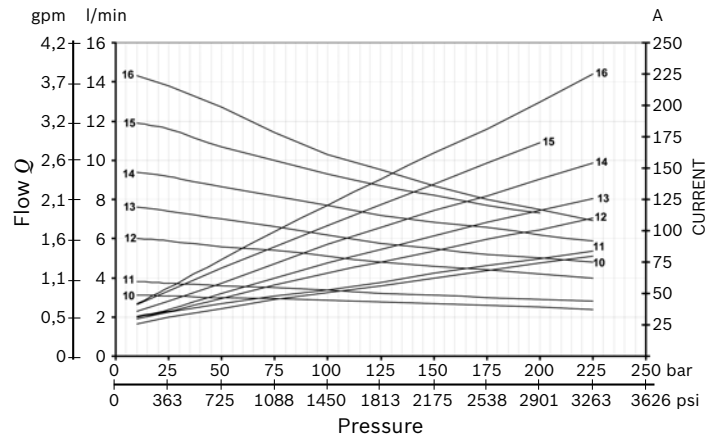


Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C78	12	1500	14% 4 min	NO	NO	IP 23	C162077000	R932000266
C79	24	2000	10% 4,5 min	NO	NO	IP 23	C162078000	R932000267

Electric Motor C78 (12V – 1500W) Diagrams



Electric Motor C79 (24V – 2000W) Diagrams



S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
150	10	30%
200	4	15%
250	2	7%
300	1	4%

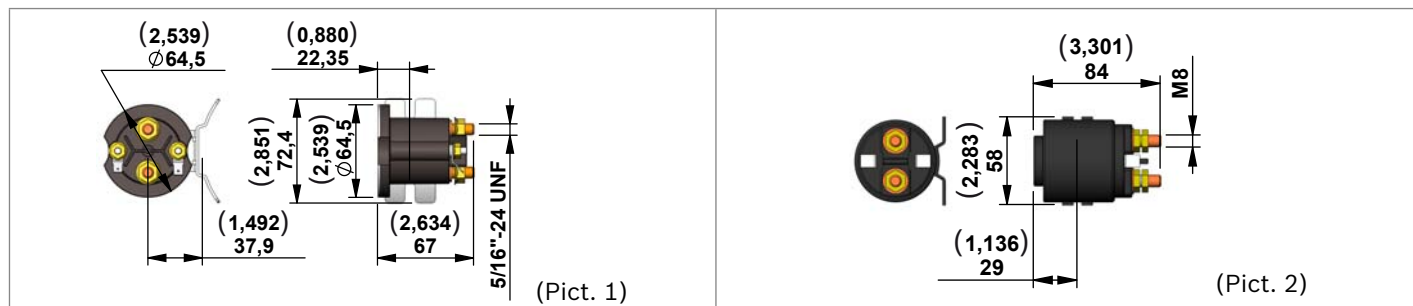
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	14	40%
100	5	15%
125	3,5	10%
150	2	6%
175	1	5%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



Starting Relay **Standard Performance** (Pict. 1)

Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
G	12	150	350	IP66	NO	C165534000	R932000692
H	24	150	350	IP66	NO	C165535000	R932000693

Starting Relay **High Performance** (silver plate contact) (Pict. 2)

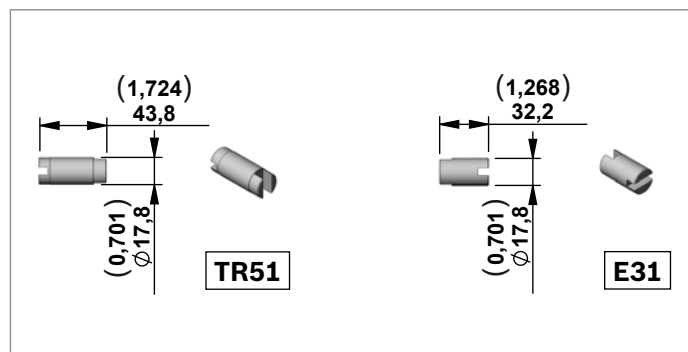
Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
C	12	150	350	IP54	NO	C165524000	R932000690
E	24	150	350	IP54	NO	C165525000	R932000691

Kit Motor + Relay



Motor + Relay	Type	Material Number
C78+relay 12V STANDARD performance	K39681278PSF	R930051640
C78+relay 12V HIGH performance	K39681278CF	R932002743
C79+relay 24V STANDARD performance	K39682479PSF	R932002811
C79+relay 24V HIGH performance	K39682479EF	R932002810

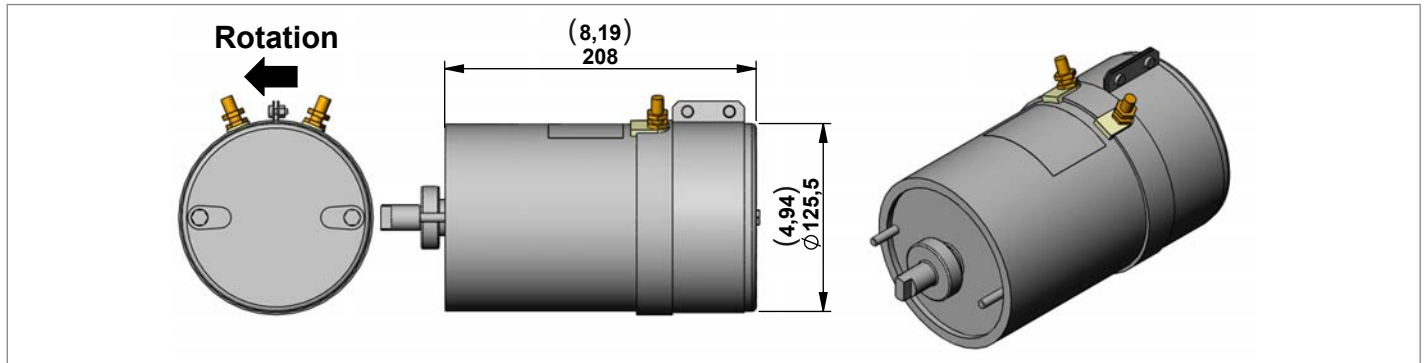
Junction Elements for D.C. Electric Motor



Junction Elements for manifolds

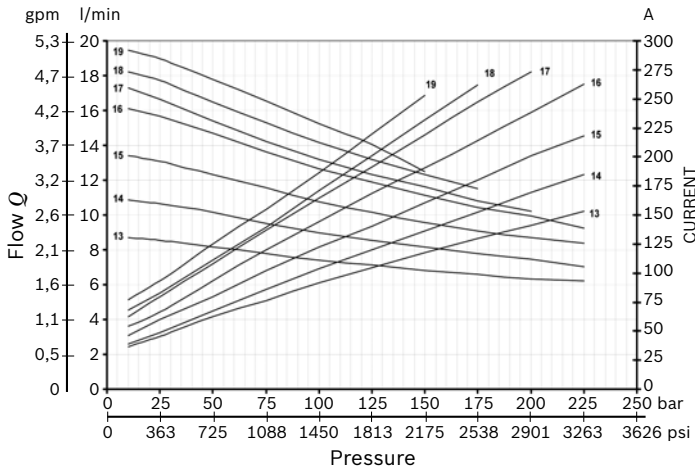
Code	Series	Type	Material Number
TR51	KE - KS	K01KE970TR051	R932001901
E31	K	K01K3970TR008	R932001907

D.C. Electric Motors Standard Performance



Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C201	24	3000	9% 5 min.	NO	YES	IP 54	C1620S1201	R930059944

Electric Motor C201 (24V – 3000W) Diagrams



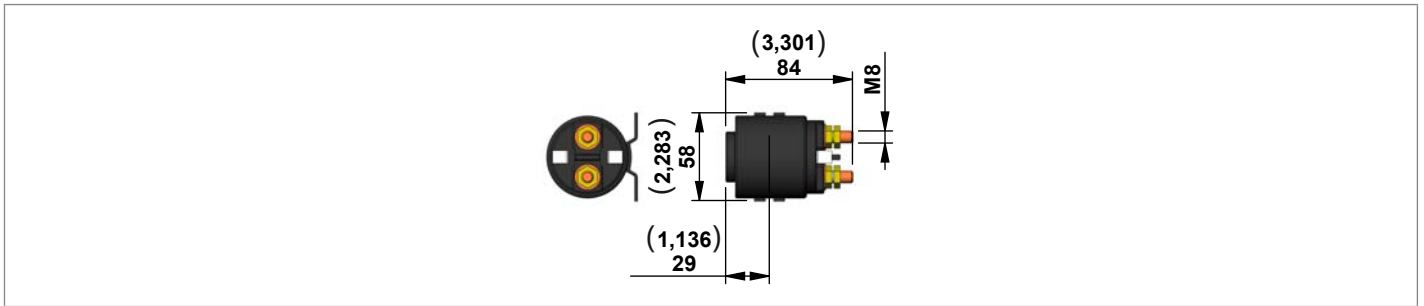
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
125	11	20%
150	7	13%
175	5	10%
200	3,5	8%
250	2,2	5%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

Relay



Starting Relay **High Performance** (silver plate contact)

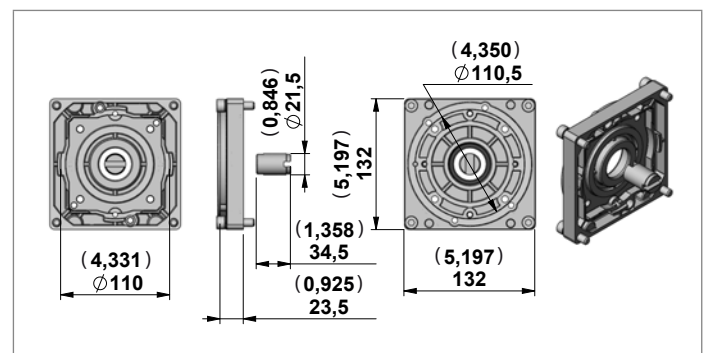
Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
E	24	150	350	IP54	NO	C165525000	R932000691

Kit Motor + Relay



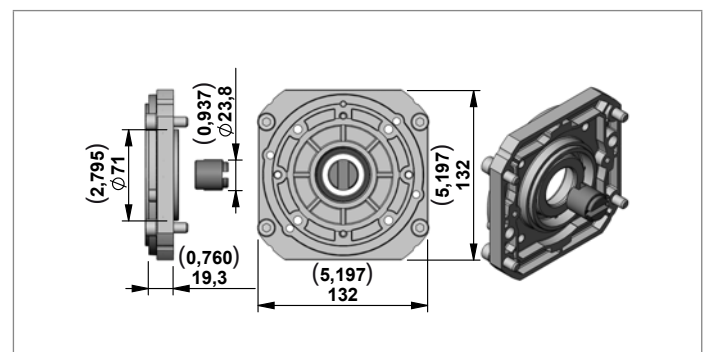
Motor + Relay	Type	Material Number
C201+relay 24V HIGH performance	K396824201E	R930071145

Junction Elements for D.C. Electric Motor Standard Flange



Junction Elements for manifolds **KE** and **KS** series

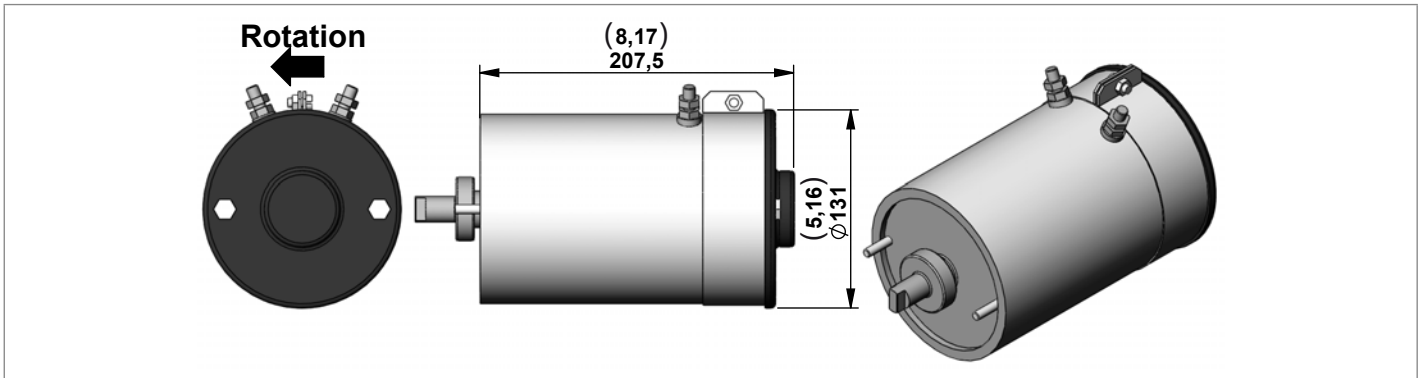
Code	Type	Material Number
TR57	K01KE970TR057	R930069427



Junction Elements for manifolds **K** series

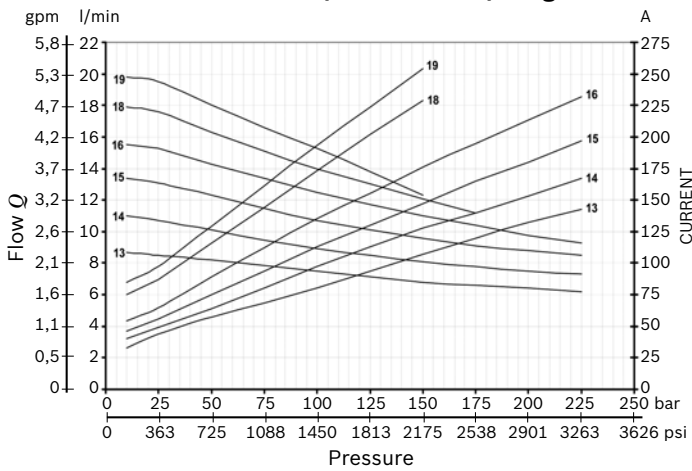
Code	Type	Material Number
E65	K01K3970TR115	R930071146

D.C. Electric Motors Low Noise High Performance



Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C151	24	3000	8% 4 min	NO	NO	IP 44	C1620S1047	R932000240
C140	24	3000	8% 4 min	YES	NO	IP 44	C1620S1040	R932000235

Electric Motor C151-C140 (24V – 3000W) Diagrams



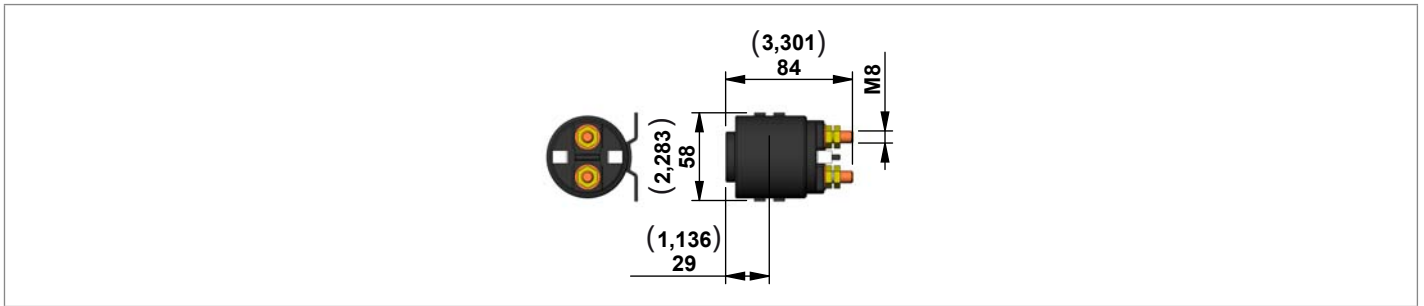
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
75	18	25%
100	12	17%
125	8,5	13%
150	6	10%
175	5	8%
200	4	7%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

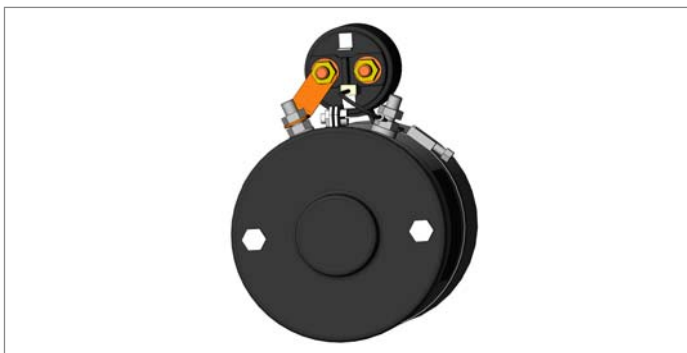
Relay



Starting Relay **High Performance** (silver plate contact)

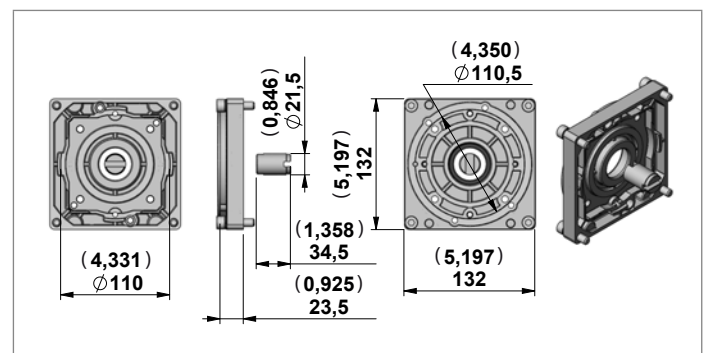
Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
E	24	150	350	IP54	NO	C165525000	R932000691

Kit Motor + Relay



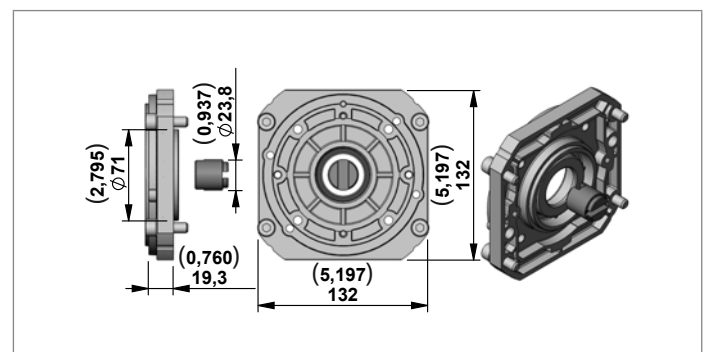
Motor + Relay	Type	Material Number
C151+relay 24V HIGH performance	K396824151E	R932002800
C140+relay 24V HIGH performance	K396824140E	R932002788

Junction Elements for D.C. Electric Motor Standard Flange



Junction Elements for manifolds **KE** and **KS** series

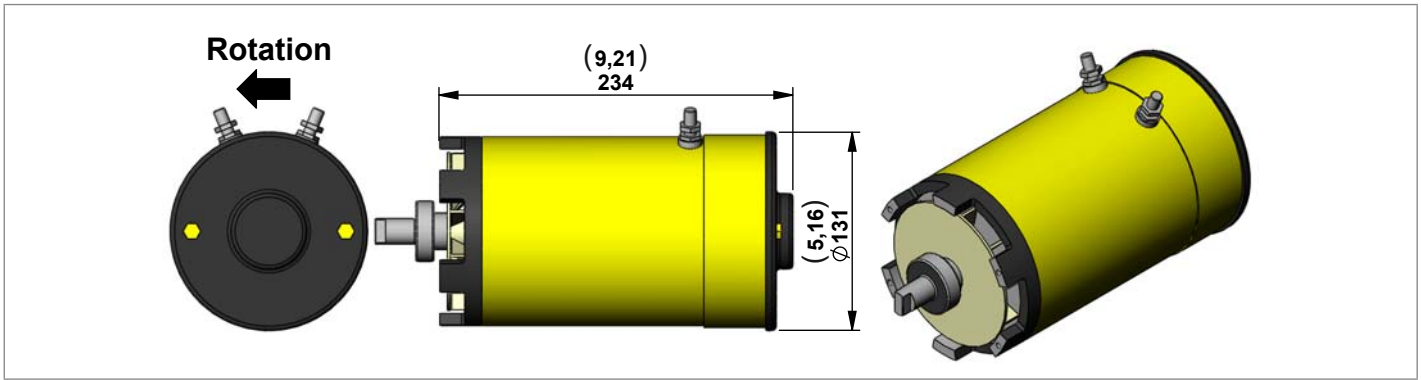
Code	Series	Type	Material Number
TR54	KE - KS	K01KE970TR054	R932001904



Junction Elements for manifolds **K** series

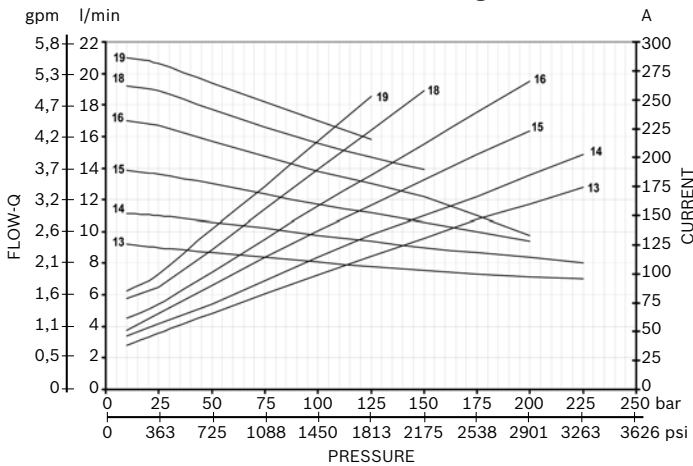
Code	Series	Type	Material Number
E62	K	K01K3970TR107	R932001936

D.C. Electric Motors High Performance Fan Cooled



Code	Voltage (V)	Power (W)	Duty Cycle S3% S2 min.	Thermal Switch	UL Certified	Protection index	Type	Material Number
C111	24	3000	20% 6 min	NO	NO	IP 12	C1620S1011	R932000208

Electric Motor C111 (24V – 3000W) Diagrams



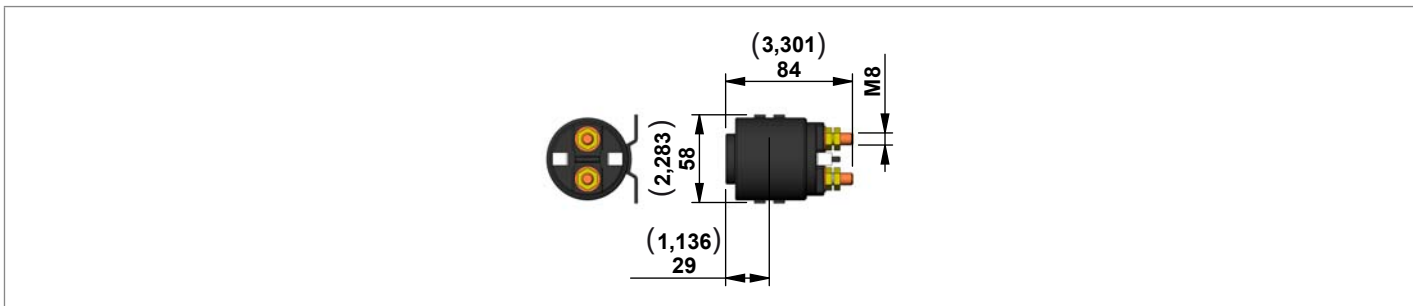
S2 - S3 performance

Amps	S2 (min.)	S3(%) (10 min.)
125	20	55%
150	10	32%
175	7,5	25%
200	4,5	15%
250	3	10%

Note

The values of the curves may change slightly depending on the brand / model of pump that is mounted.

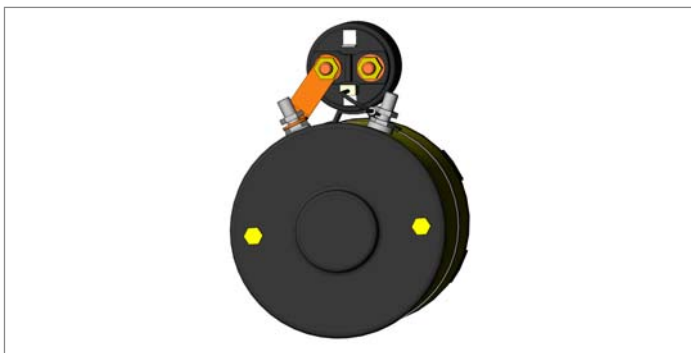
Relay



Starting Relay **High Performance** (silver plate contact)

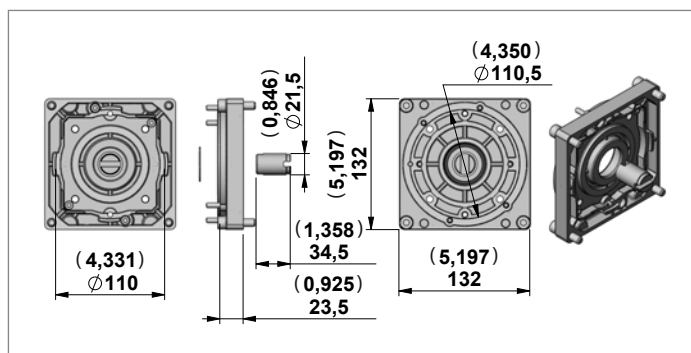
Code	Voltage (V)	Nominal Current (A)	Short time Current (A)	Protection INDEX	UL Certified	Type	Material Number
A	Without Relay						
E	24	150	350	IP54	NO	C165525000	R932000691

Kit Motor + Relay



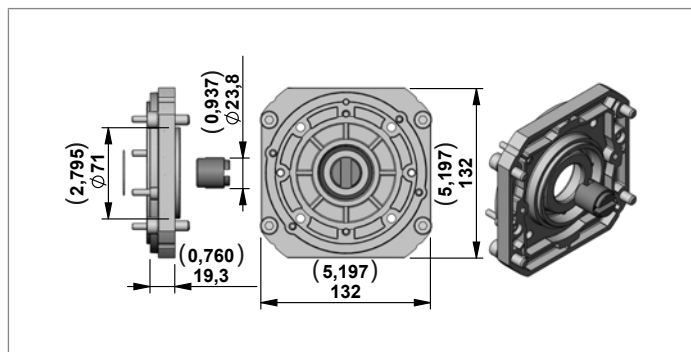
Motor + Relay	Type	Material Number
C111+relay 24V HIGH performance	K396824111E	R932002777

Junction Elements for D.C. Electric Motor Standard Flange



Junction Elements for manifolds **KE** and **KS** series

Code	Series	Type	Material Number
TR53	KE - KS	K01KE970TR053	R932001903

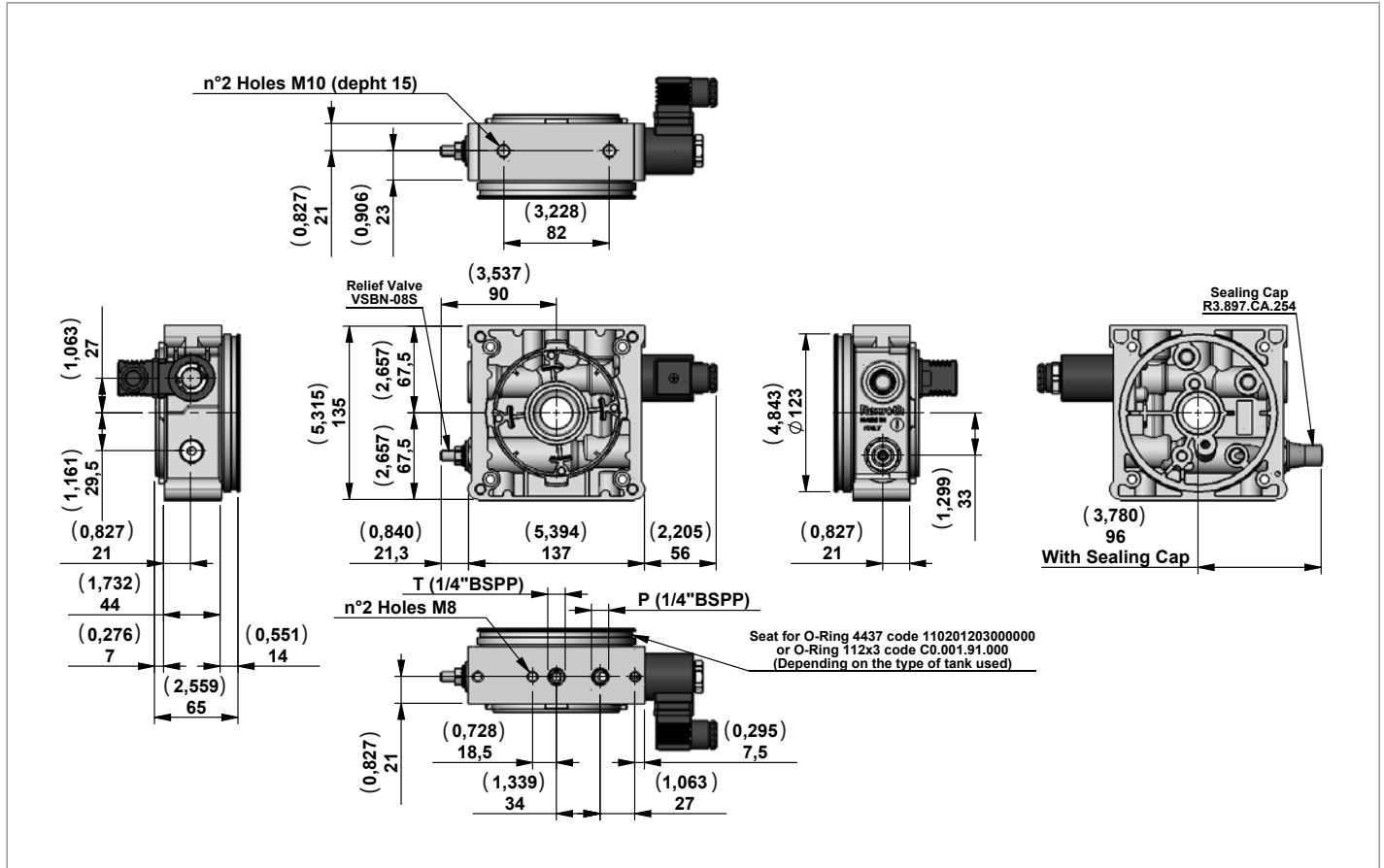


Junction Elements for manifolds **K** series

Code	Series	Type	Material Number
E63	K	K01K3970TR085	R932001927

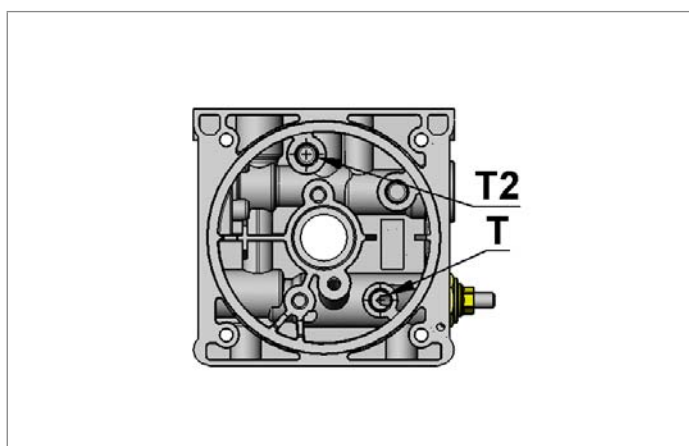
Central Manifold KE

M02

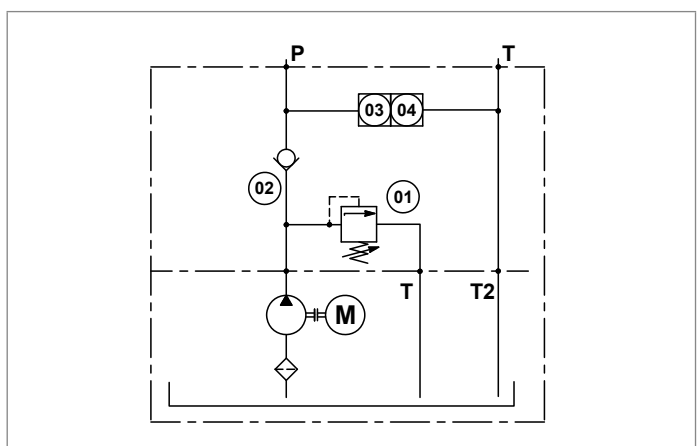


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M02/05	10-55 (145-798)	202A000	R930052187
M02/10	35-100 (508-1450)	202B000	R930052188
M02/20	90-250 (1305-3626)	202C000	R930052190
M02/35	175-345 (2538-5004)	202D000	R930052191

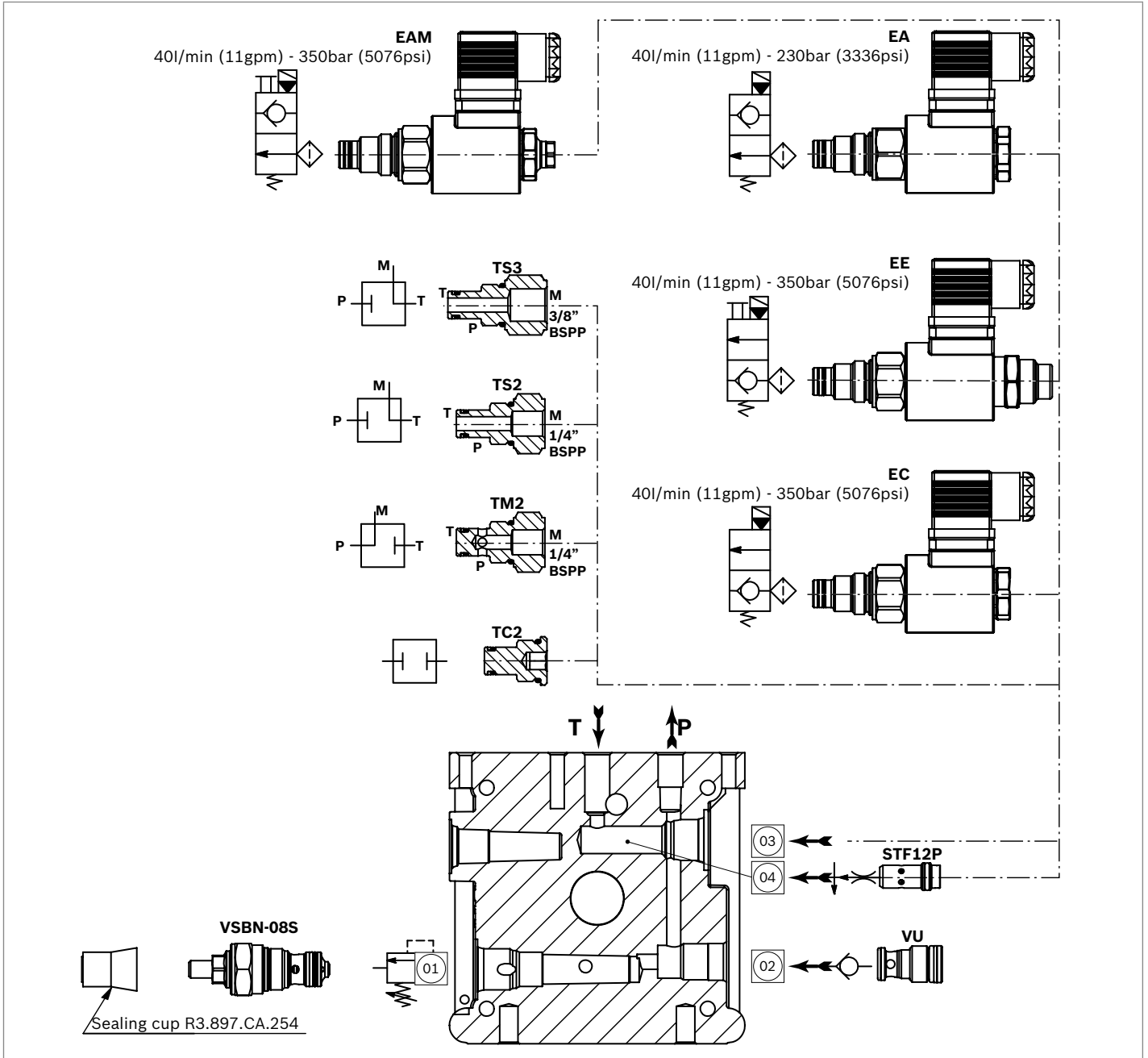
View Manifold Tank side



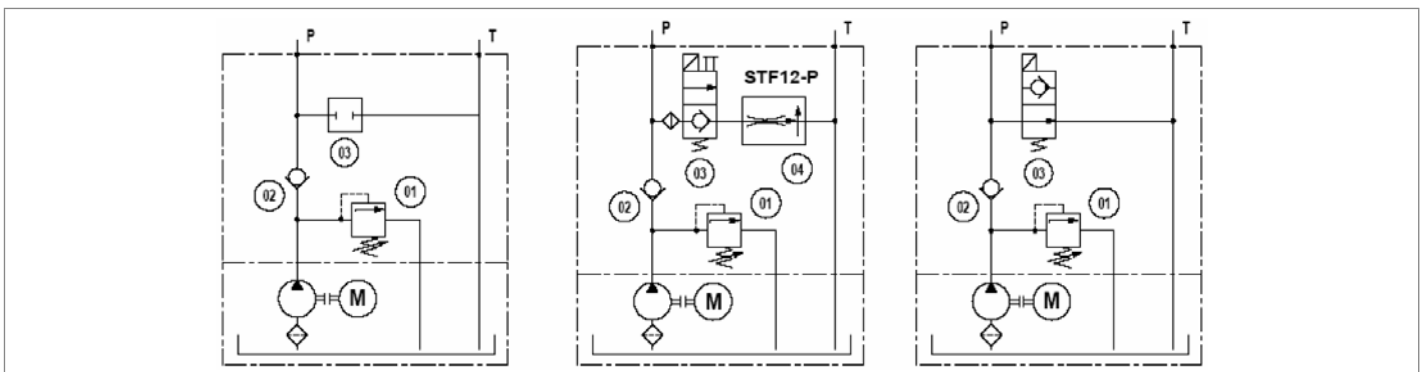
Manifold Hydraulic Diagram



M02 with valves

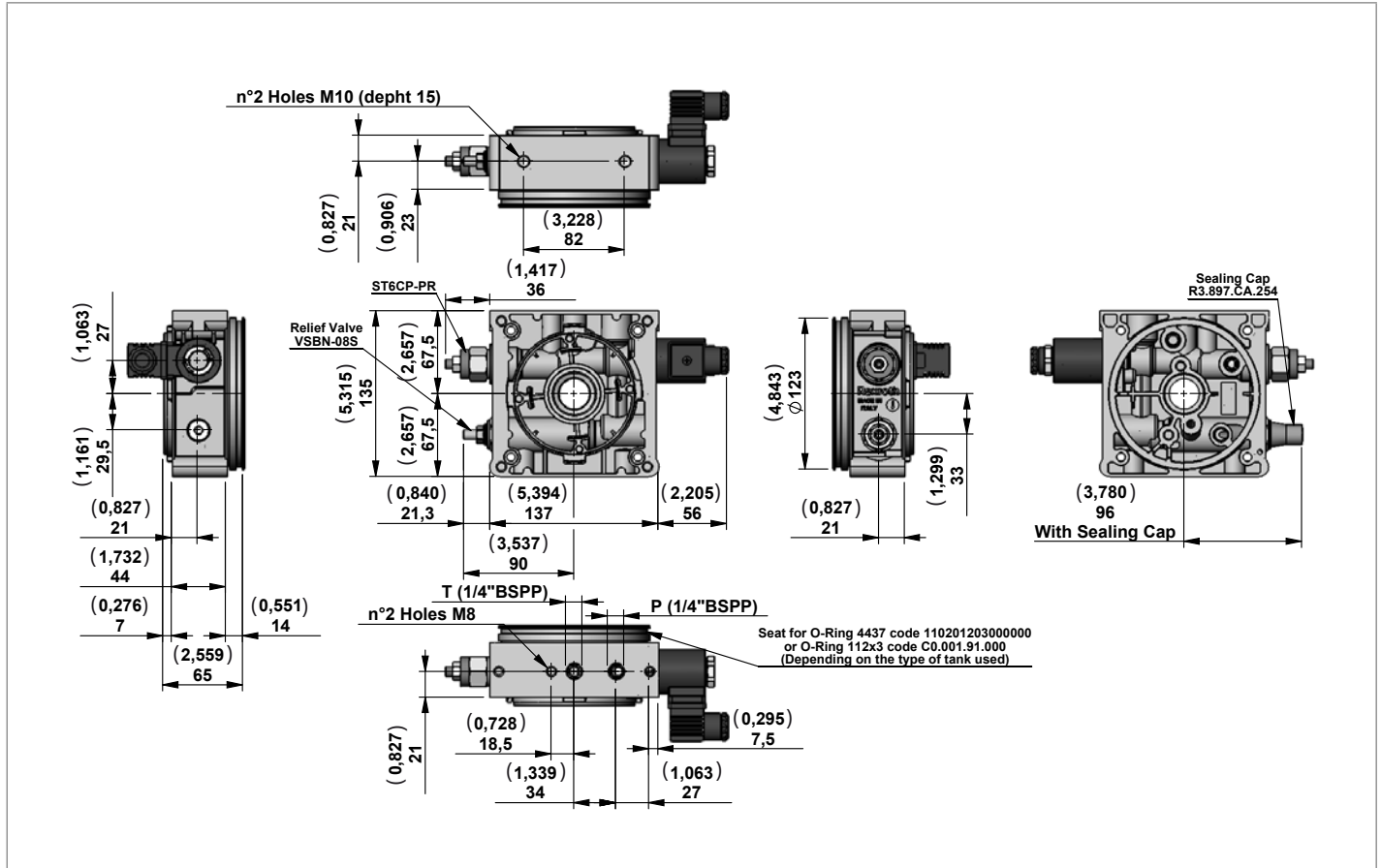


Main Realizable Diagrams



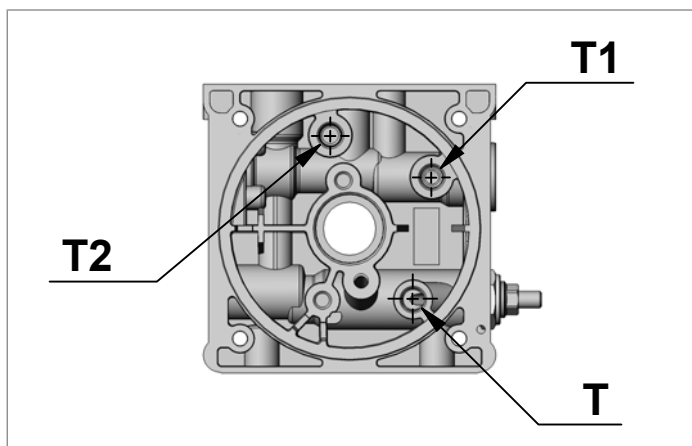
Central Manifold KE

M03

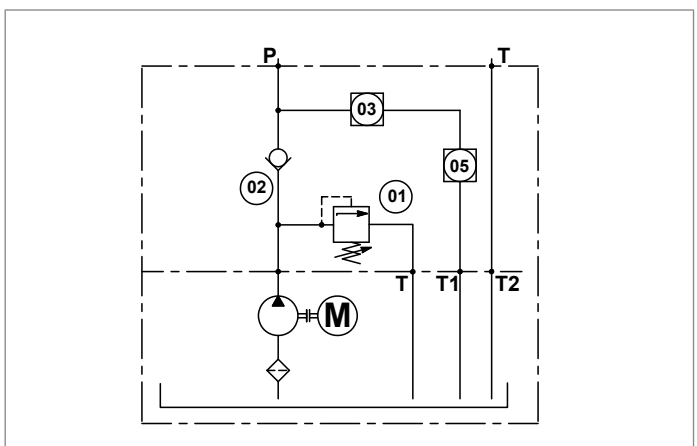


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M03/05	10-55 (145-798)	203A000	R930052192
M03/10	35-100 (508-1450)	203B000	R930052286
M03/20	90-250 (1305-3626)	203C000	R930052193
M03/35	175-345 (2538-5004)	203D000	R930052194

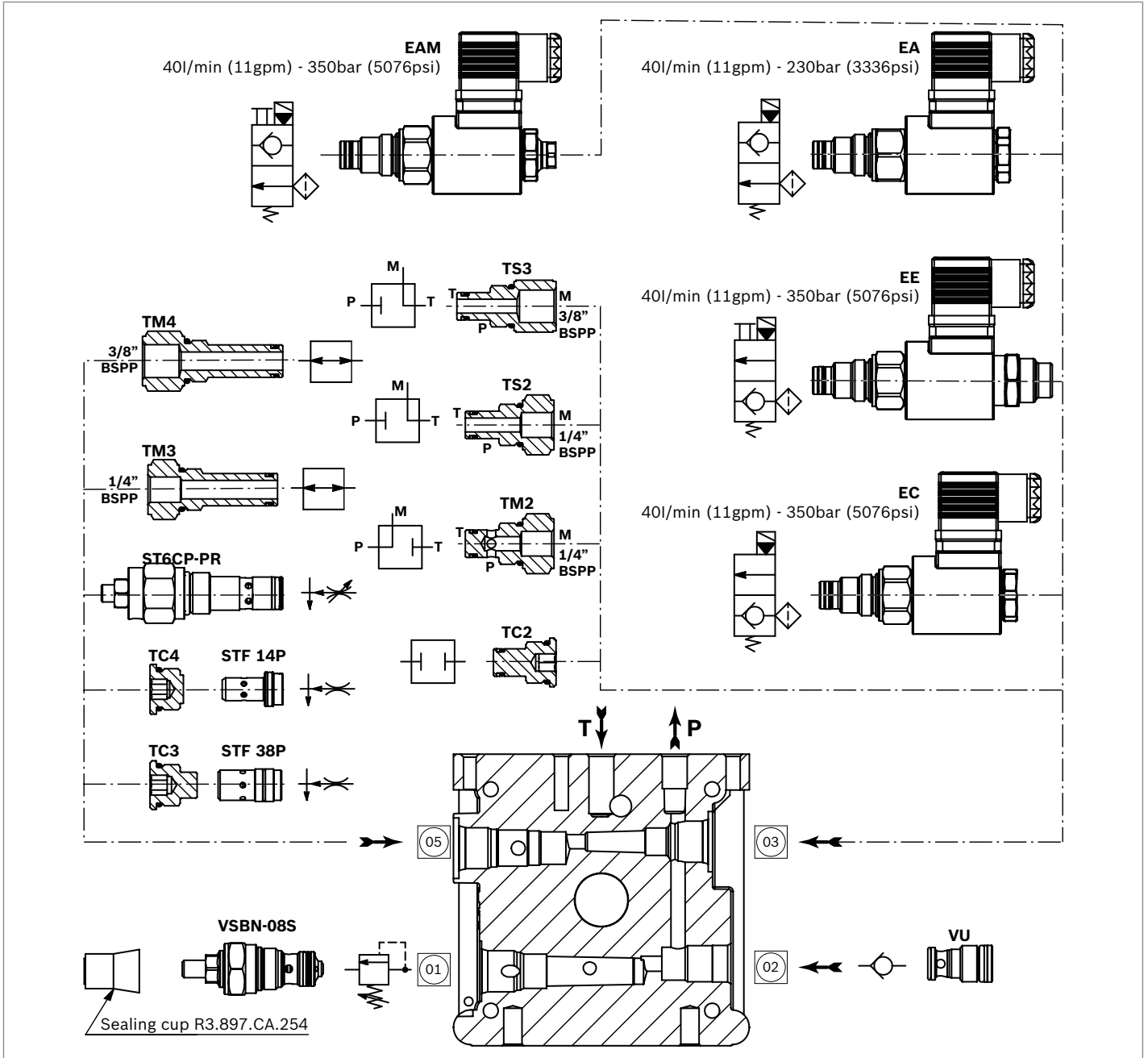
View Manifold Tank side



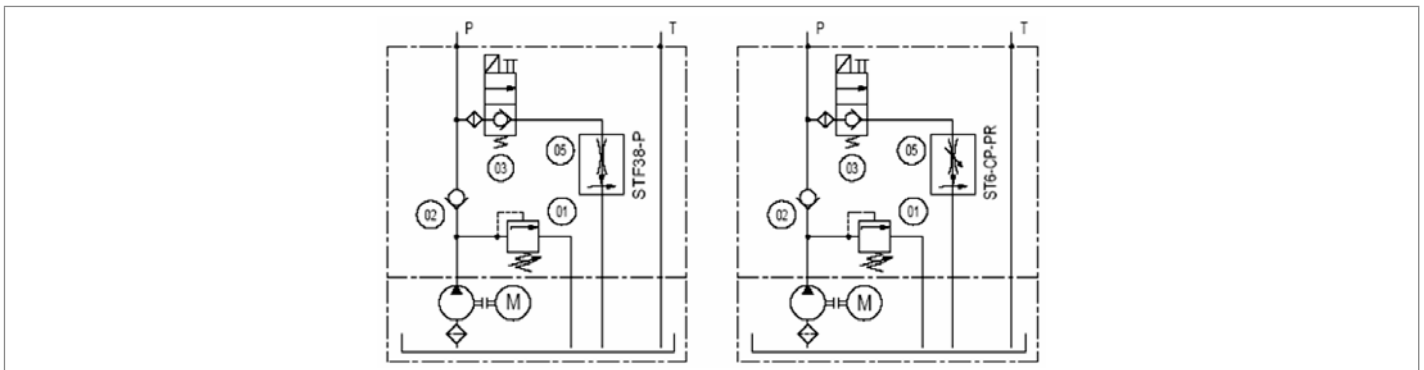
Manifold Hydraulic Diagram



M03 with valves

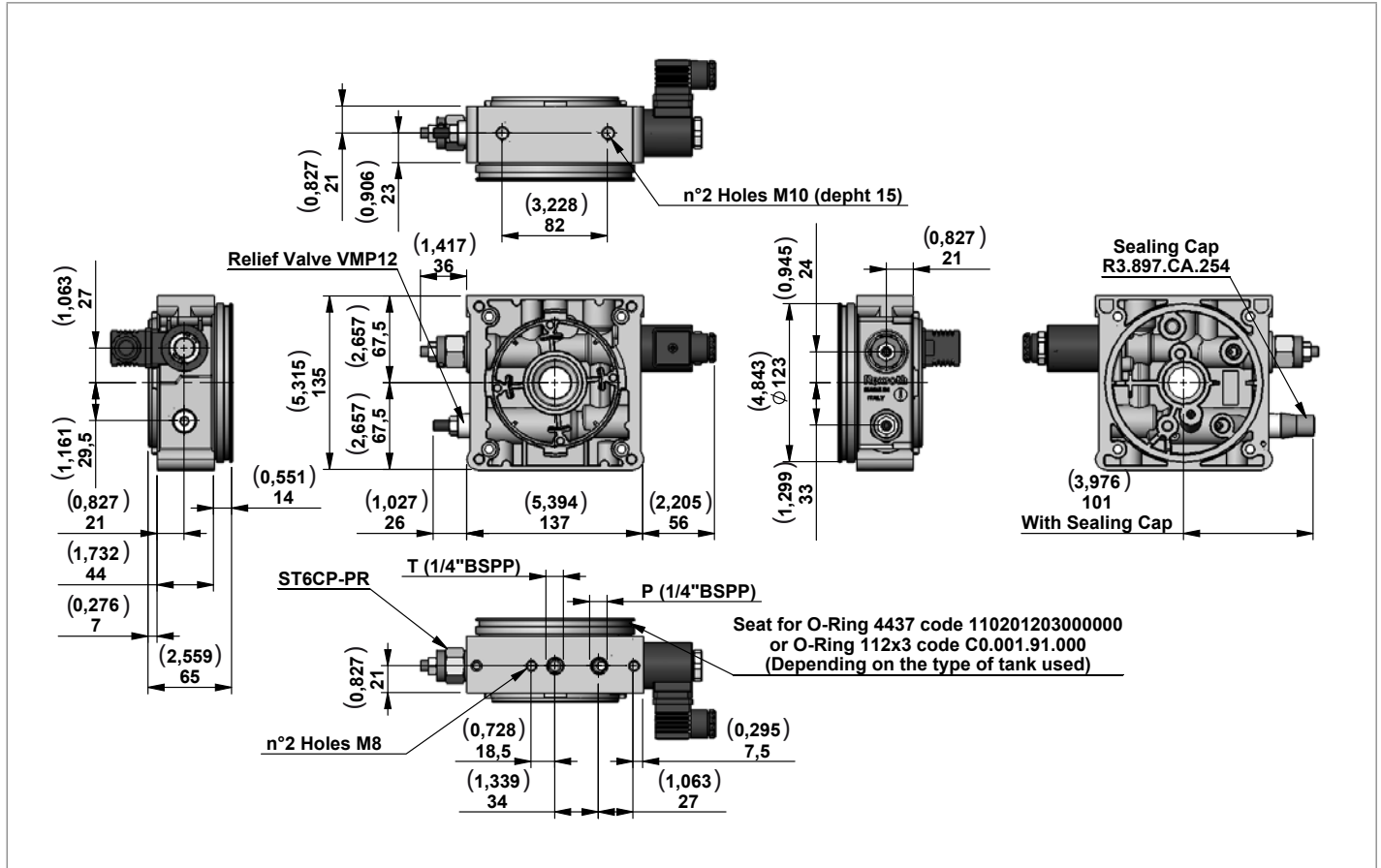


Main Realizable Diagrams



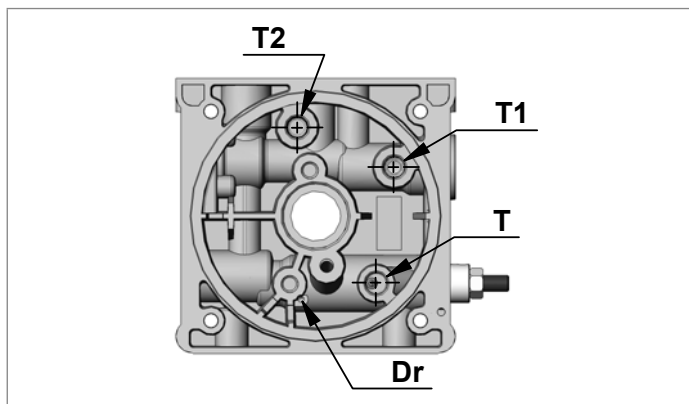
Central Manifold KE

M09

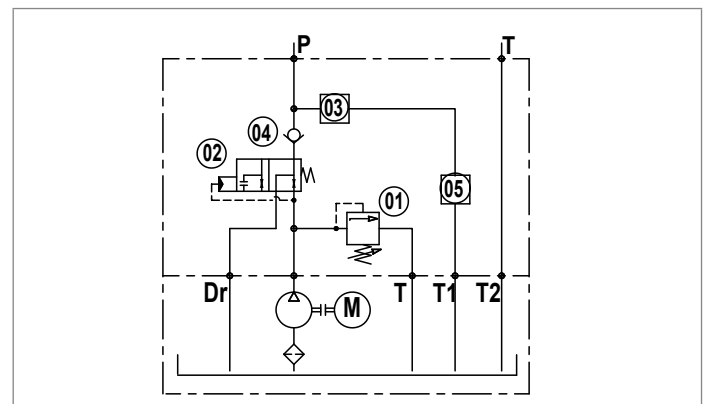


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Closing Flow l/min (gpm)	Pump displacement at 1450 rpm cc/rev	Flow at 1450 rpm l/min (gpm)	Pump displacement at 2850 rpm cc/rev	Flow at 2850 rpm l/min (gpm)	Type	Material Number
M09/13	80-300 (1160-4351)	1,1 (0,29)	1,1 (11)	1,6 (0,42)	-	-	209I00013	R932010272
M09/16	80-300 (1160-4351)	1,7 (0,45)	1,6 (12)	2,3 (0,61)	-	-	209I00016	R932008838
M09/17	80-300 (1160-4351)	2 (0,53)	2 (13)	2,9 (0,77)	1,1 (11)	3,2 (0,85)	209I00017	R932008839
M09/18	80-300 (1160-4351)	2,3 (0,61)	2,5 (14)	3,6 (0,95)	-	-	209I00018	R932008840
M09/22	80-300 (1160-4351)	3,5 (0,92)	3,15 (15)	4,6 (1,22)	1,6 (12)	4,6 (1,22)	209I00022	R930052412
M09/25	80-300 (1160-4351)	4,2 (1,11)	4 (16)	5,8 (1,53)	2 (13)	5,7 (1,51)	209I00025	R932010299

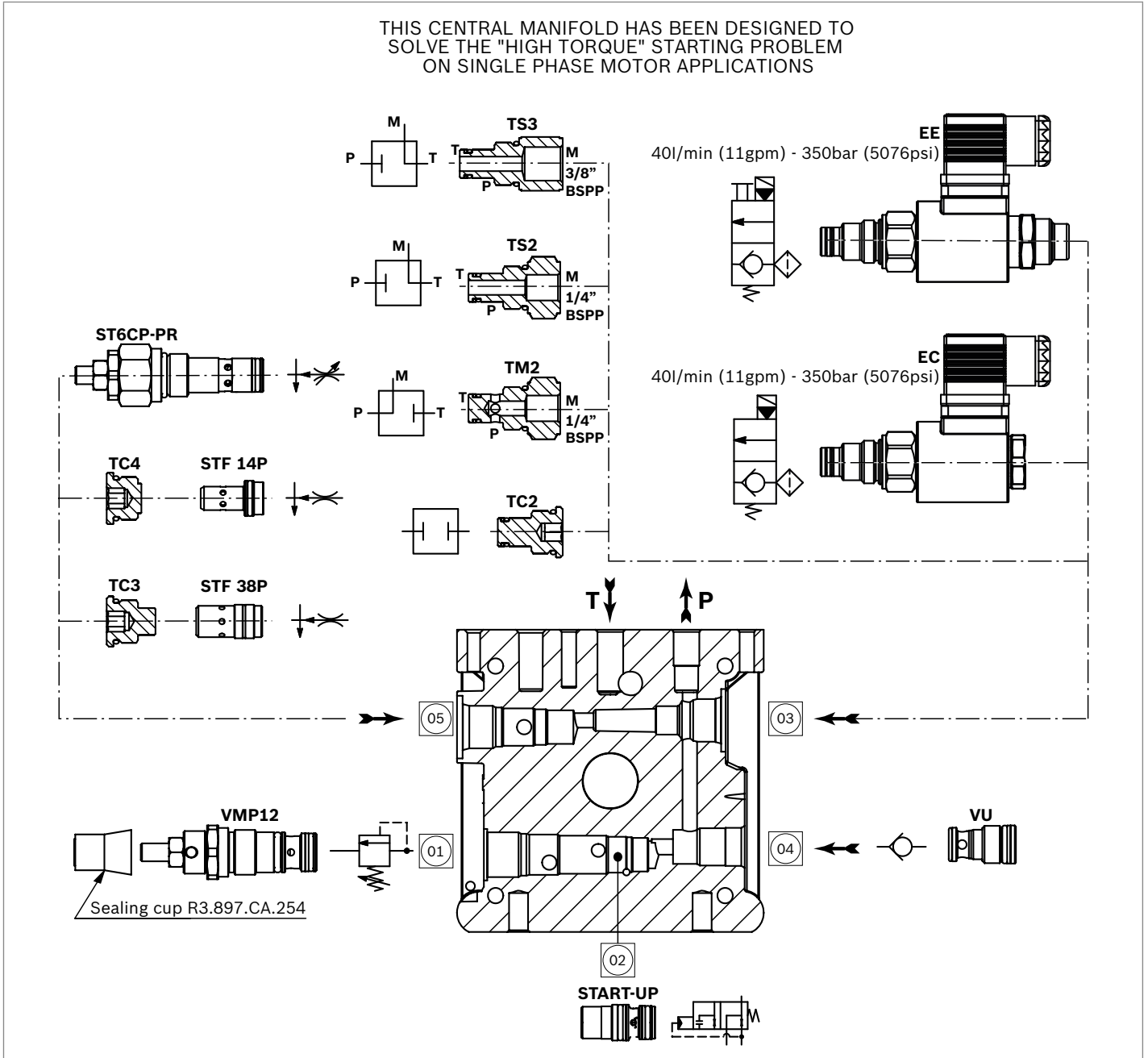
View Manifold Tank side



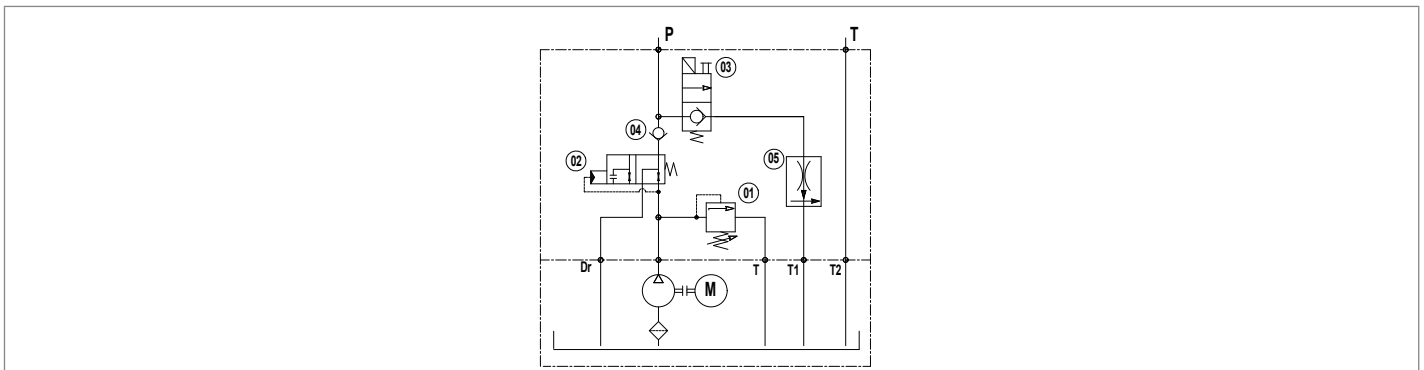
Manifold Hydraulic Diagram



M09 with valves

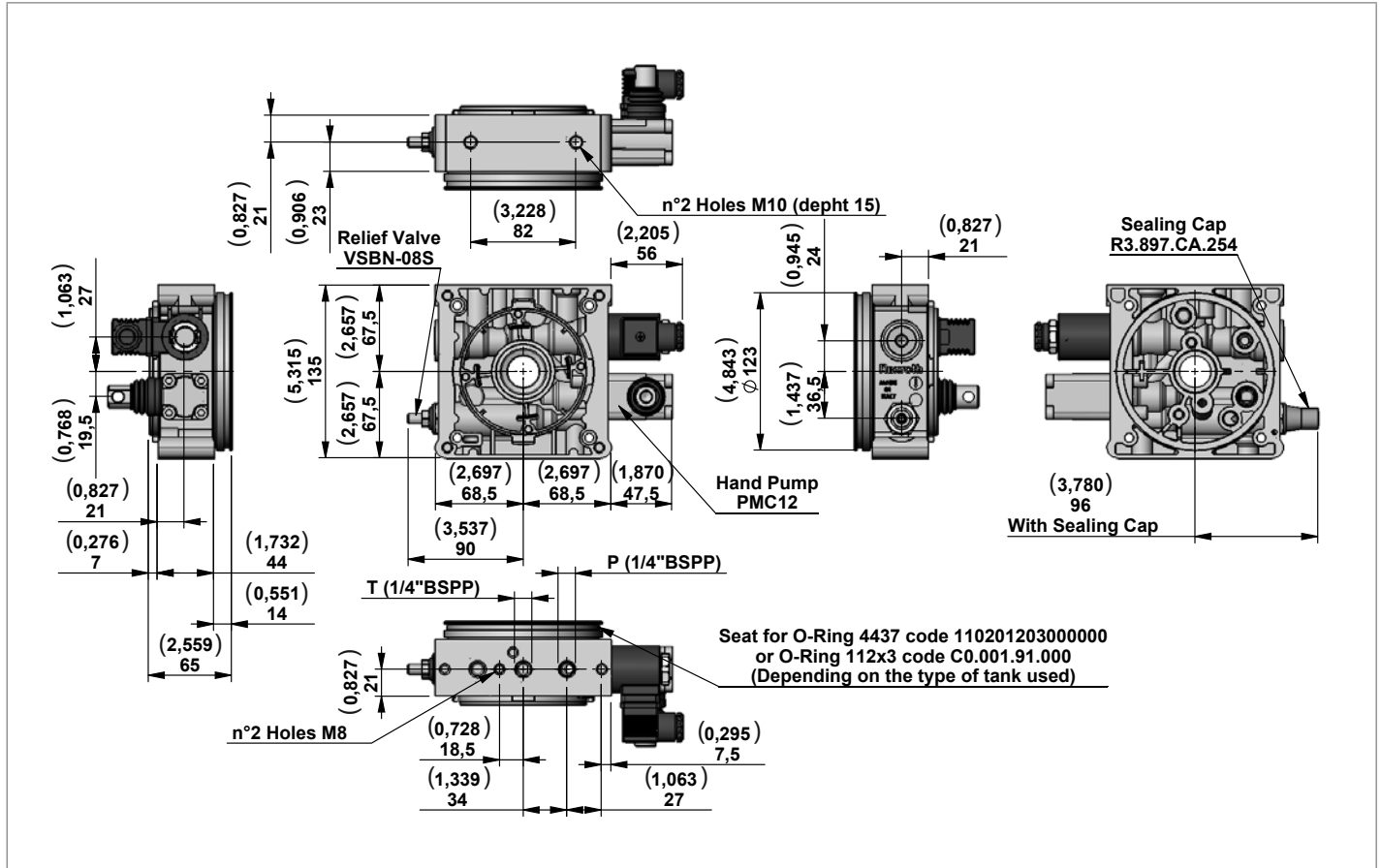


Main Realizable Diagrams



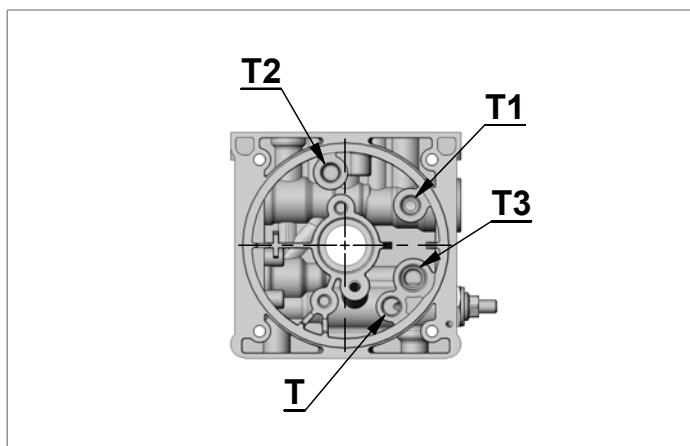
Central Manifold KE

M04

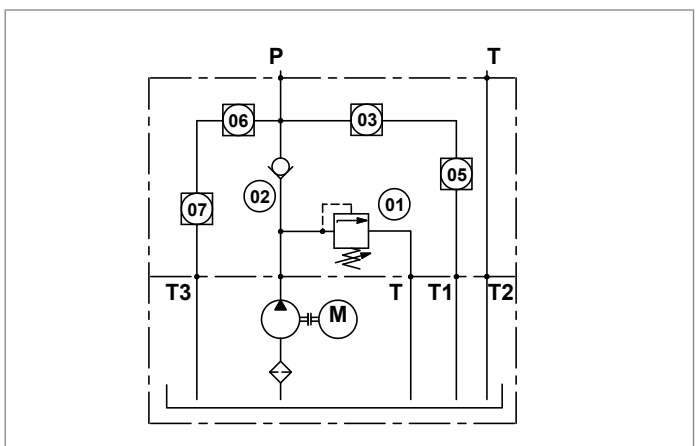


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M04/05	10-55 (145-798)	204A000	R930052195
M04/10	35-100 (508-1450)	204B000	R930052196
M04/20	90-250 (1305-3626)	204C000	R930052197
M04/35	175-345 (2538-5004)	204D000	R930052198

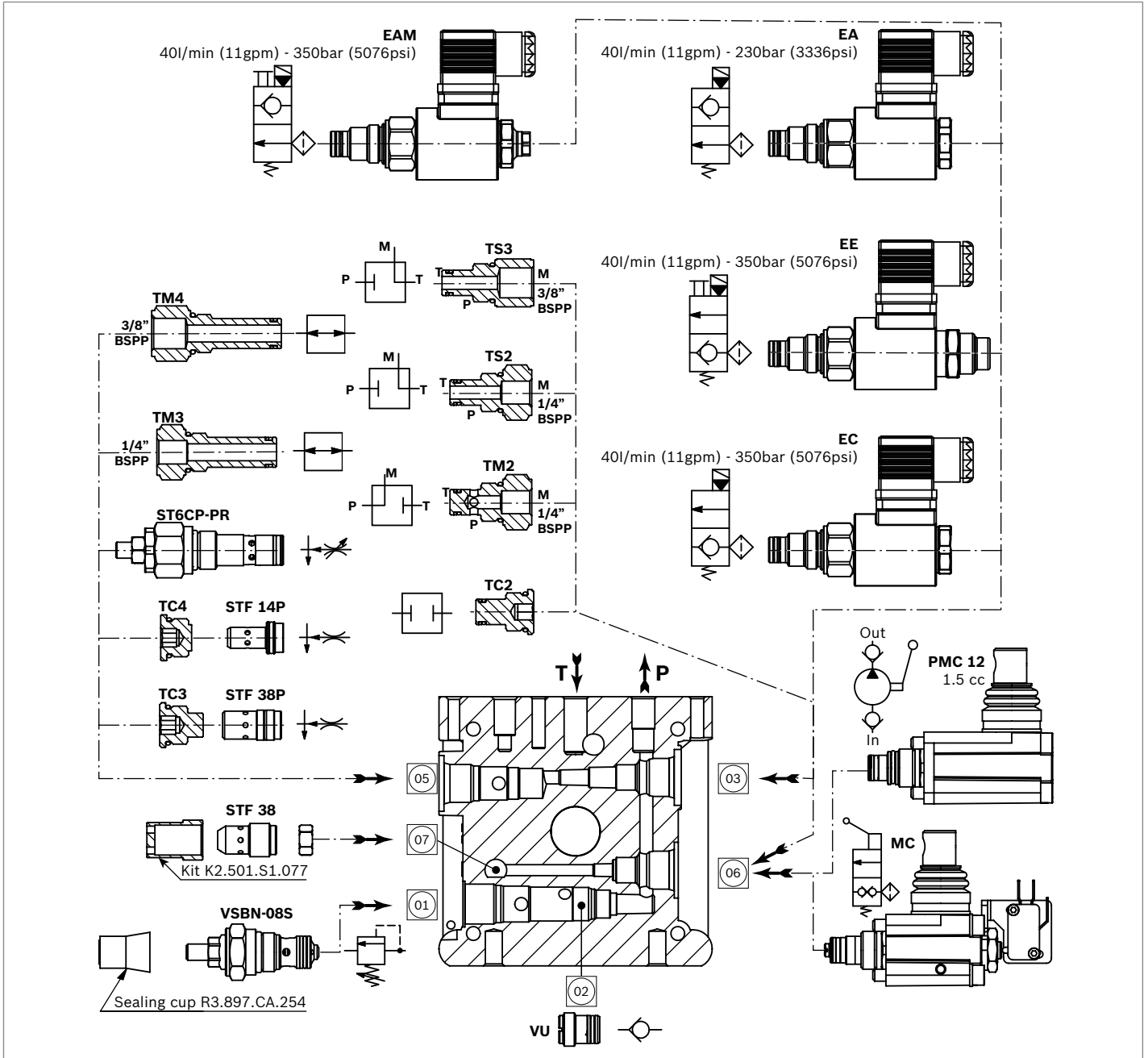
View Manifold Tank side



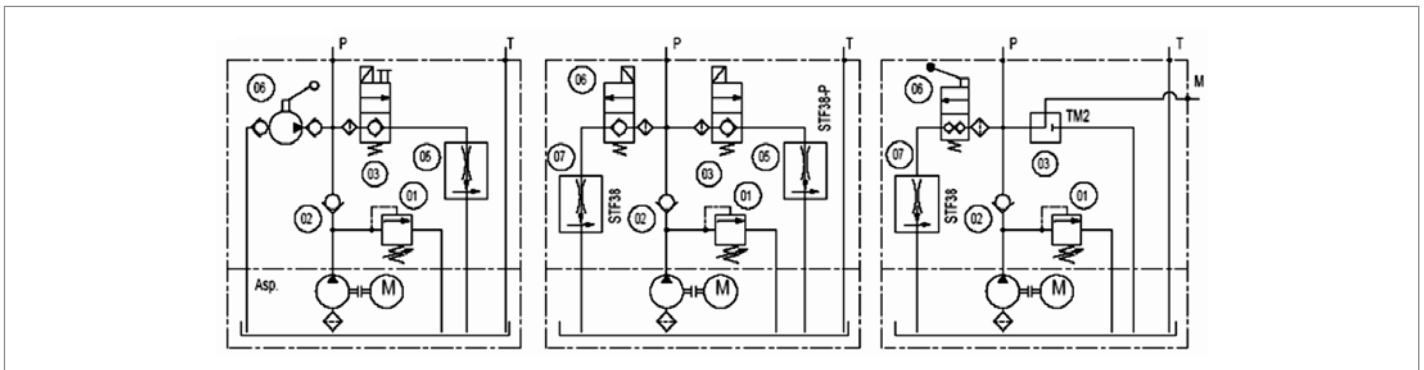
Manifold Hydraulic Diagram



M04 with valves

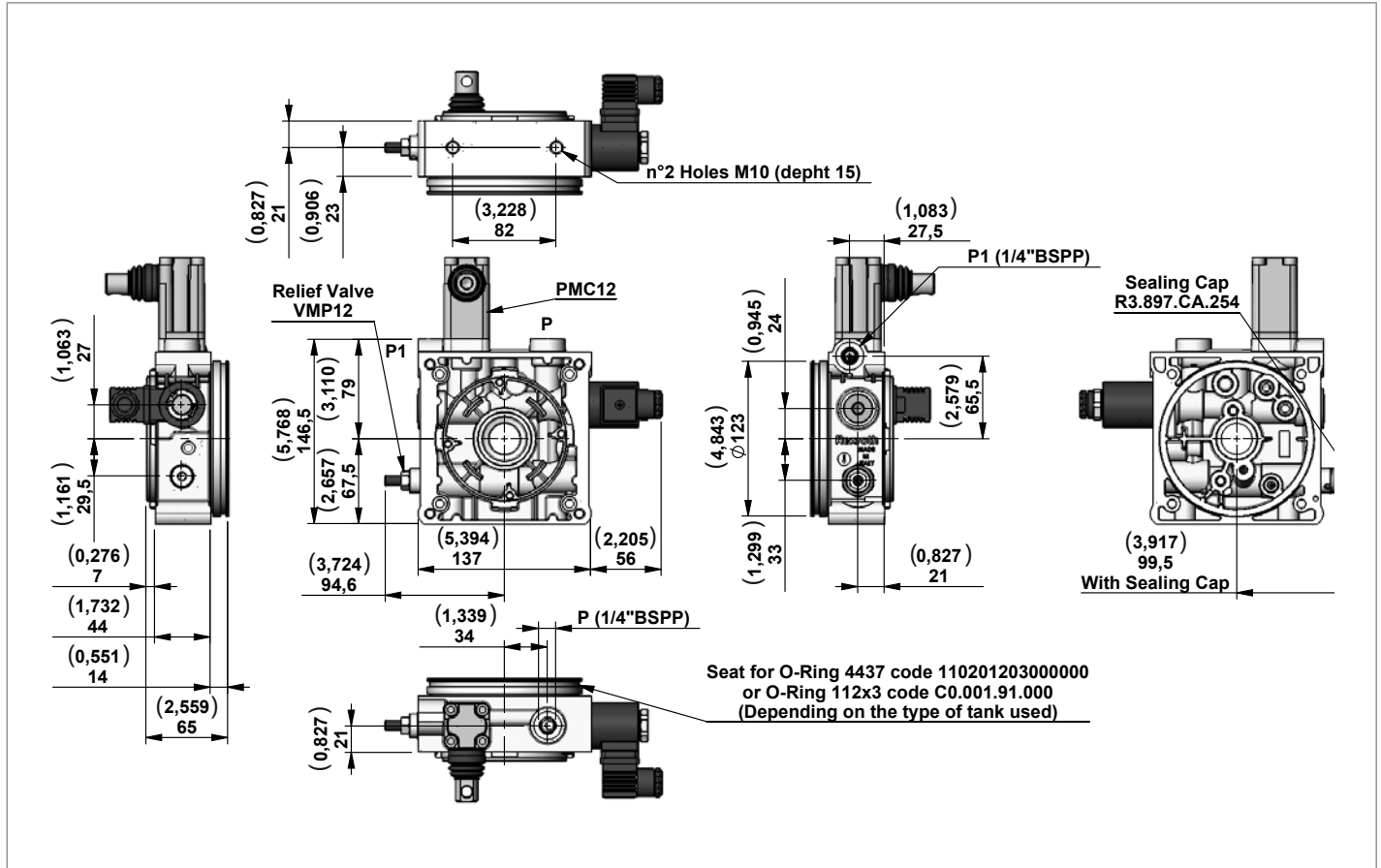


Main Realizable Diagrams



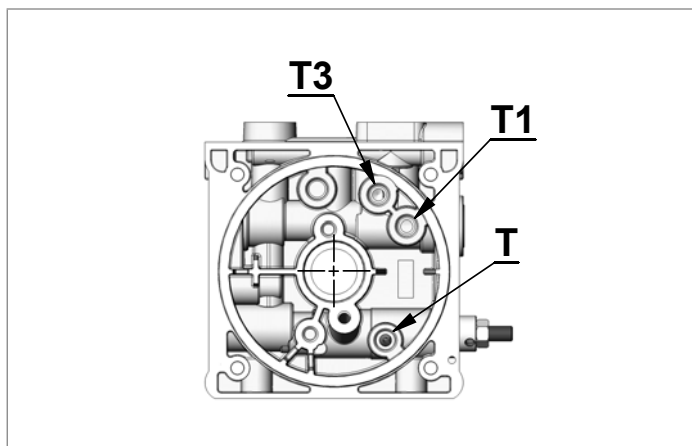
Central Manifold KE

M05

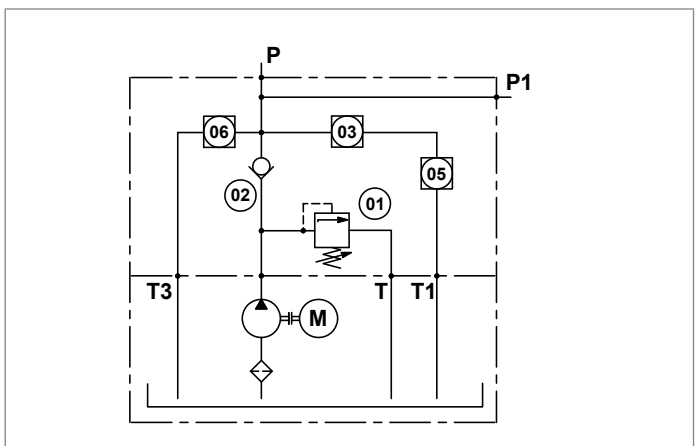


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M05/35	80-300 [1160-4351]	2051000	R930071142

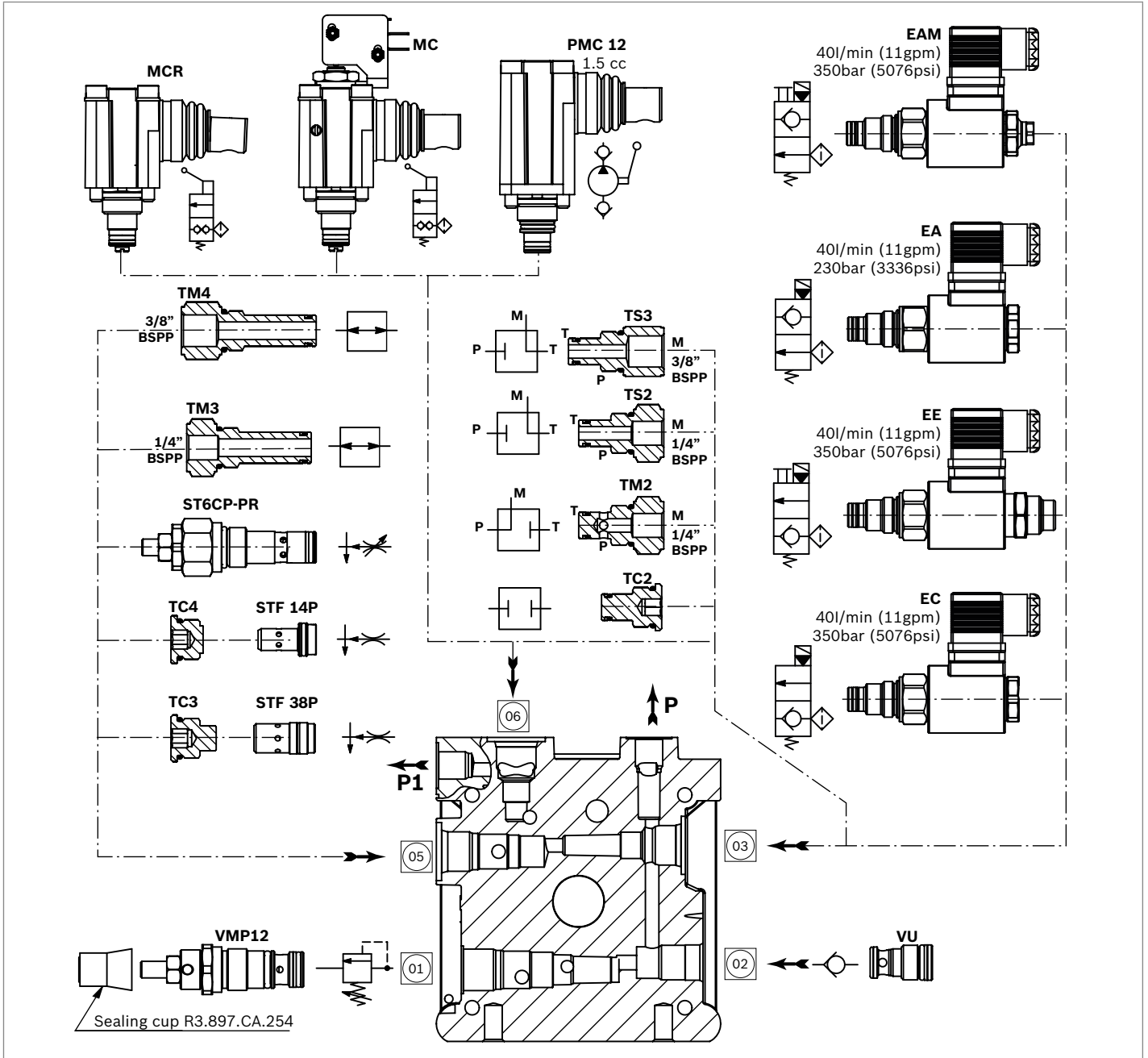
View Manifold Tank side



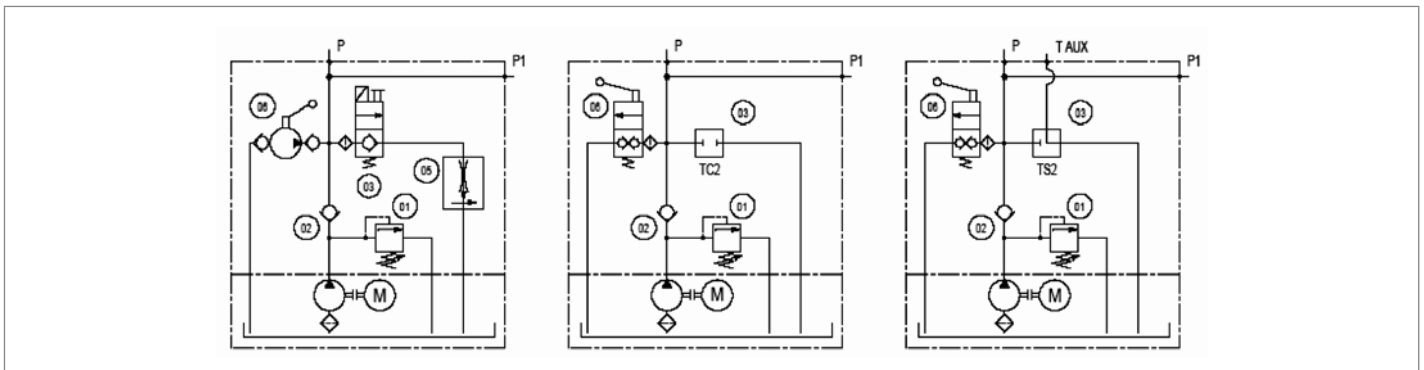
Manifold Hydraulic Diagram



M05 with valves

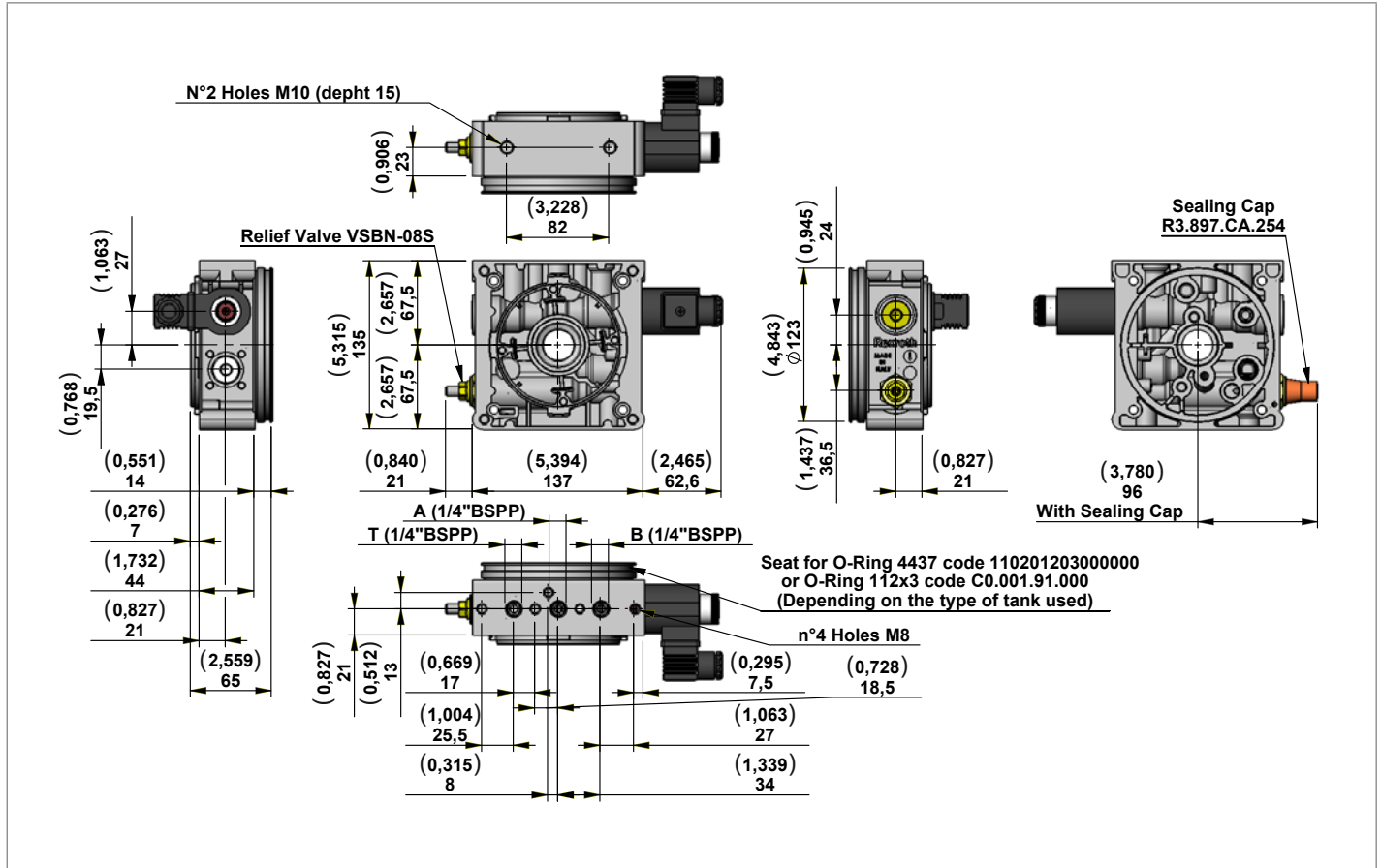


Main Realizable Diagrams



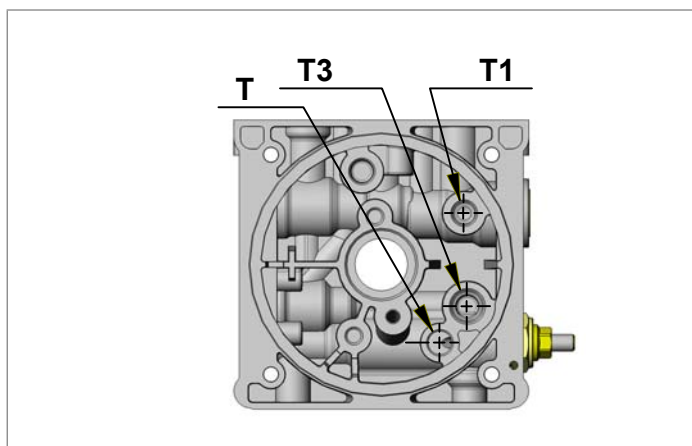
Central Manifold KE

M15

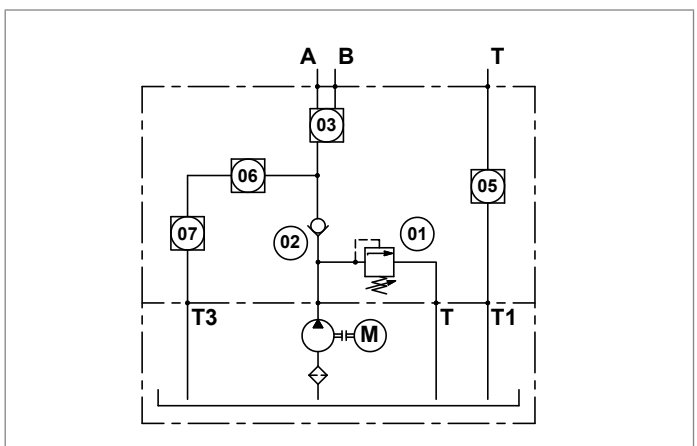


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M15/05	10-55 (145-798)	215A000	R930052205
M15/10	35-100 (508-1450)	215B000	R930052206
M15/20	90-250 (1305-3626)	215C000	R930052207
M15/35	175-345 (2538-5004)	215D000	R930052208

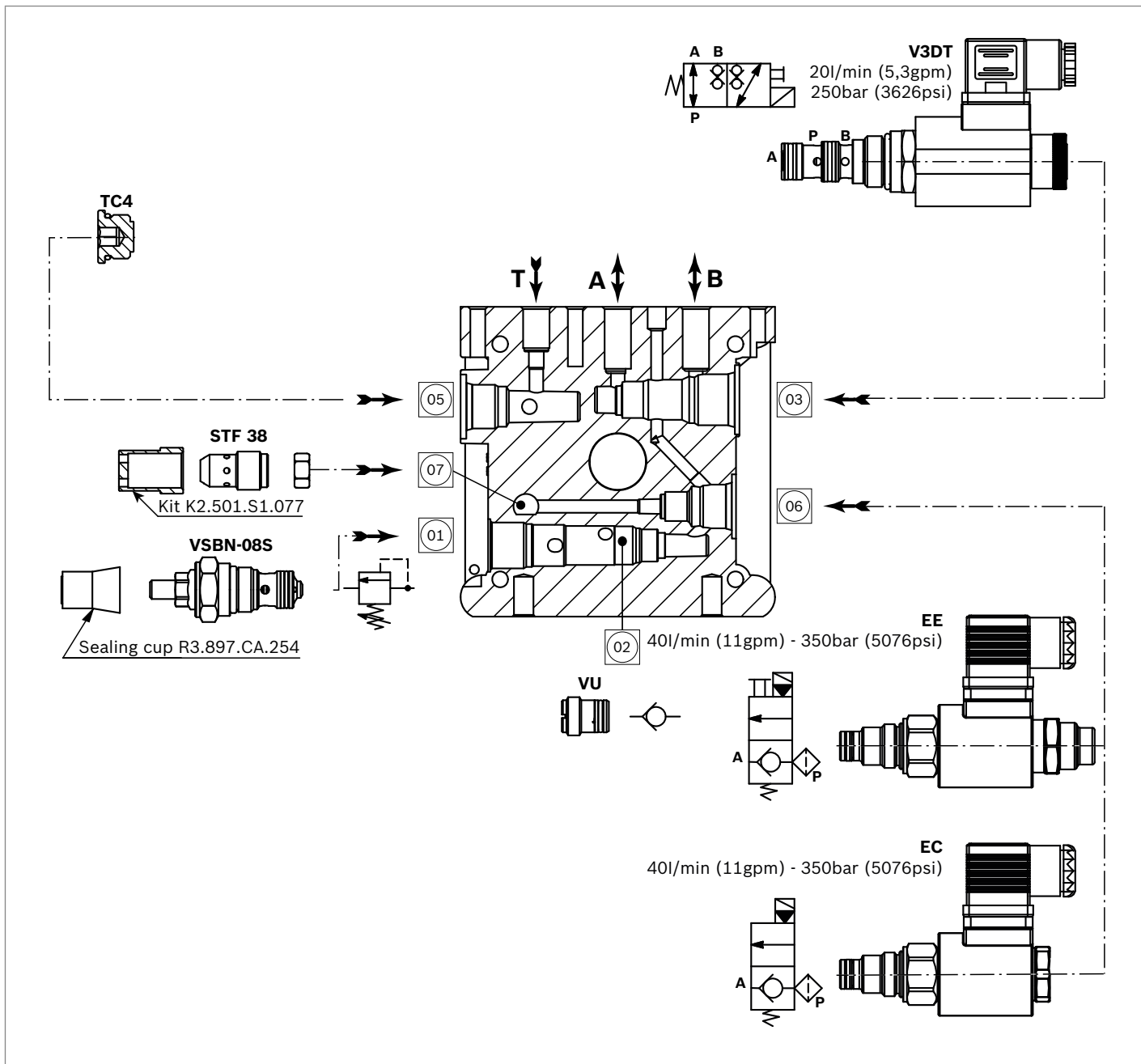
View Manifold Tank side



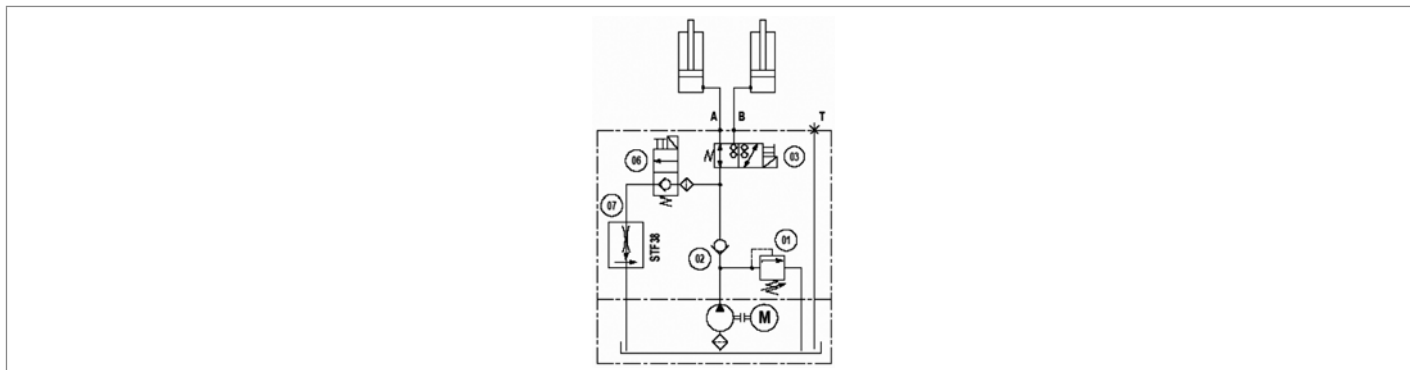
Manifold Hydraulic Diagram



M15 with valves

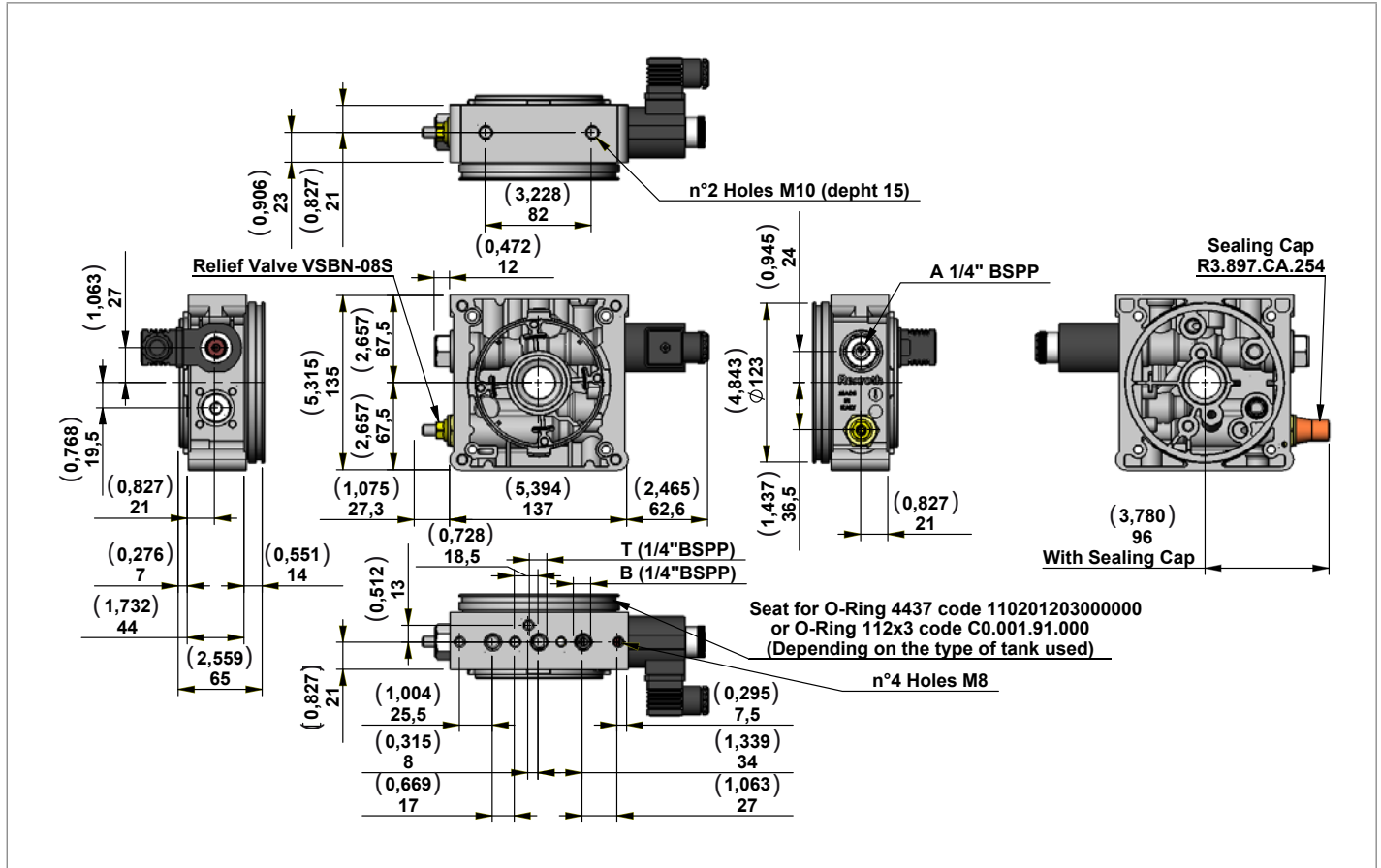


Main Realizable Diagrams



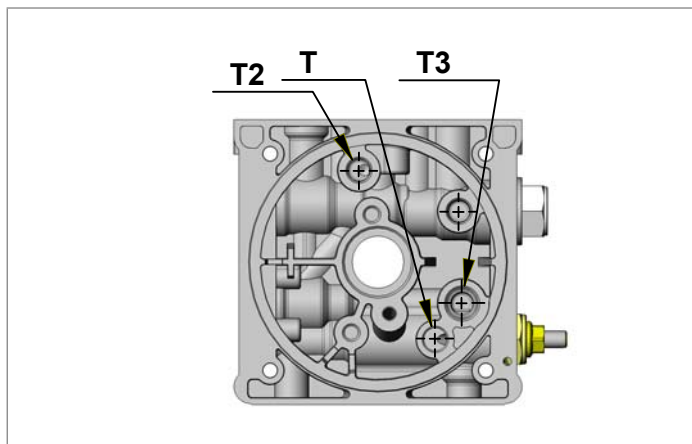
Central Manifold KE

M16

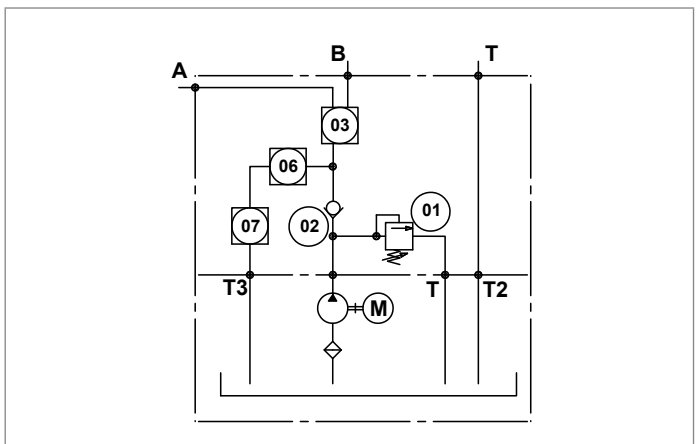


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M16/05	10-55 (145-798)	216A000	R930052212
M16/10	35-100 (508-1450)	216B000	R930052213
M16/20	90-250 (1305-3626)	216C000	R930052214
M16/35	175-345 (2538-5004)	216D000	R930052215

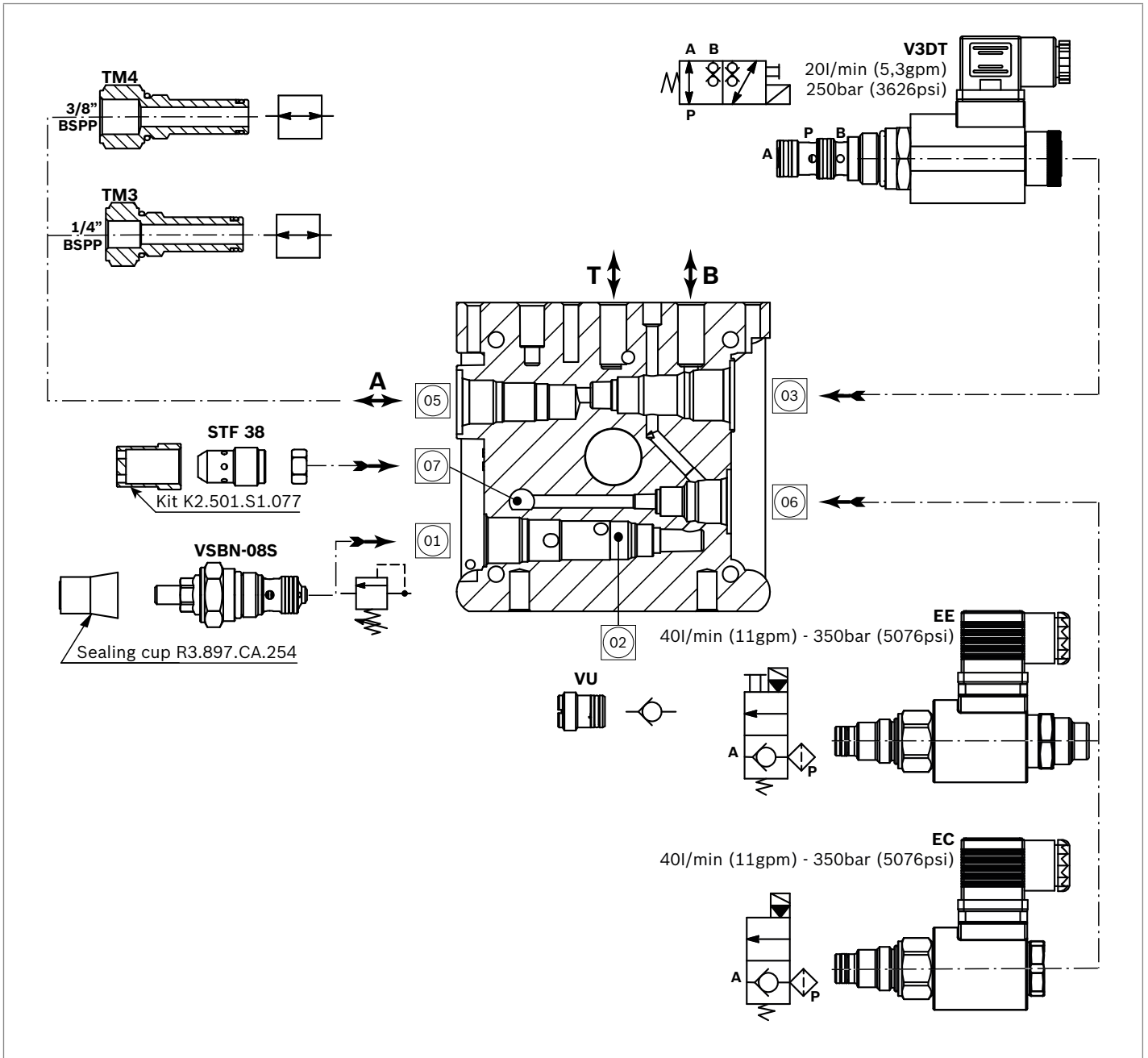
View Manifold Tank side



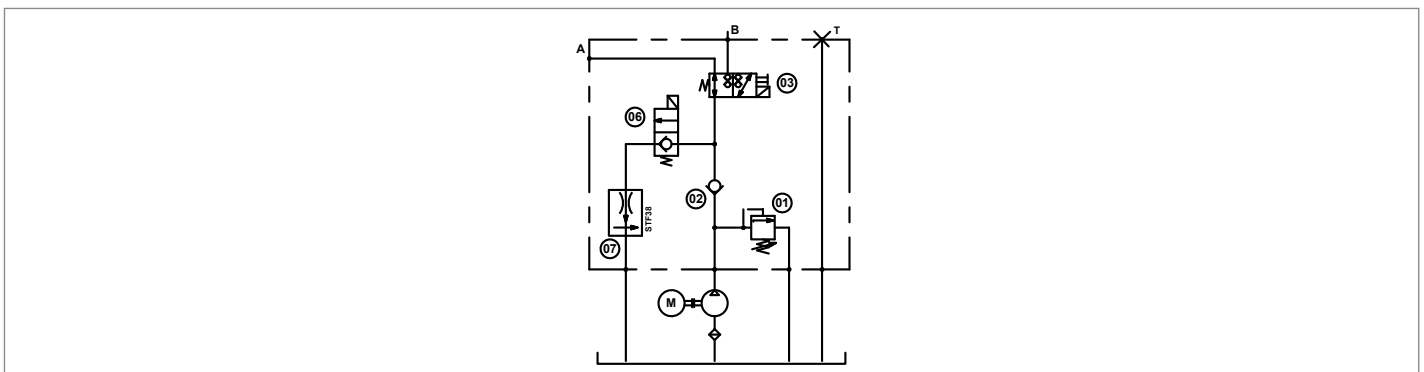
Manifold Hydraulic Diagram



M16 with valves

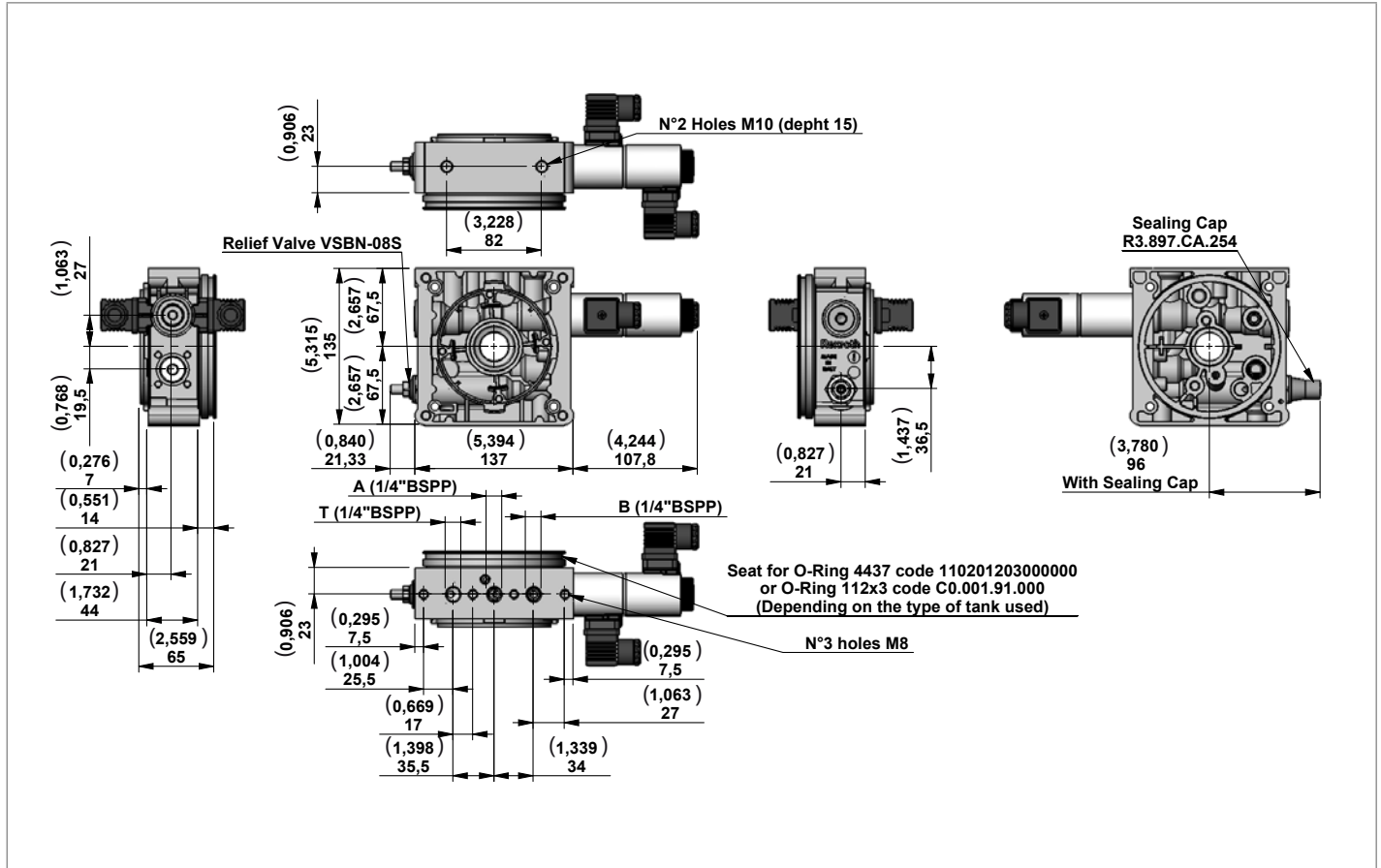


Main Realizable Diagrams



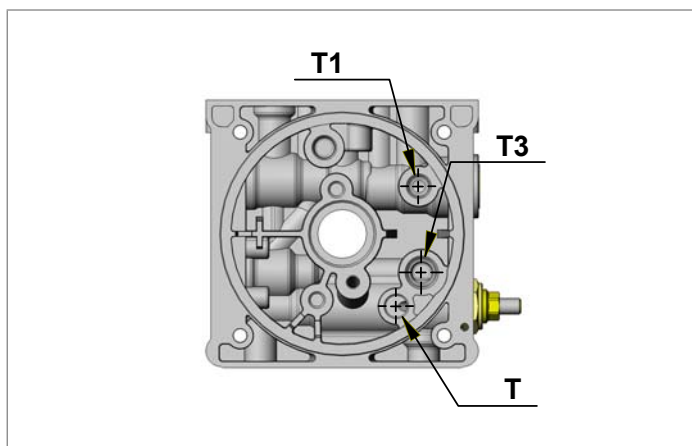
Central Manifold KE

M25

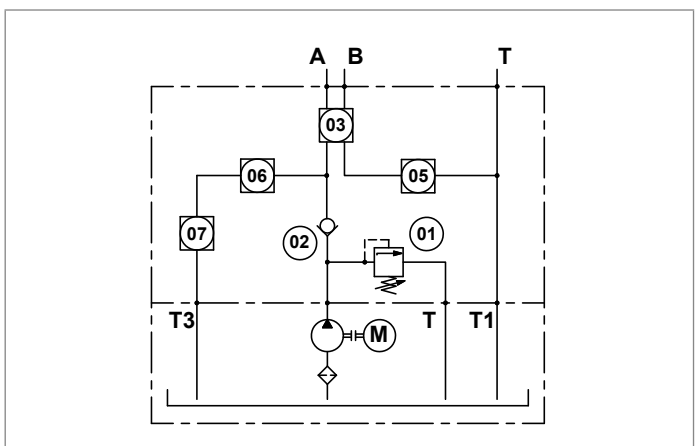


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M25/05	10-55 (145-798)	225A000	R930052221
M25/10	35-100 (508-1450)	225B000	R930052222
M25/20	90-250 (1305-3626)	225C000	R930052223
M25/35	175-345 (2538-5004)	225D000	R930052224

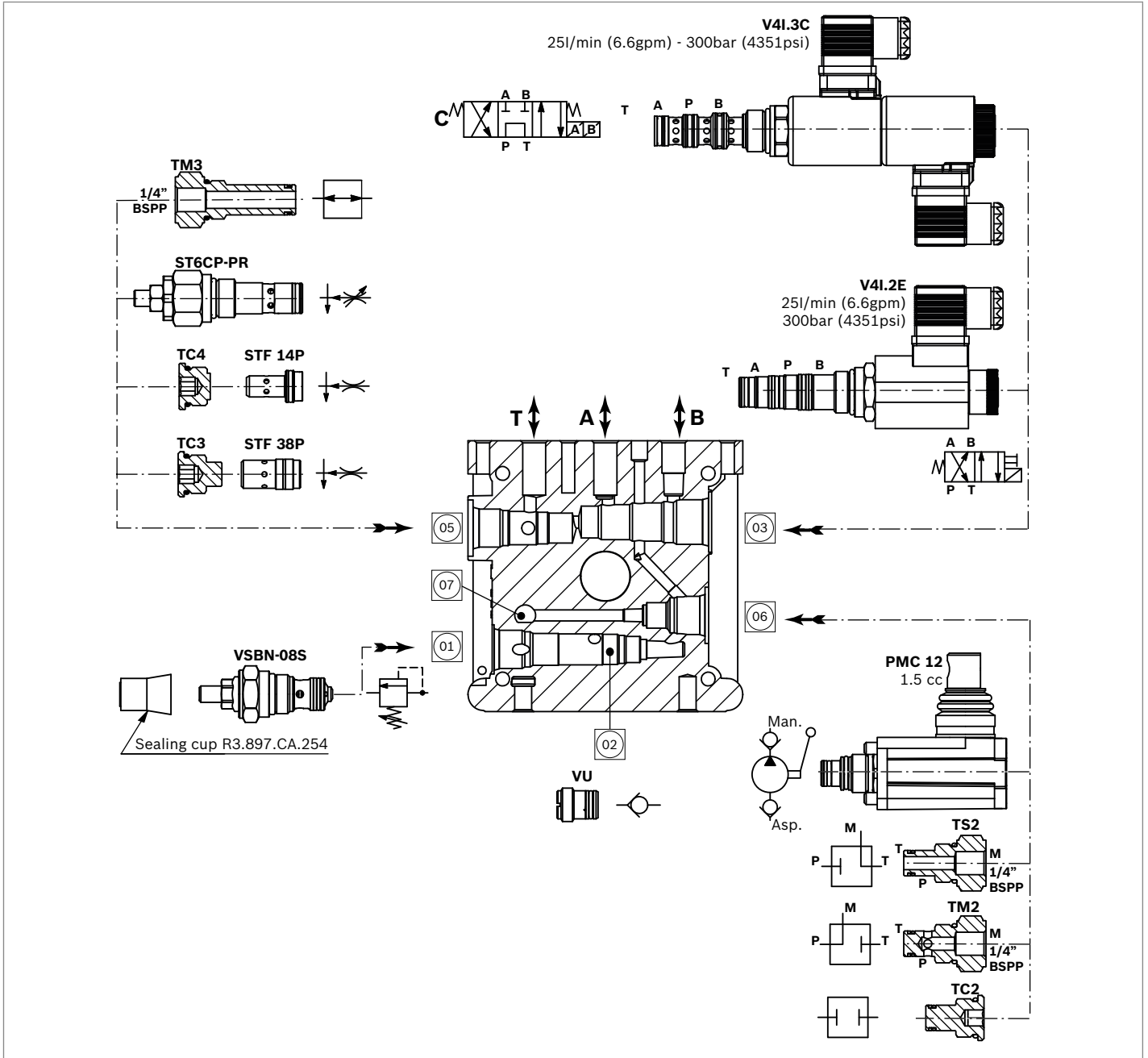
View Manifold Tank side



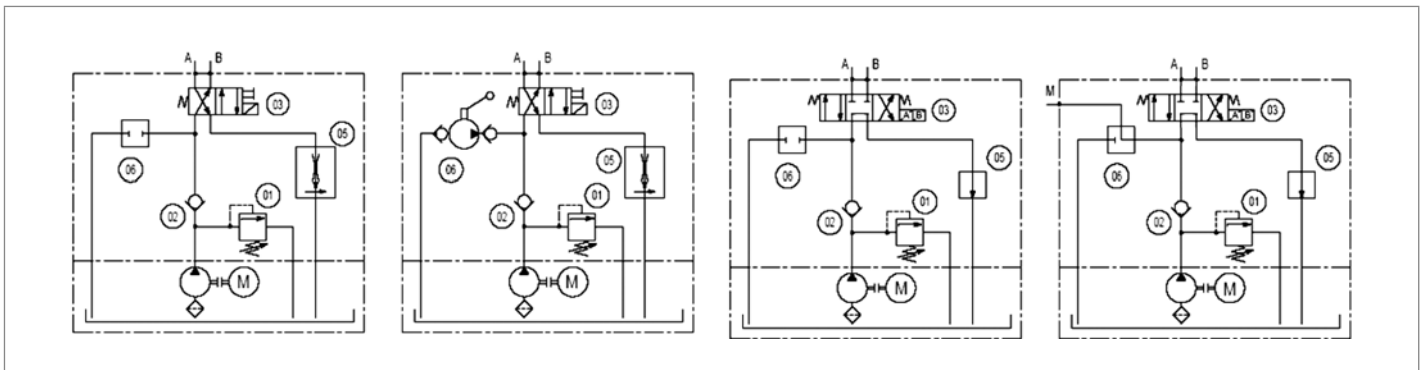
Manifold Hydraulic Diagram



M25 with valves

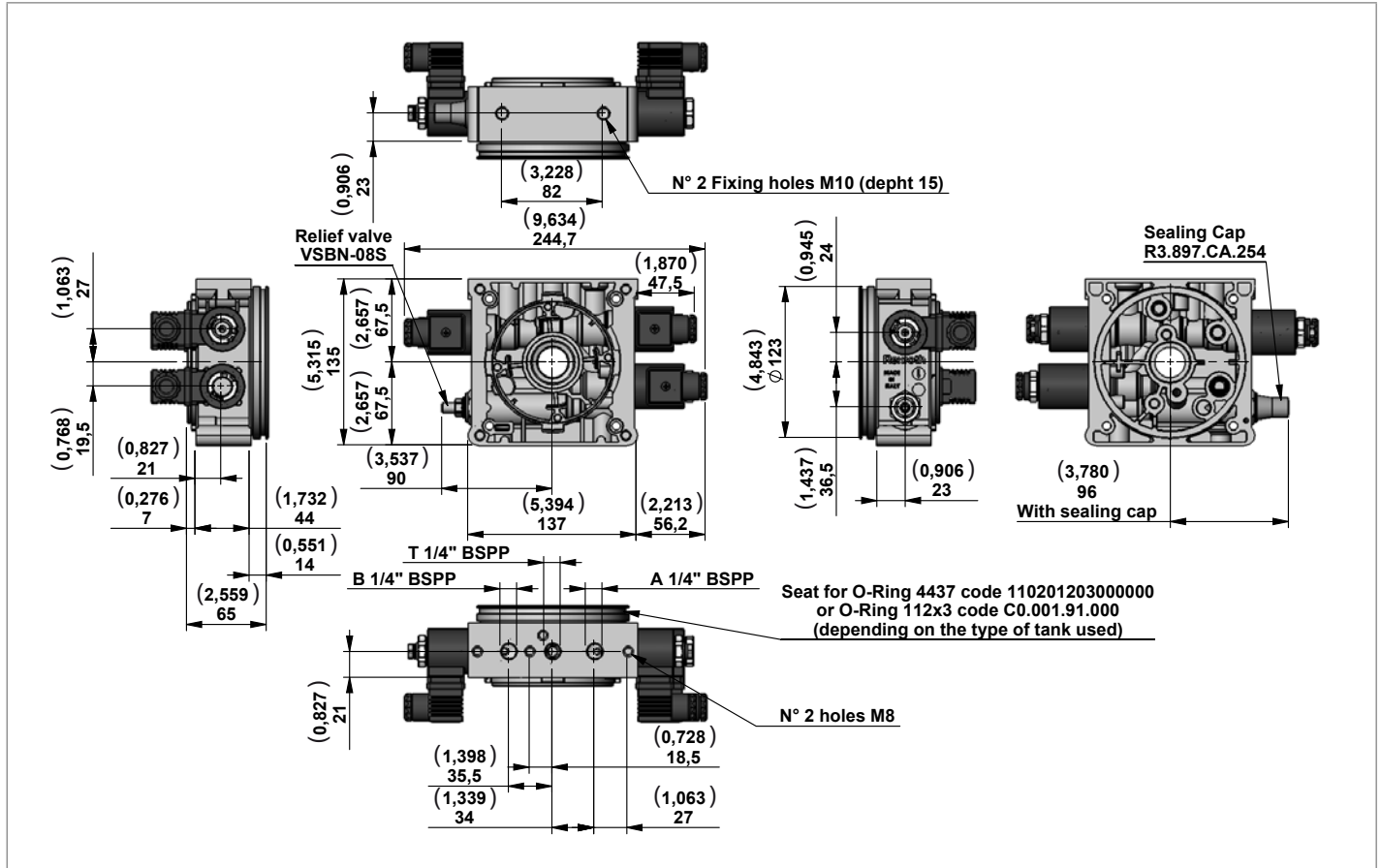


Main Realizable Diagrams



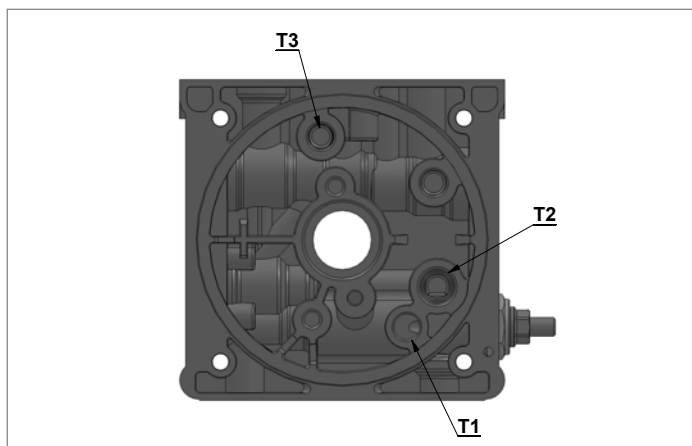
Central Manifold KE

M32

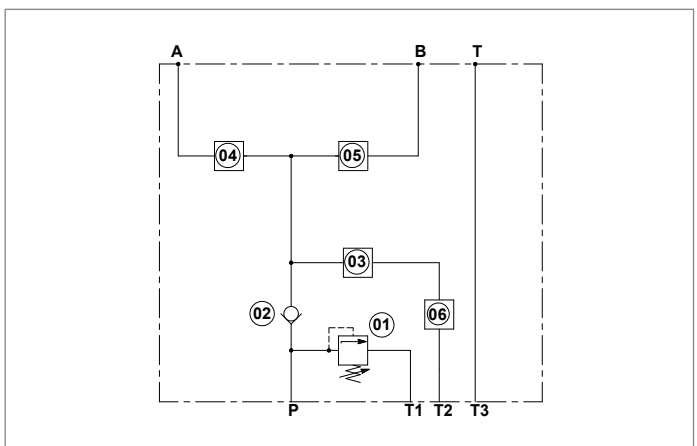


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
M32/10	35-100 (508-1450)	232B000	R930052413
M32/20	90-250 (1305-3626)	232C000	R930052414
M32/35	175-345 (2538-5004)	232D000	R930052415

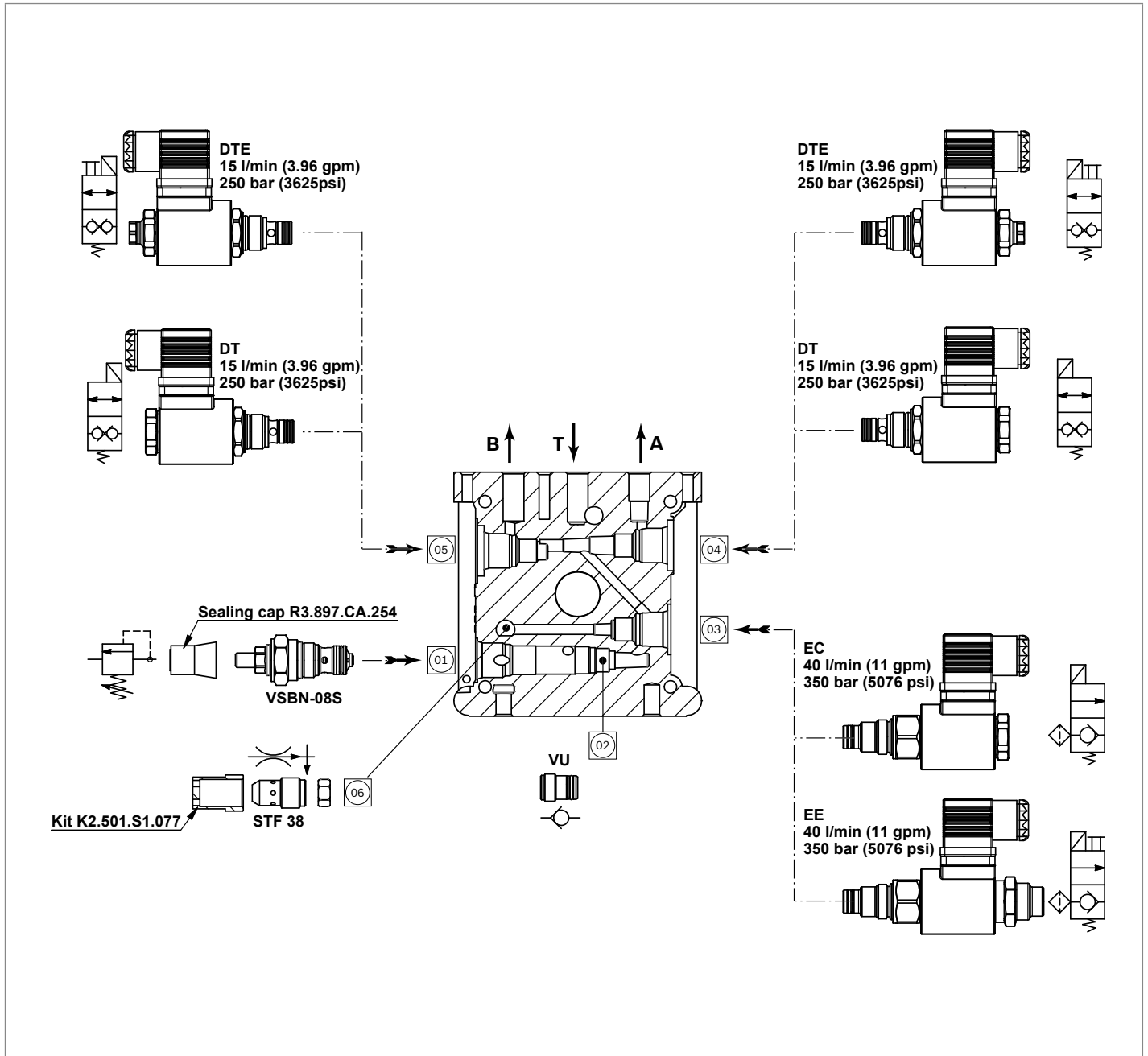
View Manifold Tank side



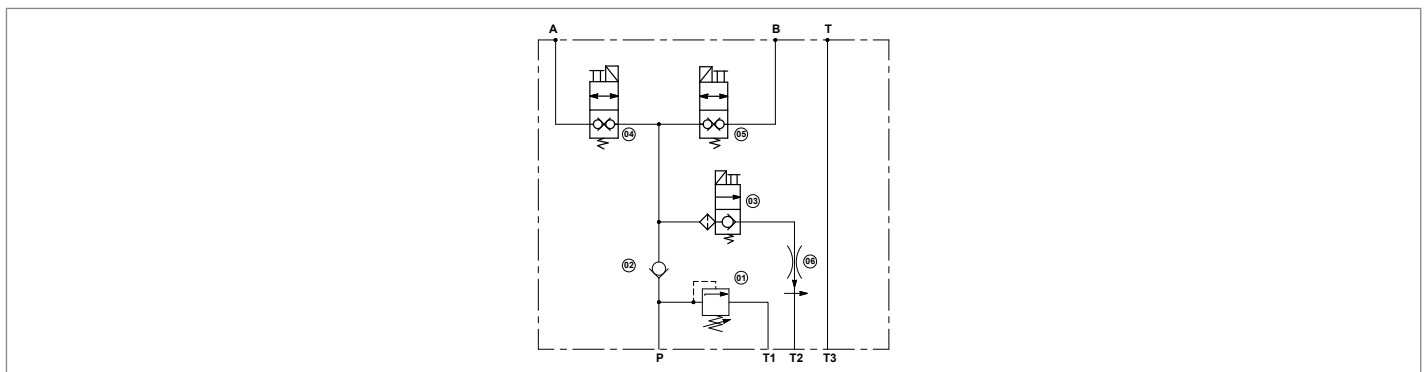
Manifold Hydraulic Diagram



M32 with valves

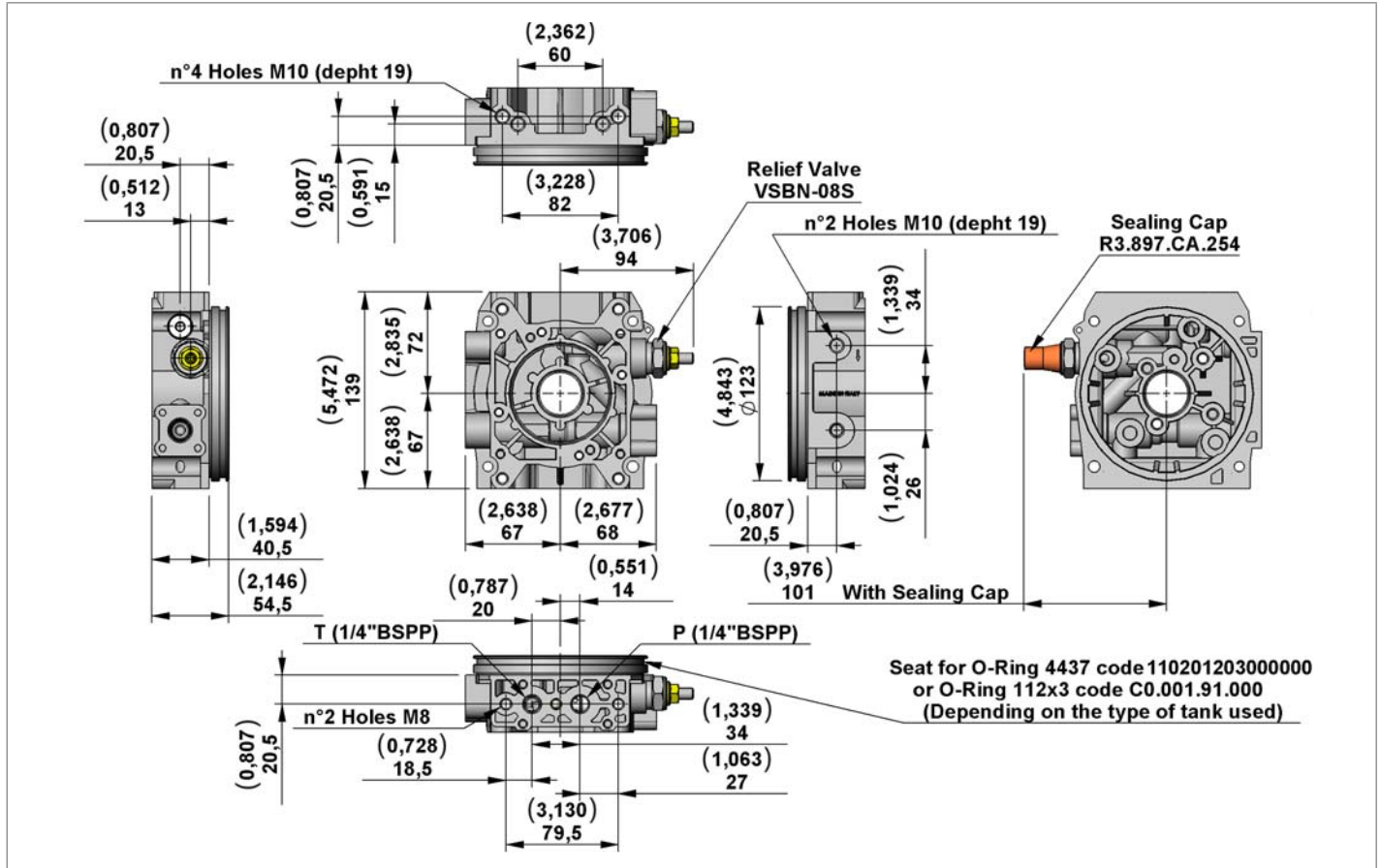


Main Realizable Diagrams



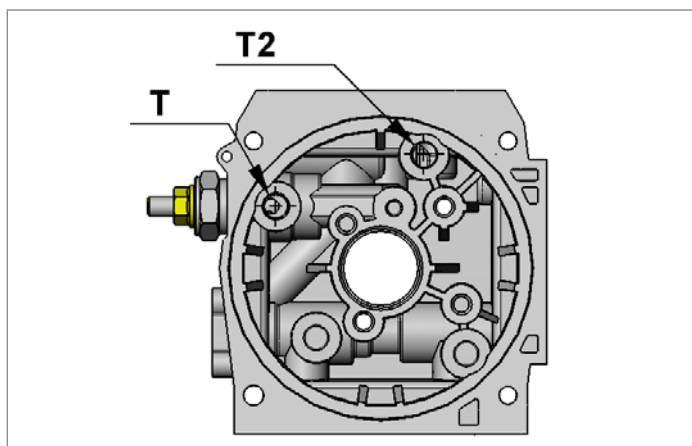
Central Manifold K

A1

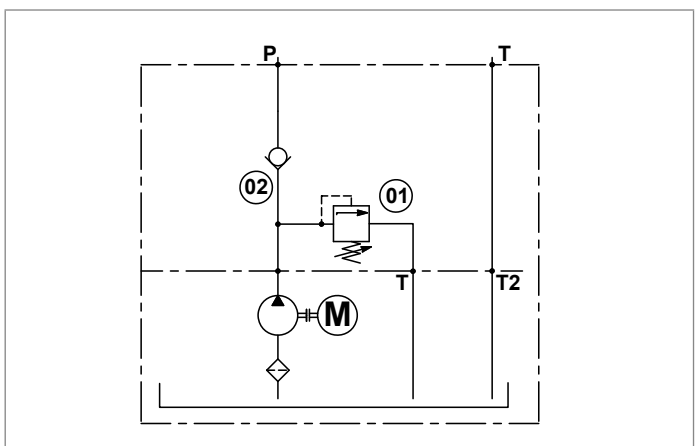


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
A1/05	10-55 (145-798)	101A000A	R930052170
A1/10	35-100 (508-1450)	101B000A	R930052171
A1/20	90-250 (1305-3626)	101C000	R932008681
A1/35	175-345 (2538-5004)	101D000	R932008682

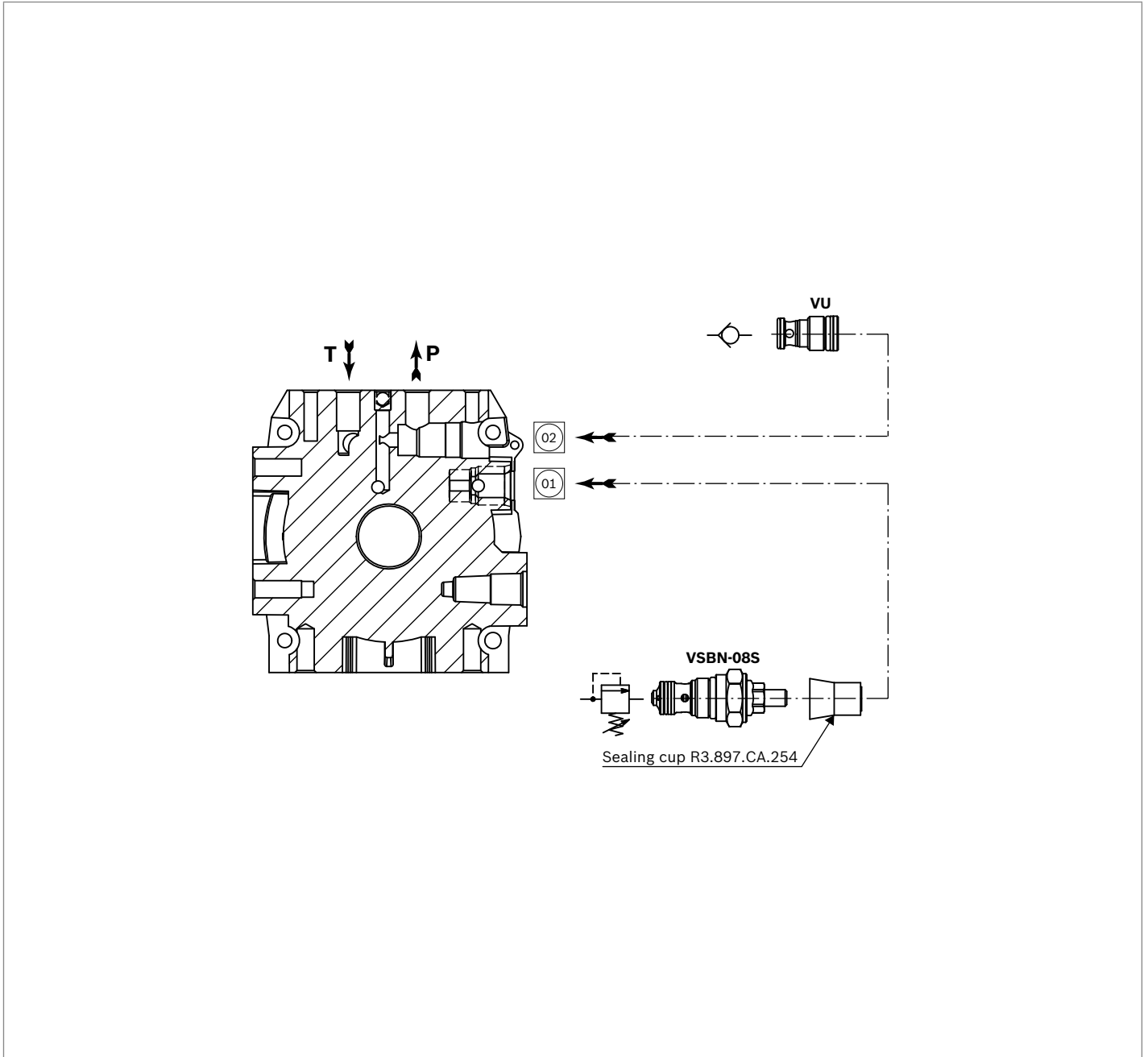
View Manifold Tank side



Manifold Hydraulic Diagram

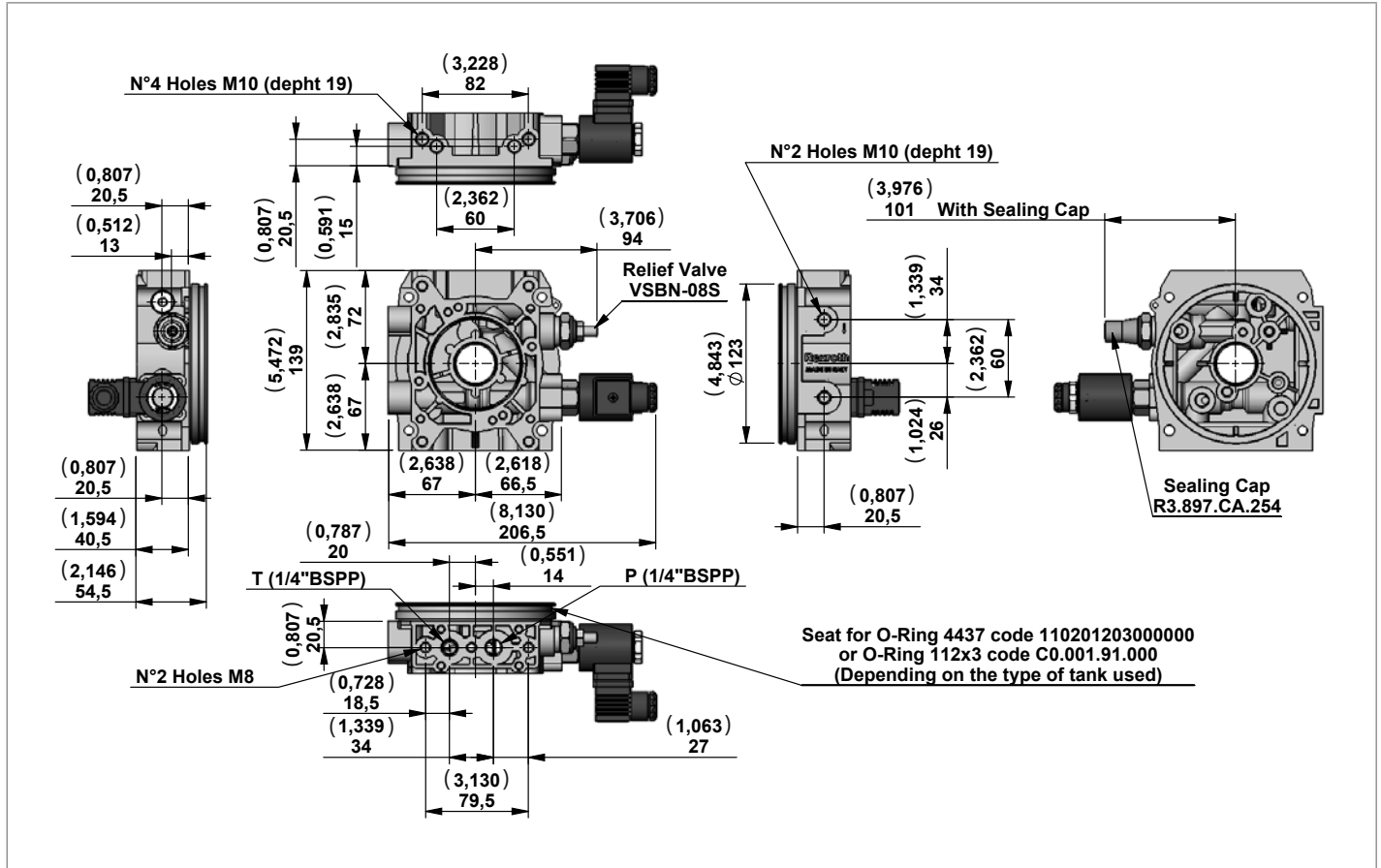


A1 with valves



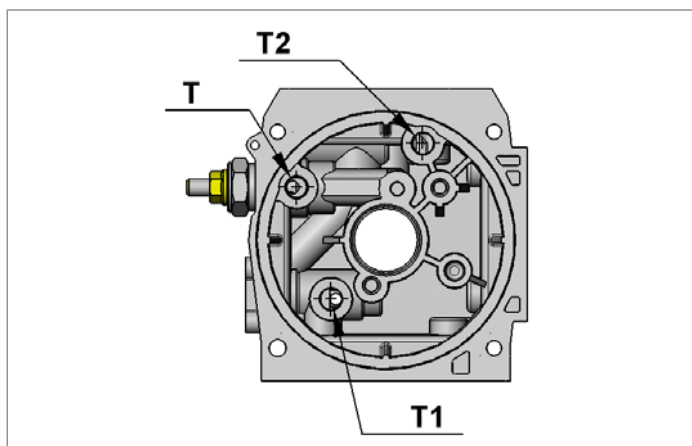
Central Manifold K

A12

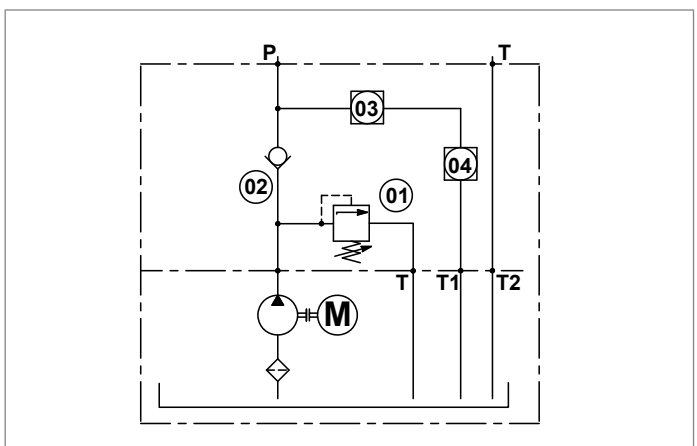


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
A12/05	10-55 (145-798)	112A000A	R930052172
A12/10	35-100 (508-1450)	112B000A	R930052173
A12/20	90-250 (1305-3626)	112C000	R932008685
A12/35	175-345 (2538-5004)	112D000	R932008686

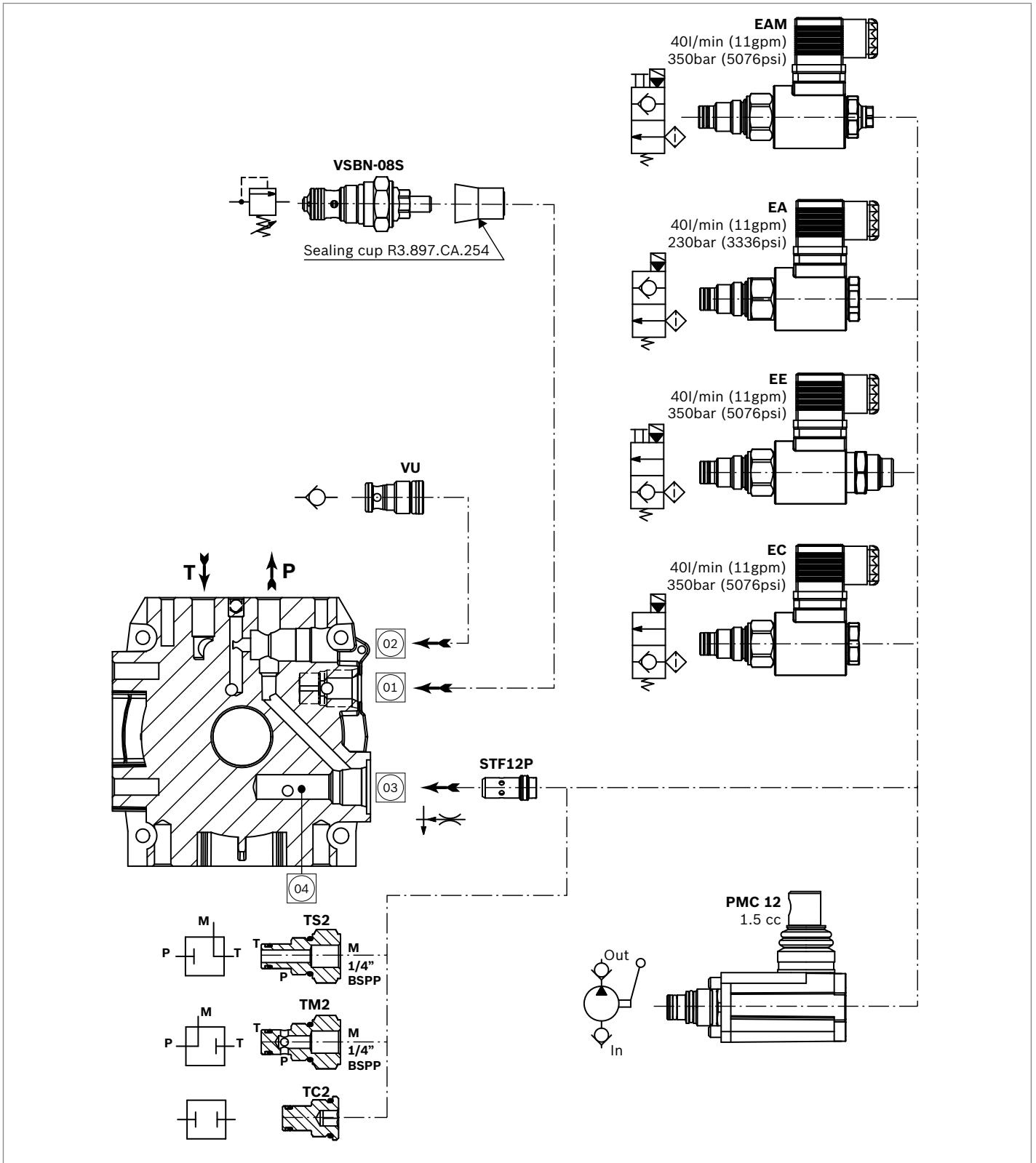
View Manifold Tank side



Manifold Hydraulic Diagram

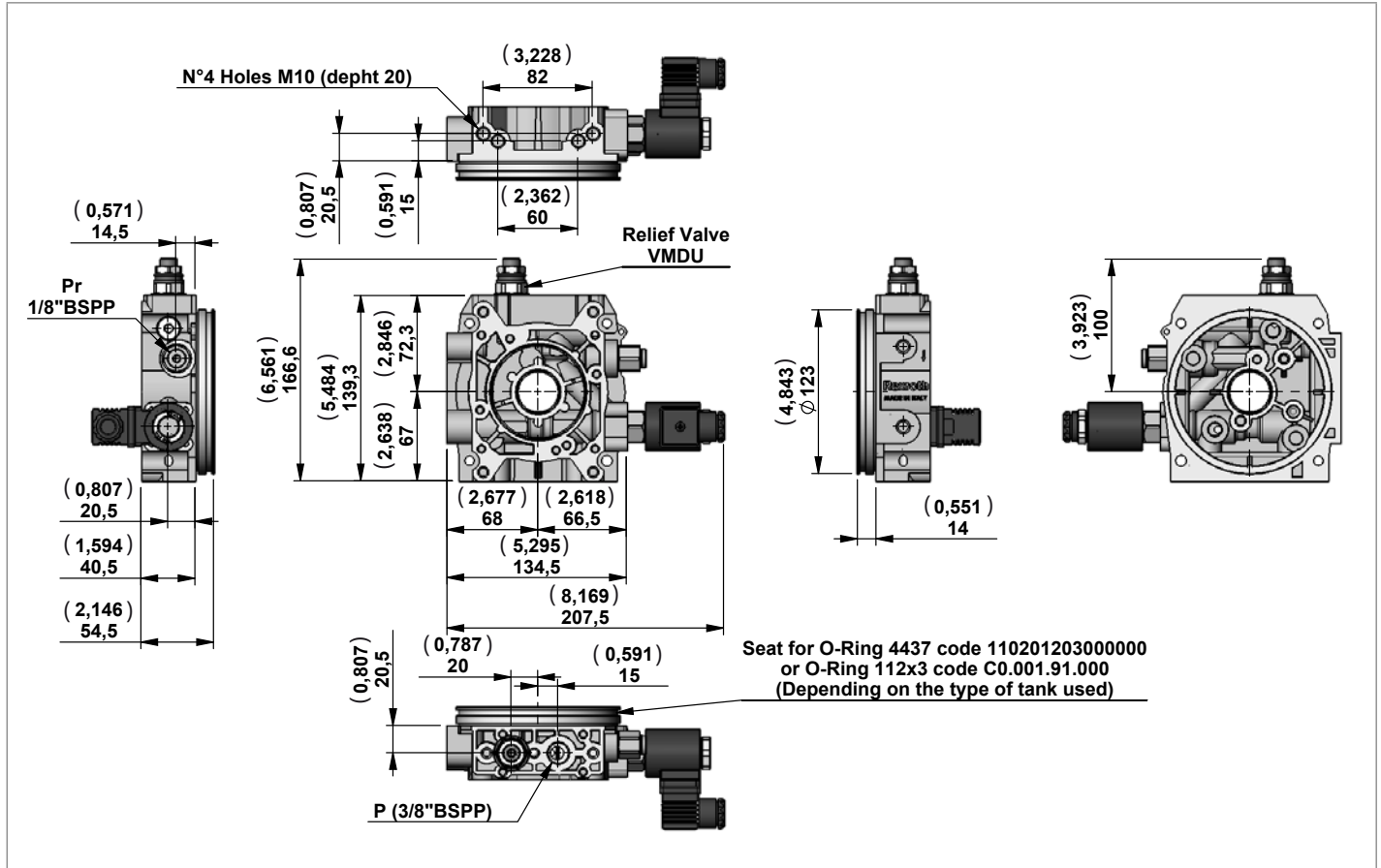


A12 with valves



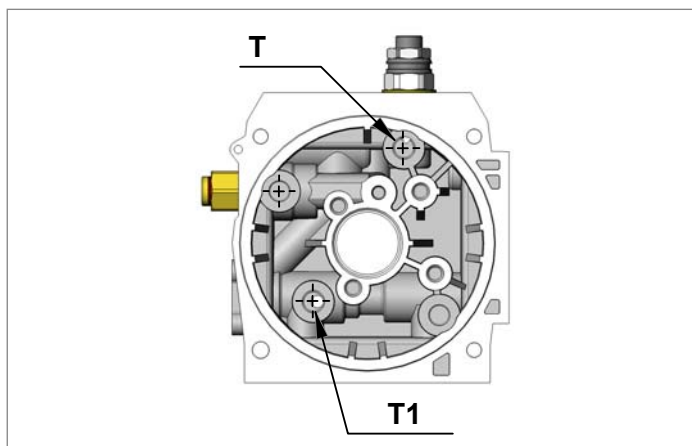
Central Manifold K

A9

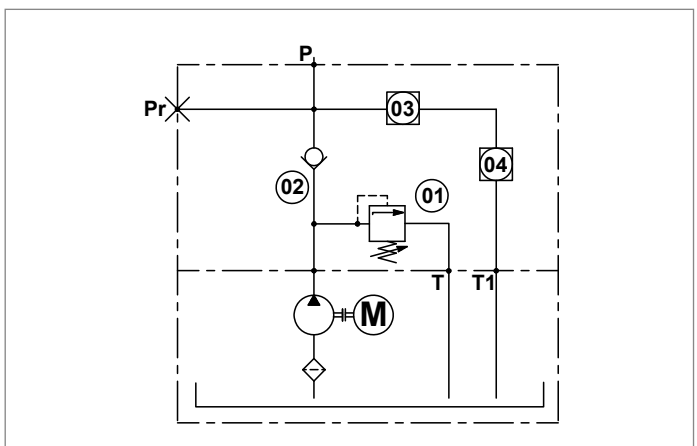


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
A9/20	80-250 [1160-3626]	109H000A	R930061028

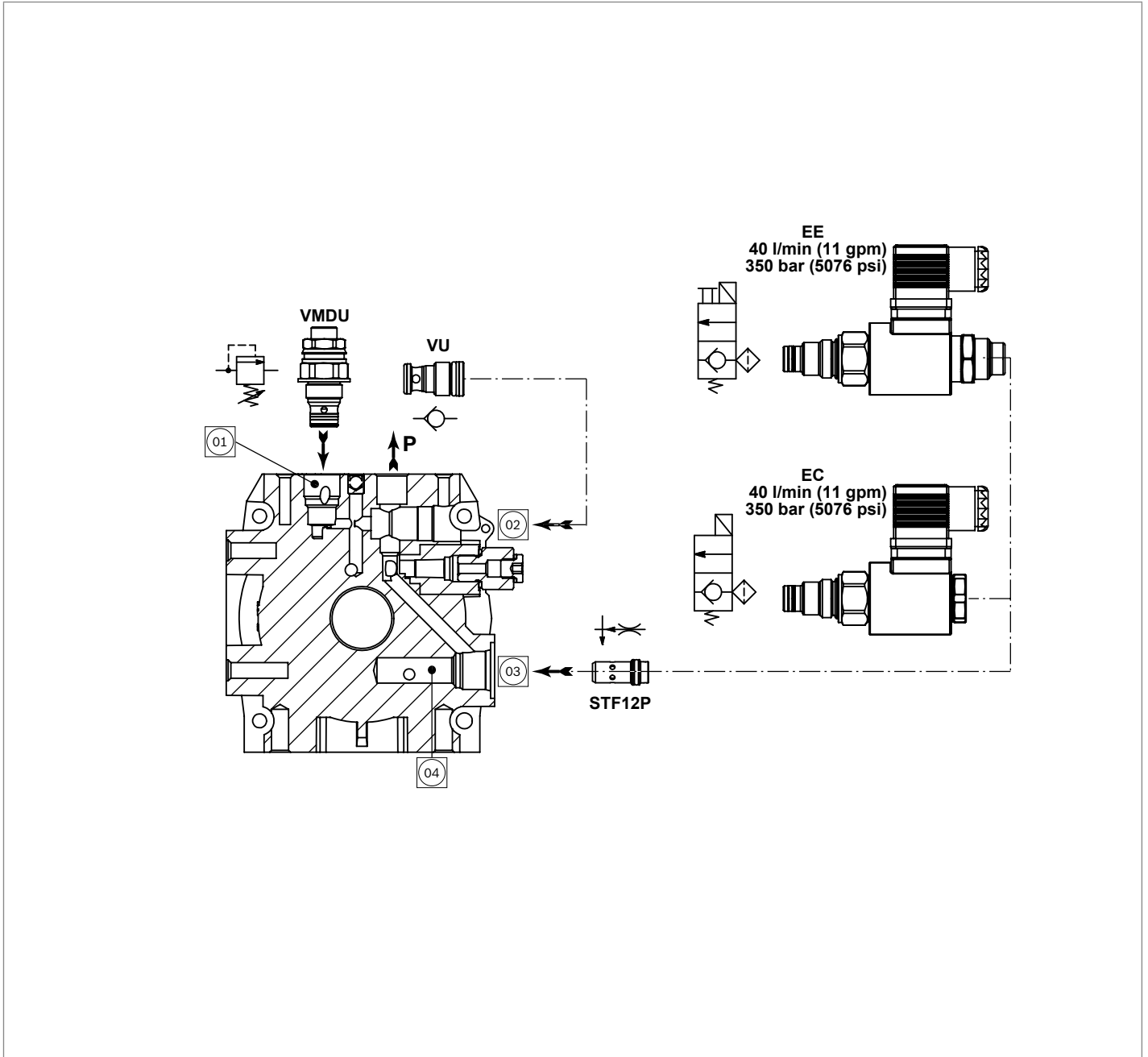
View Manifold Tank side



Manifold Hydraulic Diagram

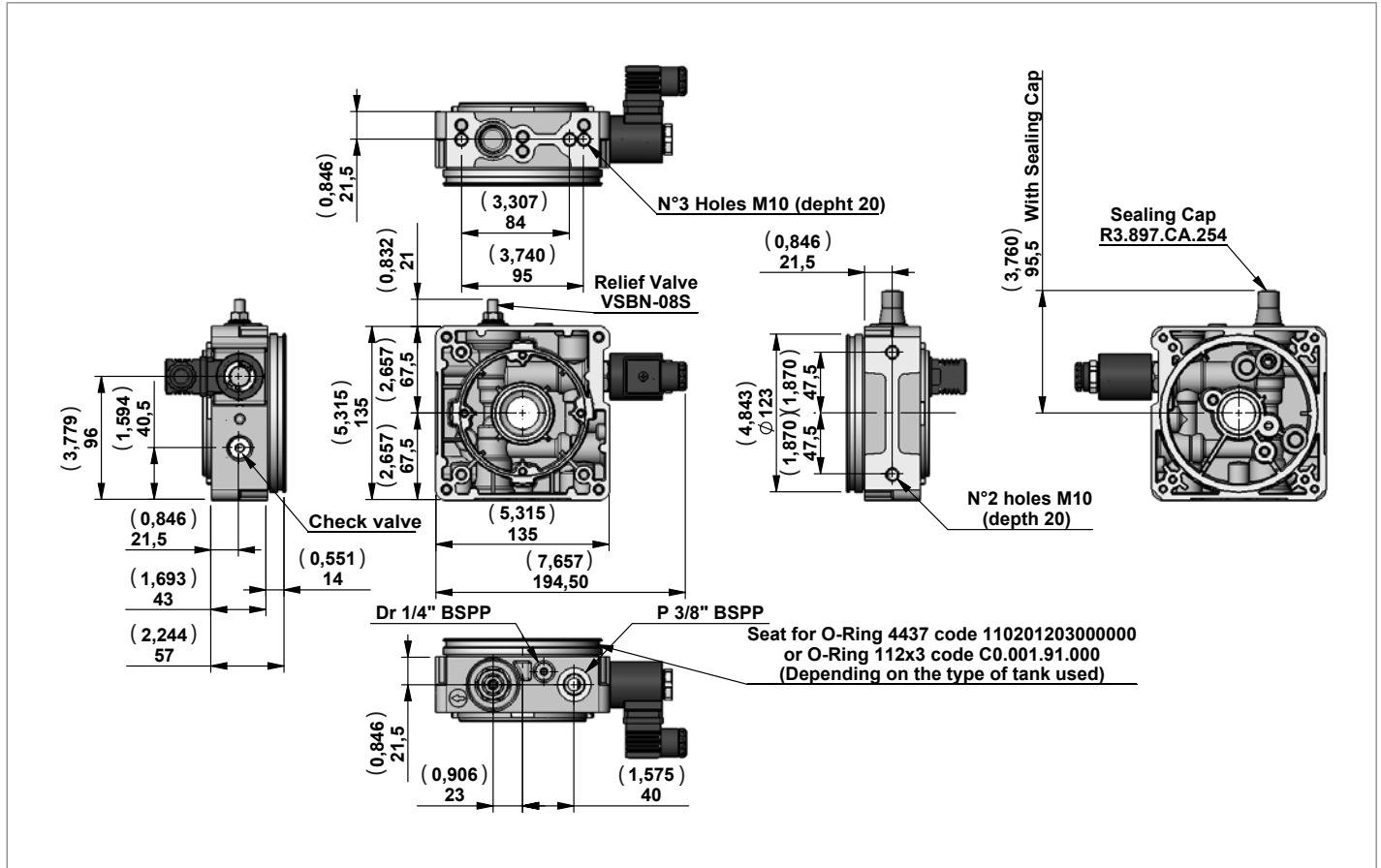


A9 with valves



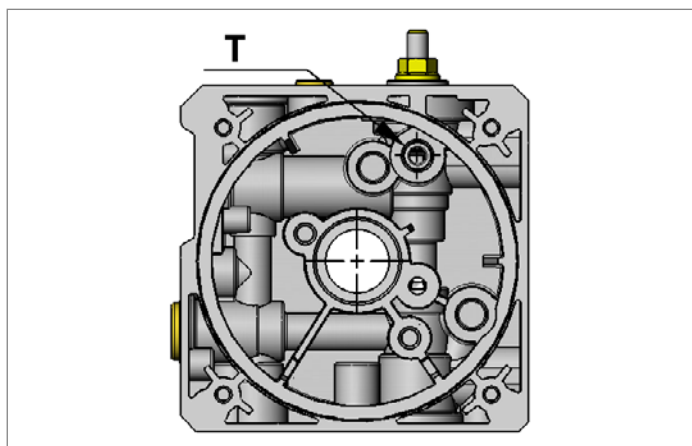
Central Manifold KS

KS05

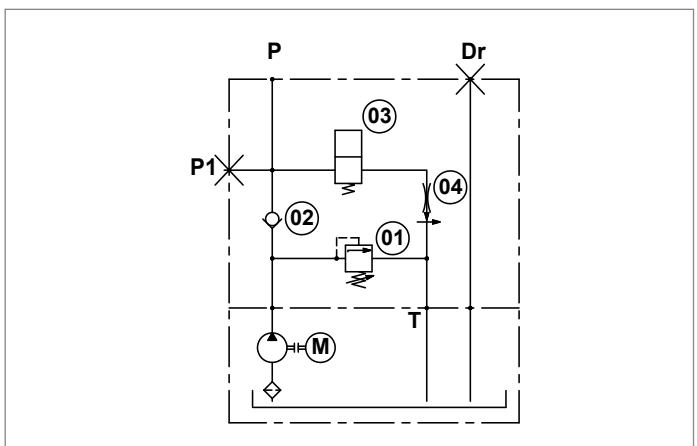


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
KS05/10	35-100 (508-1450)	305B000	R930071232
KS05/20	90-250 (1305-3626)	305C000	R930071231
KS05/35	175-345 (2538-5004)	305D000	R930071230

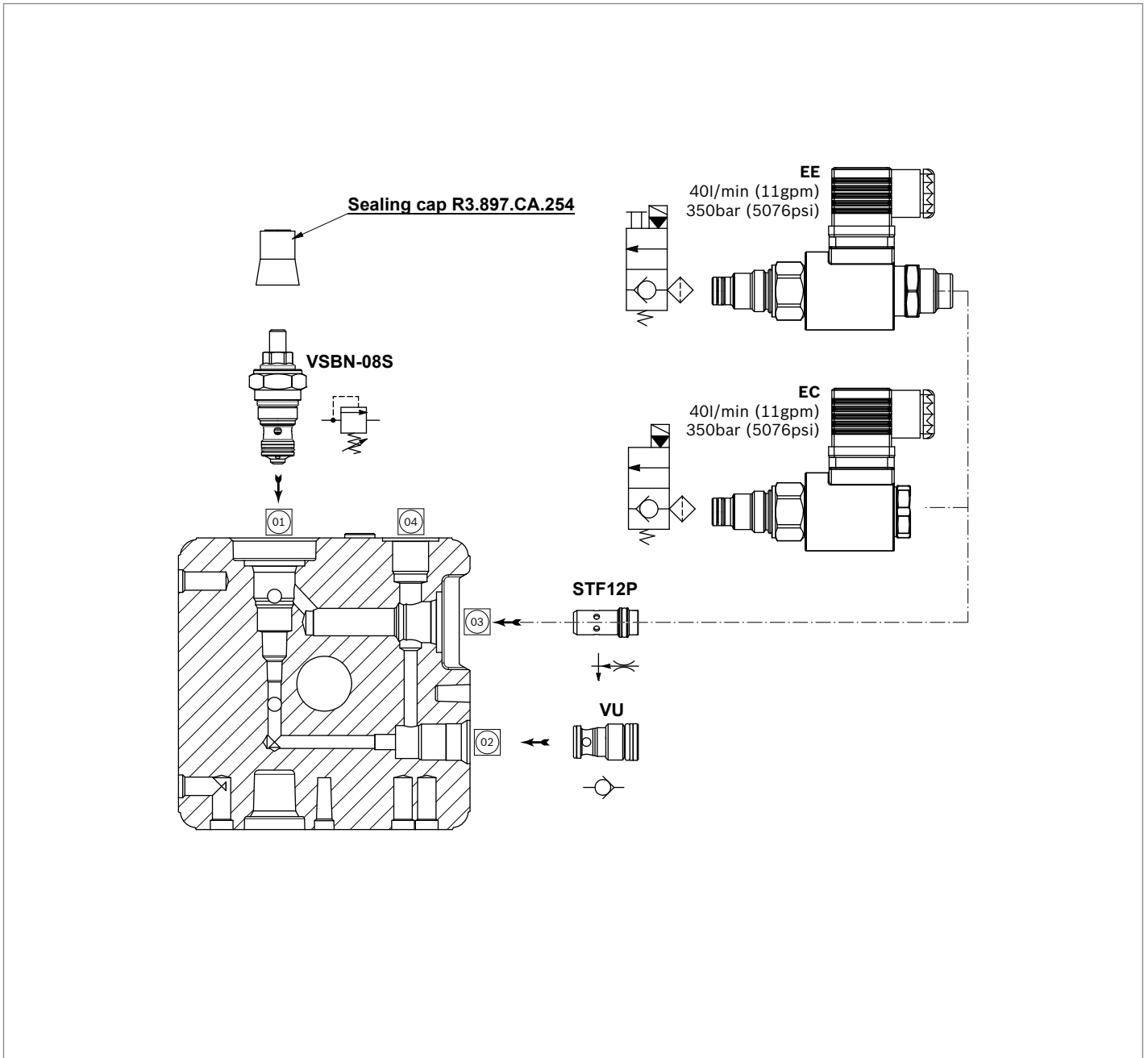
View Manifold Tank side



Manifold Hydraulic Diagram



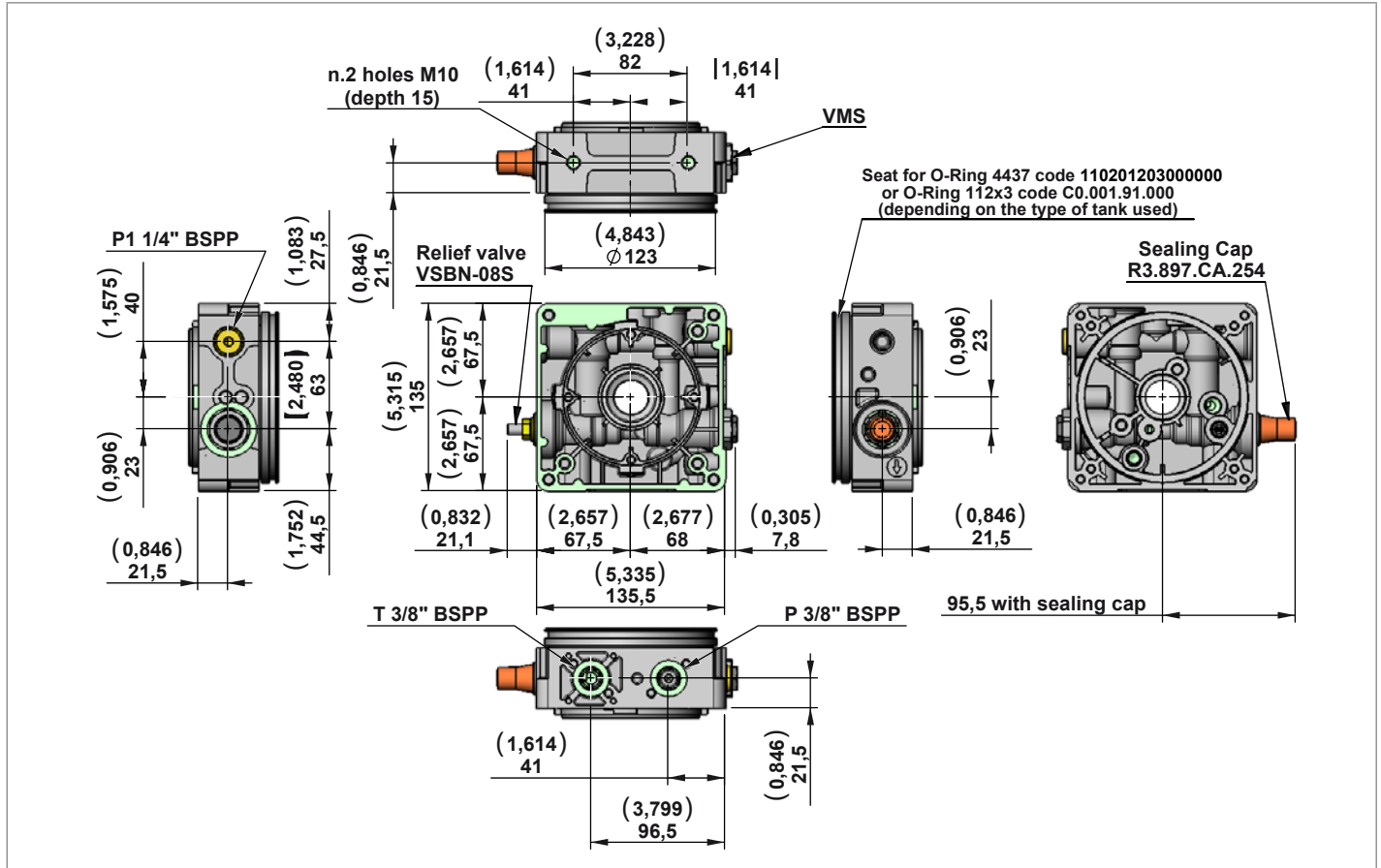
KS05 with valves



Note
 Steel tank is not available for central manifold KS type.
 Please contact our sales department for further information.

Central Manifold KS

KS02

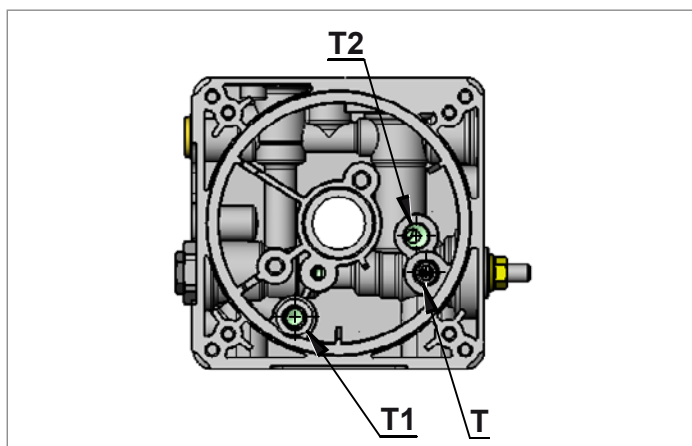


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
KS02/10	35-100 (508-1450)	302B000	R932010304
KS02/20	90-250 (1305-3626)	302C000	R932008762
KS02/35	175-345 (2538-5004)	302D000	R932008763

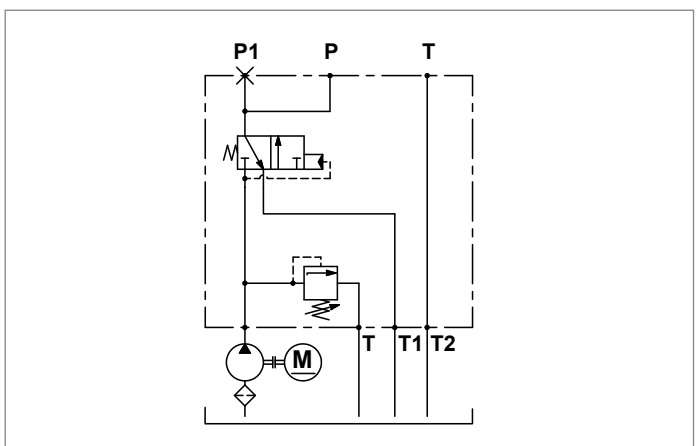
Note

Steel tank is not available for central manifold KS type. Please contact our sales department for further information.

View Manifold Tank side

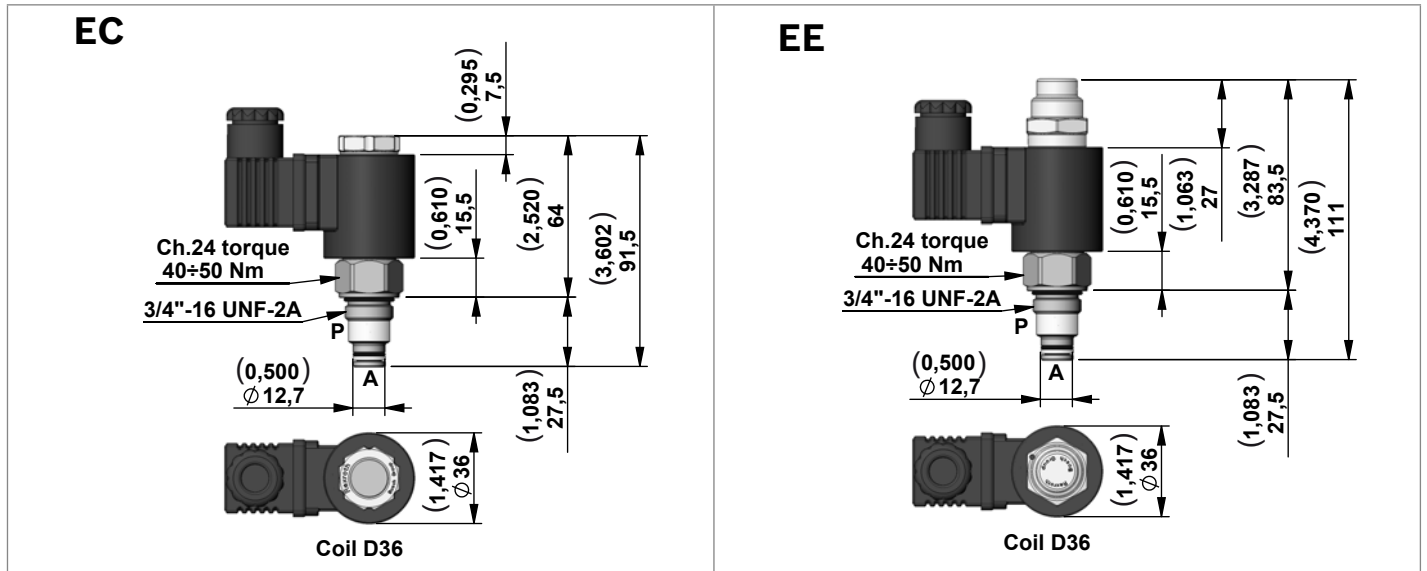


Manifold Hydraulic Diagram



Built-in Valve

EC-EE Series



2 Way Pilot Operated Solenoid Valves, Normally Closed for D.C. current

Code	Type	Material Number
EC	OD150718A000000	R930058338
EE	OD150718DP00000	R930058529

Description

This is a standard 2 way pilot operated valves poppet style.

- **Only for D.C. current.**
- Internal leakage: see technical data.
- Minimum operating voltage: 90% of nominal.
- Screen on P 300 Micron.
- Screw Type Emergency on EE.

Valve symbol

Code	Symbol	Operating features with solenoid	
		De-energized	Energized
EC		P ◊ A	P <-> A
EE		P ◊ A	P <-> A

Technical Data

General		
Operating time	ms	Opening 50 Closing 100
Max. working pressure	bar (psi)	350 (5076)
Max. flow	l/min (gpm)	40 (11)

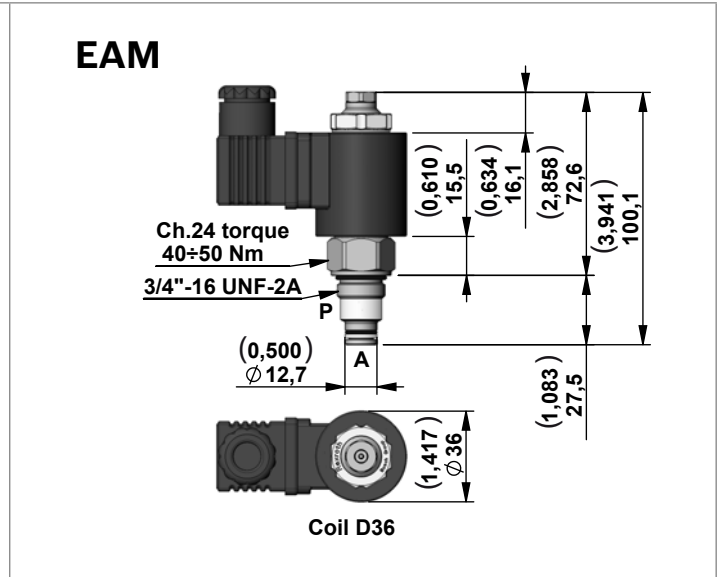
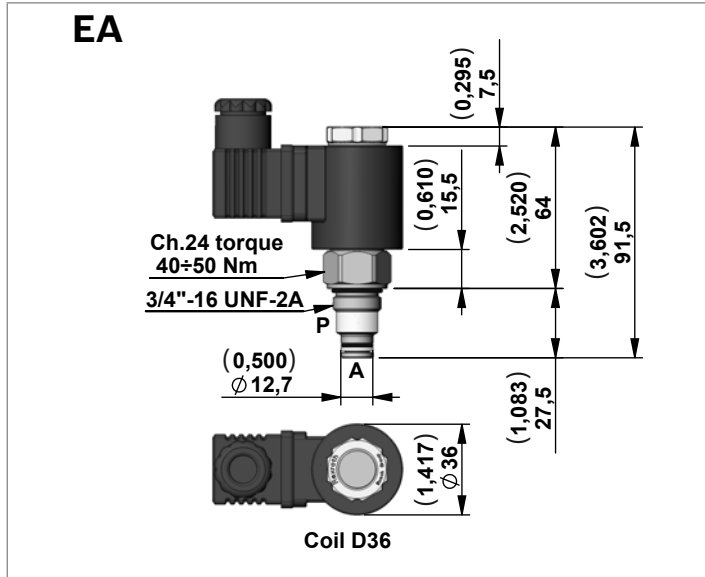
D36 Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
48 Volts D.C.
96 Volts D.C.
205 Volts D.C.

Note

For more info see Data Sheet RE18323-25

EA-EAM Series



2 Way Pilot Operated Solenoid Valves, Normally Open

Code	Type	Material Number
EA	OD150818A000000	R930058337
EAM	OD150818B000000	R930058340

Technical Data

General		
Max. working pressure	bar (psi)	350 (5000)
Max. flow	l/min (gpm)	40 (11)

Description

This is a standard 2 way pilot operated valves poppet style.

- **Only for D.C. current.**
- Internal leakage: see technical data.
- Minimum operating voltage: 90% of nominal.
- Screen on P 300 Micron.
- Push Type Emergency on EAM.

Valve symbol

Code	Symbol	Operating features with solenoid	
		De-energized	Energized
EA		P → A	P ◊ A
EAM		P → A	P ◊ A

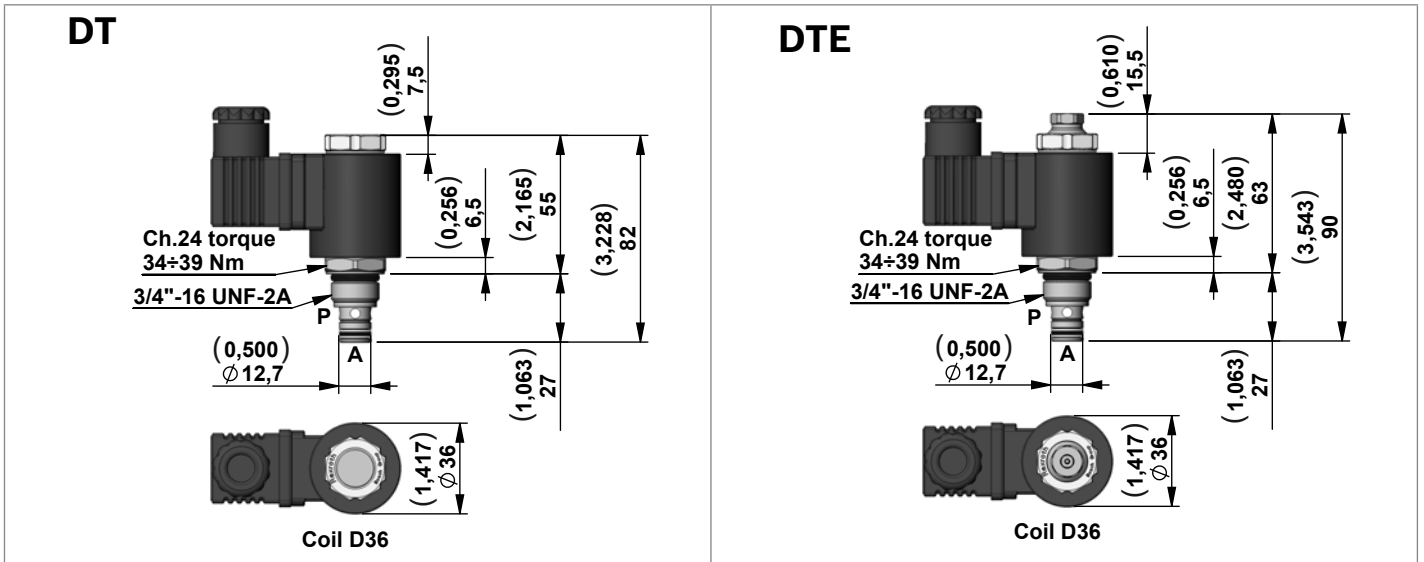
D36 Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
48 Volts D.C.
96 Volts D.C.
205 Volts D.C.

Note

For more info see Data Sheet RE18323-26

DT-DTE Series (for manifold M32)



**2 Way direct acting double lock Solenoid Valves,
Normally Closed for D.C. current**

Code	Type	Material Number
DT	OD113118A000000	R930058329
DTE	OD113118B000000	R930058330

Description

On this valve the oil can pass free or can be perfectly locked on each ports “P” and “A”.

- **Only for D.C. current.**
- Internal leakage: see technical data.
- Minimum operating voltage: 90% of nominal.
- Push Type Emergency on DTE push..

Valve symbol

Code	Symbol	Operating features with solenoid	
		De-energized	Energized
DT		P → A A → P	P → A A → P
DTE		P → A A → P	P → A A → P

Technical Data

General		
Max. working pressure	bar (psi)	250 (3626)
Max. flow	l/min (gpm)	15 (3,96)

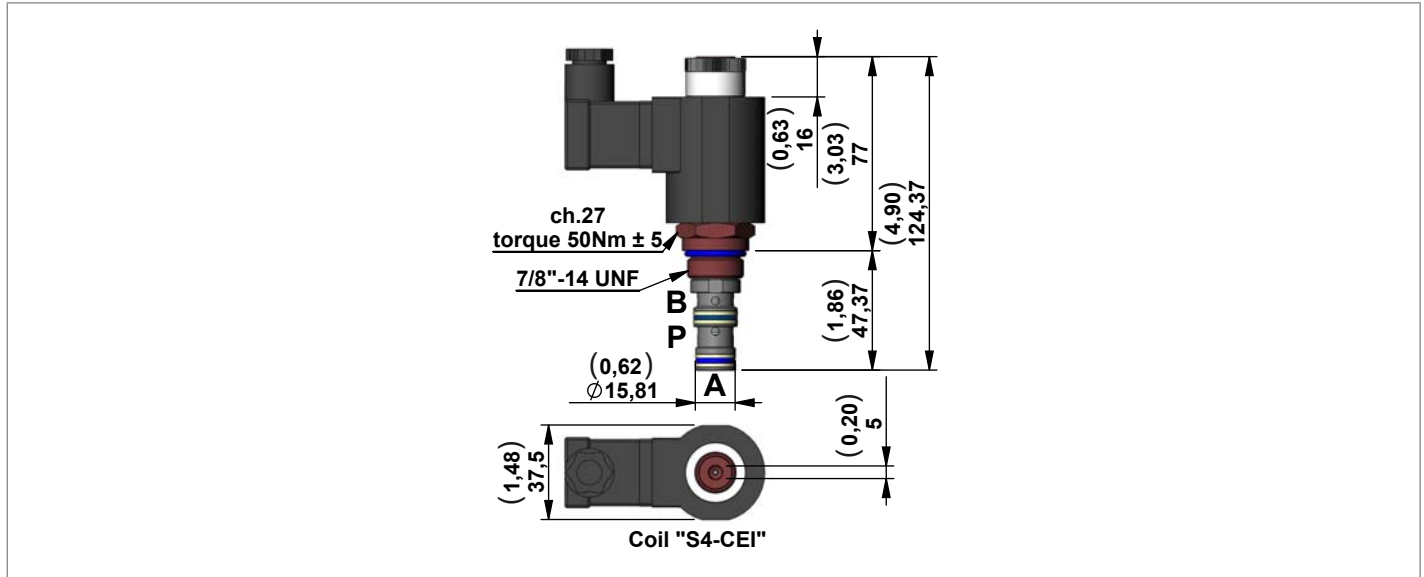
D36 Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
48 Volts D.C.
96 Volts D.C.
205 Volts D.C.

Note

For more info see Data Sheet RE18324-02

V3D-DT Series



3 Way Direct Acting Poppet Style Solenoid Valves

Code	Type	Material Number
V3DT	K01V389643A00	R932009299

Description

3 Way Direct Acting Poppet Style Solenoid Valves

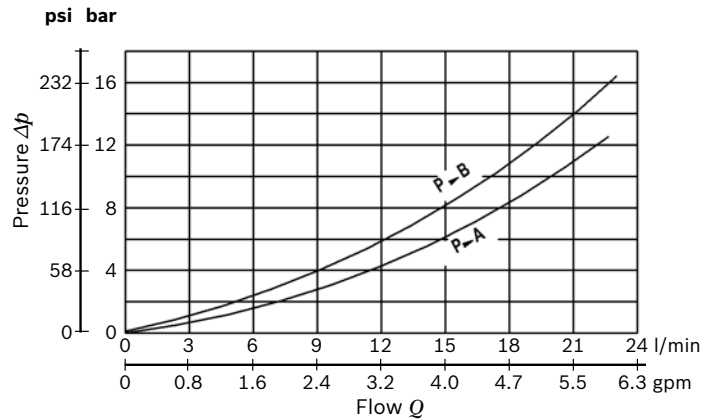
- **Only for D.C. current.**
- Internal leakage: see technical data.
- Minimum operating voltage: 90% of nominal.
- Push Type Emergency.

Valve symbol

Code	Symbol	Operating features with solenoid	
		De-energized	Energized
V3DT		P ↔ A B ○ ○	P ↔ B A ○ ○

Technical Data

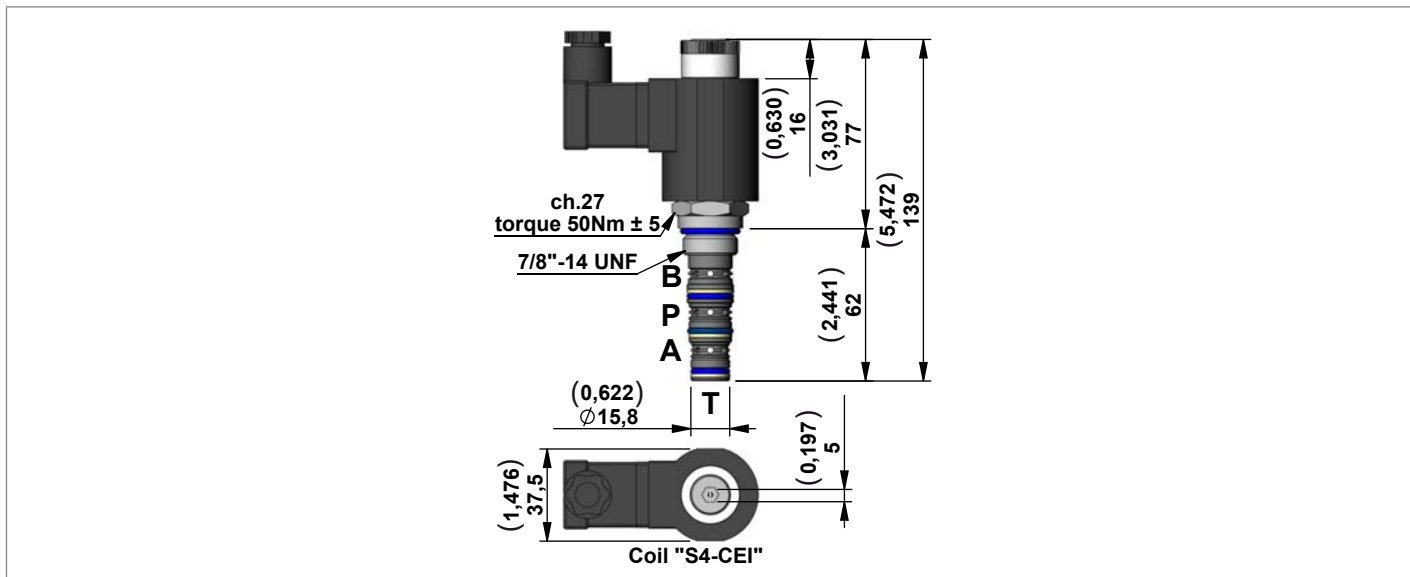
General		
Max. working pressure	bar (psi)	250 (3626)
Max. flow	l/min (gpm)	20 (5,28)



S4-CEI Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
24 Volts RAC
110 Volts RAC
220 Volts RAC

V4D-CEI-2P Series



4 Way 2 Position Solenoid Valves Spool Type

Code	Type	Material Number
V4I.2E	K01V389631A10	R932009302

Description

4 Way 2 Position Solenoid Valves, Spool Type

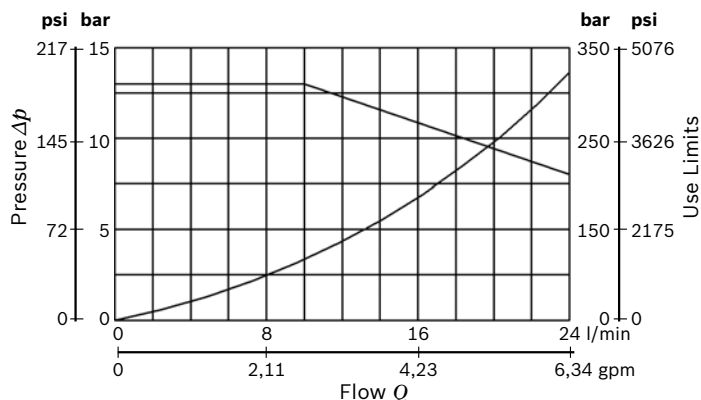
- **Only for D.C. current.**
- Minimum operating voltage: 90% of nominal.
- Push Type Emergency.

Valve symbol

Code	Symbol	Operating features with solenoid	
		De-energized	Energized
V4I.2E		P ↔ B A ↔ T	P ↔ A B ↔ T

Technical Data

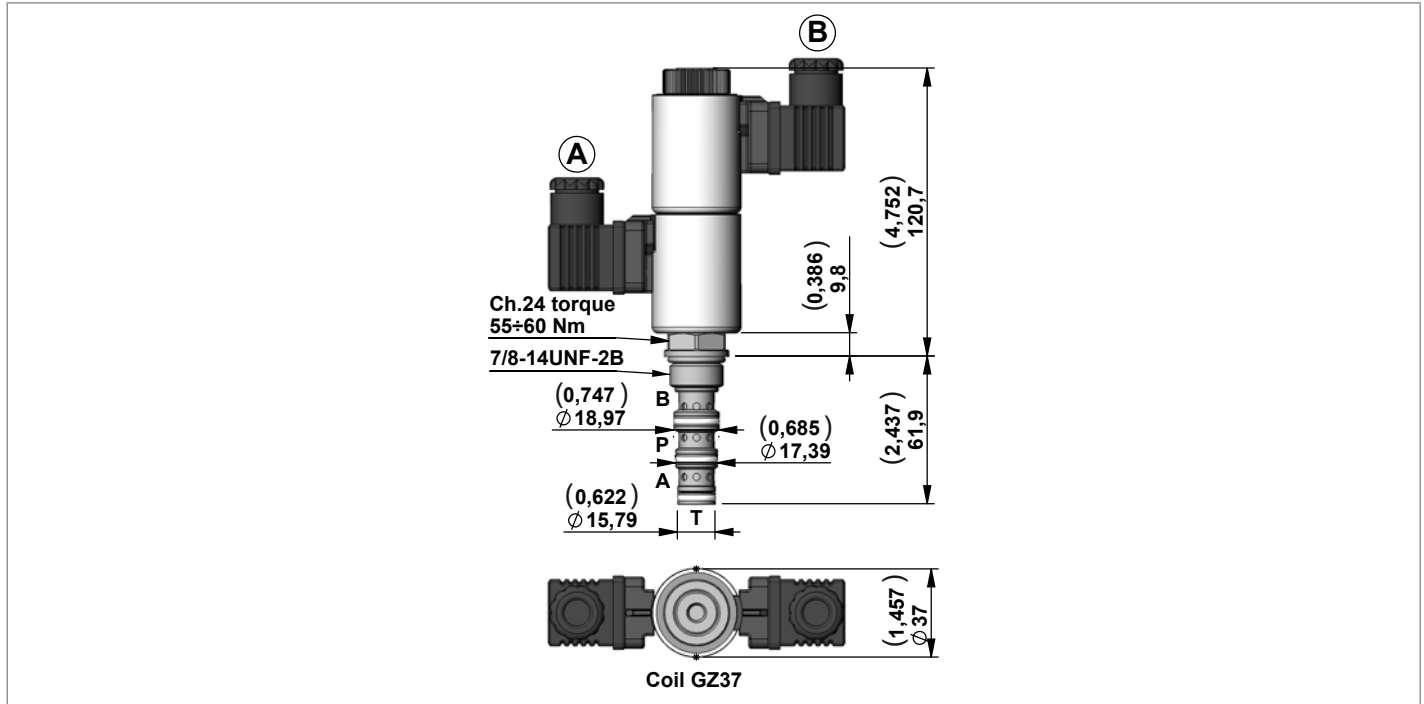
General		
Max. working pressure	bar (psi)	see diagram
Max. flow	l/min (gpm)	25 (6,60)



S4-CEI Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
24 Volts RAC
110 Volts RAC
220 Volts RAC

V4I.3C Series



4 Way 3 Position Solenoid Valves Spool Type

Code	Type	Material Number
V4I.3C	R901237591	R901237591

Description

4 Way 3 Position Solenoid Valves, Spool Type

- Only for D.C. current.
- Minimum operating voltage: 90% of nominal.
- Push Type Emergency (only function coil B).

Valve symbol

Code	Symbol	Operating features with solenoid		
		Energized A	De-energized	Energized B
V4I.3C		P → B A → T	A ∅ B ∅ P → T	P → A B → T

Technical Data

General		
Max. working pressure	bar (psi)	350 (5000)
Max. flow	l/min (gpm)	35 (9)

GZ37 Coil Voltage Available

Voltage
12 Volts D.C.
24 Volts D.C.
48 Volts D.C.
96 Volts D.C.
205 Volts D.C.

Note

For more info see Data Sheet RE18324-64

Coils - Connectors**Coil D36 - CLASS H - 20 W****Technical Data**

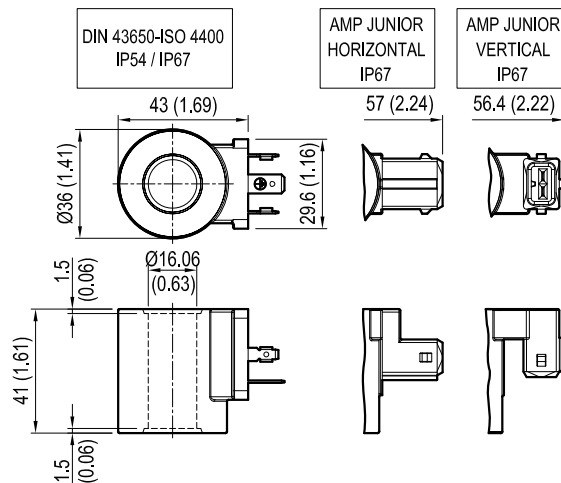
Weight: 0.18 kg (0.40 lbs)

Power: 20 W

Heat insulation Class H: 180°C (356°F)

Ambient temperature range: -30/+90°C (-22/+194°F)

Further performance limits in terms of temperature and voltage fluctuations: please refer to data sheet of the solenoid valve where D36 coil is mounted.

**Coils D36 DIN 43650**

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OB	12 Volts D.C.	H (180 °C) (356 °F)	OD02360130OB00	R901393412
OC	24 Volts D.C.	H (180 °C) (356 °F)	OD02360130OC00	R901393577
OD	48 Volts D.C.	H (180 °C) (356 °F)	OD02360130OD00	R901394117
OU*	96 Volts D.C.	H (180 °C) (356 °F)	OD02360130OU00	R901394229
AH*	205 Volts D.C.	H (180 °C) (356 °F)	OD02360130AH00	R901394231

Note

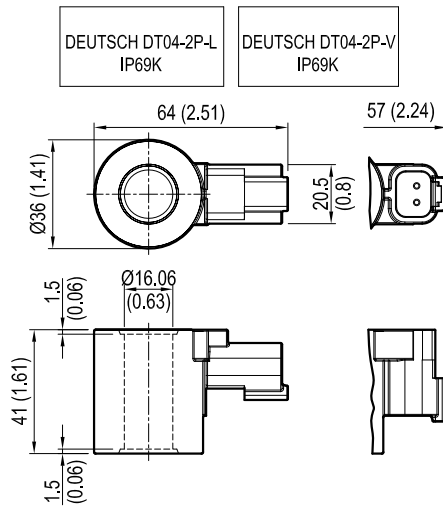
* OU and AH versions especially designed in cases of AC supply voltage (respectively for 110AC and 220 AC) to be used in conjunction with connector with circuit including wave rectifier. Ambient temperature range for OU and AH versions: -30°C / + 75°C

Coils D36 AMP H

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBA	12 Volts D.C.	H (180 °C) (356 °F)	OD02360730OB00	R901435508
OCA	24 Volts D.C.	H (180 °C) (356 °F)	OD02360730OC00	R901435506

Coils D36 AMP V

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBAV	12 Volts D.C.	H (180 °C) (356 °F)	OD0236073POB00	R901394950
OCAV	24 Volts D.C.	H (180 °C) (356 °F)	OD0236073POC00	R901394955

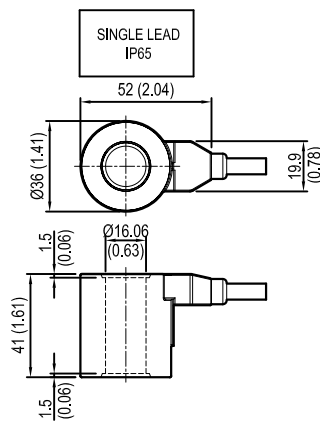


Coils D36 Deutsch L

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBDL	12 Volts D.C.	H (180 °C) (356 °F)	OD02362030OB00	R901435524
OCDL	24 Volts D.C.	H (180 °C) (356 °F)	OD02362030OC00	R901435526

Coils D36 Deutsch V

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBD	12 Volts D.C.	H (180 °C) (356 °F)	OD0236203POB00	R901394391
OCD	24 Volts D.C.	H (180 °C) (356 °F)	OD0236203POC00	R901394393



Coils D36 Single Lead

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBL	12 Volts D.C.	H (180 °C) (356 °F)	OD02360G03OB00	R901435529
OCL	24 Volts D.C.	H (180 °C) (356 °F)	OD02360G03OC00	R901435533

Note

For more info see Data Sheet RE18325-90

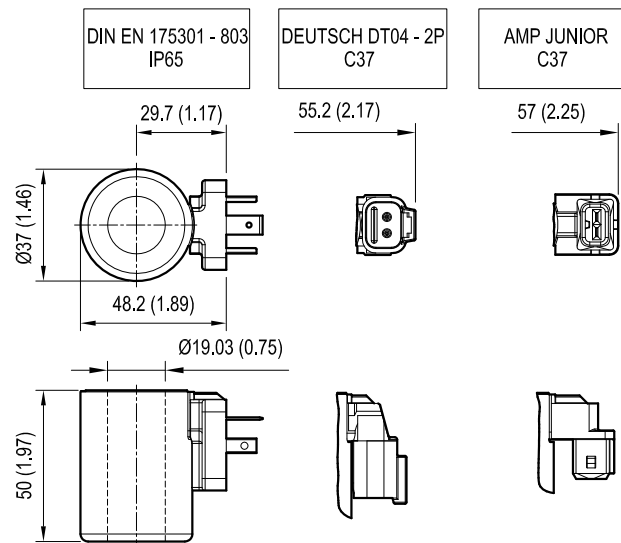
Coil GZ37 ON/OFF - CLASS H - 22W**Technical Data**

Weight: 0.24 kg (0.53 lbs)

Heat insulation Class H: 180°C (356°F)

Ambient temperature range: -40/+110°C (-40/+230°F)

Inlet voltage fluctuations must not exceed ±15% of nominal voltage to obtain correct operation and long life coils.

Coils are not equipped with suppression diode.
Coating to DIN 50962 - Fe // ZnNi with thick film passivation.
(Salt spray test to DIN 50021 720 h)**Coils GZ37 DIN 43650**

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OB	12 Volts D.C.	H (180 °C) (356 °F)	R900991678	R900991678
OC	24 Volts D.C.	H (180 °C) (356 °F)	R900991121	R900991121
OD	48 Volts D.C.	H (180 °C) (356 °F)	R901037025	R901037025
OU	96 Volts D.C.	H (180 °C) (356 °F)	R900704587	R900704587
AH	205 Volts D.C.	H (180 °C) (356 °F)	R900704588	R900704588

Coils GZ37 Deutsch V

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBD	12 Volts D.C.	H (180 °C) (356 °F)	R900729189	R900729189
OCD	24 Volts D.C.	H (180 °C) (356 °F)	R900729190	R900729190

Coils GZ37 AMP V

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OBAV	12 Volts D.C.	H (180 °C) (356 °F)	R900315818	R900315818
OCAV	24 Volts D.C.	H (180 °C) (356 °F)	R900315819	R900315819

Note

For more info see Data Sheet RE18325-90

COIL Model S4-CEI – 26W – ED 100%

for valves V3D-DT , V4D-CEI-2P , V4D-CEI-3P Series

Coil protection: Polyamide resin with fiber glass for Heat insulation class F (155°C) (311°F).

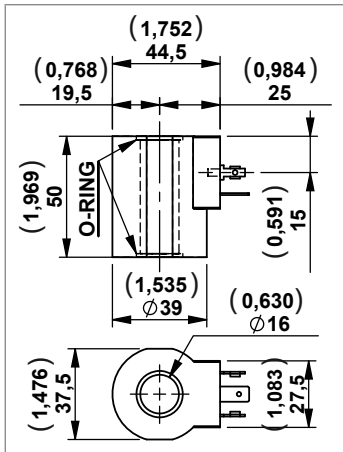
Solenoids “S4-CEI” (18 W) are designed for continuous duty ED100%.

Ambient temperature range: -15°/+40°

Inlet voltage fluctuations must not exceed +/- 10% of nominal voltage to obtain correct operations and long life coils

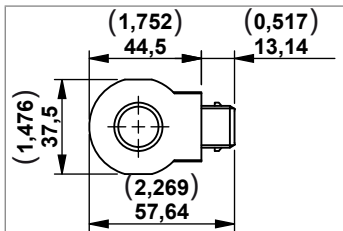
Protection degree: see tables below

DIN 43650 - ISO 4400 IP65 with connector assembled



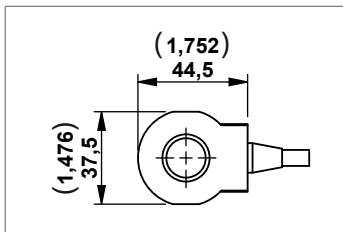
Code	Voltage	Heat Insulation class	Type	Material Number
OB	12 Volts D.C.	F (155°C) (311°F)	C166437OB1	R932000789
OC	24 Volts D.C.	F (155°C) (311°F)	C166437OC1	R932000790
OV	24 Volts RAC	F (155°C) (311°F)	C166437OV1	R932000791
OW	110 Volts RAC	F (155°C) (311°F)	C166437OW1	R932000792
OZ	220 Volts RAC	F (155°C) (311°F)	C166437OZ1	R932000793

AMP JUNIOR IP67



Code	Voltage	Heat Insulation class	Type	Material Number
OCA	24 Volts D.C.	F (155°C) (311°F)	C166471OC1	R932000836

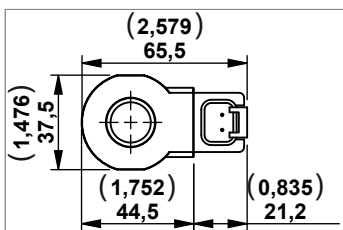
SINGLE LEAD IP54



Code	Voltage	Heat Insulation class	Type	Material Number
OBL	12 Volts D.C.	F (155°C) (311°F)	C166453OB00600F	R932009107
OCL	24 Volts D.C.	F (155°C) (311°F)	C166453OC00600F	R932007009

Cable Length 600mm

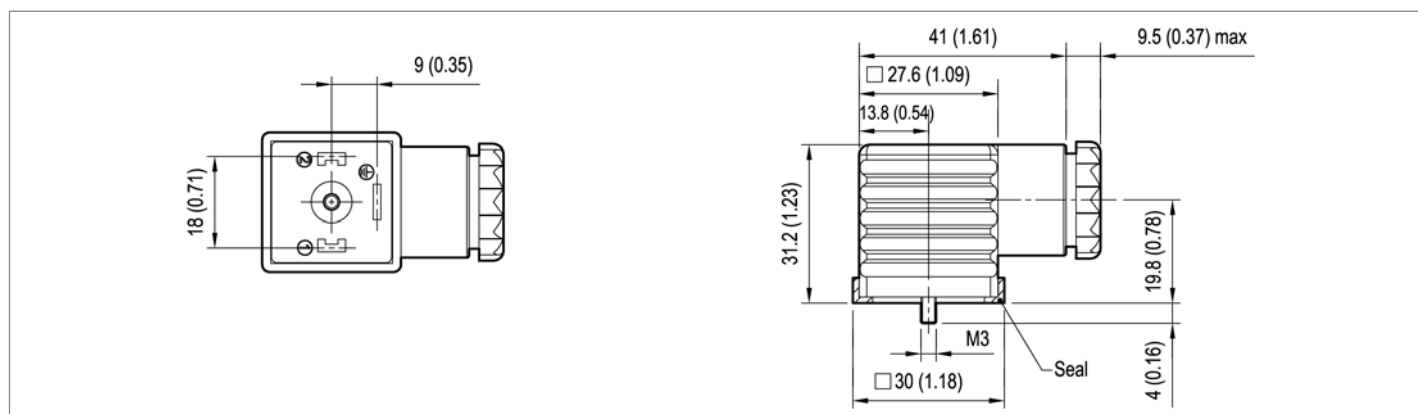
DEUTSCH DT04-2P-V IP67



Code	Voltage	Heat Insulation class	Type	Material Number
OBD	12 Volts D.C.	F (155°C) (311°F)	C166461OB1	R932000818
OCD	24 Volts D.C.	F (155°C) (311°F)	C166461OC1	R932009108

CONNECTOR IP67 - EN175000 (DIN 4350-A) / ISO 4400

Ambient temperature - Standard	°C (°F)	- 20 to + 60 (-4 to +140°F)
Type of protection according to DIN 40050		IP67 with cable socket mounted and locked
Operating voltage	V	Choose the proper ordering code according to the circuit
Maximum operating current	Standard	A 16
	With rectifier	A 1
Number of pins		2 + PE
Clamping range for cables having an outer diameter of	mm (inch)	5, up to 10 (0,2 up to 0,4)
Cable entry		Pg9 / Pg11 (unified)
Maximum cable cross-section	mm ² (inch ²)	1.5 (0,002)



Standard Circuit

Code	Colour	Cable entry	Type	Material Number
WC	Without Connector			
CS	black	Pg9 / Pg11	OD01690100000	R934004344
	grey	Pg9 / Pg11	OD01690100003	R934004346

Circuit with VDR + Wave Rectifier

Code	Voltage V		Diode Capacity I max	Colour	Cable entry	Type	Material Number
	AC	DC					
CR	230	/	1A	black	Pg9 / Pg11	OD01690201OZ00	R934004353

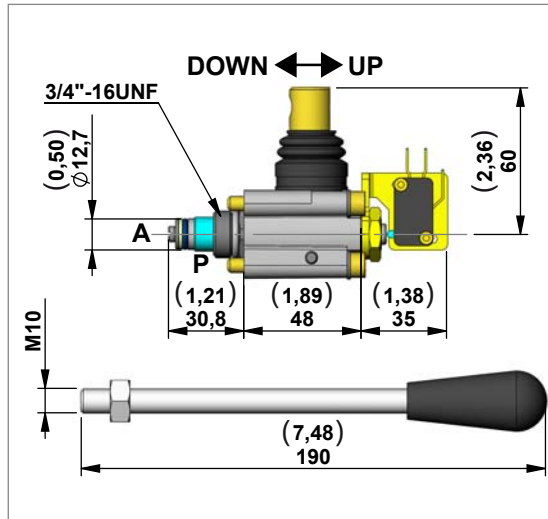
Note

Diode with capacity max 1 Amp.

Note

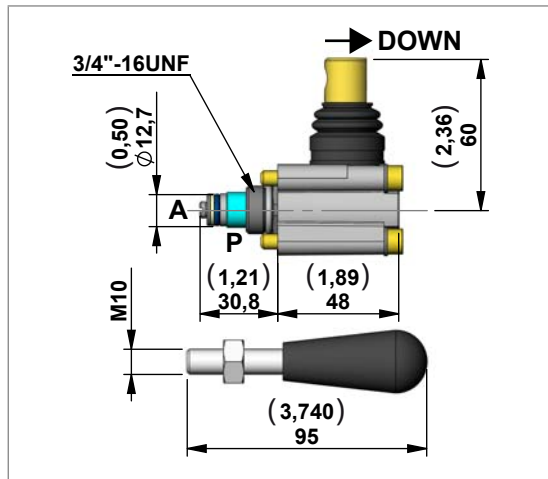
Black is the standard colour. Grey is used in case of valves with 2 coils (V4DS-3P and V4D-CEI-3P Series).

MC



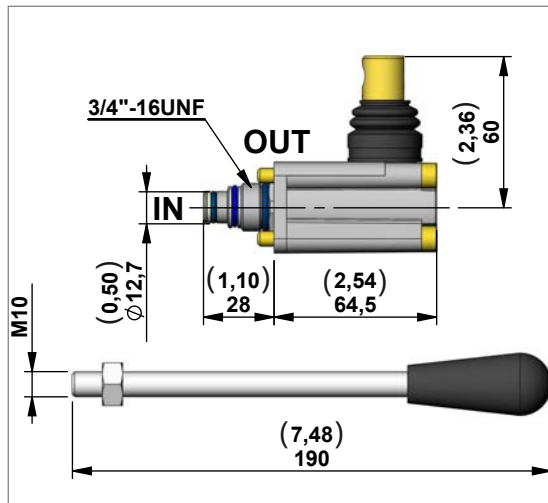
Type	Material Number				
K250113000	R932002448				
Technical Data					
General					
Max. working pressure	bar (psi) 300 (4500)				
2 Way Manual Operated Cartridge Valve					
Code	Microswitch Diagram	Compatibility	Type with lever	Material Number with lever	
MC	without		K - KE	V389280B20LV190	R932003809
MC17	with			V389280C20LV190	R932003811

MCR



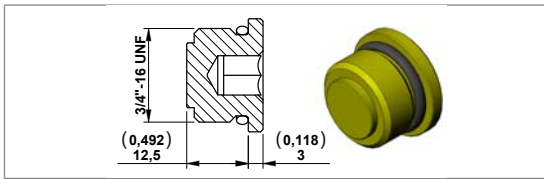
Type	Material Number			
K250121000	R932002451			
Technical Data				
General				
Max. working pressure	bar (psi) 300 (4500)			
2 Way Manual Operated Cartridge Valve				
Code	Diagram	Compatibility	Type with lever	Material Number with lever
MCR		K - KE	V389281020LV095	R932003816

PMC12



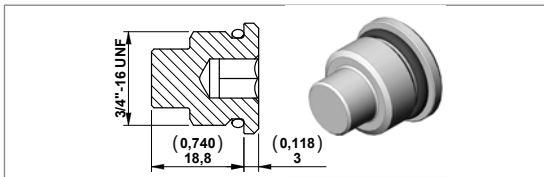
Type	Material Number		
K250113000	R932002448		
Technical Data			
General			
Max. working pressure	bar (psi) 300 (4500)		
Displacement	cc 1,5		
Hand pump (1.5cc)			
Code	Diagram	Type with lever	Material Number with lever
PMC12		K01V388540LV190	R932009298

Plug for Cavity



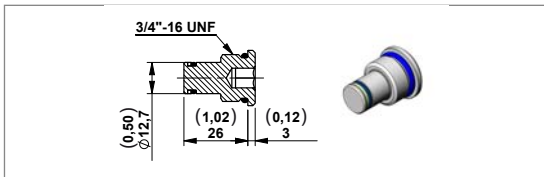
Code	Type	Material Number
TC4	R3897TA226	R932003201

Plug for Cavity



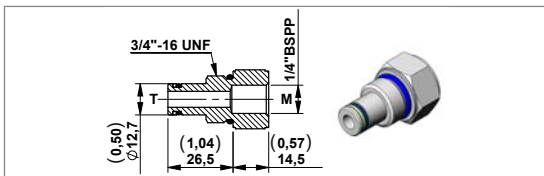
Code	Type	Material Number
TC3	R3897TA301	R932003211

Plug for Cavity



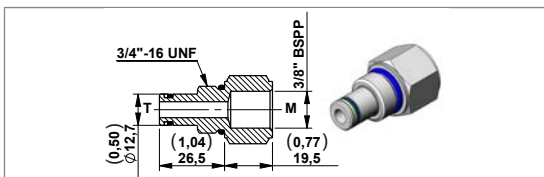
Code	Diagram	Compatibility	Type	Material Number
TC2		K - KE	R3897TA001	R932003193

1/4" Auxiliary Return Port



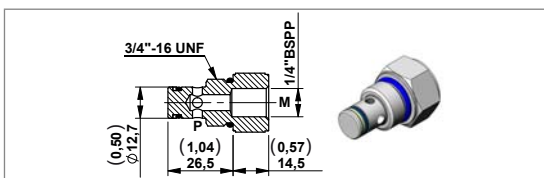
Code	Diagram	Compatibility	Type	Material Number
TS2		K - KE	R3897TA304	R932003214

3/8" Auxiliary Return Port



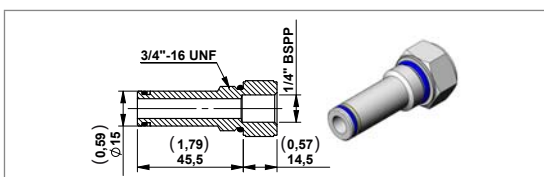
Code	Diagram	Compatibility	Type	Material Number
TS3		K - KE	R3897TA147	R932003195

1/4" Auxiliary Pressure Port



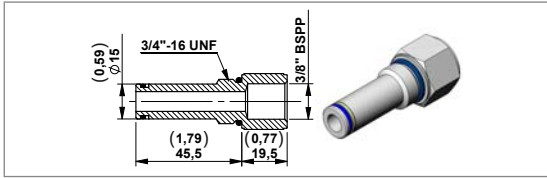
Code	Diagram	Compatibility	Type	Material Number
TM2		K - KE	R3897TA305	R932003215

1/4" Auxiliary Pressure Port



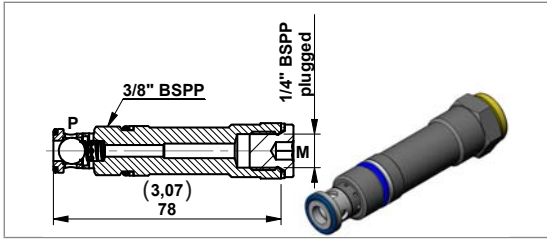
Code	Diagram	Compatibility	Type	Material Number
TM3		K - KE	R3897TA303	R932003213

3/8" Auxiliary Pressure Port



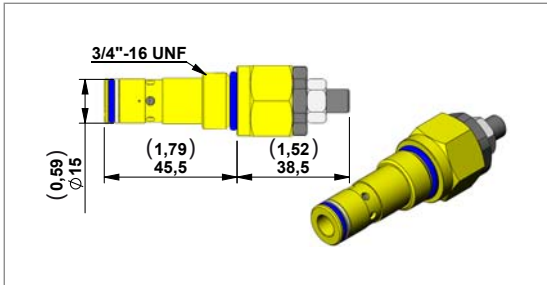
Code	Diagram	Compatibility	Type	Material Number
TM4		K - KE	R3897TA311	R932003220

Check Valve with Pressure Port 1/4" BSPP for manifolds K series



Code	Diagram	Compatibility	Type	Material Number
TPR		K	V389259000	R932003782

Pressure Compensated Flow Regulator

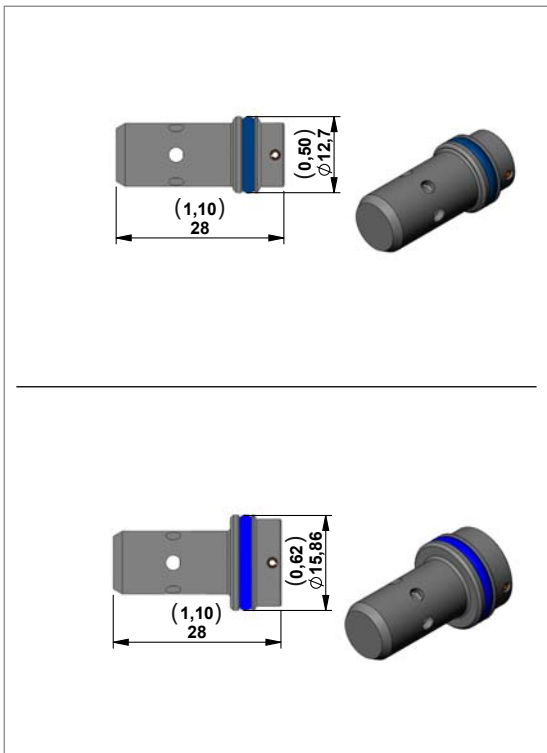


Code	Diagram	Type	Material Number
ST6CP-PR		K - KE	V389534A00

Technical Data

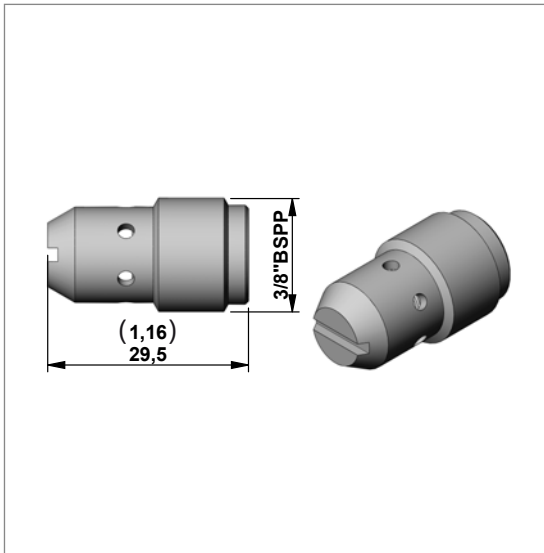
General			
Max. working pressure	bar (psi)	250 (3625)	
Regulated Flow Rate	l/min (gpm)	2....16 (0.53...4.23)	

Flow Control Valves Pressure Compensated

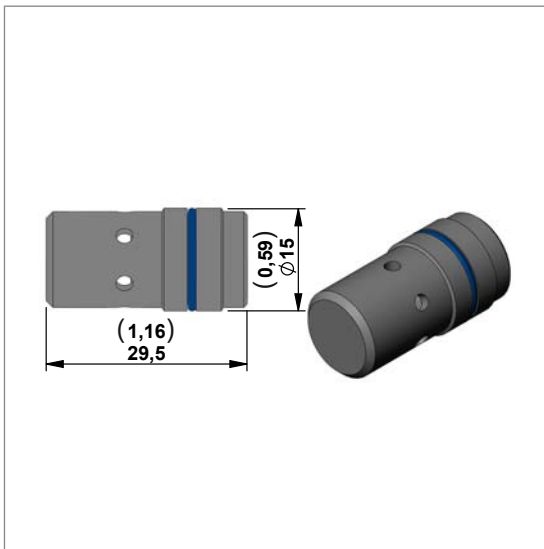


Code		l/min (gpm)	Diagram	Compatibility	Type	Material Number			
STF12P	A	1 (0,3)		K - KE	V38953600A	R932003940			
	B	2 (0,5)			V38953600B	R932003941			
	C	3 (0,8)			V38953600C	R932003942			
	D	4 (1,1)			V38953600D	R932003943			
	E	5 (1,3)			V38953600E	R932003944			
	F	6 (1,6)			V38953600F	R932003945			
	G	7 (1,9)			V38953600G	R932003946			
	H	8 (2,1)			V38953600H	R932003947			
	I	9 (2,4)			V38953600I	R932003948			
	L	10 (2,6)			V38953600L	R932003949			
	STF14P	A			1 (0,3)		KE - KS	V38951900A	R932003892
		B			2 (0,5)			V38951900B	R932003894
C		3 (0,8)	V38951900C	R932003895					
D		4 (1,1)	V38951900D	R932003896					
E		5 (1,3)	V38951900E	R932003897					
F		6 (1,6)	V38951900F	R932003898					
G		7 (1,9)	V38951900G	R932003899					
H		8 (2,1)	V38951900H	R932003900					
I		9 (2,4)	V38951900I	R932003901					
L		10 (2,6)	V38951900L	R932003903					

Flow Control Valves Pressure Compensated



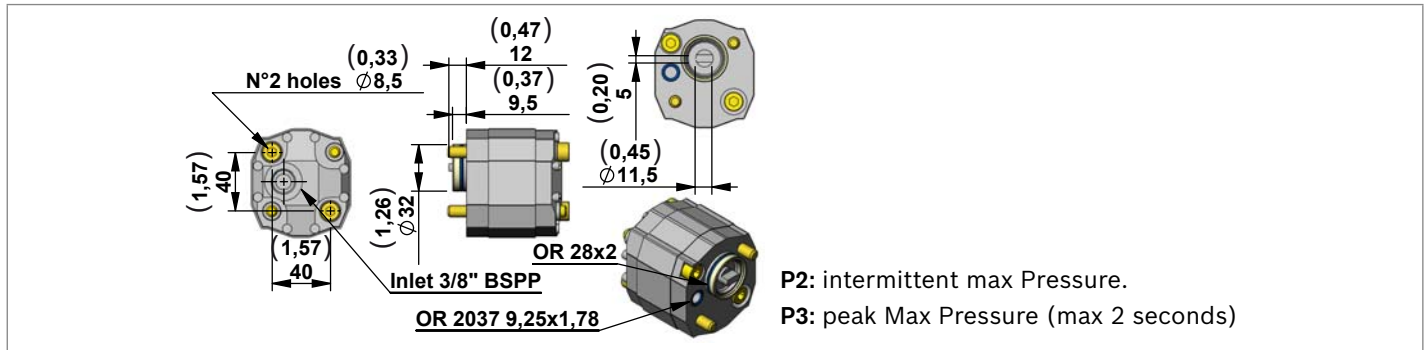
Code	l/min (gpm)	Diagram	Compatibility	Type	Material Number
STF38	B 2 (0,5)		KE	V38951500B	R932003860
	C 3 (0,8)			V38951500C	R932003861
	D 4 (1,1)			V38951500D	R932003862
	E 5 (1,3)			V38951500E	R932003864
	F 6 (1,6)			V38951500F	R932003866
	G 7 (1,9)			V38951500G	R932003868
	H 8 (2,1)			V38951500H	R932003870
	I 9 (2,4)			V38951500I	R932003872
	L 10 (2,6)			V38951500L	R932003876
	M 11 (2,9)			V38951500M	R932003877
	N 12 (3,2)			V38951500N	R932003878
	O 13 (3,4)			V38951500O	R932003879
	P 14 (3,7)			V38951500P	R932003880
	Q 15 (4,0)			V38951500Q	R932003881
	R 16 (4,2)			V38951500R	R932003882
	T 18 (4,7)			V38951500T	R932003884
	Z 20 (5,3)			V38951500Z	R932003888



Code	l/min (gpm)	Diagram	Compatibility	Type	Material Number
STF38P	B 2 (0,5)		K - KE	V38953500B	R932003918
	C 3 (0,8)			V38953500C	R932003919
	D 4 (1,1)			V38953500D	R932003920
	E 5 (1,3)			V38953500E	R932003921
	F 6 (1,6)			V38953500F	R932003922
	G 7 (1,9)			V38953500G	R932003923
	H 8 (2,1)			V38953500H	R932003924
	I 9 (2,4)			V38953500I	R932003925
	L 10 (2,6)			V38953500L	R932003927
	M 11 (2,9)			V38953500M	R932003928
	N 12 (3,2)			V38953500N	R932003929
	O 13 (3,4)			V38953500O	R932003930
	P 14 (3,7)			V38953500P	R932003932
	Q 15 (4,0)			V38953500Q	R932003933
	R 16 (4,2)			V38953500R	R932003934
	T 18 (4,7)			V38953500T	R932003935
	Z 20 (5,3)			V38953500Z	R932003938

Gear Pumps Group 1 for KE - K - KS

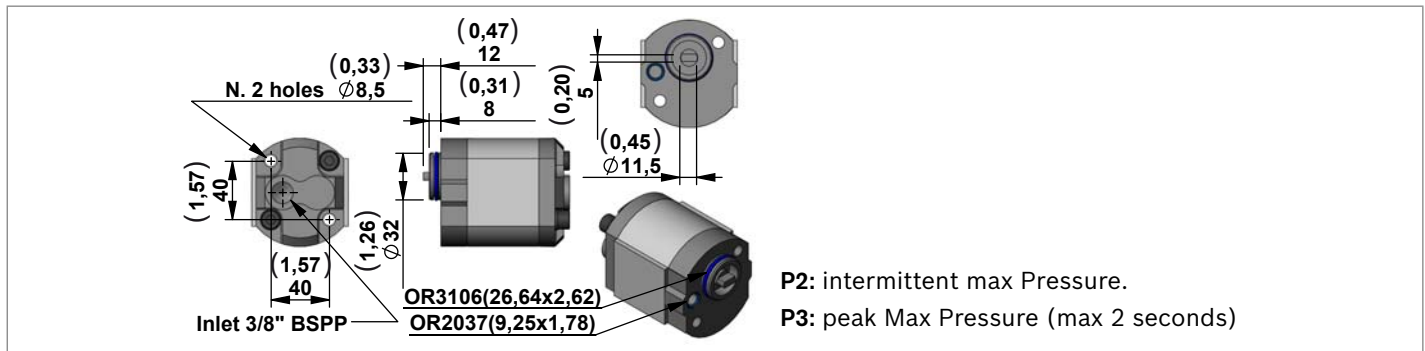
Standard Version



Code	Displacement cc/rev	Flow at 1500 rpm l/min (gpm)	P2 bar (psi)	P3 bar (psi)	Type	Material Number
10	0,84	1,26 (0,34)	230(3336)	270(3916)	K01CV10010311	R930068972
11	1,25	1,88 (0,50)	230(3336)	270(3916)	K01CV79107126	R930068971
12	1,6	2,4 (0,63)	230(3336)	270(3916)	K01CV10110322	R932007475
13	2	3 (0,79)	230(3336)	270(3916)	K01CV10110323	R932007477
14	2,5	3,75 (0,99)	230(3336)	270(3916)	K01CV10112317	R932007479
15	3,15	4,7 (1,24)	210(3046)	250(3626)	K01CV10112318	R932007481
16	4	6 (1,58)	210(3046)	250(3626)	K01CV10114321	R932007483
18	5	7,5 (1,98)	210(3046)	250(3626)	K01CV10114323	R930068931

High Pressure Gear Pumps Group 1 for KE - K - KS

Cast iron covers version for high pressure applications

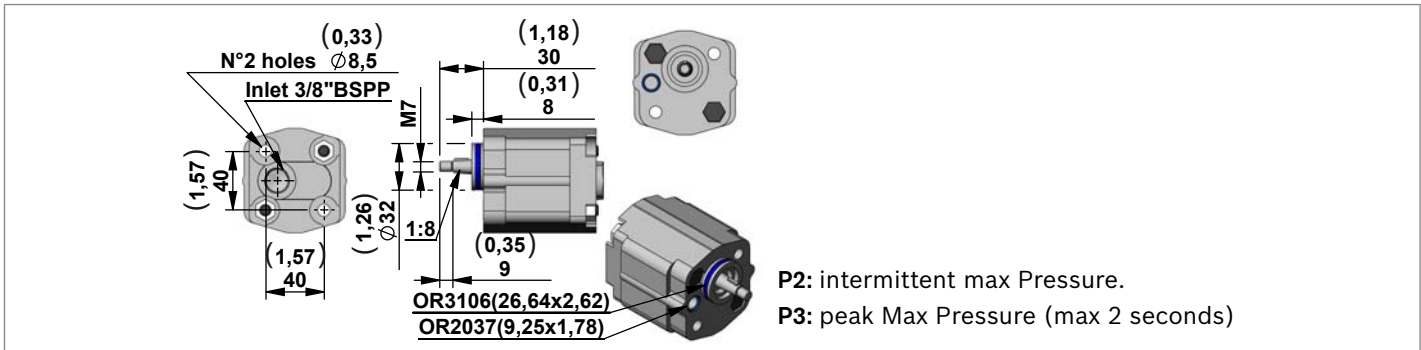


Code	Displacement cc/rev	Flow at 1500 rpm l/min (gpm)	P2 bar (psi)	P3 bar (psi)	Type	Material Number
11GH	1,25	1,8 (0,48)	300(4351)	350(5076)	K01CV640S1142C	R932007474
12GH	1,6	2,4 (0,63)	300(4351)	350(5076)	K01CV640S1144C	R932007476
13GH	2	3 (0,79)	300(4351)	350(5076)	K01CV640S1145C	R932007478
14GH	2,5	3,7 (0,98)	300(4351)	350(5076)	K01CV640S1146C	R932007480
15GH	3,15	4,7 (1,24)	280(4061)	330(4786)	K01CV640S1147C	R932007482
16GH	3,65	5,5 (1,45)	250(3626)	300(4351)	K01CV640S1148C	R932007484
17GH	4,2	6,3 (1,66)	230(3336)	280(4061)	K01CV640S1149C	R932007485
18GH	5	7,5 (1,98)	210(3046)	250(3626)	K01CV640S1150C	R932007486
19GH	5,7	8,5 (2,24)	210(3046)	250(3626)	K01CV640S1153C	R932007487
20GH	7,4	11,1 (2,93)	180(2611)	230(3336)	K01CV640S1152C	R932007488

Note

All pumps have anti-clockwise rotation.

Gear Pumps Group 1 for K
Elastic couplings version with tapered shaft*

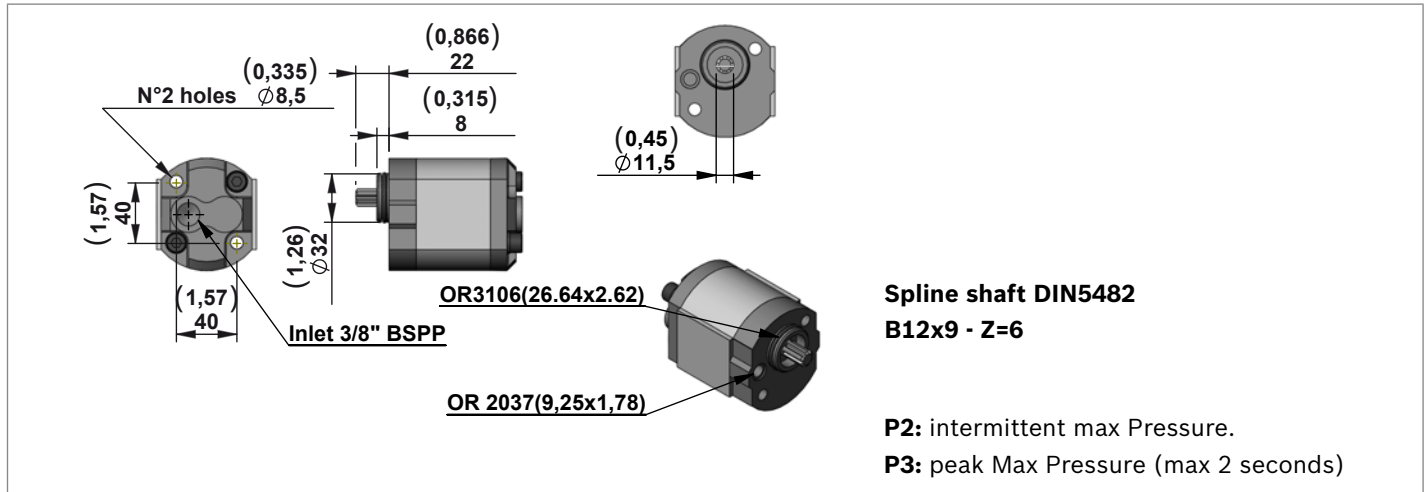


Code	Displacement cc/rev	Flow at 1500 rpm l/min (gpm)	P2 bar (psi)	P3 bar (psi)	Type	Material Number
10CON	0,82	1,3 (0,34)	230(3336)	270(3916)	K01CV640S1132	R932007498
11CON	1,1	1,6 (0,42)	230(3336)	270(3916)	K01CV64017000	R932007499
12CON	1,6	2,4 (0,63)	230(3336)	270(3916)	K01CV64018000	R932007500
13CON	2,1	3,1 (0,82)	230(3336)	270(3916)	K01CV64019000	R932007501
14CON	2,7	3,9 (1,03)	230(3336)	270(3916)	K01CV64020000	R932007502
15CON	3,2	4,8 (1,27)	210(3046)	250(3626)	K01CV64021000	R932007503
16CON	3,7	5,5 (1,45)	210(3046)	250(3626)	K01CV64022000	R932007504
17CON	4,2	6,3 (1,66)	210(3046)	250(3626)	K01CV64023000	R932007505
18CON	4,8	7,2 (1,90)	190(2756)	230(3336)	K01CV64024000	R932007506
19CON	5,8	8,7 (2,30)	190(2756)	230(3336)	K01CV64025000	R932007507
20CON	7,9	11,8 (3,12)	160(2320)	200(2901)	K01CV64026000	R932007508

***Note**
 The assembly of the gear pumps with tapered shaft are only possible in the manifolds K series with the following junction elements:
 - Motor size IEC71: junction element code F82
 - Motor size IEC80: junction element code F24
 - Motor size IEC90: junction element code F25
 - Motor size IEC100-112: junction element code F26

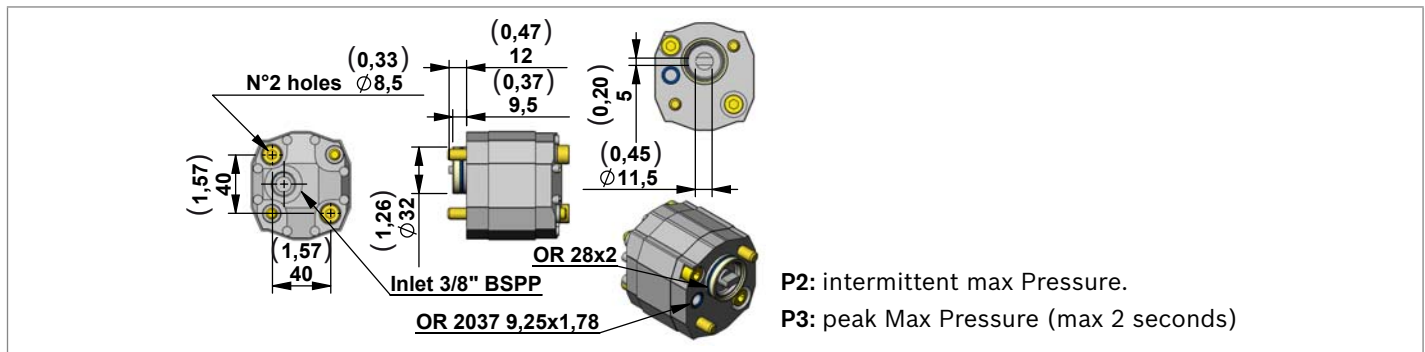
Gear Pumps

Gear Pumps Group 1 with Splined Shaft for KE-KS central manifold



Code	Displacement cc/rev	Flow at 1500 rpm l/min (gpm)	P2 bar (psi)	P3 bar (psi)	Type	Material Number
11AS	1,25	1,8 (0,48)	250 (3626)	270 (3916)	K01CV640S1260	R932011185
12AS	1,60	2,4 (0,63)	250 (3626)	270 (3916)	K01CV640S1261	R932011186
13AS	2,00	3,0 (0,79)	250 (3626)	270 (3916)	K01CV640S1262	R932011187
14AS	2,50	3,7 (0,98)	250 (3626)	270 (3916)	K01CV640S1263	R932011188
15AS	3,15	4,7 (1,24)	250 (3626)	270 (3916)	K01CV640S1264	R932011189
16AS	3,65	5,5 (1,45)	250 (3626)	270 (3916)	K01CV640S1265	R932011190
17AS	4,20	6,3 (1,66)	230 (3336)	250 (3626)	K01CV640S1266	R932011191
18AS	5,00	7,5 (1,98)	210 (3046)	230 (3336)	K01CV640S1252	R932011192
19AS	5,70	8,5 (2,24)	210 (3046)	230 (3336)	K01CV640S1247	R932011193
20AS	7,40	11,1 (2,93)	180 (2611)	200 (2901)	K01CV640S1249	R932011194

Silent Gear Pumps Group 1 for KE - K - KS



Code	Displacement cc/rev	Flow at 1500 rpm l/min (gpm)	P2 bar (psi)	P3 bar (psi)	Type	Material Number
11LN	1,1	1,65 (0,44)	230 (3336)	270 (3916)	K01CV640S1311	R930069552
12LN	1,3	1,95 (0,52)	230 (3336)	270 (3916)	K01CV640S1306	R930069416
14LN	2,5	3,75 (0,99)	230 (3336)	270 (3916)	K01CV640S1313	R930069899
16LN	3,6	5,4 (1,43)	230 (3336)	270 (3916)	K01CV640S1312	R930069553

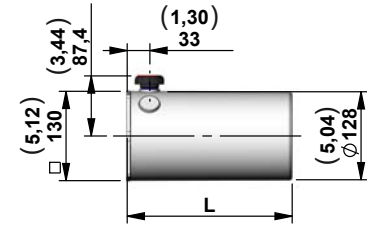
Note

All pumps have anti-clockwise rotation.

Oil Tanks for KE - K - KS**Technical Data for Plastic Tanks**

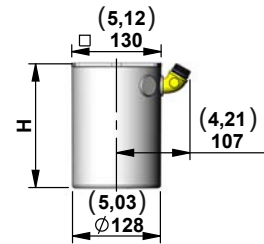
Temperature range	°C (°F)	-15....+70 (5....158)
Materials	PE=Polyethylene - PP=Polypropilene	
Seal	For tanks codes S335-S336-S337-S338-S339-S340-S341-S342 is necessary to use the O-RING Ø112x3 Code: C000191000 R-Number:R932000190. For all the other tanks except the codes above is necessary to use the O-RING 4437 (Ø110,7x3,53) Code:110201203000000 R-Number:R932000188	

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number	Drawing
S335	1,0 (0,26)	0,7 (0,18)	140 (5,51)	PP	K01K3976SE372	R932002035	
S336	1,8 (0,48)	1,2 (0,32)	180 (7,09)	PP	K01K3976SE373	R932002036	
S337	2,5 (0,66)	1,7 (0,45)	240 (9,45)	PP	K01K3976SE374	R932002037	
S338	3,0 (0,79)	2,3 (0,61)	285 (11,22)	PP	K01K3976SE375	R932002038	



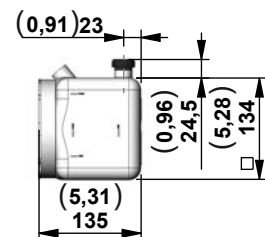
For this tanks is necessary to use the O-RING Ø112x3 code: C000191000 R-Number: R932000190

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	Material	Type	Material Number	Drawing
S339	1,0 (0,26)	0,6 (0,16)	140 (5,51)	PP	K01K3976SE376	R932007882	
S340	1,8 (0,48)	1,1 (0,29)	180 (7,09)		K01K3976SE377	R932007883	
S341	2,5 (0,66)	1,7 (0,45)	240 (9,45)		K01K3976SE378	R932007884	
S342	3,0 (0,79)	2,3 (0,61)	285 (11,22)		K01K3976SE379	R932007885	

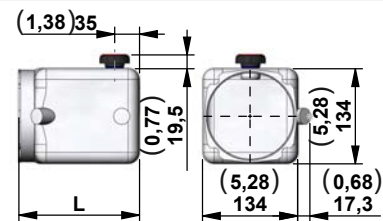


For this tanks is necessary to use the O-RING Ø112x3 code: C000191000 R-Number: R932000190

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	-	Material	Type	Material Number	Drawing
S246	1 (0,26)	0,9 (0,24)	-	PE	K01K3976SE270	R932002016	



Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number	Drawing
S247	1,8 (0,48)	1,6 (0,42)	170 (6,71)	PE	K01K3976SE271	R932002017	
S248	2,5 (0,66)	2,2 (0,58)	240 (9,45)	PE	K01K3976SE272	R932002018	



Plastic Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	Material	Type	Material Number	Drawing
S249	1 (0,26)	0,9 (0,24)	135 (5,31)	PE	K01K3976SE273	R932002019	
S250	1,8 (0,48)	1,6 (0,42)	170 (6,71)	PE	K01K3976SE274	R932002020	
S251	2,5 (0,66)	2,2 (0,58)	240 (9,45)	PE	K01K3976SE275	R932002021	

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number	Drawing
S343	5 (1,32)	3,8 (1,00)	230 (9,05)	PE	K01K3976SE380	R932002039	
S331	5 (1,32)	3,8 (1,00)	230 (9,05)	PE Black	K01K3976SE368	R932007872	
S413	7 (1,85)	5,5 (1,45)	310 (12,20)	PE	K01K3976SE439	R932007873	
S414	7 (1,85)	5,5 (1,45)	310 (12,20)	PE Black	K01K3976SE440	R932007874	
S415	8 (2,11)	6,5 (1,72)	335 (13,19)	PE	K01K3976SE441	R932006036	
S416	8 (2,11)	6,5 (1,72)	335 (13,19)	PE Black	K01K3976SE442	R932007875	
S316	9 (2,38)	7,3 (1,93)	365 (14,37)	PE	K01K3976SE351	R932002031	
S314	9 (2,38)	7,3 (1,93)	365 (14,37)	PE Black	K01K3976SE451	R932007876	
S417	12 (3,17)	10 (2,64)	495 (19,50)	PE	K01K3976SE443	R932006768	
S418	12 (3,17)	10 (2,64)	495 (19,50)	PE Black	K01K3976SE444	R932007877	

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	Material	Type	Material Number	Drawing
S344	5 (1,32)	3,5 (0,92)	230 (9,05)	PE	K01K3976SE381	R932002040	
S332	5 (1,32)	3,5 (0,92)	230 (9,05)	PE Black	K01K3976SE369	R932008240	
S419	7 (1,85)	5,5 (1,45)	310 (12,20)	PE	K01K3976SE445	R932007879	
S420	7 (1,85)	5,5 (1,45)	310 (12,20)	PE Black	K01K3976SE446	R932007880	
S421	8 (2,11)	6,5 (1,72)	335 (13,19)	PE	K01K3976SE447	R932006037	
S422	8 (2,11)	6,5 (1,72)	335 (13,19)	PE Black	K01K3976SE448	R932007881	
S315	9 (2,38)	7,3 (1,93)	365 (14,37)	PE	K01K3976SE350	R932002030	
S313	9 (2,38)	7,3 (1,93)	365 (14,37)	PE Black	K01K3976SE348	R932002029	
S423	12 (3,17)	10 (2,64)	495 (19,50)	PE	K01K3976SE449	R932006038	
S424	12 (3,17)	10 (2,64)	495 (19,50)	PE Black	K01K3976SE450	R932006278	

Plastic Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	Material	Type	Material Number	Drawing
S428	15 (3,96)	13 (3,43)	595 (23,42)	PE <u>Black</u>	K01K3976SE456	R932009317	
S430	17 (4,50)	15 (3,96)	660 (25,98)	PE	K01K3976SE459	R932009316	
S429	17 (4,50)	15 (3,96)	660 (25,98)	PE <u>Black</u>	K01K3976SE457	R932008291	
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number	Drawing
S395	3 (0,79)	1,7 (0,45)	140 (5,51)	PE	K01K3976SE470	R932007903	
S396	3,7 (0,98)	2,2 (0,58)	165 (6,50)	PE	K01K3976SE471	R932007904	
S392	5 (1,32)	3,1 (0,82)	215 (8,46)	PE	K01K3976SE464	R932007365	
S394	8,4 (2,22)	5,5 (1,45)	340 (13,39)	PE	K01K3976SE466	R932007435	
S397	12,7 (3,35)	8,4 (2,2)	500 (19,68)	PE	K01K3976SE472	R932007905	
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	Material	Type	Material Number	Drawing
S434	3 (0,79)	1,7 (0,45)	140 (5,51)	PE	K01K3976SE478	R932007910	
S435	3,7 (0,98)	2,2 (0,58)	165 (6,50)	PE	K01K3976SE479	R932007911	
S436	5 (1,32)	3,1 (0,82)	215 (8,46)	PE	K01K3976SE480	R932007912	
S437	8,4 (2,22)	5,5 (1,45)	340 (13,39)	PE	K01K3976SE481	R932007913	
S438	12,7 (3,35)	8,4 (2,2)	500 (19,68)	PE	K01K3976SE482	R932007914	
S442	10 (2,64)	7 (1,85)	190 (7,18)	PE	K01K3976SE492	R932010792	
S443	12 (3,17)	9 (2,38)	215 (8,46)	PE	K01K3976SE493	R932010793	
S444	15 (3,96)	12,5 (3,30)	265 (10,43)	PE	K01K3976SE494	R932010794	
S445	20 (5,28)	17,5 (4,62)	330 (12,99)	PE	K01K3976SE495	R932010795	

Plastic Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number	Drawing
S374	5 (1,32)	4 (1,06)	219 (8,62)	PE	K01K3976SE415	R932002042	
S376	7 (1,85)	5,4 (1,43)	271 (10,67)		K01K3976SE417	R932002044	
S378	8 (2,11)	6,6 (1,74)	323 (12,72)		K01K3976SE419	R932002046	
S380	11 (2,91)	9,6 (2,54)	453 (17,83)		K01K3976SE421	R932002048	
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	Material	Type	Material Number	Drawing
S375	5 (1,32)	4 (1,06)	219 (8,62)	PE	K01K3976SE416	R932002043	
S377	7 (1,85)	5,4 (1,43)	271 (10,67)		K01K3976SE418	R932002045	
S379	8 (2,11)	6,6 (1,74)	323 (12,72)		K01K3976SE420	R932002047	
S381	11 (2,91)	9,6 (2,54)	453 (17,83)		K01K3976SE422	R932002049	

Assembly Kit for Plastic Tank

Oil Tank	Code for KE	Material Number	Please make sure that the tank and motor are mounted correctly
S335 - S336 - S337 - S338 - S339 - S340 S341 - S342	K2501VT006	R932002436	
S246 - S247 - S248 - S249 - S250 - S251	K2501VT007	R932002437	
S413 - S414 - S419 - S420 - S415 - S416 - S421 - S422 - S332 - S344 - S313 - S315 - S343 - S331 - S316 - S314 - S374 - S375 - S376 - S377 - S378 - S379 - S380 - S381 - S417 - S418 - S423 - S424 - S395 - S396 - S392 - S394 - S397 - S434 - S435 - S436 - S437 - S438 - S428 - S430 - S429 - S442 - S443 - S444 - S445	K2501VT014	R932002440	
Oil Tank	Code for K	Material Number	
S335 - S336 - S337 - S338 - S339 - S340 S341 - S342	K2501VT001	R932002433	
S246 - S247 - S248 - S249 - S250 - S251	K2501VT002	R932002434	
S413 - S414 - S419 - S420 - S415 - S416 - S421 - S422 - S332 - S344 - S313 - S315 - S343 - S331 - S316 - S314 - S374 - S375 - S376 - S377 - S378 - S379 - S380 - S381 - S417 - S418 - S423 - S424 - S395 - S396 - S392 - S394 - S397 - S434 - S435 - S436 - S437 - S438 - S428 - S430 - S429 - S442 - S443 - S444 - S445	K2501VT013	R932002439	
Oil Tank	Code for KS	Material Number	
S335 - S336 - S337 - S338 - S339 - S340 S341 - S342	K2501VT016	R932007391	
S246 - S247 - S248 - S249 - S250 - S251	K2501VT015	R932008244	
S413 - S414 - S419 - S420 - S415 - S416 - S421 - S422 - S332 - S344 - S313 - S315 - S343 - S331 - S316 - S314 - S374 - S375 - S376 - S377 - S378 - S379 - S380 - S381 - S417 - S418 - S423 - S424 - S395 - S396 - S392 - S394 - S397 - S434 - S435 - S436 - S437 - S438 - S428 - S430 - S429 - S442 - S443 - S444 - S445	K2501VT026	R930053718	

Oil Tanks for KE - K

Technical Data for Steel Tanks

Temperature range	°C (°F)	-15....+80 (5....176)
Materials		Steel
Colors		Black paint finish
Seal		For all the steel tanks is necessary to use the O-RING 4437 (Ø110,7x3,53) Code:110201203000000 - R-Number:R932000188

Steel collar for Tanks

Code	Type	Material Number	Drawing
S00	K224201000	R932006279	

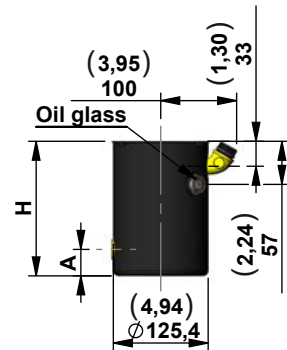
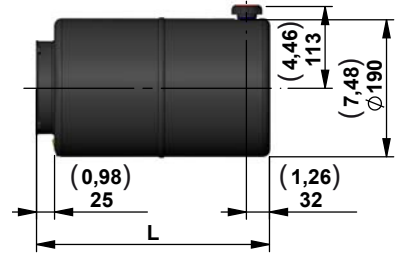
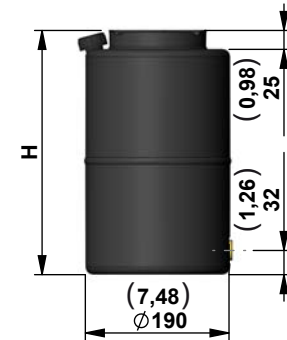
Steel Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	A mm (inch)	Type	Material Number	Drawing
S01	1 (0,26)	0,7 (0,18)	133 (5,24)	35 (1,38)	K01K3976SE001	R932001937	
S20	1,8 (0,48)	1,2 (0,32)	178 (7,01)	35 (1,38)	K01K3976SE026	R932001953	
S02	2,5 (0,66)	1,7 (0,45)	238 (9,37)	60 (2,36)	K01K3976SE003	R932001939	
S161	3 (0,79)	2,3 (0,61)	280 (11,02)	60 (2,36)	K01K3976SE186	R932001987	
S107	4 (1,06)	3,2 (0,84)	409 (16,10)	60 (2,36)	K01K3976SE119	R932001970	

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	A mm (inch)	Type	Material Number	Drawing
S144	1,8 (0,48)	1,2 (0,32)	178 (7,01)	35 (1,38)	K01K3976SE168	R932001983	
S142	2,5 (0,66)	1,7 (0,45)	238 (9,37)	60 (2,36)	K01K3976SE166	R932001981	

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	A mm (inch)	Type	Material Number	Drawing
S216	1 (0,26)	0,6 (0,16)	133 (5,24)	35 (1,38)	K01K3976SE246	R932002011	
S217	1,8 (0,48)	1,1 (0,29)	178 (7,01)	35 (1,38)	K01K3976SE247	R932002012	
S218	2,5 (0,66)	1,7 (0,45)	238 (9,37)	60 (2,36)	K01K3976SE248	R932009269	
S239	3 (0,79)	2,3 (0,61)	280 (11,02)	60 (2,36)	K01K3976SE269	R932002015	
S107V	4 (1,06)	3,2 (0,84)	409 (16,10)	60 (2,36)	K01K3976SE161	R932001976	

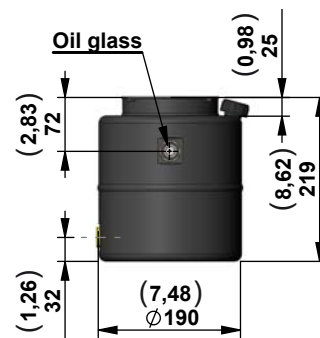
Steel Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	A mm (inch)	Type	Material Number	Drawing
S20V	1,8 (0,48)	1,1 (0,29)	178 (7,01)	35 (1,38)	K01K3976SE027	R932001954	
S02V	2,5 (0,66)	1,7 (0,45)	238 (9,37)	60 (2,36)	K01K3976SE004	R932001940	
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	-	Type	Material Number	Drawing
S03	5 (1,32)	4 (1,06)	219 (8,62)	-	K01K3976SE005	R932001941	
S34	7 (1,85)	5,4 (1,43)	271 (10,67)	-	K01K3976SE041	R932001956	
S04	8 (2,11)	6,6 (1,74)	323 (12,72)	-	K01K3976SE007	R932001943	
S109	11 (2,91)	9,6 (2,54)	453 (17,83)	-	K01K3976SE172	R932001985	
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	-	Type	Material Number	Drawing
S03V	5 (1,32)	3 (7,9)	219 (8,62)	-	K01K3976SE006	R932001942	
S34V	7 (1,85)	4,4 (1,16)	271 (10,67)	-	K01K3976SE042	R932001957	
S04V	8 (2,11)	5,8 (1,53)	323 (12,72)	-	K01K3976SE008	R932001944	
S109V	11 (2,91)	9,0 (2,38)	453 (17,83)	-	K01K3976SE121	R932001972	

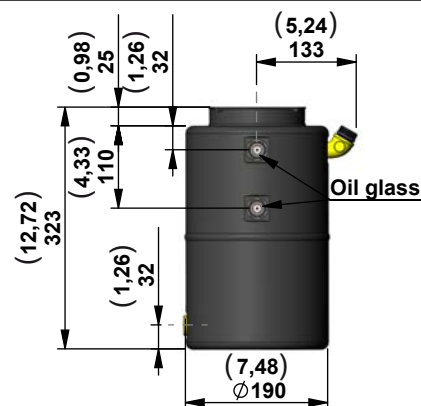
Steel Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	Type	Material Number	Drawing
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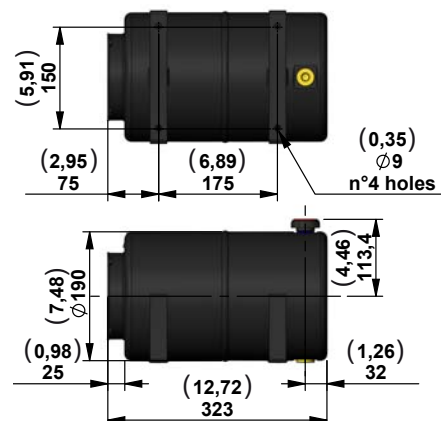
S106	5 (1,32)	3 (7,9)	K01K3976SE215	R932001997	
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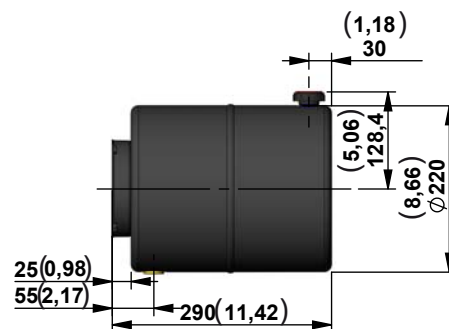
S108	8 (2,11)	5,8 (1,53)	K01K3976SE120	R932001971	
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S94	8 (2,11)	6,6 (1,74)	K01K3976SE106	R932001965	
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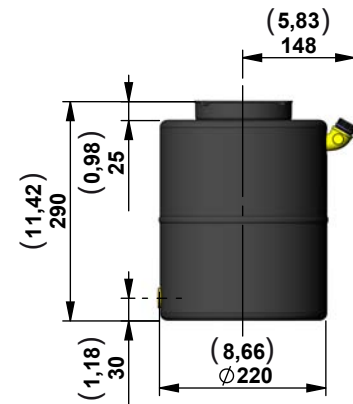
S177	9 (2,38)	7,7 (2,03)	K01K3976SE207	R932001994	
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Steel Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	Type	Material Number	Drawing
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S178 9 (2,38) 6,9 (1,82) K01K3976SE208 R932001995



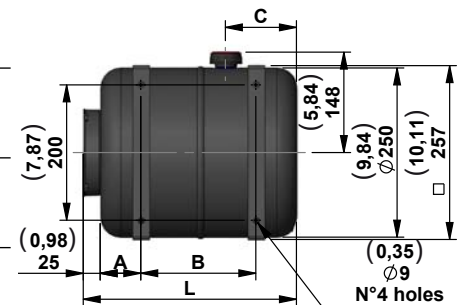
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	A mm (inch)	B mm (inch)	C mm (inch)	L mm (inch)	Type	Material Number	Drawing
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S90* 12 (3,17) 10,5 (2,77) 60 (2,36) 170 (6,69) 105 (4,13) 315 (12,40) K01K3976SE100 R932001961

S128* 16 (4,23) 13 (3,43) 60 (2,36) 170 (6,69) 158 (6,22) 368 (14,49) K01K3976SE151 R932001975

S105* 19 (5,02) 15 (3,96) 52,5 (2,07) 290 (11,42) 158 (6,22) 420 (16,53) K01K3976SE117 R932001969

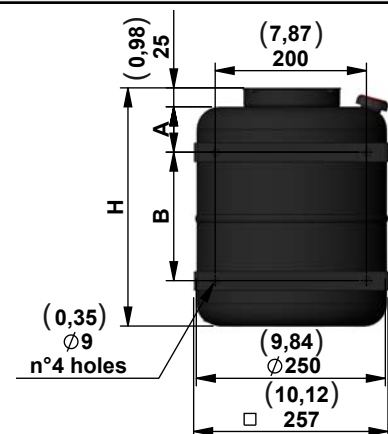
S92* 23 (6,08) 19 (5,02) 102,5 (4,03) 290 (11,42) 158 (6,22) 520 (20,47) K01K3976SE102 R932001962



Code	Tank capacity l (USgal)	Useable capacity l (USgal)	H mm (inch)	A mm (inch)	B mm (inch)	Type	Material Number	Drawing
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S90V* 12 (3,17) 9 (2,38) 315 (12,40) 60 (2,36) 170 (6,69) K01K3976SE103 R932001963

S92V* 23 (6,08) 18 (4,75) 520 (20,47) 102,5 (4,03) 290 (11,42) K01K3976SE104 R932001964



***Note**

In order to avoid to support the weight of motor by the collar of the tank when the tanks with fixing brackets are used, it is strongly suggested to support also the central manifold.

Steel Tanks

Code	Tank capacity I (USgal)	Useable capacity I (USgal)	Brackets	Type	Material Number	Drawing	
S07	6 (1,58)	4 (1,06)	No	K01K3976SE013	R932001945		
S138*	6 (1,58)	4 (1,06)	Yes	K01K3976SE162	R932001977		
S48	6 (1,58)	4 (1,06)	No	K01K3976SE056	R932001959		
S139*	6 (1,58)	4 (1,06)	Yes	K01K3976SE163	R932001978		
Code	Tank capacity I (USgal)	Useable capacity I (USgal)	A mm (inch)	B mm (inch)	Type	Material Number	Drawing
S223*	8 (2,11)	6 (1,58)	156 (6,14)	131 (5,16)	K01K3976SE253	R932002013	
S54	12 (3,17)	9,5 (2,51)	210 (8,27)	186 (7,32)	K01K3976SE063	R932001960	
S140*	12 (3,17)	9,5 (2,51)	210 (8,27)	186 (7,32)	K01K3976SE164	R932001979	
S256*	14 (3,70)	12 (3,17)	235 (9,25)	211 (8,31)	K01K3976SE280	R932002022	
S141*	15 (3,96)	13 (3,43)	261 (10,28)	236 (9,29)	K01K3976SE165	R932001980	
S143*	20 (5,28)	18 (4,75)	329 (12,95)	305 (12,01)	K01K3976SE167	R932001982	

***Note**

In order to avoid to support the weight of motor by the collar of the tank when the tanks with fixing brackets are used, it is strongly suggested to support also the central manifold.

Steel Tanks

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	Type	Material Number	Drawing
S184*	15 (3,96)	13 (3,43)	K01K3976SE214	R932001996	
S189*	15 (3,96)	13 (3,43)	K01K3976SE219	R932001998	

***Note**

In order to avoid to support the weight of motor by the collar of the tank when the tanks with fixing brackets are used, it is strongly suggested to support also the central manifold.

Steel Tanks

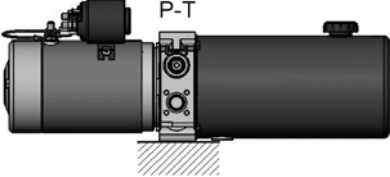
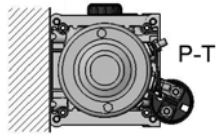
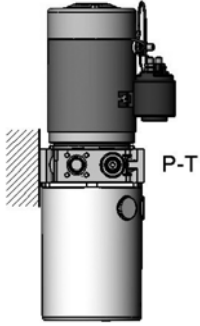
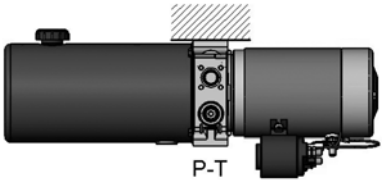
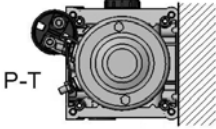
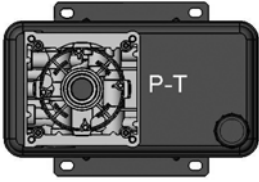
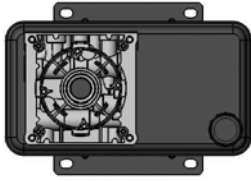
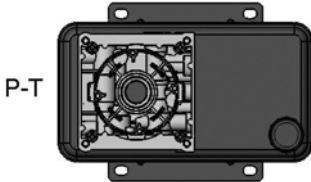
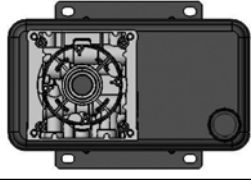
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	A mm (inch)	B mm (inch)	C mm (inch)	L x W mm (inch)	Type	Material Number	Drawing
S09	20 (5,28)	12,5 (3,30)	285 (11,22)	53 (2,09)	207 (8,15)	340x270 (13,4x10,6)	K01K3976SE015	R932001946	
S240	20 (5,28)	12,5 (3,30)	285 (11,22)	53 (2,09)	207 (8,15)	340x270 (13,4x10,6)	K01K3976SE195	R932001989	
S10	30 (7,92)	22,5 (5,94)	405 (15,94)	58 (2,28)	322 (12,68)	340x270 (13,4x10,6)	K01K3976SE016	R932001947	
S241	30 (7,92)	22,5 (5,94)	405 (15,94)	58 (2,28)	322 (12,68)	340x270 (13,4x10,6)	K01K3976SE196	R932001990	
S11	45 (11,89)	30 (7,92)	344 (13,54)	58 (2,28)	261 (10,28)	540x320 (21,3x12,6)	K01K3976SE017	R932001948	
S242	45 (11,89)	30 (7,92)	344 (13,54)	58 (2,28)	261 (10,28)	540x320 (21,3x12,6)	K01K3976SE197	R932001991	
S12	60 (15,85)	44 (11,62)	435 (17,13)	58 (2,28)	352 (13,86)	540x320 (21,3x12,6)	K01K3976SE018	R932001949	
S243	60 (15,85)	44 (11,62)	435 (17,13)	58 (2,28)	352 (13,86)	540x320 (21,3x12,6)	K01K3976SE198	R932001992	

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	A mm (inch)	B mm (inch)	Type	Material Number	Drawing
S211	3,5 (0,92)	3 (0,79)	125 (4,92)	100 (3,94)	K01K3976SE241	R932002009	
S212	8 (2,11)	7 (1,85)	245 (9,65)	220 (8,66)	K01K3976SE242	R932002010	

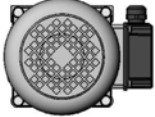

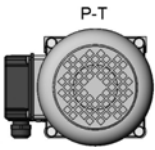

Aluminium Tanks for KE - K

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	Type	Material Number	Drawing
S31	10 (2,64)	8,3 (2,19)	K01K3976SE038	R932001955	
S245	10 (2,64)	8,3 (2,19)	K01K3976SE199	R932001993	

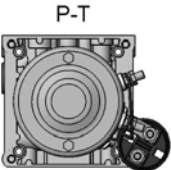
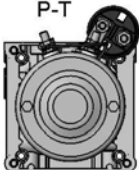
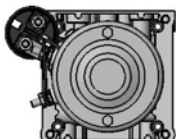
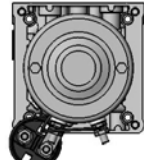
Mounting position

Code	Code	Code
O1	O3	V1
		
O2	O4	
		
-	O6	
		
O7	O8	
		

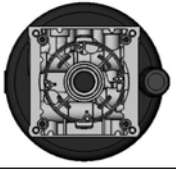



Terminal Box Position for A.C. Motors

-	M2
	
M3	M4
	

Relay Position for D.C. Motors


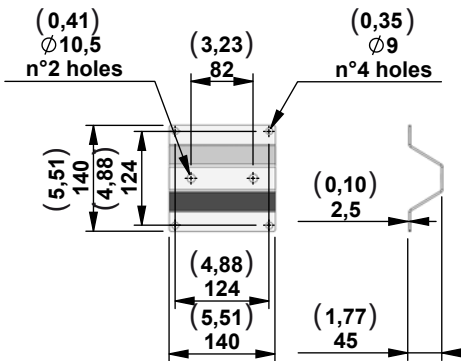
-	R2
	
R3	R4
	

Oil Cap Position for V1 only


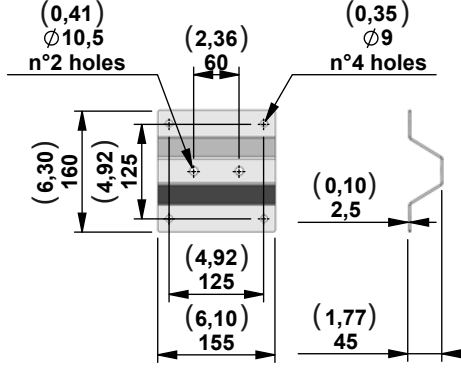

Code		Code	
-	P-T 	LU	P-T 
LO	P-T 	LP	P-T 

Mounting Brackets

Support for Manifold KE Series

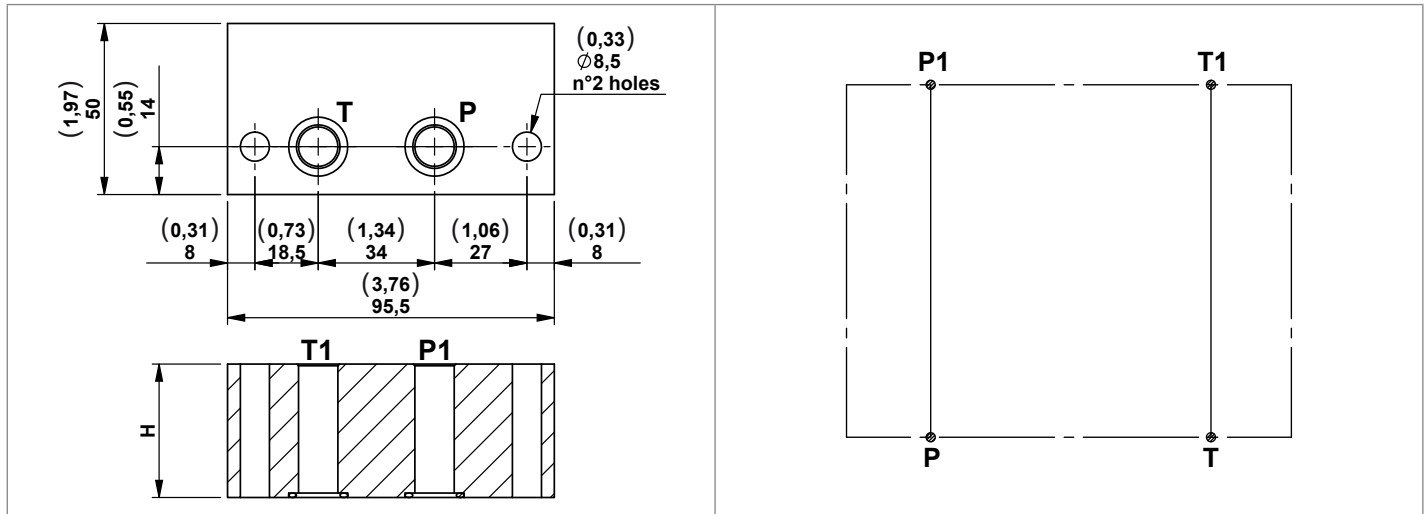
Code	Central manifold	Type	Material number	
G80	KE	K01F331514000	R932009395	 

Support for Manifold K Series

Code	Central manifold	Type	Material number	
G07	K	K01K331507000	R932009393	 
G07L	K	K01K331507000	R932009393	

Modular Stackable Elements

Space Modular Block

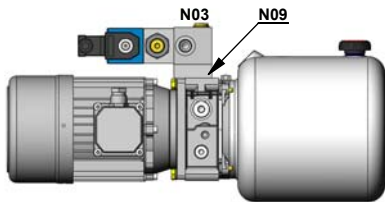


These modular blocks have been designed to have the ability to be assembled as a stack to allow clearance

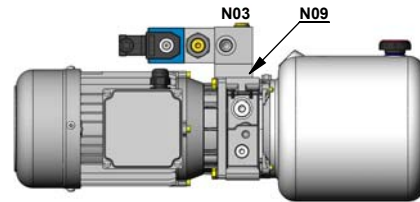
between flanges and motors of different sizes and types. Each block includes 2 OR 3056 gaskets.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N09	Space modular block H=18	300 (4351)	40 (10,57)	G386010000	R932001058
N01	Space modular block H=39	300 (4351)	40 (10,57)	G386001000	R932001005
N02	Space modular block H=69	300 (4351)	40 (10,57)	G386038000	R932001122

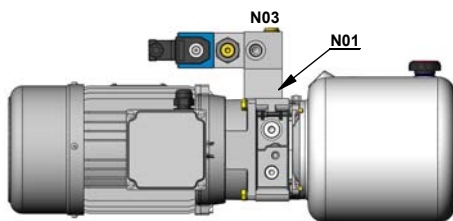
Motor IEC71 frame Coupling TR02



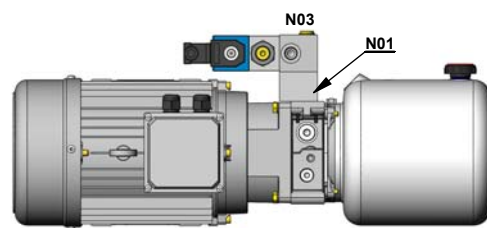
Motor IEC80 frame Coupling TR03



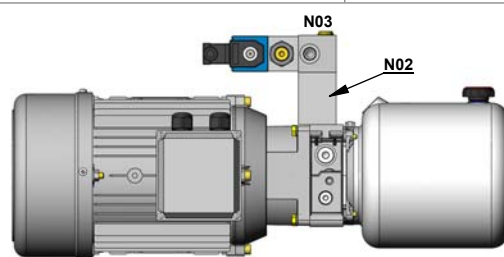
Motor IEC90 frame Coupling TR04



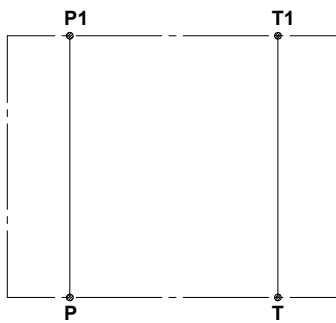
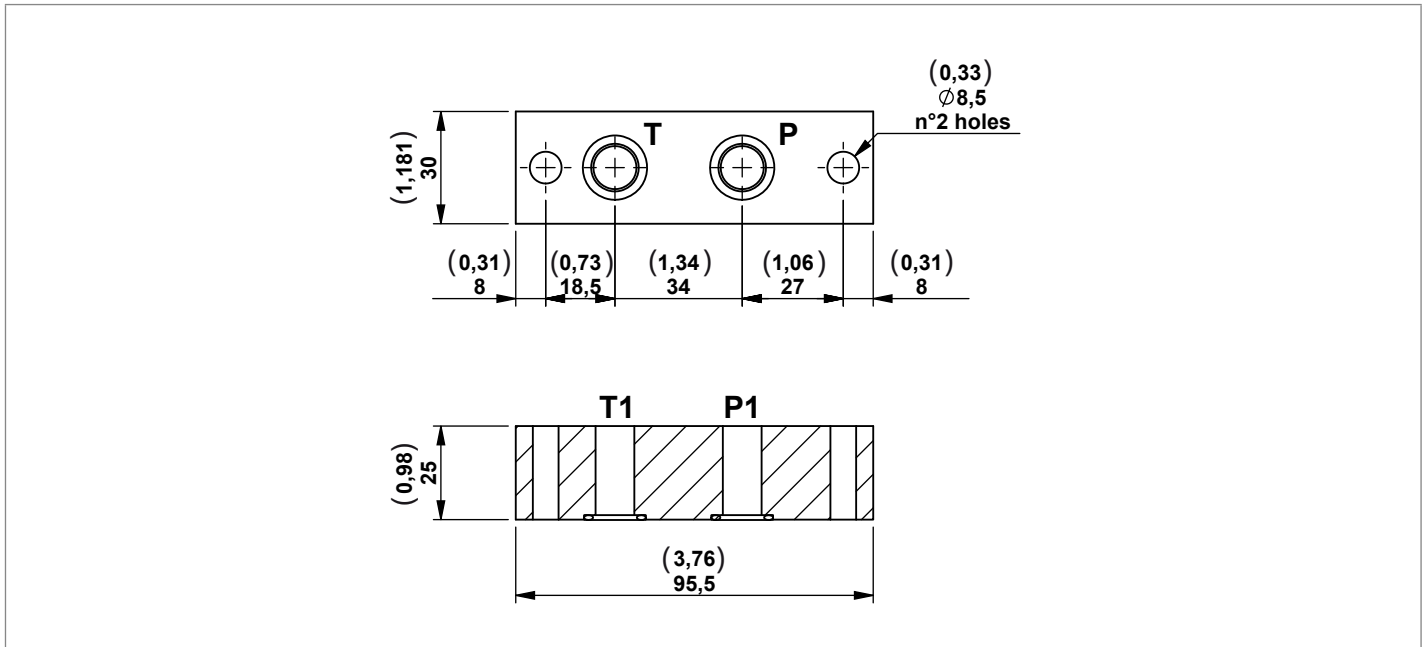
Motor IEC100 frame Coupling TR05



Motor IEC112 frame Coupling TR05



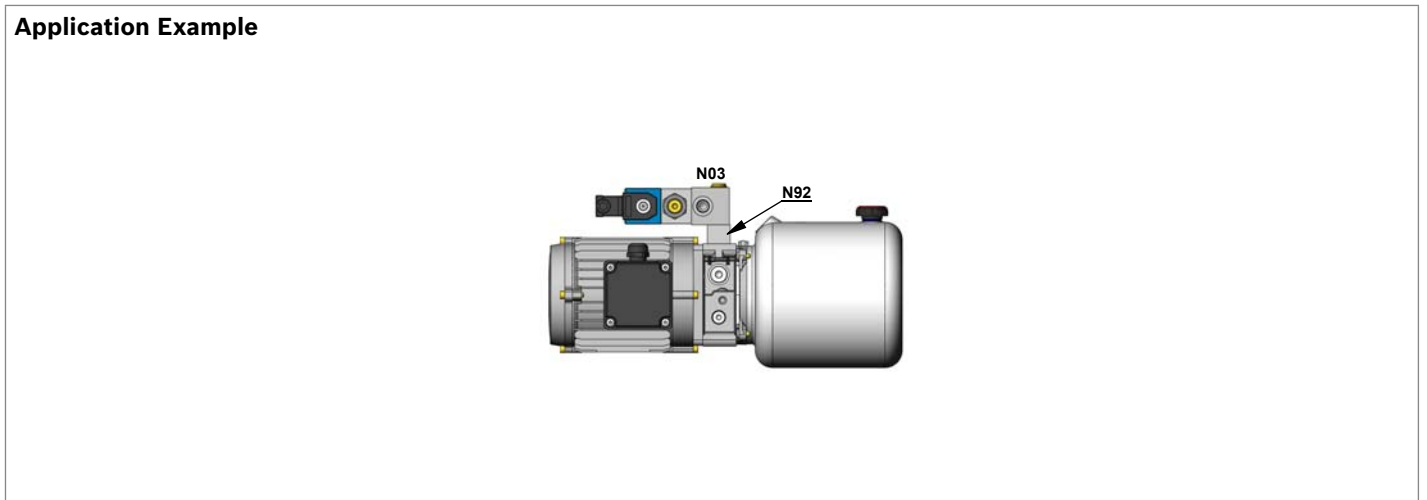
Space Modular Block



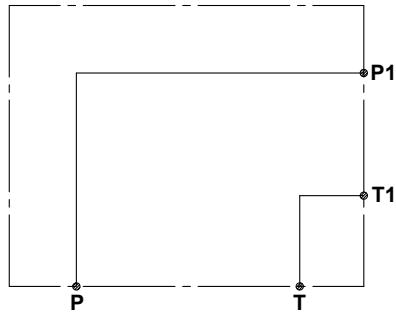
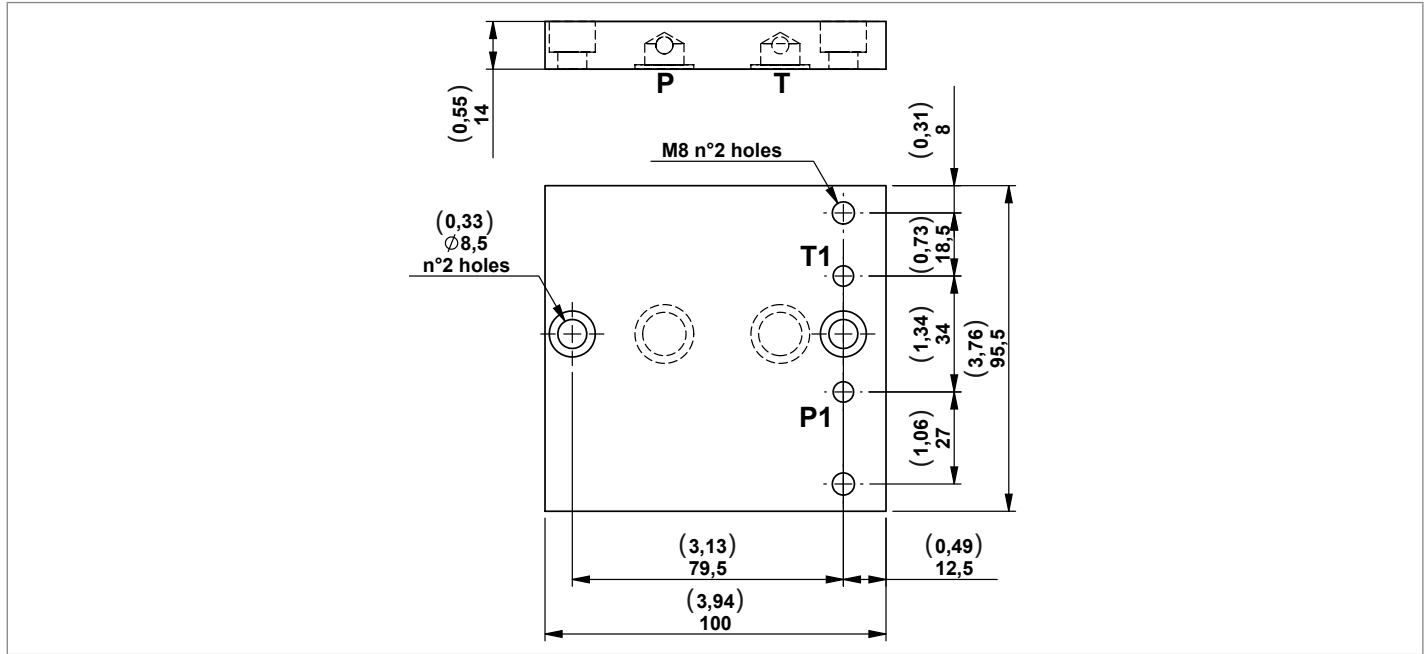
Space Modular Block to fix a compact mounting style electric motor on power module KE type.
This block includes 2 OR 3056 gaskets.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N92	Space modular block	300 (4351)	40 (10,57)	G386091000	R932001167

Application Example

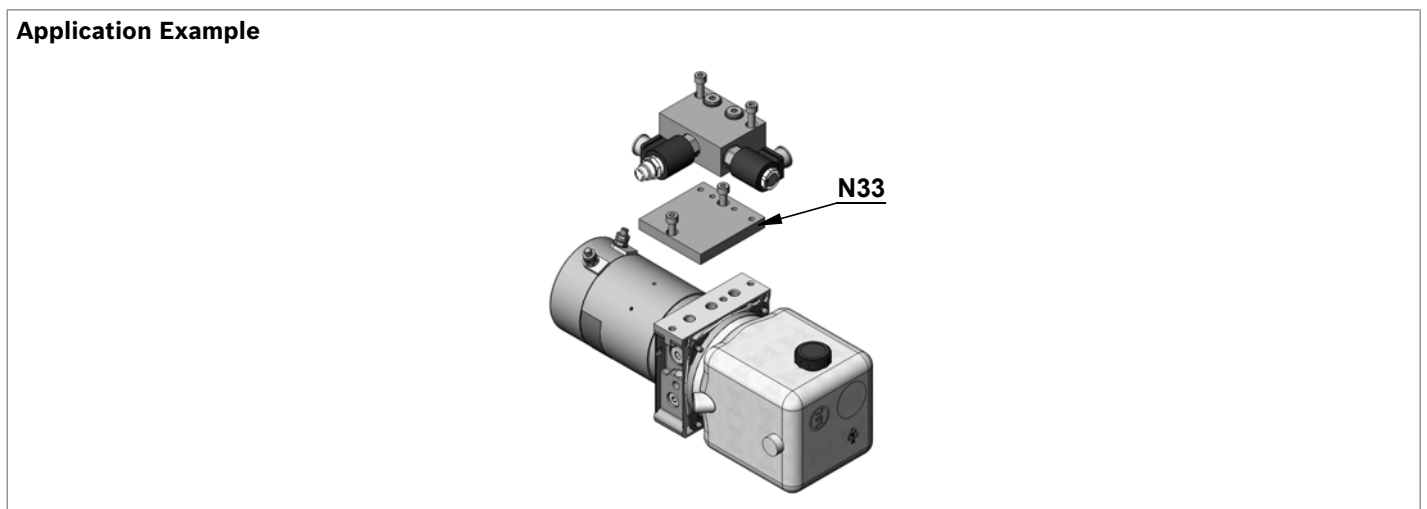


90° Rotation modular block

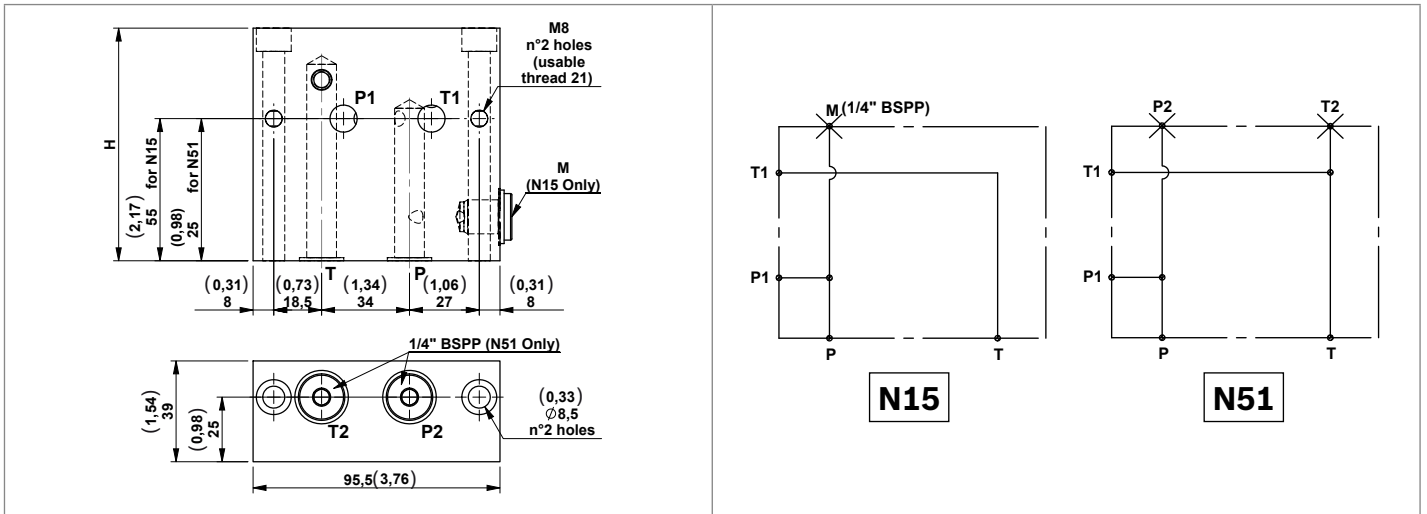


A modular block that is able to have a 90° rotation from our standard OILSISTEM configuration, but keeping the block on the same surface allowing a different position of any other modular block.
Each block includes 2 OR 2056 gaskets.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N33	90° rotation modular block	300 (4351)	20 (5,28)	G386032000	R932001110



90° modular block allowing horizontal mounting (motor side)

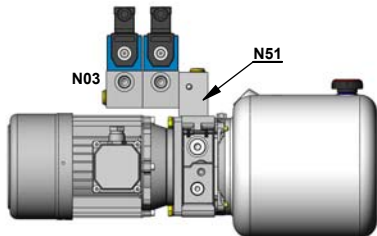


A modular block that is able to turn the standard assembling of 90°, in order to place other manifold blocks over the motor.

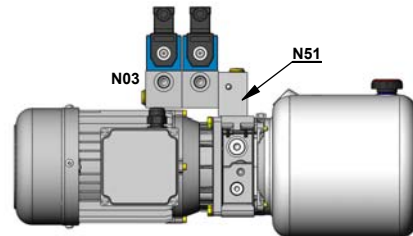
The “N15” block has a 1/4” BSPP port for Pressure Gauge. Each block includes 2 OR 2056 gaskets.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N15	90° modular block allowing horizontal mounting (motor side) H=90	300 (4351)	35 (9,25)	G386014000	R932001087
N51	90° modular block allowing horizontal mounting (motor side) H=60	300 (4351)	35 (9,25)	G386050000	R932001146

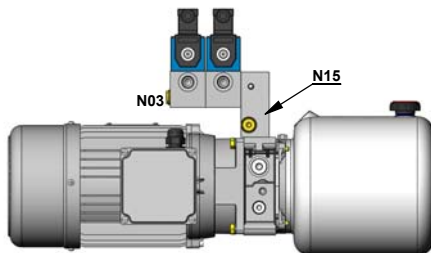
Motor IEC71 frame Coupling TR02



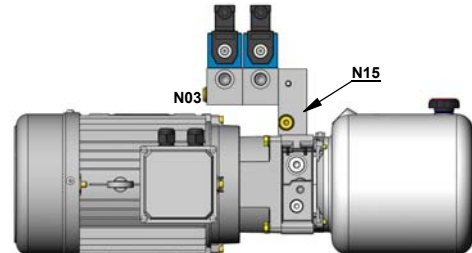
Motor IEC80 frame Coupling TR03



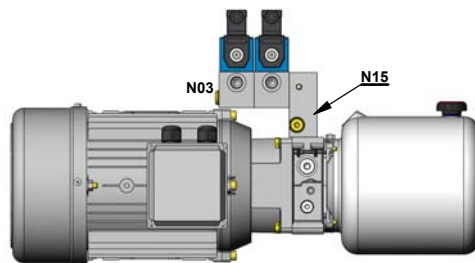
Motor IEC90 frame Coupling TR04



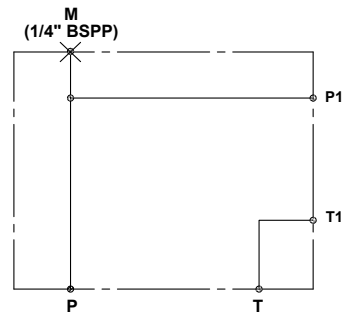
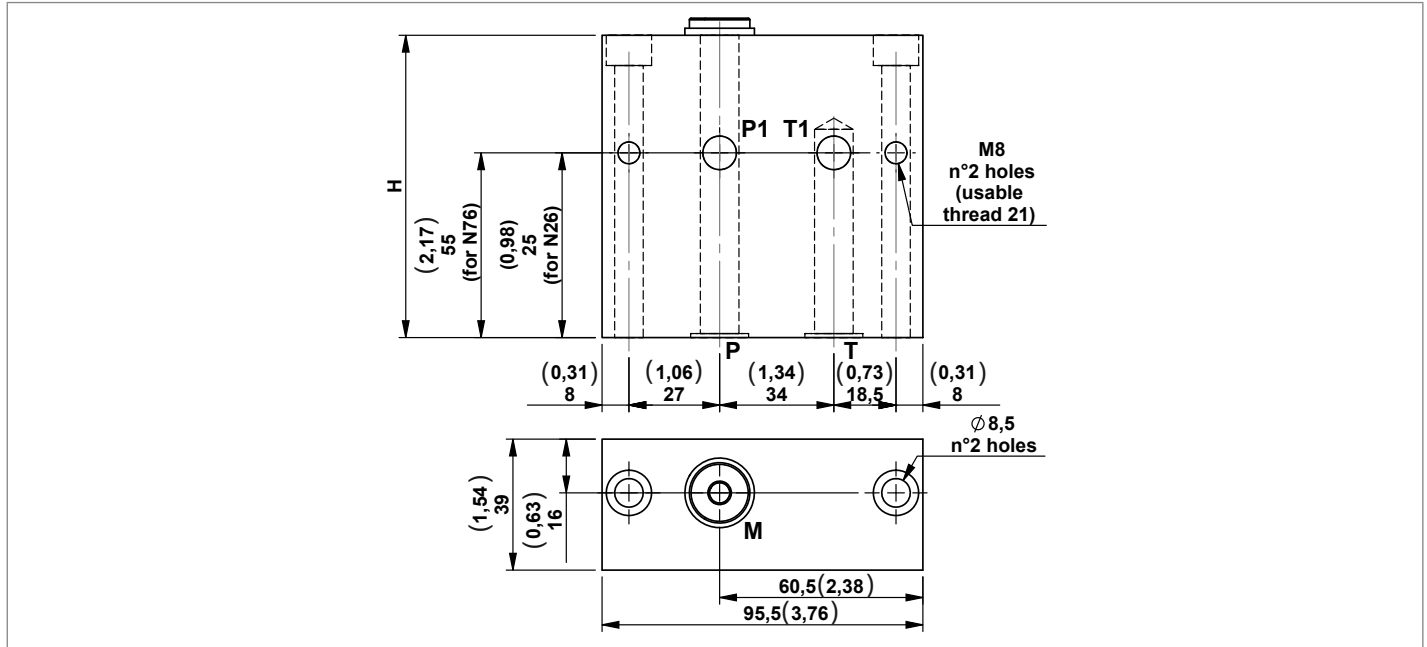
Motor IEC100 frame Coupling TR05



Motor IEC112 frame Coupling TR05



90° modular block allowing horizontal mounting (tank side)

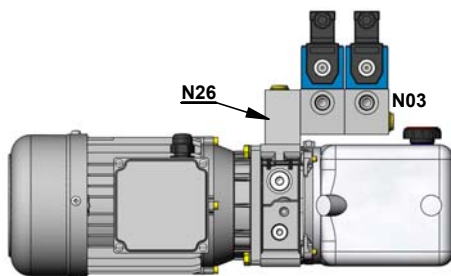


A modular block that is able to turn the standard assembling of 90°, in order to place other blocks over the tank.

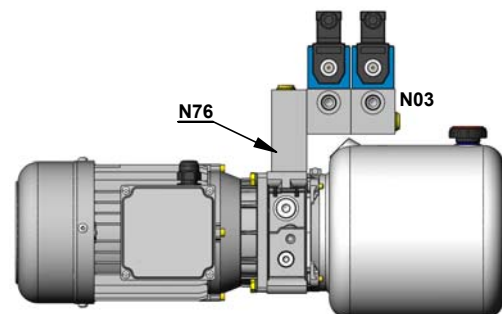
The blocks have a 1/4" BSPP port for Pressure Gauge. Each block includes 2 OR 2056 gaskets.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N76	90° modular block allowing horizontal mounting (tank side) H=90	300 (4351)	35 (9,25)	G386075000	R932001153
N26	90° modular block allowing horizontal mounting (tank side) H=60	300 (4351)	35 (9,25)	G386025000	R932001100

Tank H=134



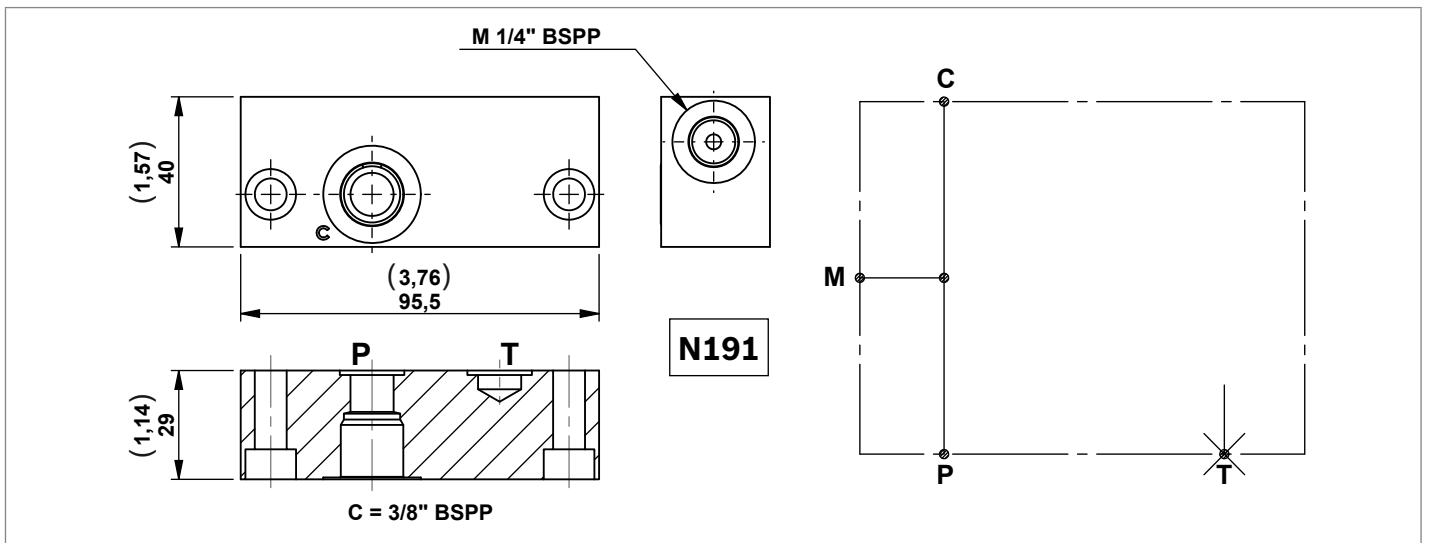
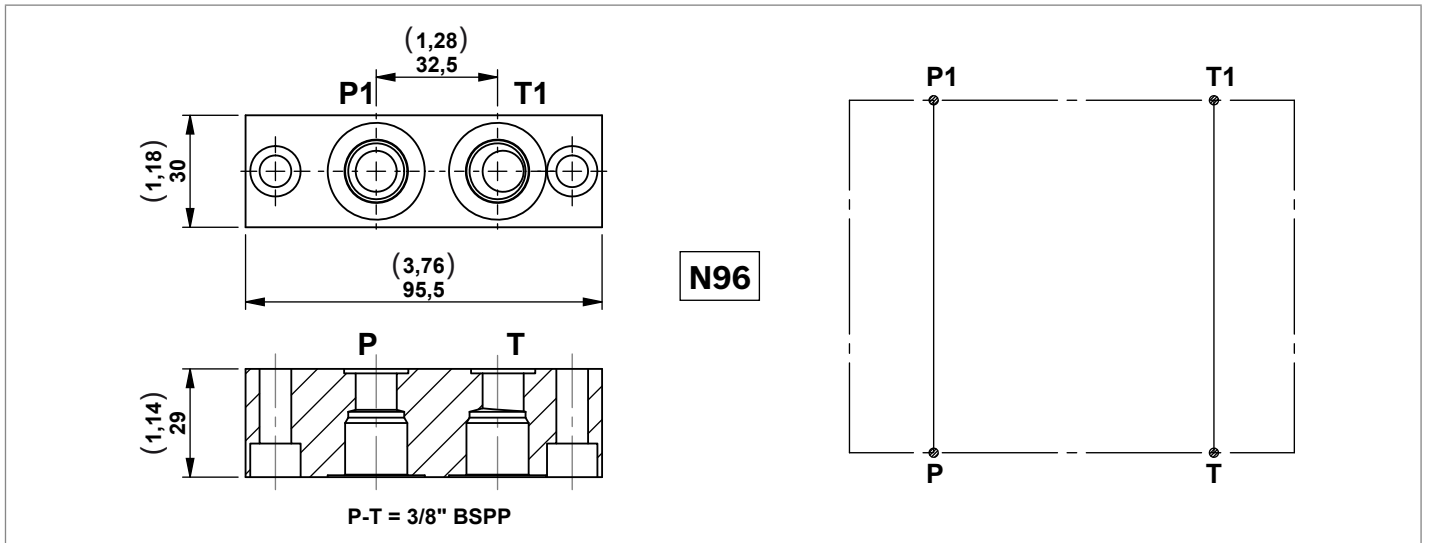
Tank Diameter Ø190



Modular blocks with threaded ports

Modular blocks with exit 3/8" BSPP.

Each block includes 2 OR 2056 gaskets.

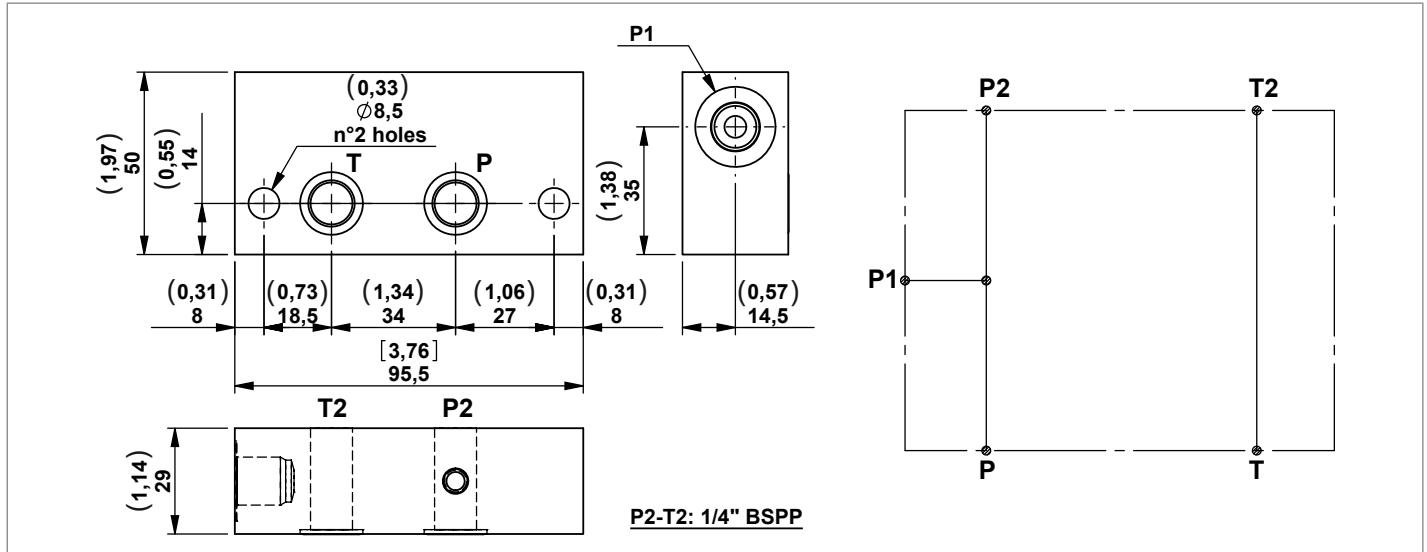


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N96	Modular block with threaded ports	300 (4351)	35 (9,25)	G386095000	R932001173
N191	Modular block with threaded ports	300 (4351)	35 (9,25)	G386191000	R932001284

Modular spacer block with extra "P1" port

A modular block with an extra port.

Each block includes 2 OR 2056 gaskets.

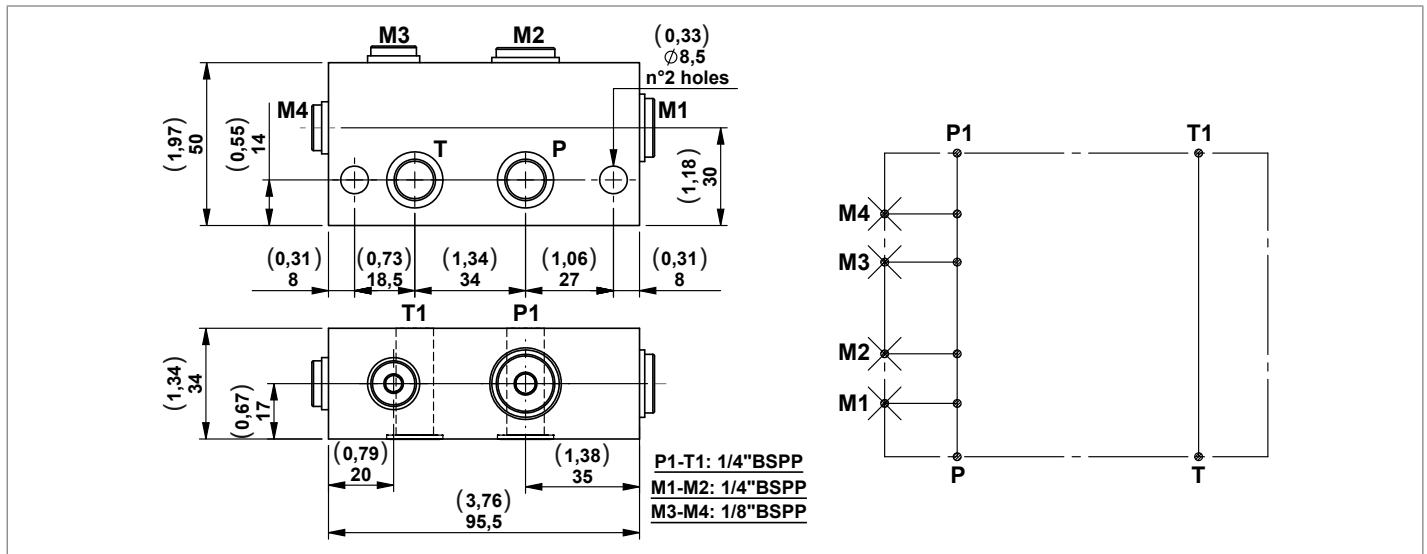


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N46-14	Modular spacer block with extra "P1" port 1/4" BSPP	300 (4351)	20 (5,28)	G386045000	R932001142
N46-38	Modular spacer block with extra "P1" port 3/8" BSPP	300 (4351)	20 (5,28)	1386000053	R932009506

Modular spacer block with two 1/8" BSPP and two 1/4" BSPP ports

A modular block with 4 extra ports.

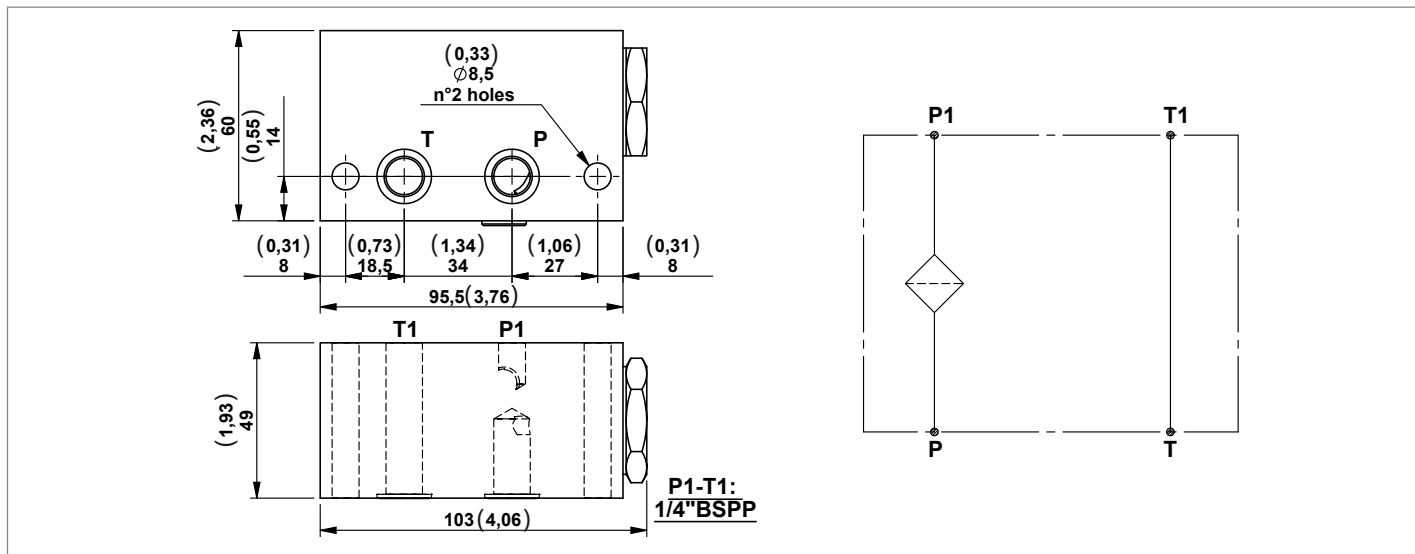
Each block includes 2 OR 2056 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N128	Modular spacer block with two 1/8" BSPP ports and two 1/4" BSPP ports	300 (4351)	35 (9,25)	G386128000	R932001241

Modular block with filter on pressure line

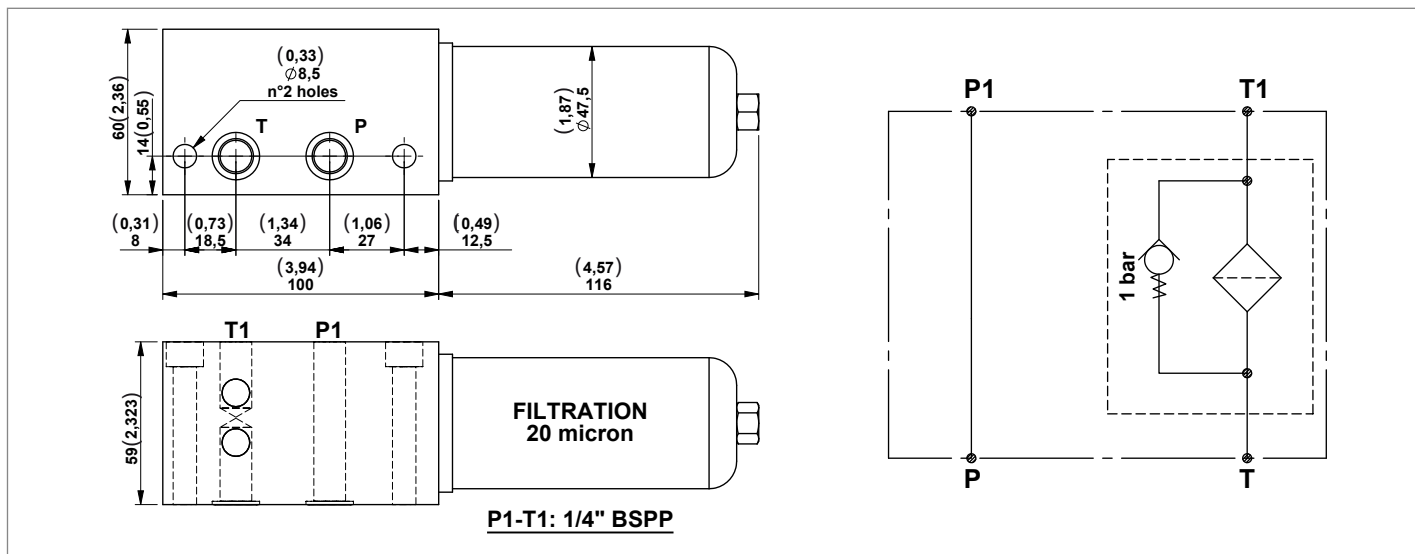
A modular block with a filter on the pressure line. This is recommended for applications where valve may be subjected to contamination. Each block includes 2 OR 2056 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N39-25	Modular block with filter (25 micron) on pressure line	230 (3336)	10 (2,64)	G386038010	R932001123
N39-60	Modular block with filter (60 micron) on pressure line	230 (3336)	10 (2,64)	G386038020	R932001124

Modular block with filter on the return line

A modular block with filter on return line. This is recommended for applications where valves may be subjected to contamination. Each block includes 2 OR 2056 gaskets. By-pass valve set at a pressure of 1 bar.

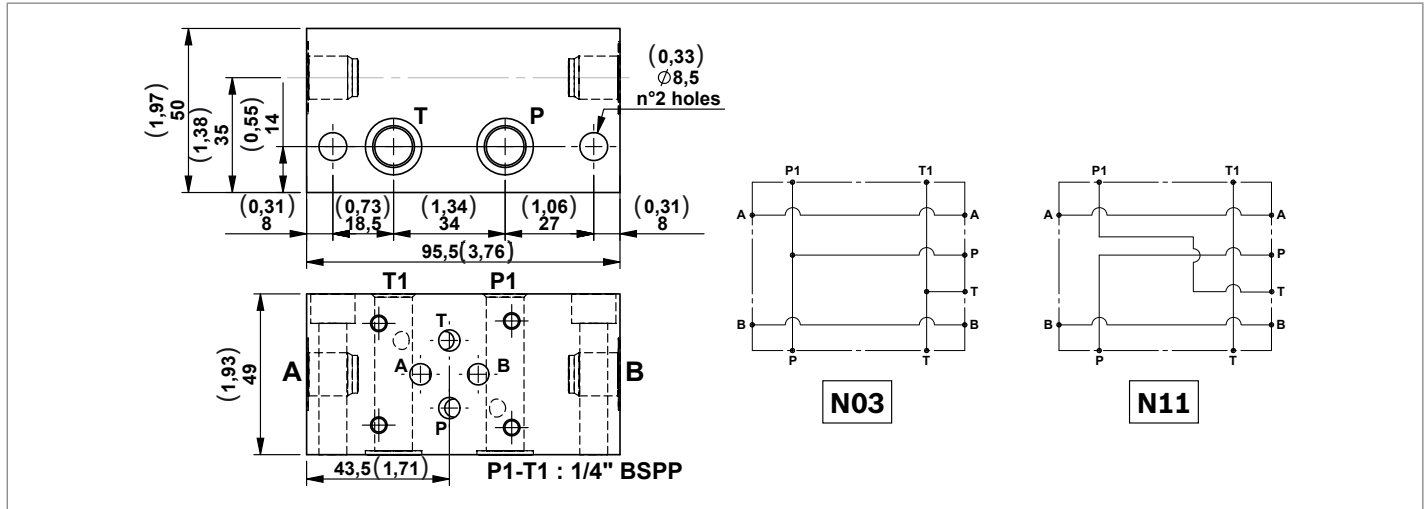


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N116	Modular block with filter on the return line (20 micron)	6 (87)	20 (5,28)	G386116010	R932001214

Modular block for CETOP 3 (2143) configuration valves

Modular blocks for CETOP 3 (2143) electrovalves for parallel or series circuits.

Each block includes 2 OR 2056 gaskets.

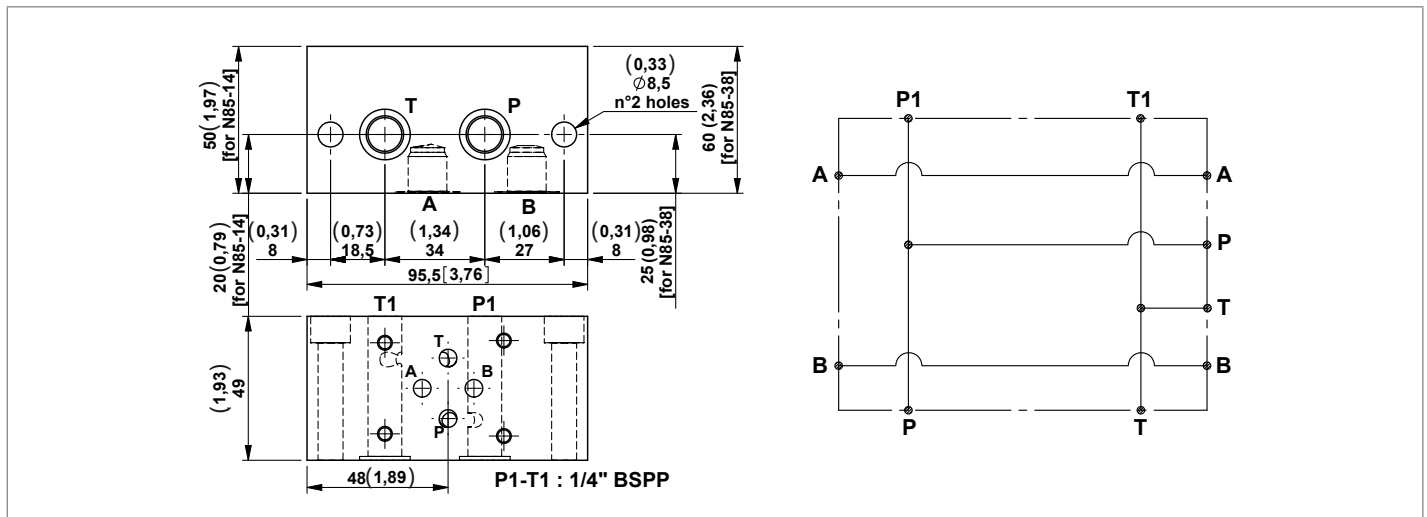


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N03-14	Modular block for CETOP3 (2143) configuration valves with A-B 1/4" BSPP (parallel circuit)	300 (4351)	40 (10,57)	G386002010	R932001010
N03-38	Modular block for CETOP3 (2143) configuration valves with A-B 3/8" BSPP (parallel circuit)	300 (4351)	40 (10,57)	G386002020	R932001011
N11-14	Modular block for CETOP3 (2143) configuration valves with A-B 1/4" BSPP (series circuit)	300 (4351)	40 (10,57)	G386009010	R932001054
N11-38	Modular block for CETOP3 (2143) configuration valves with A-B 3/8" BSPP (series circuit)	300 (4351)	40 (10,57)	G386009020	R932001056

Modular block for CETOP 3 (2143) configuration valves

A modular block that is for CETOP 3 (2143) electrovalves for a parallel circuit with ports on the oppsite side of the valve.

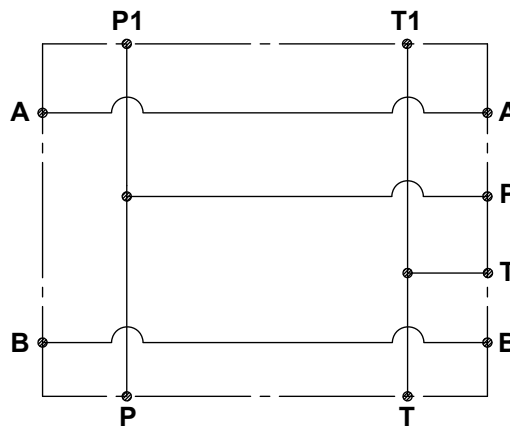
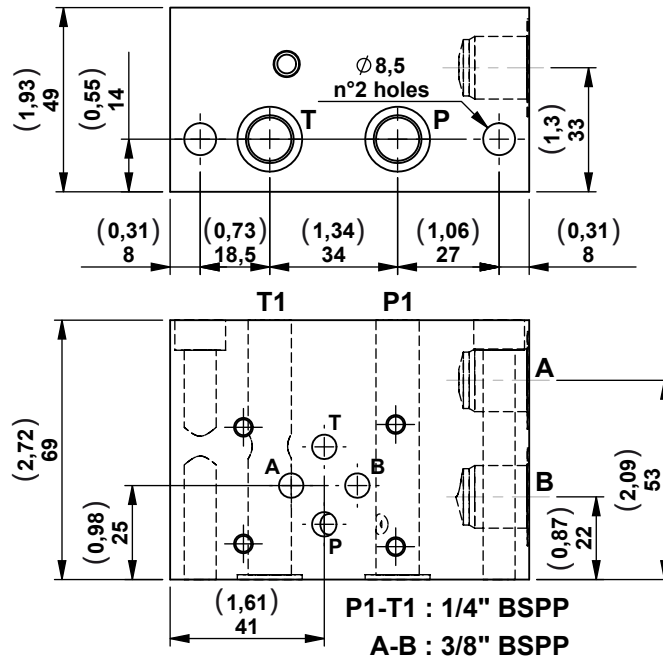
Each block includes 2 OR 2056 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N85-14	Modular block for CETOP3 (2143) configuration valves with A-B 1/4" BSPP (parallel circuit)	300 (4351)	40 (10,57)	G386084010	R932001158
N85-38	Modular block for CETOP3 (2143) configuration valves with A-B 3/8" BSPP (parallel circuit)	300 (4351)	40 (10,57)	G386084020	R932001159

Modular block for CETOP 3 (2143) configuration valves with side ports

A modular block that is for CETOP 3 (2143) electrovalves for parallel circuit with side device ports on one face. Each block includes 2 OR 2056 gaskets.



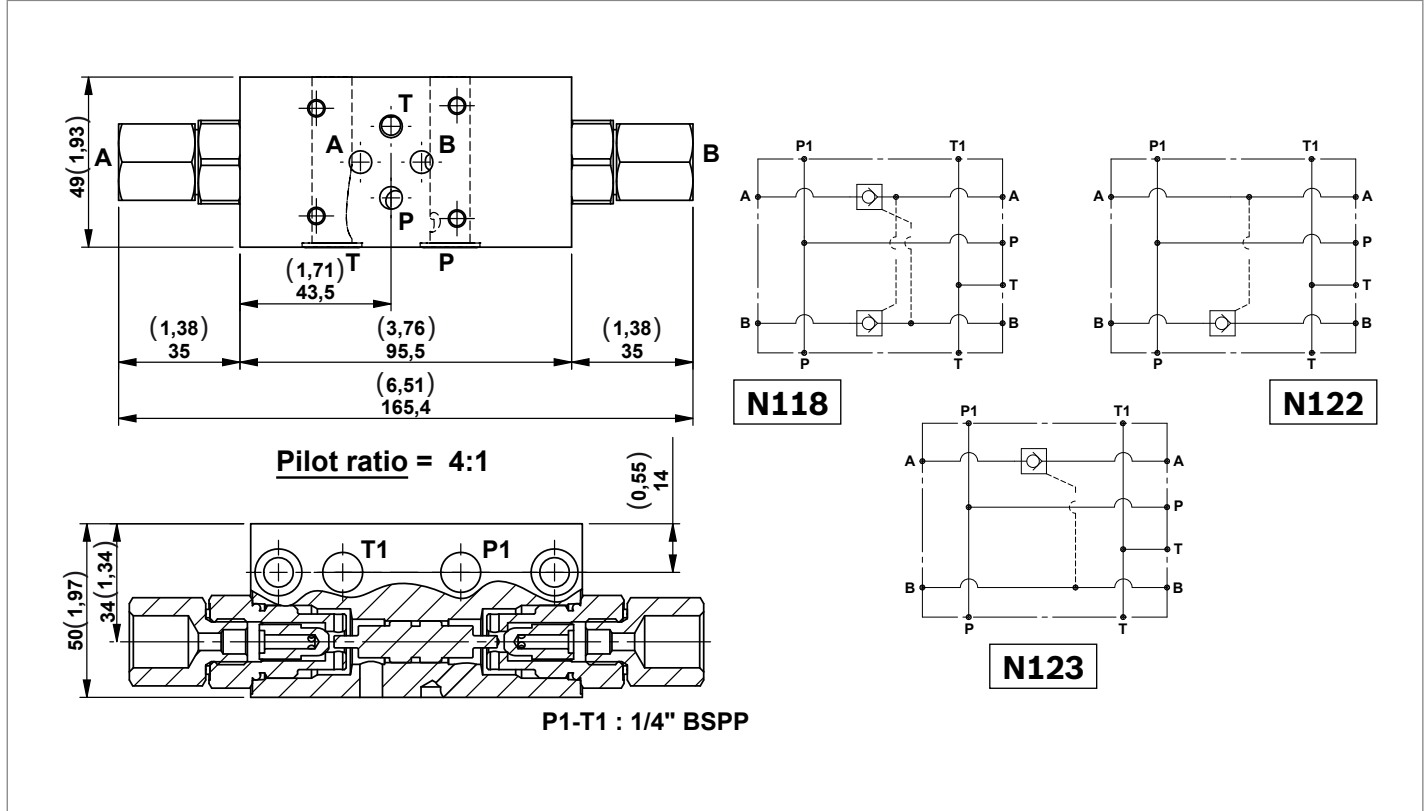
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N142	Modular block for CETOP 3 (2143) configuration valves with side ports	300 (4351)	40 (10,57)	G386142000	R932001252

Modular block with poppet type P.O. check valves for CETOP 3 (2143) configuration valves (parallel circuit)

A selection of modular block with P.O. check valves for block CETOP 3 (2143) electrovalves.

Each block includes 2 OR 2056 gaskets.

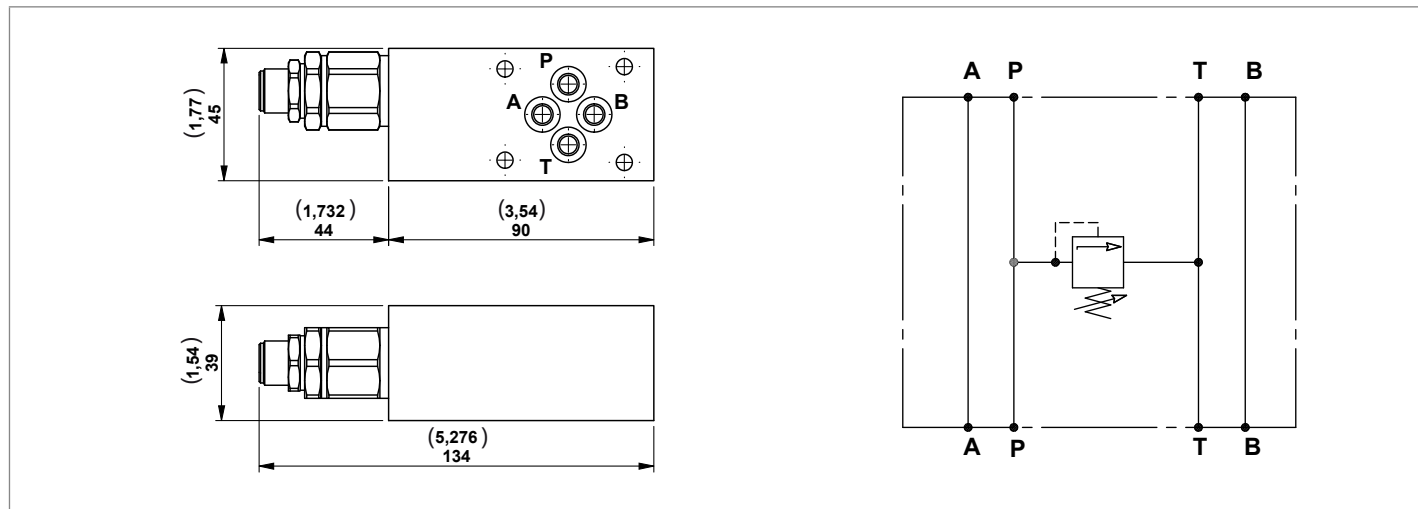
Possibility to have an OR gasket on the piloting piston for application with low flow.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N118-38	Modular block with poppet type P.O. check valves on A-B for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 3/8" BSPP)	300 (4351)	20 (5,28)	G386118A02	R932001217
N118G-38	Modular block with poppet type P.O. check valves on A-B for CETOP 3 (2143) configuration valves (with O-ring on pilot piston and A-B 3/8" BSPP)	300 (4351)	20 (5,28)	G386118B02	R932001222
N118-14	Modular block with poppet type P.O. check valves on A-B for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 1/4" BSPP)	300 (4351)	20 (5,28)	G386118A03	R932001218
N118G-14	Modular block with poppet type P.O. check valves on A-B for CETOP 3 (2143) configuration valves (with O-ring on pilot piston and A-B 1/4" BSPP)	300 (4351)	20 (5,28)	G386118B03	R932001223
N122-38	Modular block with poppet type P.O. check valve on B for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 3/8" BSPP)	300 (4351)	20 (5,28)	G386122A02	R932001233
N122-14	Modular block with poppet type P.O. check valve on B for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 1/4" BSPP)	300 (4351)	20 (5,28)	G386122A01	R932001232
N123-38	Modular block with poppet type P.O. check valves on A for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 3/8" BSPP)	300 (4351)	20 (5,28)	G386123A02	R932001237
N123-14	Modular block with poppet type P.O. check valves on A for CETOP 3 (2143) configuration valves (without O-ring on pilot piston and A-B 1/4" BSPP)	300 (4351)	20 (5,28)	G386123A01	R932001236

Sandwich blocks with poppet type “VMD1” relief valves for CETOP 3 (2143) configuration valves

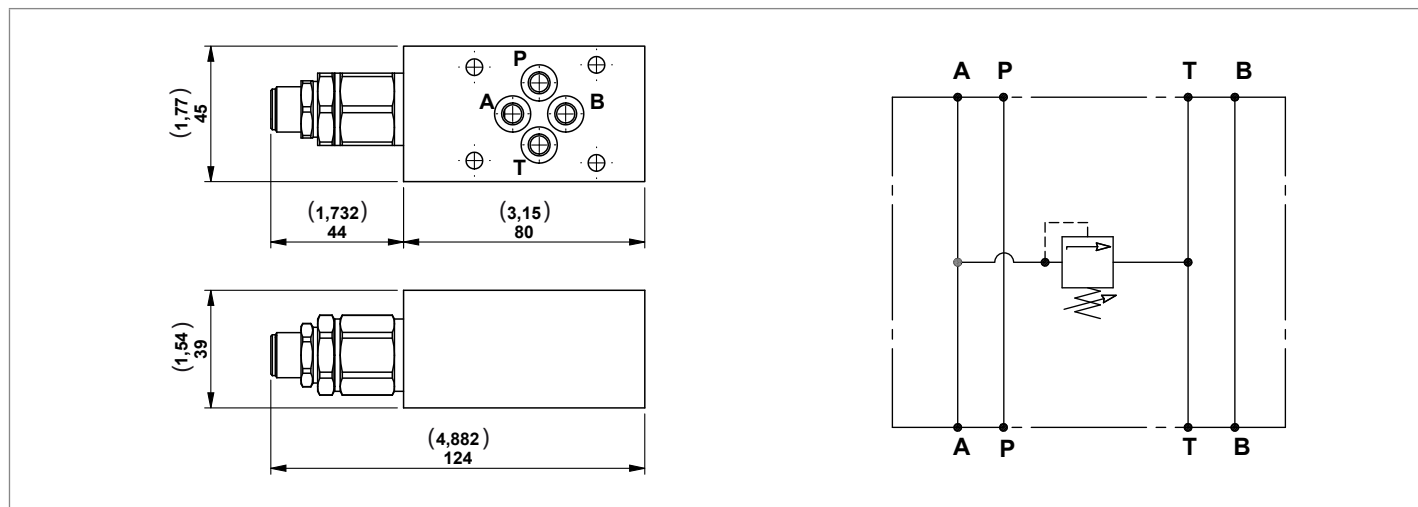
Each block includes 4 OR 108 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N99-10	Sandwich block with poppet type "VMD1" relief valve P in T (25-120 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386098A81A	R930071372
N99-20	Sandwich block with poppet type "VMD1" relief valve P in T (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386098A82A	R930071373
N99-35	Sandwich block with poppet type "VMD1" relief valve P in T (200-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386098A83A	R930071376

Sandwich blocks with poppet type “VMD1” relief valves for CETOP 3 (2143) configuration valves

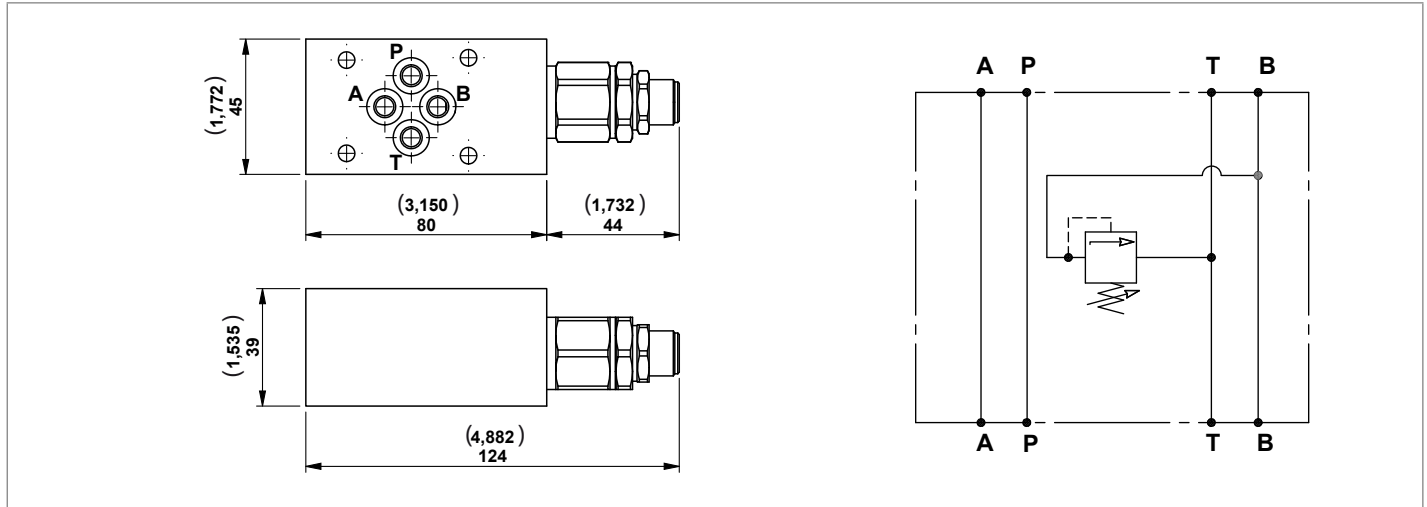
Each block includes 4 OR 108 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N100-10	Sandwich block with poppet type "VMD1" relief valve A in T (25-120 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386099A81A	R930071377
N100-20	Sandwich block with poppet type "VMD1" relief valve A in T (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386099A82A	R930071378
N100-35	Sandwich block with poppet type "VMD1" relief valve A in T (200-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386099A83A	R930071379

Sandwich blocks with poppet type “VMD1” relief valves for CETOP 3 (2143) configuration valves

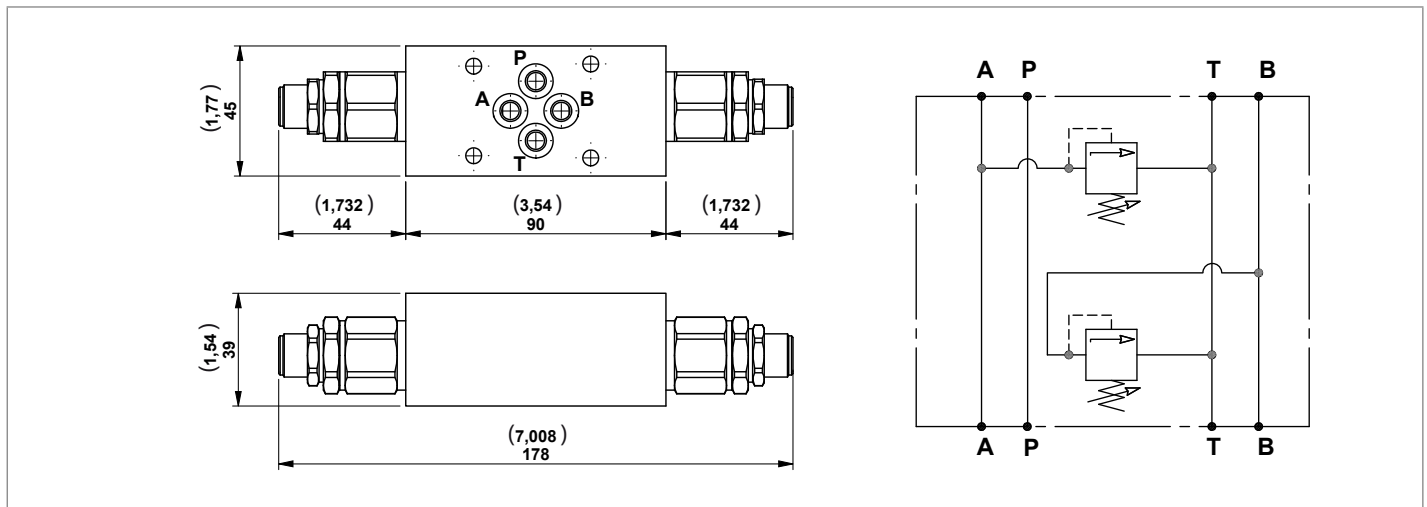
Each block includes 4 OR 108 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N101-10	Sandwich block with poppet type "VMD1" relief valve B in T (25-120 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386101A81A	R930071380
N101-20	Sandwich block with poppet type "VMD1" relief valve B in T (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386101A82A	R930071381
N101-35	Sandwich block with poppet type "VMD1" relief valve B in T (200-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386101A83A	R930071382

Sandwich blocks with poppet type “VMD1” relief valves for CETOP 3 (2143) configuration valves

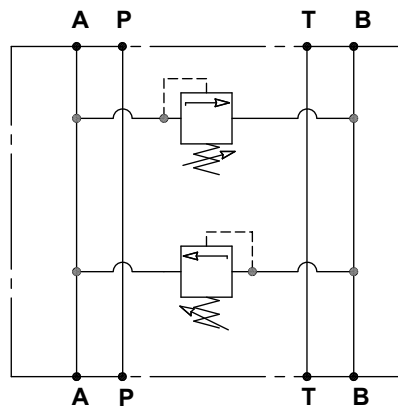
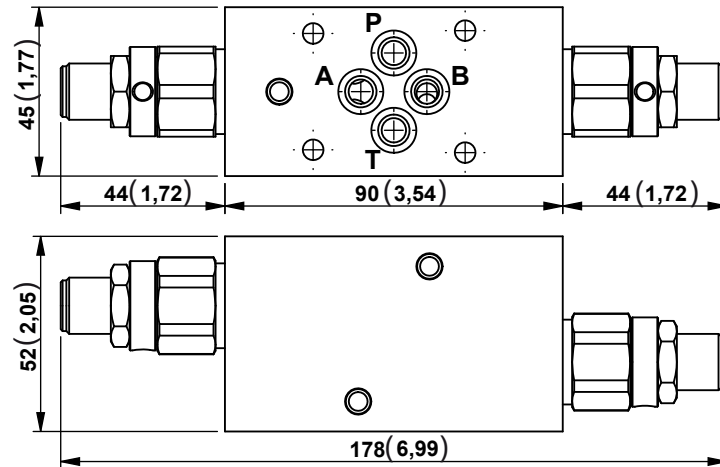
Each block includes 4 OR 108 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N102-10	Sandwich block with poppet type "VMD1" relief valves A-B in T (25-120 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386102A81A	R930071383
N102-20	Sandwich block with poppet type "VMD1" relief valves A-B in T (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386102A82A	R930071384
N102-35	Sandwich block with poppet type "VMD1" relief valves A-B in T (200-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386102A83A	R930071385

Sandwich blocks with poppet type “VM25” relief valves for CETOP 3 (2143) configuration valves

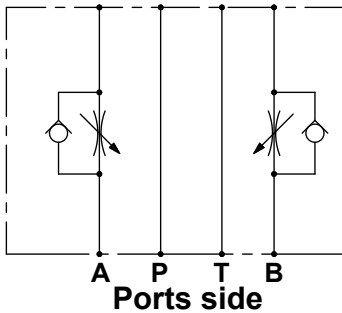
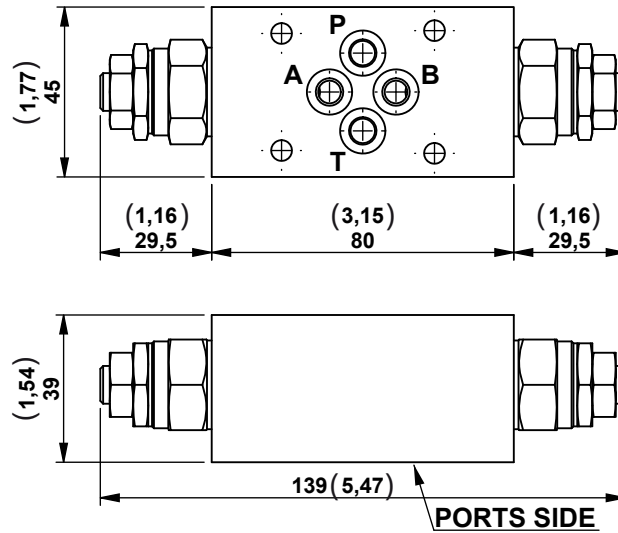
Each block includes 4 OR 108 gaskets.



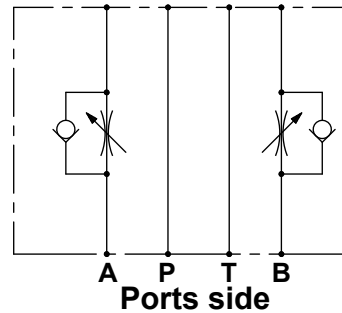
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N103-10	Sandwich block with poppet type "VM25" relief valves A in B and B in A (10-100 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386103A81	R932001202
N103-20	Sandwich block with poppet type "VM25" relief valves A in B and B in A (40-200 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386103A82	R932001203
N103-35	Sandwich block with poppet type "VM25" relief valves A in B and B in A (70-350 bar) for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386103A83	R932001204

Sandwich blocks with “ST-CU-06” adjustable flow control valves for CETOP 3 (2143) configuration valves

Each block includes 4 OR 108 gaskets.



N78

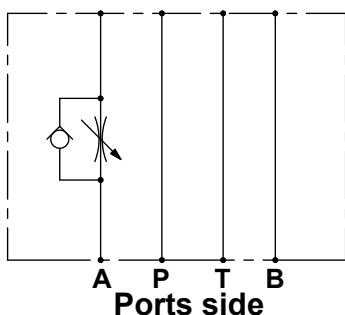
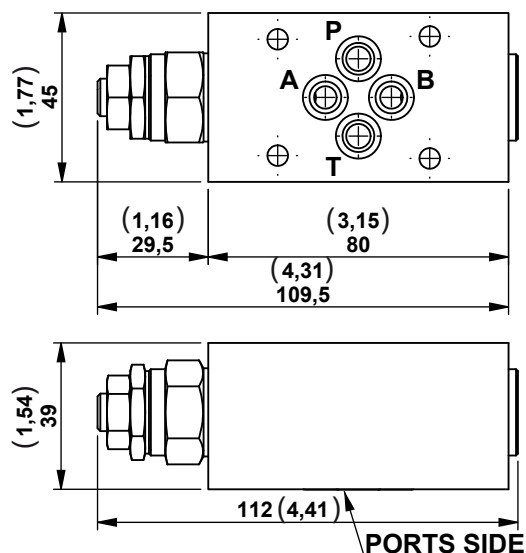


N104

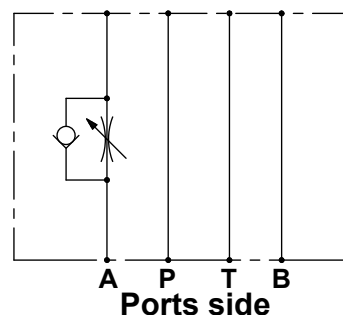
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N78	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the return to the tank of the A and B line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386077A81	R932001156
N104	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the delivery of the A and B line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386104A80	R932001205

Sandwich blocks with “ST-CU-06” adjustable flow control valves for CETOP 3 (2143) configuration valves

Each block includes 4 OR 108 gaskets.



N105

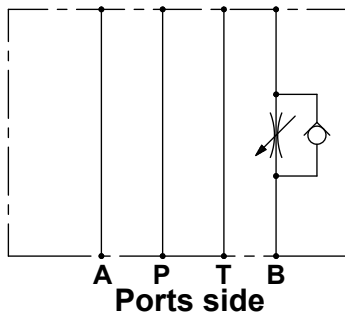
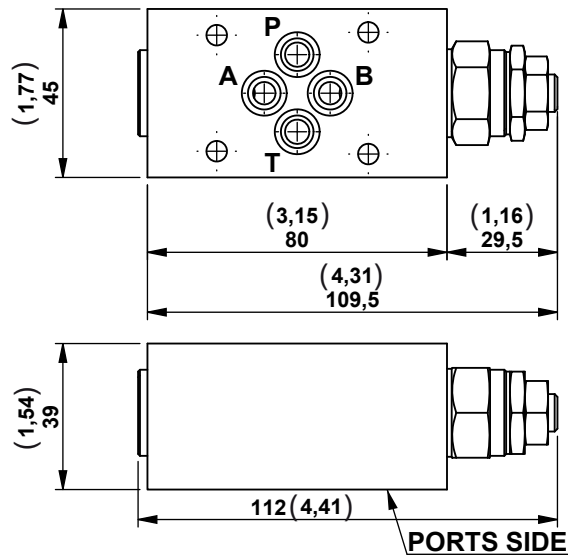


N107

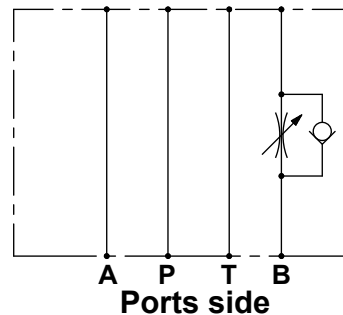
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N105	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the return to the tank of the A line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386105A81	R932000183
N107	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the delivery of the A line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386107A80	R932001211

Sandwich blocks with “ST-CU-06” adjustable flow control valves for CETOP 3 (2143) configuration valves

Each block includes 4 OR 108 gaskets.



N106

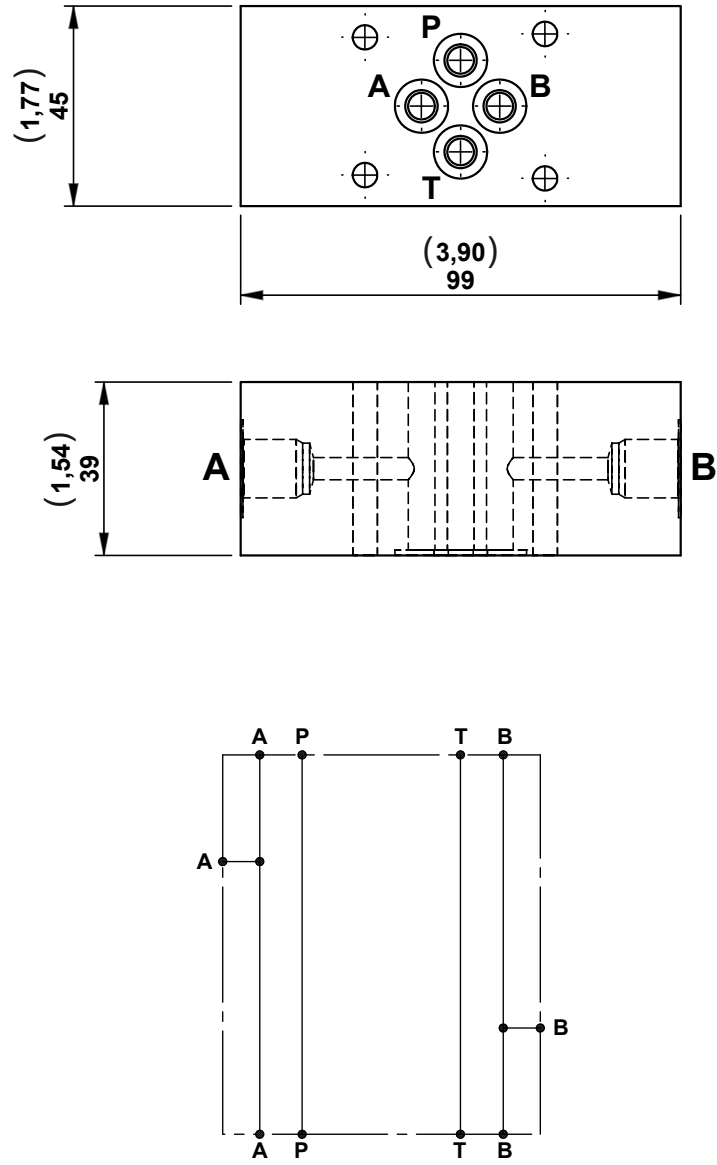


N108

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N106	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the return to the tank of the B line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386106A81	R932000184
N108	Sandwich blocks with ST-CU-06 adjustable flow control valves (that working on the delivery of the B line) for CETOP 3 (2143) configuration valves	300 (4351)	25 (6,60)	G386108A80	R932001212

Sandwich block with ports on “A” and “B” line for CETOP 3 (2143) configuration valves

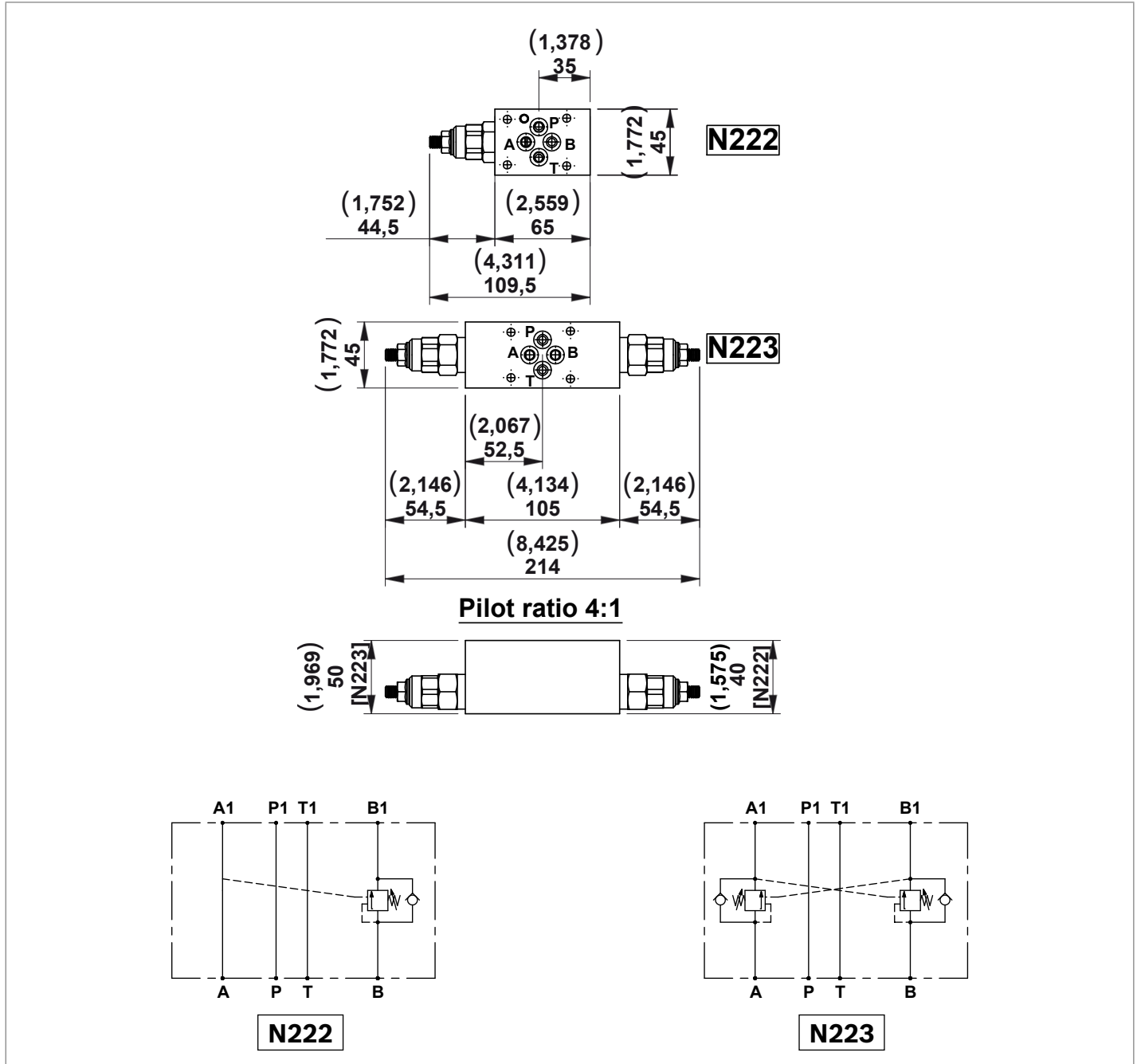
Each block includes 2 OR 2056 gaskets.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N19-14	Sandwich block with 1/4" BSPP ports on A and B line for CETOP3 (2143) configuration valves	300 (4351)	25 (6,60)	G386018010	R932001091

Sandwich blocks with overcenter valves for CETOP 3 (2143) configuration valves

Each block includes 4 OR 108 gaskets.

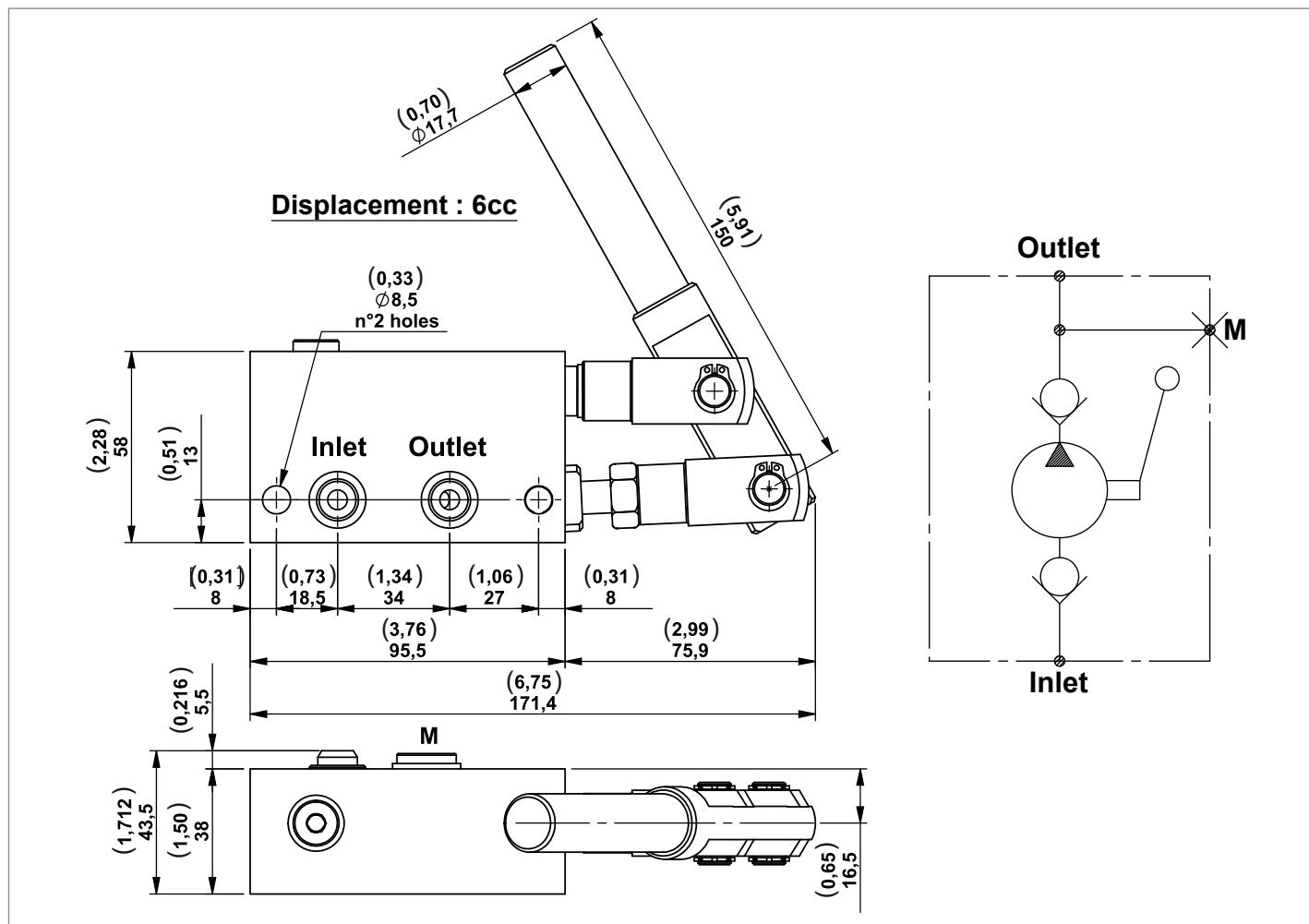


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N222.20	Sandwich block with Overcentre valve VBSN-08AA (100-210 bar) on B line for CETOP3	300 (4351)	30 (7,93)	G386222002	R932001326
N222.35	Sandwich block with Overcentre valve VBSN-08AA (200-350 bar) on B line for CETOP3	300 (4351)	30 (7,93)	G386222003	R932001327
N223.20	Sandwich block with Overcentre valves VBSN-08AA (100-210 bar) on A and B line for CETOP3	300 (4351)	30 (7,93)	G386223002	R932001329
N223.35	Sandwich block with Overcentre valves VBSN-08AA (200-350 bar) on A and B line for CETOP3	300 (4351)	30 (7,93)	G386223003	R932001330

Modular hand pump manifold block

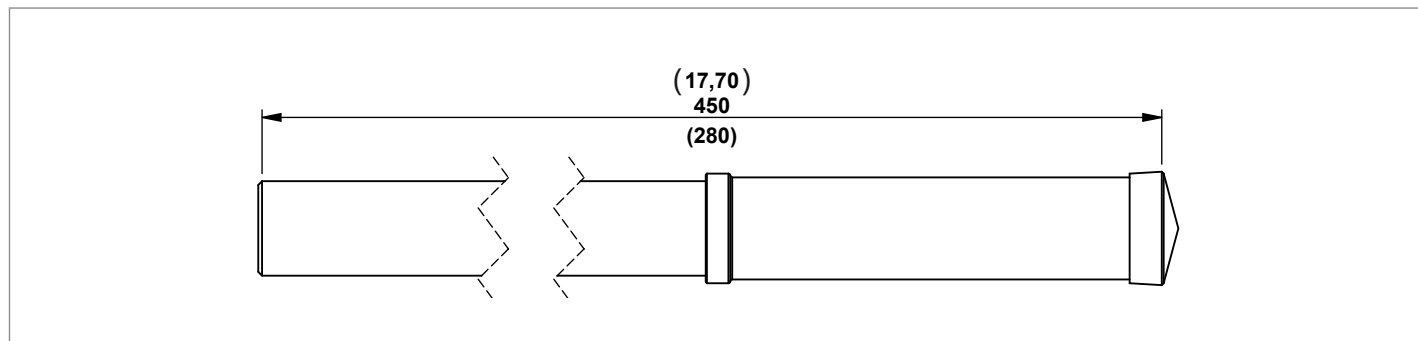
A single acting hand pump usually used for emergency.

Each block includes 5 OR 2050 gaskets.



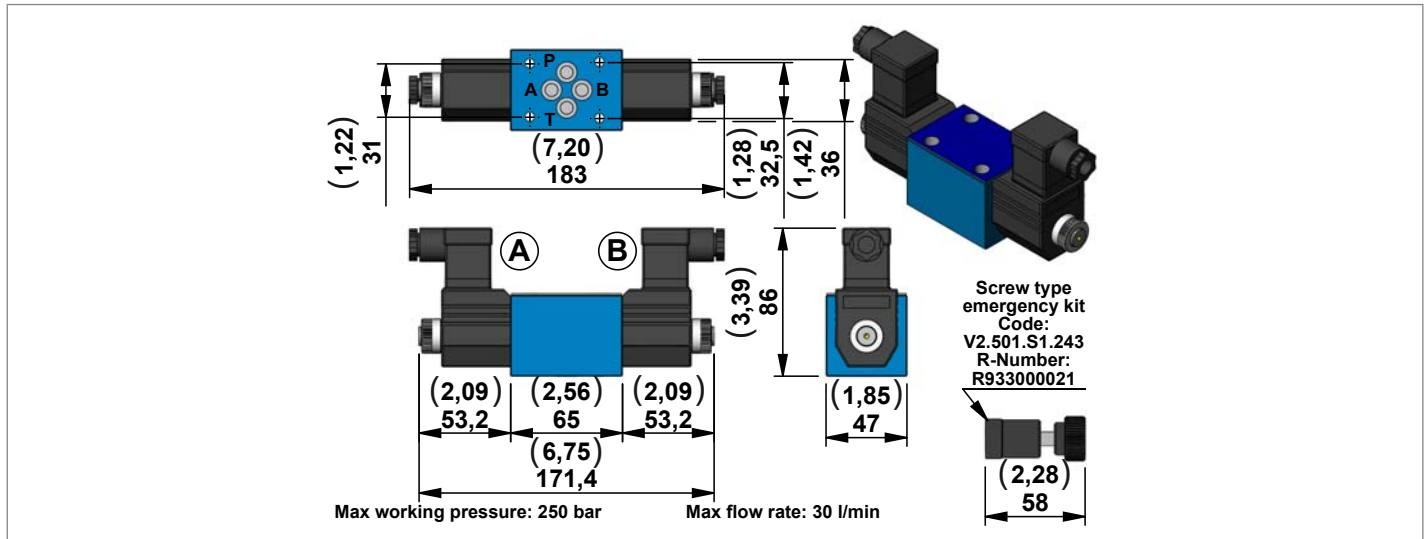
Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
N22	Modular hand pump manifold block	350 (5076)	-	G386021A10	R930067575

Lever Kit



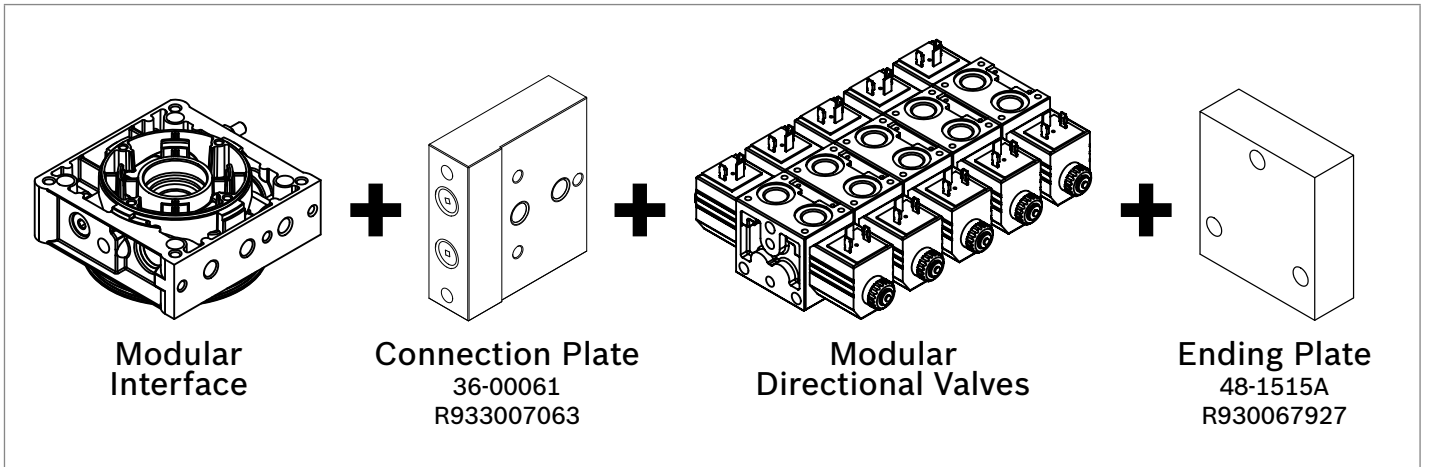
Description	Type	Material number
Lever L= 450	K250133000	R932002452
Lever L= 280	K2501S1058	R932002407

CETOP 2143 [Ø6mm (0,24inch)] Solenoid Valves

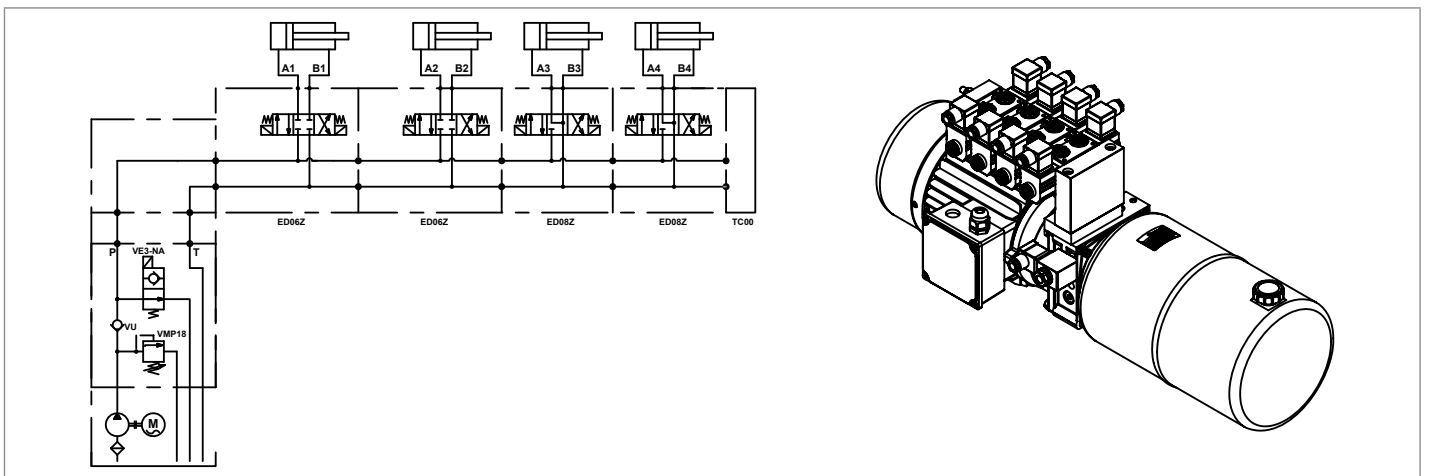


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Material number	Diagram
E02Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004275	
E02Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004277	
E02Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004279	
E02Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004281	
E06Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004096	
E06Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004098	
E06Z-OD	CETOP3 solenoid valve 48V D.C.	250 (3626)	30 (7,92)	R933007830	
E06Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004102	
E06Z-OW	CETOP3 solenoid valve 110V RAC	250 (3626)	30 (7,92)	R933004103	
E06Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004104	
E07Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004131	
E07Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004133	
E07Z-OD	CETOP3 solenoid valve 48V D.C.	250 (3626)	30 (7,92)	R933004135	
E07Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004136	
E07Z-OW	CETOP3 solenoid valve 110V RAC	250 (3626)	30 (7,92)	R933004137	
E07Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004138	
E08Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004191	
E08Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004193	
E08Z-OD	CETOP3 solenoid valve 48V D.C.	250 (3626)	30 (7,92)	R933004197	
E08Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004198	
E08Z-OW	CETOP3 solenoid valve 110V RAC	250 (3626)	30 (7,92)	R933004199	
E08Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004200	
E10Z-OB	CETOP3 solenoid valve 12V D.C.	250 (3626)	30 (7,92)	R933004057	
E10Z-OC	CETOP3 solenoid valve 24V D.C.	250 (3626)	30 (7,92)	R933004061	
E10Z-OD	CETOP3 solenoid valve 48V D.C.	250 (3626)	30 (7,92)	R933004063	
E10Z-OV	CETOP3 solenoid valve 24V RAC	250 (3626)	30 (7,92)	R933004065	
E10Z-OW	CETOP3 solenoid valve 110V RAC	250 (3626)	30 (7,92)	R933004067	
E10Z-OZ	CETOP3 solenoid valve 220V RAC	250 (3626)	30 (7,92)	R933004068	

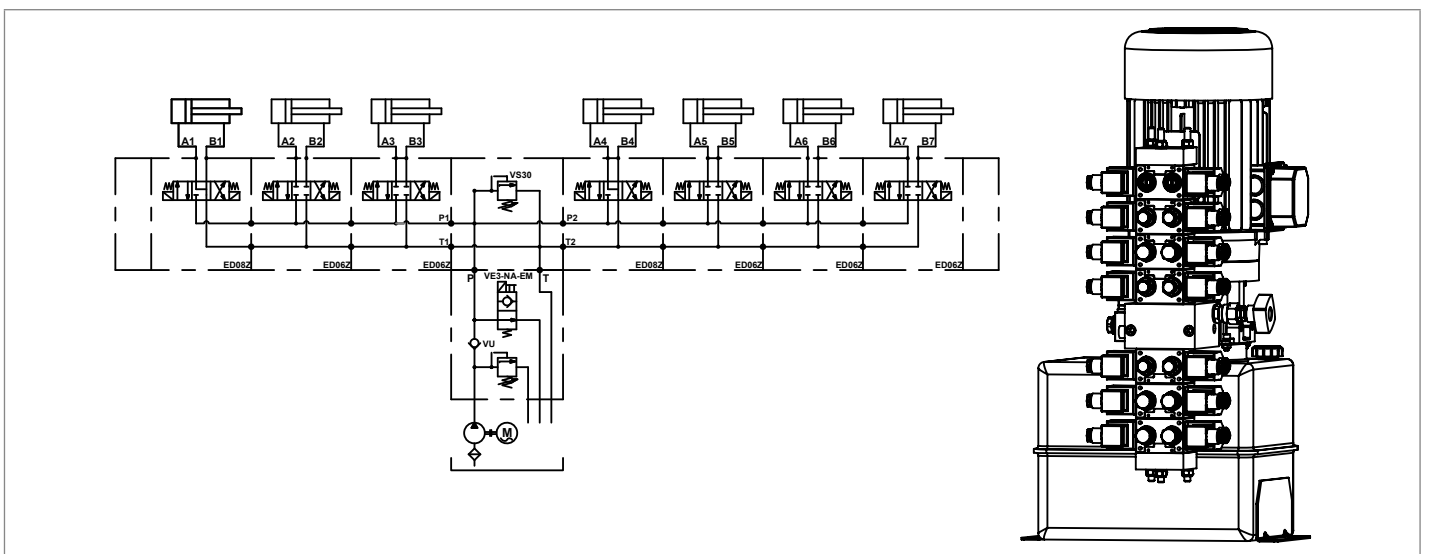
Design



Horizontal Example



CETOP 2143 [Ø6mm (0,24inch)] Solenoid Valves



Note
Please contact our Sales Department for further information.

Modular blocks with two lowering solenoid valves, check valves, and compensated flow control throttle valves (available upon request)

Modular blocks to operate a single acting cylinder in a parallel circuit or a double acting cylinder in regenerative.

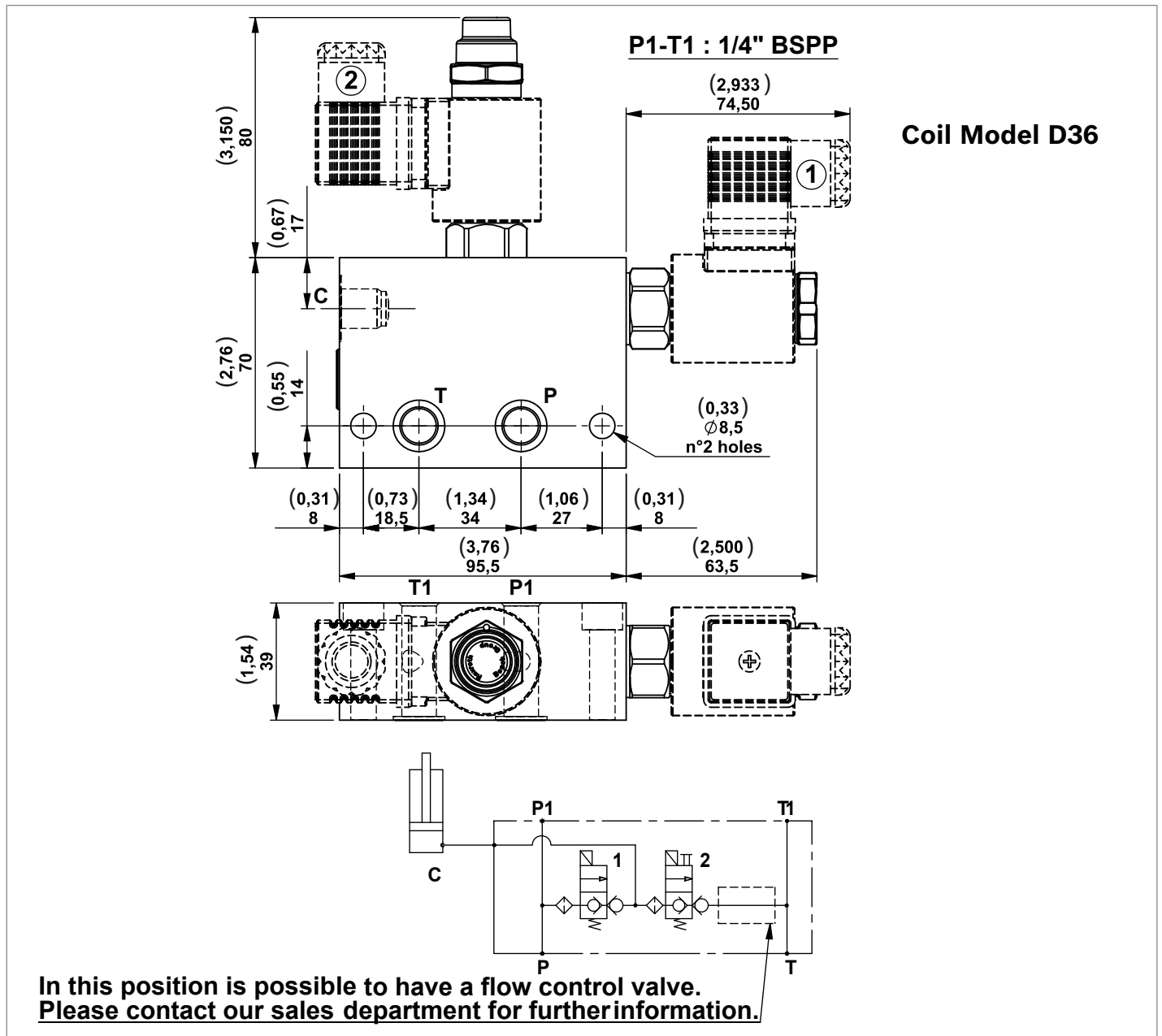
Each block includes 2 OR 2056 gaskets.

Minimum voltage required: 90% of nominal.

Coils not included, must be ordered separately.

For the selection of coil model and voltage please refer to page 65.

For the selection of connectors please refer to page 69.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
V07-14	Modular block with 2 VE with "C" port 1/4" BSPP	250 (3626)	25 (6,60)	G386507010A	R930062154
V07-38	Modular block with 2 VE with "C" port 3/8" BSPP	250 (3626)	25 (6,60)	G386507020A	R930064959

Modular blocks with four way three position solenoid valve. Spool type

A selection of modular blocks with 4/3 spool type solenoid valve for small double acting cylinders.

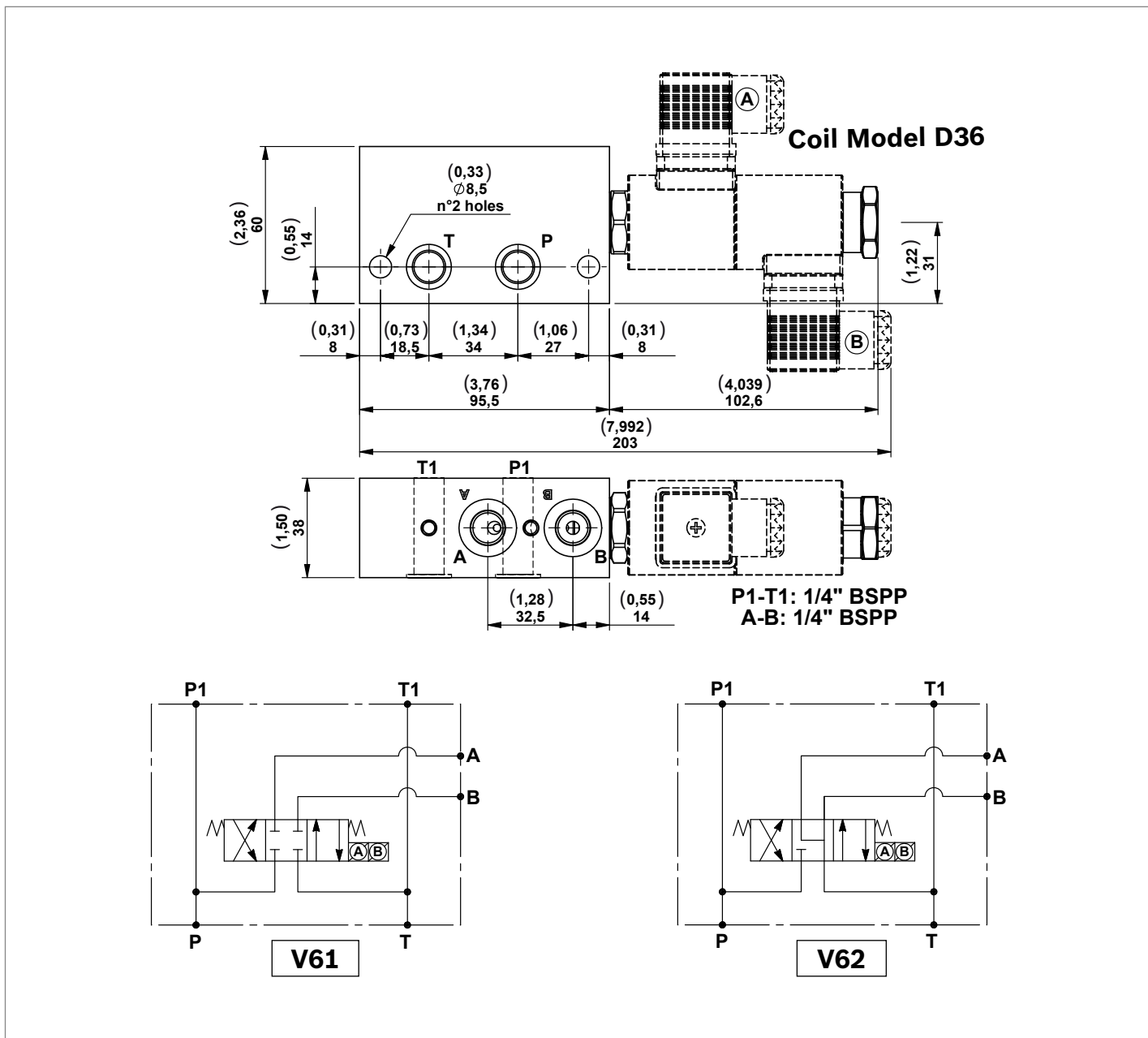
Each block includes 2 OR 2056 gaskets.

Minimum voltage required: 90% of nominal.

Coils not included, must be ordered separately.

For the selection of coil model and voltage please refer to page 65.

For the selection of connectors please refer to page 69.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
V61	Modular block with 4 way 3 position electric valve (V4.3A)	210 (3046)	10 (2,64)	G386562010A	R930063648
V62	Modular block with 4 way 3 position electric valve (V4.3B)	210 (3046)	10 (2,64)	G386563010A	R930067006

Modular block with four way three position solenoid valve and P.O. check valves on “A” and “B” line

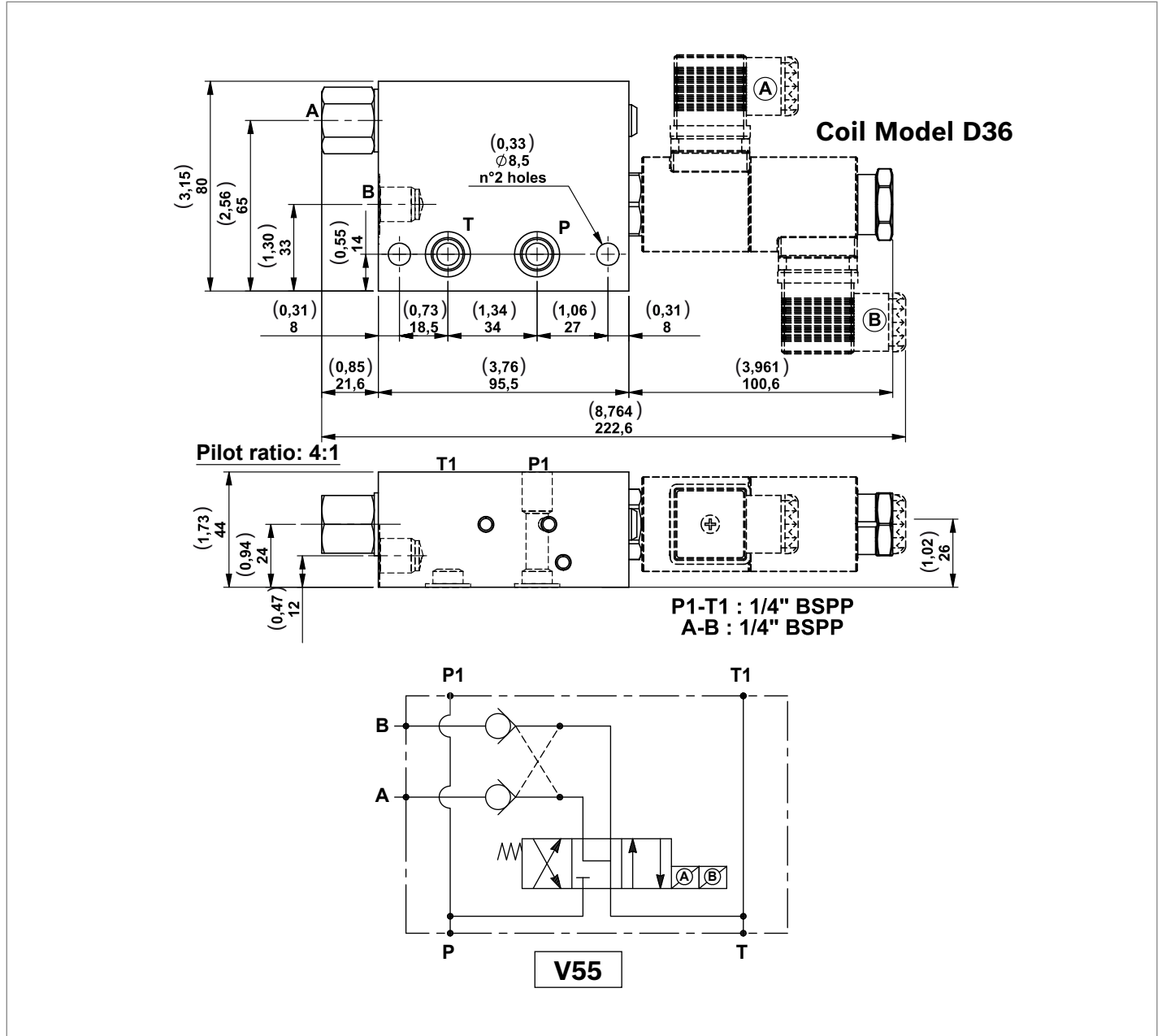
A modular block with 4/3 spool type solenoid valve and P.O. check valves on “A” and “B” line. For small double acting cylinders. Each block includes 2 OR 2056 gaskets.

Minimum voltage required: 90% of nominal.

Coils not included, must be ordered separately.

For the selection of coil model and voltage please refer to page 65.

For the selection of connectors please refer to page 69.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
V55	Modular block with 4 way 3 position electric valve and P.O. check valves on A and B without O-Ring on pilot piston	210 (3046)	10 (2,64)	G386591A10A	R930066516

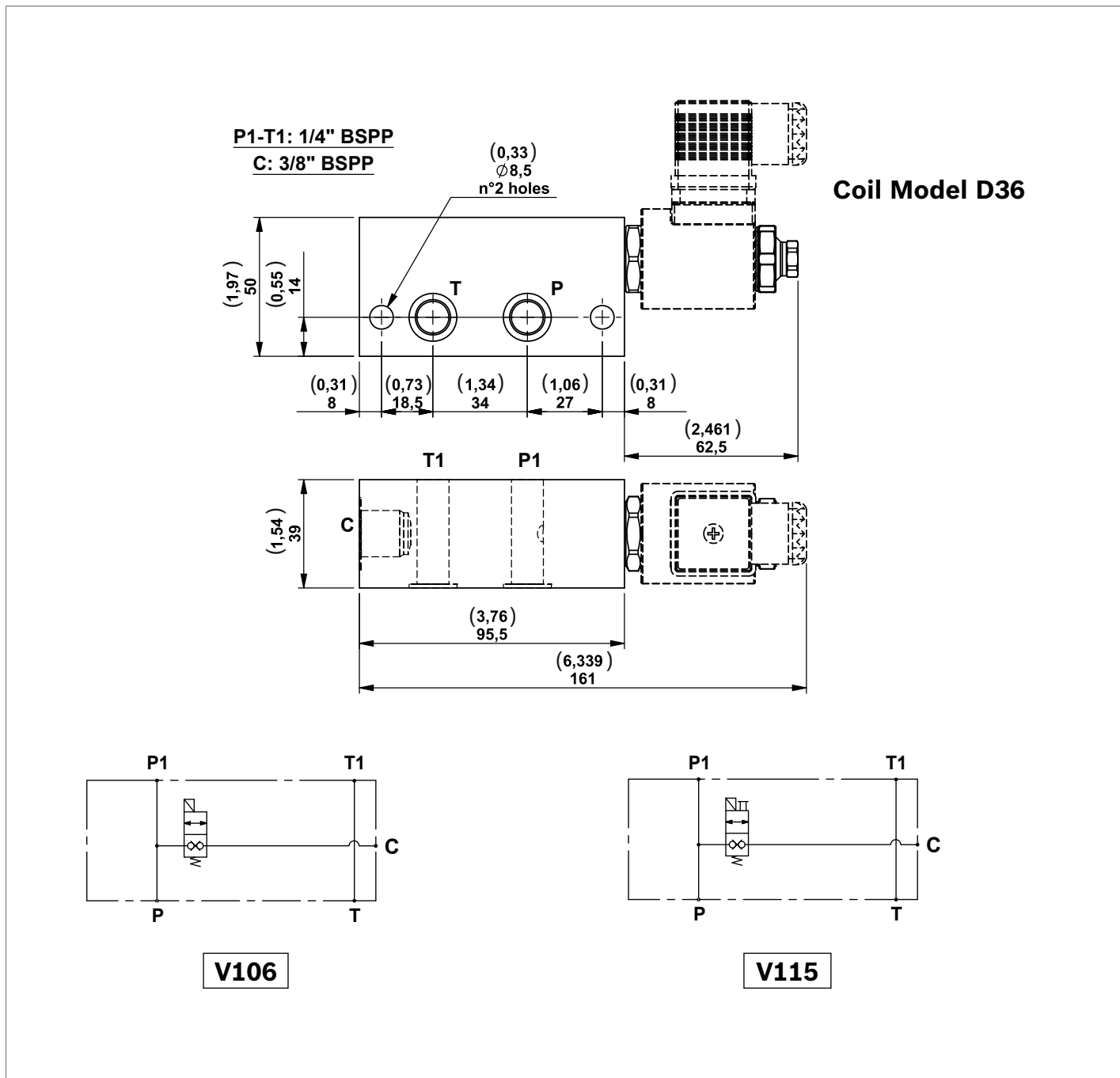
Modular blocks with double locking solenoid valve

Each block includes 2 OR 2056 gaskets.

Coils not included, must be ordered separately.

For the selection of coil model and voltage please refer to page 65.

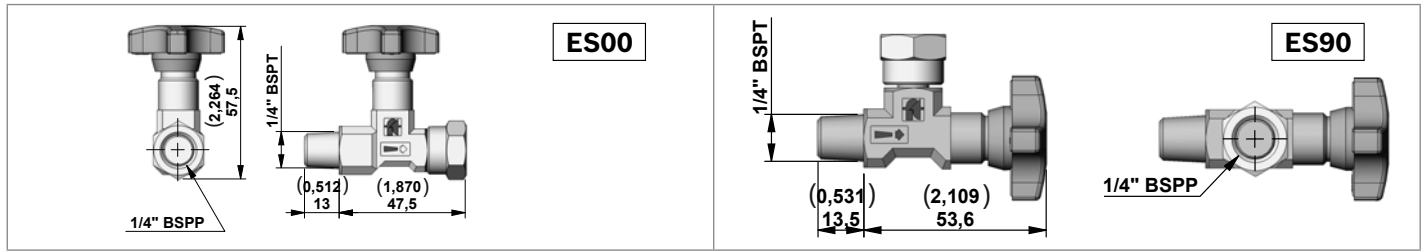
For the selection of connectors please refer to page 69.



Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
V106	Modular block with DT solenoid valve	250 (3626)	15 (3,96)	G386606020A	R930064757
V115	Modular block with DTE solenoid valve	250 (3626)	15 (3,96)	1586500023A	R930061374

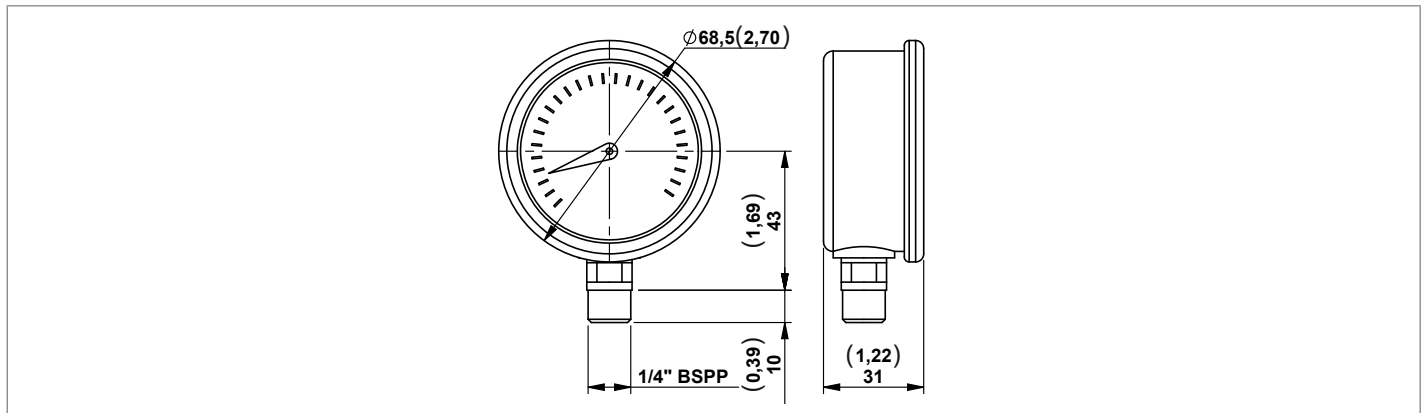
Accessories

Isolator

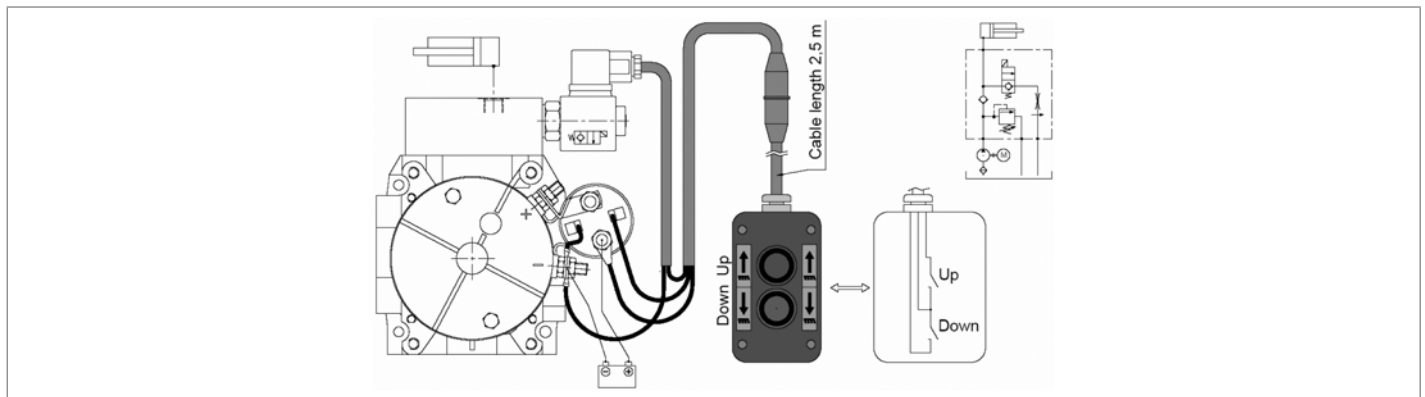


Code	Description	Type	Material Number
ES00	Straight isolator	EM14A	R930069418
ES90	90° isolator	EM14A-T	R930069419

Manometer

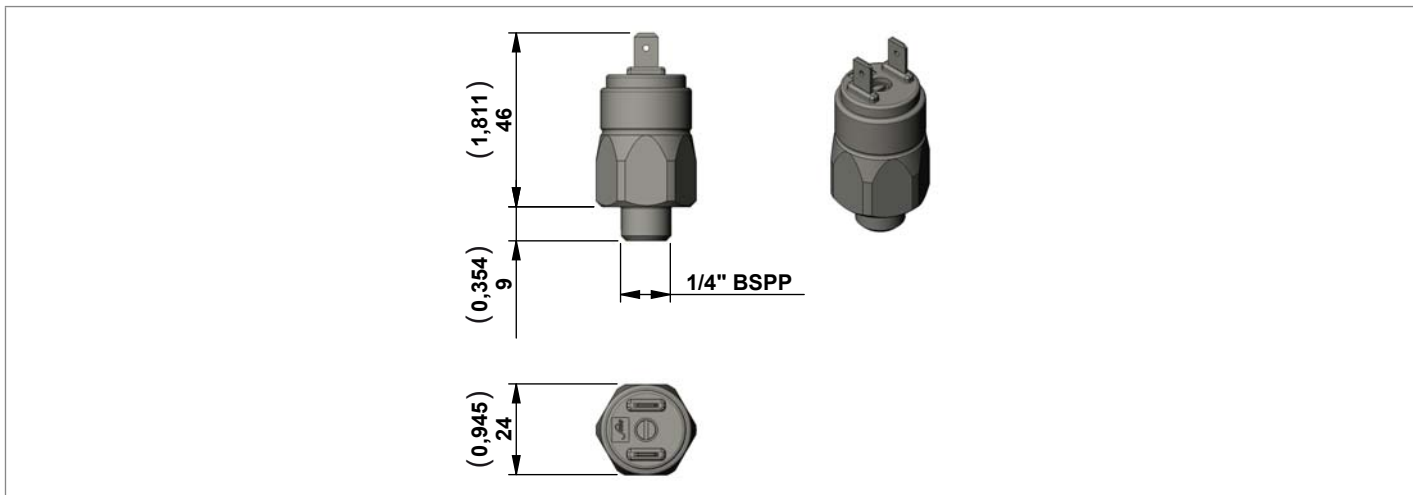


Code	Description	Pressure range bar (psi)	Type	Material Number
MN100	Pressure gauge	0-100 (0-1450)	C163017000	R932000582
MN160	Pressure gauge	0-160 (0-2320)	C163018000	R932000583
MN250	Pressure gauge	0-250 (0-3626)	C163019000	R932000584
MN315	Pressure gauge	0-315 (0-4568)	C163020000	R932000585



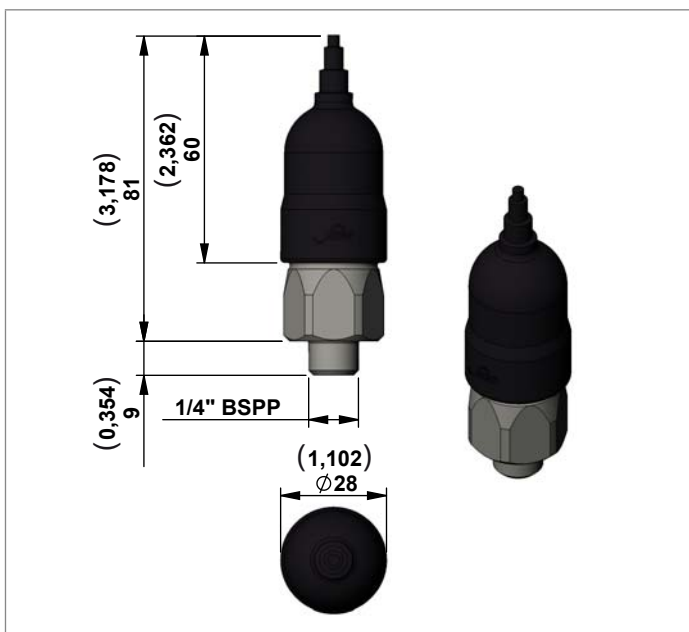
Description	Type	Material Number
Cables for D.C. motor and single acting cylinder	K2.501S1.218	R932002428

Standard Pressure Switches



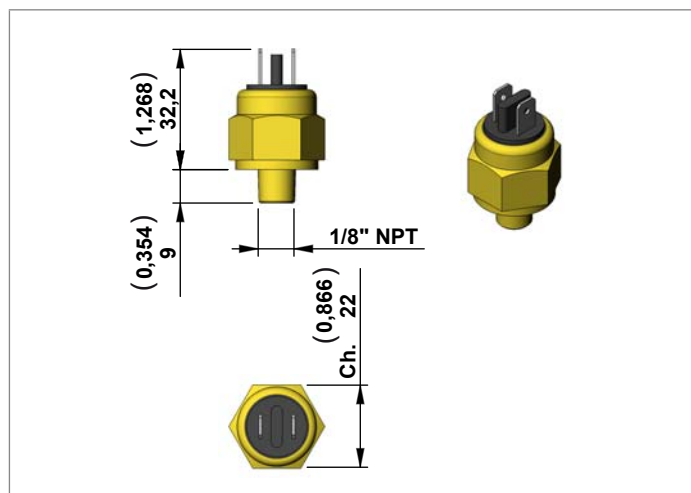
Code	Adjustment Range bar (psi)	Contact Type	Internal Features	Protection (with protective cap assembled)	Type	Material Number
PRNO20	10-20 (145-290)	N.O.	Diaphragm	IP65	C164761000	R932010002
PRNC20	10-20 (145-290)	N.C.	Diaphragm	IP65	C164766000	R932010001
PRNO50	20-50 (290-725)	N.O.	Diaphragm	IP65	C164767000	R932010003
PRNC50	20-50 (290-725)	N.C.	Diaphragm	IP65	C164768000	R932010004
PRNO150	50-150 (725-2175)	N.O.	Piston	IP65	C164769000	R932010005
PRNC150	50-150 (725-2175)	N.C.	Piston	IP65	C164770000	R932010006

Protective Cap for Standard Pressure Switches



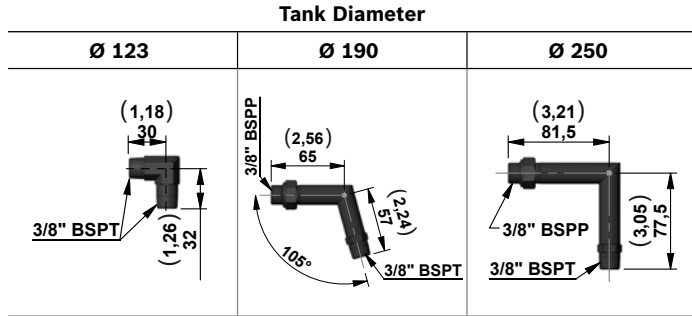
Code	Type	Material Number
CAP	F224013000	R932010000

Pressure Switches for manifold A9

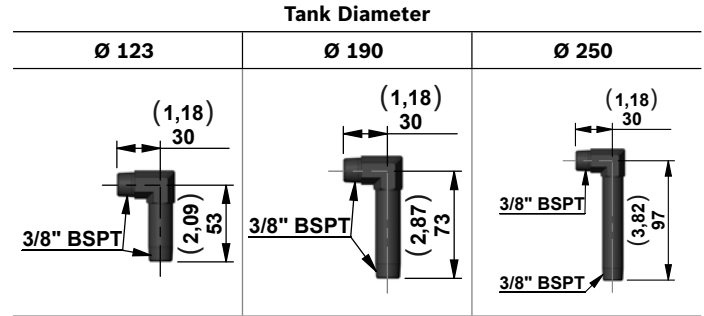


Code	Fixed Pressure Setting bar (psi)	Contact Type	Protection	Type	Material Number
PRDU	3 (44)	N.O.	IP00	C16470200A	R932008313

Horizontal Suction, Plastic Pipe



Central Manifold	Oil tank diameter mm (inch)	Type	Material Number
K	123 (4,84)	K2340S2144	R932006770
	190 (7,48)	K2501S1060	R932002408
	250 (9,84)	K2501S1061	R932002409



Central Manifold	Oil tank diameter mm (inch)	Type	Material Number
KE	123 (4,84)	K2340S2145	R932006771
	190 (7,48)	K2340S2146	R932006772
	250 (9,84)	K2340S2147	R932006773

Vertical Suction, Plastic Pipe

Central Manifold	H mm (inch)	Type	Material Number	Drawing ref.	Drawing
KE - K	32 (1,26)	K234069000	R932002347	B	
	37 (1,46)	K2340S2130	R932002303	A	
	40 (1,58)	K2340S2123	R932002299	A	
	47 (1,85)	K234073000	R932002349	B	
	49 (1,93)	K2340S2118	R932002297	A	
	60 (2,36)	K2340S2129	R932002302	A	
	69 (2,72)	K2340S2172	R932011025	A	
	71 (2,80)	K2340S2131	R932002304	A	
	76 (2,99)	K234074000	R932002350	B	
	80 (3,15)	K2340S2132	R932002305	A	
	90 (3,54)	K2340S2192	R930056927	A	
	98 (3,86)	K234076000	R932002351	B	
	109 (4,29)	K234079000	R932002352	B	
	111 (4,37)	K2340S2133	R932002306	A	
	121 (4,76)	K2340S2110	R932002289	A	
	129 (5,08)	K234072000	R932002348	B	
	134 (5,28)	K2340S2121	R932002298	A	
	144 (5,67)	K234063000	R932002343	B	
	157 (6,18)	K2340S2134	R932002307	A	
	167 (6,58)	K2340S2135	R932002308	A	
	175 (6,89)	K2340S2111	R932002290	A	
	182 (7,17)	K2340S2136	R932002309	A	
	194 (7,64)	K234066000	R932002345	B	
	202 (7,95)	K2340S2137	R932002310	A	
	211 (8,31)	K234064000	R932002344	B	
	222 (8,74)	K2340S2125	R932002300	A	
	237 (9,33)	K2340S2112	R932002291	A	
	245 (9,65)	K2340S2138	R932002311	A	
	255 (10,04)	K2340S2139	R932002312	A	
	284 (11,18)	K2340S2113	R932002292	A	
	297 (11,69)	K2340S2140	R932002313	A	
	317 (12,48)	K2340S2114	R932002293	A	
	334 (13,15)	K2340S2115	R932002294	A	
	345 (13,58)	K2340S2141	R932002314	A	
	355 (13,98)	K2340S2116	R932002295	A	
	373 (14,69)	K2340S2142	R932002315	A	
	382 (15,04)	K2340S2117	R932002296	A	
	402 (15,83)	K2340S2128	R932002301	A	

Vertical Suction, Steel Pipe

Central Manifold	H mm (inch)	Type	Material Number	Drawing
KE - K	86 (3,39)	K234006000	R932009324	
	100 (3,94)	K234081000	R932002353	
	110 (4,33)	K234083000	R932002355	
	117 (4,61)	K2340S2162	R932009323	
	150 (5,91)	K234004000	R932002317	
	160 (6,30)	K2340S2151	R932008456	
	178 (7,01)	K234086000	R932002356	
	212 (8,35)	K234093000	R932002360	
	260 (10,24)	K234087000	R932002357	
	287 (11,30)	K234071000	R932006600	
	348 (13,70)	K2340S2027	R932002272	
	357 (14,05)	K234092000	R932002359	
	385 (15,16)	K234062000	R932002342	
	520 (20,47)	K2340S2047	R932008033	

Suction Filter

Compatibility	Filtering Degree (µm)	Max Flow l/min (gpm)	Type	Material Number	Drawing
KE - K	90	8 (2,11)	K225582000	R932010860	
	90	15 (3,96)	K225566000	R932002243	

Horizontal Return, Steel Pipe

L mm (inch)	H mm (inch)	Type	Material Number	Drawing
120 (4,72)	45 (1,77)	K234716000	R932002375	
134 (5,28)	90 (3,54)	K234717000	R932002376	
170 (6,69)	90 (3,54)	K234727000	R932002383	

Vertical Return, Plastic Pipe

H mm (inch)	Type	Material Number	Drawing ref.	Drawing
100 (3,94)	K234715000	R932002374	A	
110 (4,33)	K234780000	R932011081	B	
120 (4,72)	K234781000	R932011082	B	
150 (5,91)	K234714000	R932002373	A	
160 (6,30)	K234782000	R932011083	B	
200 (7,87)	K234713000	R932002372	A	
250 (9,84)	K234784000	R932011084	B	
300 (11,81)	K234785000	R932011085	B	
400 (15,75)	K234786000	R932011086	B	

Vertical Return, Steel Pipe

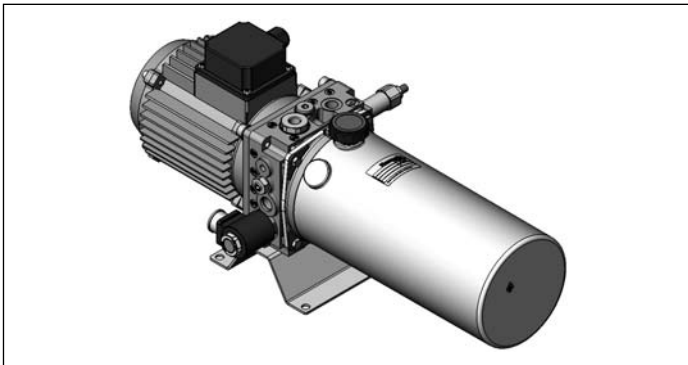
H mm (inch)	Type	Material Number	Drawing
250 (9,84)	K234718000	R932002377	
300 (11,81)	K234719000	R932002378	
400 (15,75)	K234722000	R932002379	

Compact power modules DL series

RE 18306-03

Edition: 12.18

Replaces: 08.14



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- 2 **DL series** | Compact power modules
 Ordering details for compact power modules for dock leveller with hinged lip (manifold code 66-67)

Ordering details for compact power modules for dock leveller with hinged lip (manifold code 66-67)

01	02	03	04	05	06	07	08	09	
DL	----	-	----	-	___/__(---)	-	----	-	___/___

Family

01	Power module type	DL
----	-------------------	----

A.C. Electric motor

02	Select the required AC motor shown in the catalogue. (See page 11)	
----	--	--

Junction Elements

03	The code of the Junction Element is shown in the page after the selected AC motor.	
----	--	--

Central Manifold

04	Central Manifold with Pressure range Sequence Valve + Request Setting of the Relief Valve DB in Bar in brackets + Request setting of the sequence valve V2 in Bar in brackets.	
----	--	--

Flow restrictor

05	Select the required setting of flow restrictor on B line (see page 16)	
----	--	--

Coil Model and Connector

06	Choose the required coil Voltage and the required Connector. (See page 17)	
----	--	--

Gear pumps

07	Select the required pump. (See page 19)	
----	---	--

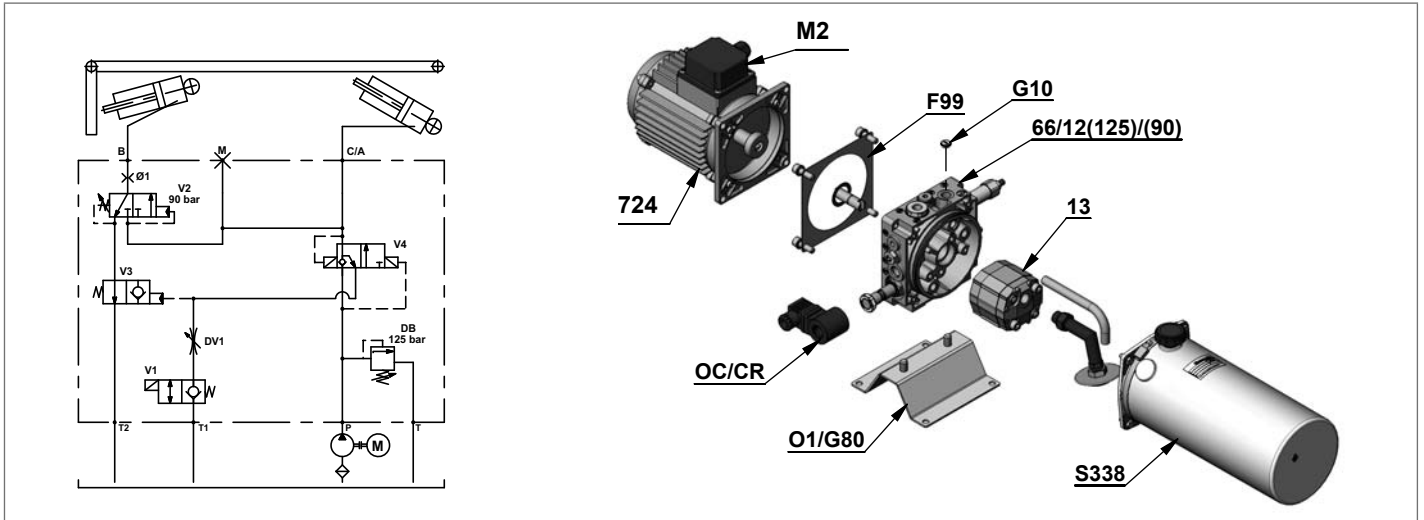
Oil Tank

08	Select the required Oil Tank (See page 20)	
----	--	--

Mounting Position and Mounting Brackets

09	Select the required working position of the Power Module and the position of the terminal box of the motor. If needed select a Mounting Bracket (See page 22)	
----	---	--

Ordering details for compact power modules for dock leveller with hinged lip (manifold code 66-67)



Example of Ordering Details

	01	02	03	04	05	06	07	08	09
DL	742	- F99	- 66 / 12 (125)/(90)	- G10	- OC/CR	- 13	- S338	- O1 / M2/G80	
Power module type	AC Electric motor	Junction Element	Central Manifold with Pressure range Sequence Valve + Request Setting of the Relief Valve DB in Bar in brackets + Request setting of the sequence valve V2 in Bar in brackets	Setting of flow restrictor on B line	Coil Model and Connector	Gears pump	Oil Tank	Mounting Position and Mounting Brackets	

- 4 **DL series** | Compact power modules
 Ordering details for compact power modules for dock leveller with telescopic lip (manifold code 73)

Ordering details for compact power modules for dock leveller with telescopic lip (manifold code 73)

01	02	03	04	05	06	07	08	09	
DL	----	-	----	-	___/__(___)	-	----	-	___/___/---

Family

01	Power module type	DL
----	-------------------	----

A.C. Electric motor

02	Select the required AC motor shown in the catalogue. (See page 11)	
----	--	--

Junction Elements

03	The code of the Junction Element is shown in the page after the selected AC motor.	
----	--	--

Central Manifold

04	Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve DB1 in Bar in brackets + Request setting of the Relief Valve DB2 in Bar in brackets.	
----	--	--

Flow restrictor

05	Select if needed the setting of flow restrictor on B line (see page 16)	
----	---	--

Coil Model and Connector

06	Choose the required coil Voltage and the required Connector. (See page 17)	
----	--	--

Gear pumps

07	Select the required pump. (See page 19)	
----	---	--

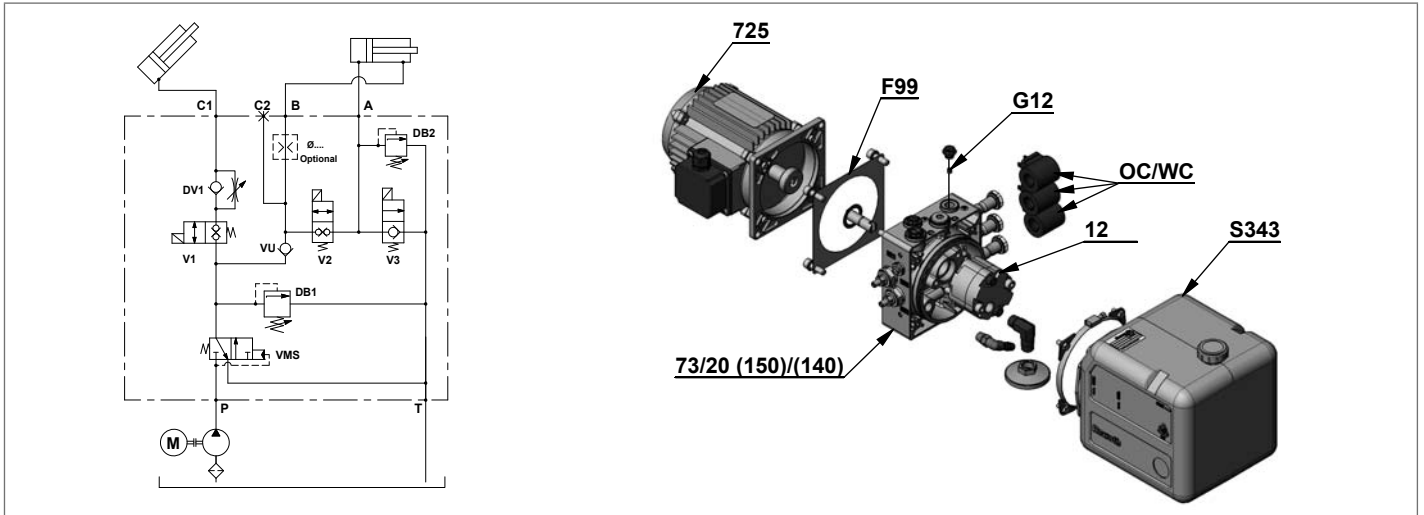
Oil Tank

08	Select the required Oil Tank (See page 20)	
----	--	--

Mounting Position and Mounting Brackets

09	Select the required working position of the Power Module and the position of the terminal box of the motor. If needed select a Mounting Bracket (See page 22)	
----	---	--

Ordering details for compact power modules for dock leveller with telescopic lip (manifold code 73)



Example of Ordering Details

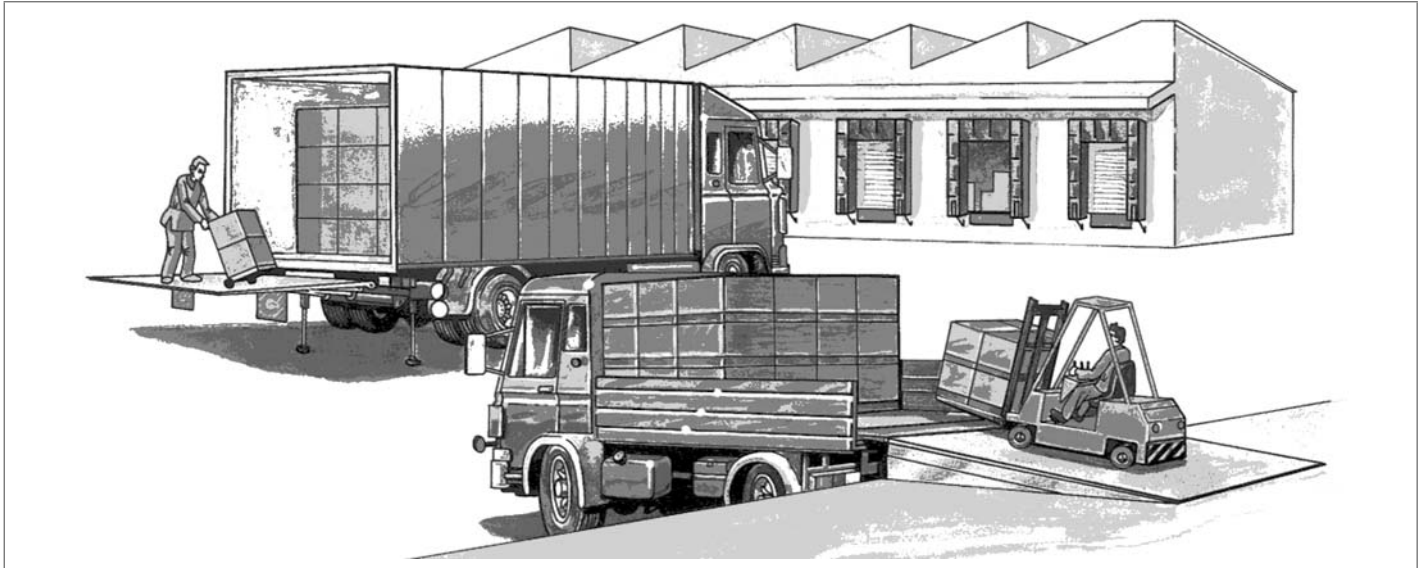
	01	02	03	04	05	06	07	08	09
DL	725	- F99	- 73 / 20 (150)/(140)	- G12	- OC/WC	- 12	- S343	- O1/G00	
Power module type	AC Electric motor	Junction Element	Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve DB1 in Bar in brackets + Request setting of the Relief Valve DB2 in Bar in brackets.	Setting of flow restrictor on B line	Coil Model and Connector	Gears pump	Oil Tank	Mounting Position and Mounting Brackets	

General Technical Data for Compact Power Module DL

Application description:

A Dock leveller is a structure which is typically fixed at the doors of the warehouse to load/unload goods. It's used as

a crossing bridge by Forklift, Transpallet etc, between the floor of the warehouse and the truck. (Picture 1)

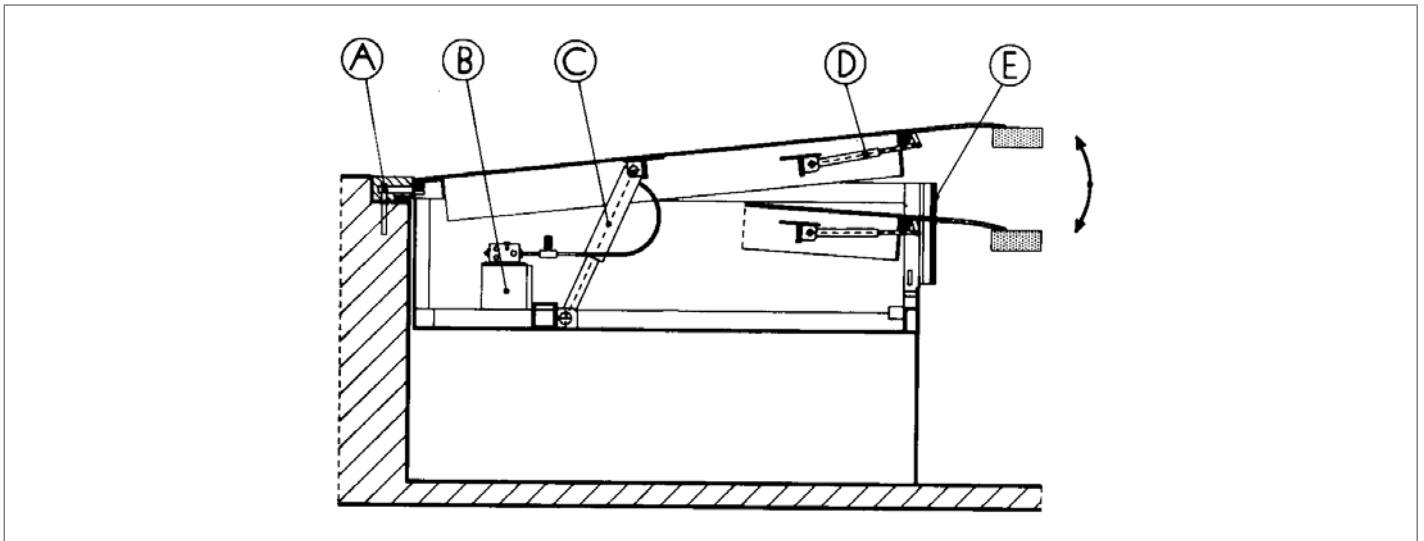


Picture 1 (Example of dock leveller)

Hydraulic system description:

In a Dock leveller the hydraulic system is characterized by a main single acting cylinder C (in some case 2 single acting cylinders connect to the same ports of the compact power module) for the lifting function and a single acting cylinder

to move the lip D in case of Dock leveller with a hinged lip (picture 2-3) or a double acting cylinder in case of Dock leveller with a telescopic lip. (Picture 4)



Picture 2 (typical Hydraulic Dock leveller scheme)

A) Dock leveller anchorage
 B) Compact Power Module

C) Single acting cylinder to lift the dock leveller
 D) Lip movement cylinder
 E) Rubber protection

How the system works:

Hydraulic Dock leveller with Single acting cylinders hinged lip (Picture 3)

Lifting phase: By switching on the electric motor, the gear pump pushes oil into the system and with the raising of the pressure the V4 valve changes over giving the possibility for the oil to push the main lifting cylinder connected to the port C/A; The solenoid valve V1 must always be energized or the system doesn't work.

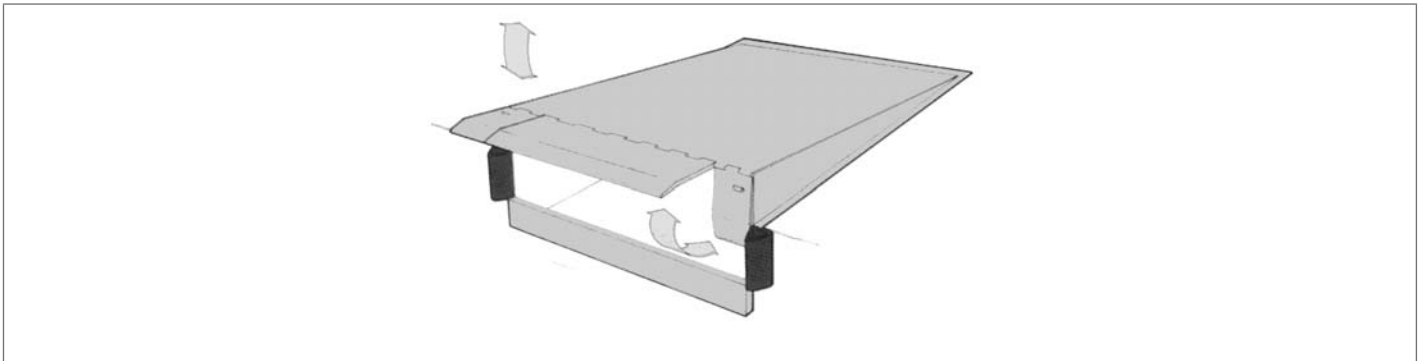
When the main lifting cylinder arrives at the end of the run, the pressure increases and allows for the opening of the V2 sequence valve that starts to put oil into the hinged lip single acting cylinder connected to the port B; The opening speed is set by the dimension of the orifice Ø...

Lowering phase: By stopping the electric motor, the V4 valve changes over on to the normal position, so the oil goes to the return line, crossing the V1 and through the throttle valve DV1 which maintains a backpressure on the system that causes the changing over of the V3 valve that guarantees a backpressure on the lip single acting cylinder

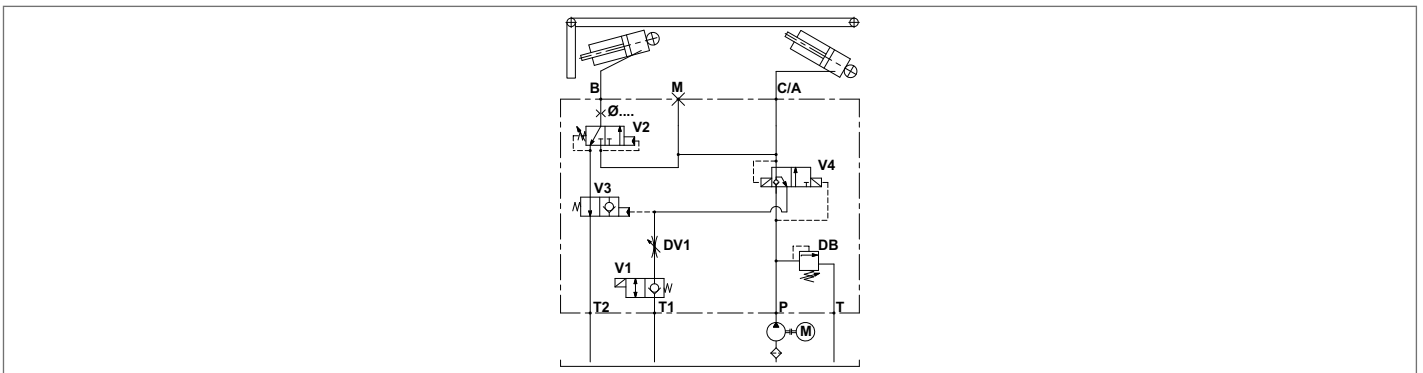
and for this reason the lip remains lifted while the main single acting cylinder lowers down. When the main singleacting cylinder stops lowering, leaning on the truck, the pressure on the system is out and automatically the V3 valve goes on the normal position, allowing the oil to run on the return line and allowing the lip to lean on to the track. The Dock leveller remains free to swing to compensate the differences on the truck level during the loading/unloading operations.

Closing phase: To close the Dock leveller you need to restart the motor by lifting the main cylinder (in consequence the lip cylinder is going to close with a setting speed set by the orifice Ø...).

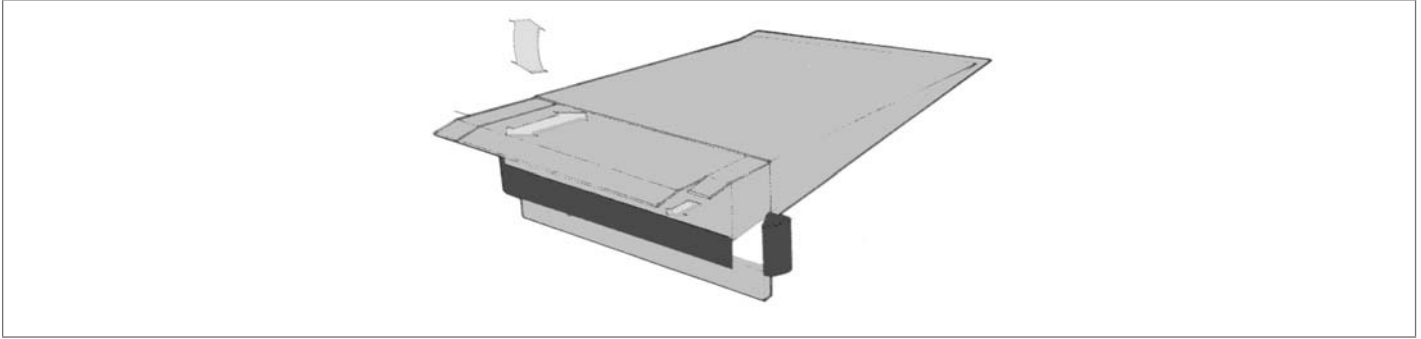
When the lip is completely close the motor can be switched off and the Dock leveller returns to the normal position. The V1 solenoid valve normally is connected to the emergency push button of the system. Pushing the emergency button the V1 valve return in closed position keeping the cylinder in position.



Picture 3 (Hydraulic hinged lip Dock leveller)



Scheme 1



Picture 4 (Hydraulic telescopic lip Dock leveller)

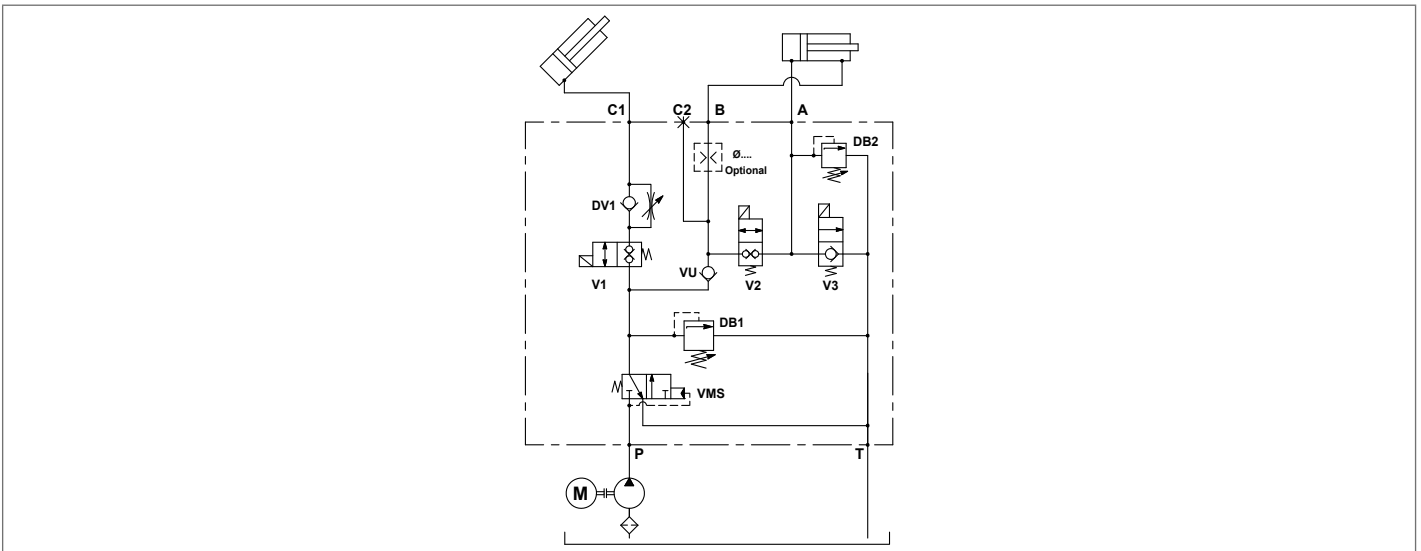
Hydraulic Dock leveller with double acting cylinder telescopic lip (Picture 4).

Opening phase: On the opening phase you need to switch on the electric motor energizing simultaneously the V1 (1) solenoid valve. The VMS valve changes over and the main cylinder connected to port C lifts: When the main cylinder arrives at the required position, we energize the V2 (2) solenoid valve and in consequence the telescopic lip double acting cylinder comes out in a regenerative mode between the A zone and B zone. When the telescopic lip arrives at the end of stroke the motor is switched off and all the solenoid valves are switched off too, so that the Dock leveller is completely open. The lip exit speed is controlled by the orifice Ø1.2 (optional).

Lowering phase: With the motor switched off the Dock leveller starts to lower itself energizing the V1 (1) solenoid valve which moves the main cylinder, which lowers down until it is leaning itself on the truck. The lowering speed is controlled by the STM12-VU valve.

The VM2 relief valve that is located on the double acting cylinder A line works as an antishock during the lip exit phase and also as protection of the same in case of an occasional bump as the truck stops.

Closing phase. To bring back the Dock leveller to the sleeping position, we need to repeat the opening phase to lift the Dock leveller from the truck and after to retract back the lip we need to energize the V3 (3) solenoid valve which puts the double acting chamber A on the return line.



Scheme 2

Power module selection

Choose the circuit which meets your application requirements.

Take note of all dimensions resulting from the basic components chosen for your application.

NOTE: dimensions may vary slightly and should be confirmed by DCOC, if the assembly is to be installed in a space with narrow clearance.

The tank capacity and the tank dimensions need to be large enough to assure proper pump suction: there must always be a reserve of oil in the tank when all cylinders are fully extended and avoid overflow when cylinders are fully retracted.

The tank must be evaluated also for best separation of air from oil, and for settling down oil contamination. It should be placed in a space with, at least, natural ventilation and it should permit enough heat dissipation to prevent high fluid temperature.

Select the electric motor by evaluating the power needed and the motor compliance with the heat developed during the expected run time (or „duty cycle“).

Hydraulic fluid for compact power module

Mineral oil based hydraulic fluids suitable for hydraulic systems can be used; they should have physical lubricating and chemical properties as specified by:

MINERAL OIL BASED HYDRAULIC FLUIDS HL (DIN 51524 part 1)

MINERAL OIL BASED HYDRAULIC FLUIDS HL P(DIN 51524 part 2)

For use of environmentally friendly fluids please consult DCOC.

Fluid viscosity, Temperature range of the operating fluid, Ambient temperature

The fluid viscosity should remain within the range 10 to 300 cSt (centistokes); recommended 15 to 120 cSt .

Permissive cold start viscosity is maximum 2000 cSt .

The fluid temperature should remain within the range -15°C and 80°C (5°F and 176°F).

Note: For compact power module with plastic tank the fluid temperature should remain within the range -15°C and 70°C (5°F and 158°F).

Ambient temperature -15°C +40°C (5°F and 104°F).

Fluid cleanliness requirements and maintenance

We recommend a cleanliness of the operating fluid according to ISO 4406 Class 20/18/15 or cleaner.

All components of the hydraulic circuit , including hoses and actuators, must be flushed and cleaned before

assembling, because the compact power module has a suction filter only.

The hydraulic fluid should be replaced after the first 50 hours, and then every 1000 hours, or, at least, once a year.

Power module installation

The mounting position is basically unrestricted; just avoid installations that could compromise the pump suction, Typically in these applications the Compact Power Module is assembled in horizontal position. It is recommended to support the power module on vibration dampening blocks when the mounting structure is expected to vibrate.

Wiring and starting-up

The cable size and length from the power source to the electric motor should be selected in order to avoid voltage drop.

It is strictly forbidden to allow the backwards rotation of the pump even at the first starting: to prevent reverse rotation, the wiring polarities must be correctly connected. Caution: when energized, the surface temperature of the electric motor could reach temperature levels of 60-80°C (140-176°F): care should be taken to avoid any accidental contact of people with the motor surface.

A.C. Motors

The tolerances on the nominal voltage are:

Single phase motor: 230V +/-5% - Three phase motor: 230-400V +/-10%.

Protection degree : IP54 (protection against dust and water splash).

Insulation class: F (155°C) (311°F).

All motors are aluminum alloy die cast without painting.

Central Manifolds

The Central Manifolds shown in the catalogue are made in die cast aluminium alloy or extruded aluminum alloy AL 2011 (Al-Cu5.5Pb0.4Bi0.4 UNI 9002/5).. The validation of the Central Manifolds follows a lifetest with 250 bar (3625 psi) pulsed pressure repeated for 300.000 cycles.

Built-in valves

The valves used in the central manifolds are manufactured using steel with high mechanical strength. Surface treatments protect the exposed parts to the external environment. Standard seals are NBR (BUNA-N) with backup rings in PTFE. The cartridge valves with “leak proof seat design” have an average leakage of 10-15 drops/minute (< 1 cm3/minute (0.06 in3/min)) at the maximum pressure using fluid ISO VG46 at 40°C (104°F). The

validation of the cartridge valves follows a life-test at pulsed maximum pressure (indicated for each valve) repeated for 500.000 cycles.

All the solenoid cartridge valves are fitted with protective O-Rings installed between the pole tube and the coil. These O-Rings protect the internal parts from condensation and contaminants, which could cause malfunction.

All the solenoid cartridge valves are designed for operating in D.C..

Power supply in A.C. requires a connector with bridge rectifier included.

External Gear Pumps

DCOC offers a wide range of External Gear Pumps to cover different kind of applications. The standard version are suitable for the biggest part of applications. All the pumps are pressure compensated to guarantee the best efficiency.

Oil Tanks

In this catalogue you will find a wide selection of steel and plastic tanks available as a standard product. Steel tanks have Black paint finish and are suitable for operating temperature range -15°C / +80°C (5°F / 176°F). Plastic tanks are obtained in one piece in order to avoid welded parts that are weak points at extreme temperature and vibrations. Plastic tanks are suitable for operating temperature range -15°C / +70°C (5°F / 158°F).

Note: even if the plastic tank mounting system is designed to avoid oil leakage the tank must be securely anchored when fitted in mobile equipment and when subject to shocks and heavy vibrations. Please check that the anchorages do not stress or deform the tank.

European machine directive 2006/42/CE

According to the Machine Directive 2006/42/CE, a complete power module, as described in paragraph 15 and made available to the European market, enters into the definition of „partly completed machinery“.

Instead, the power module subassemblies (motor, pump, reservoir, central manifold,...), when not assembled into a complete power pack, are considered „components“ which can be employed in a „machinery“ or a „partly completed machinery“. In this case, the DCOC components and subassemblies must be fitted in compliance with all the relevant technical data sheet applicable to the product, and shall not be operated, adjusted or disassembled before the complete machinery where they are incorporated has been declared to be in compliance with the Machine Directive 2006/42/CE.

Note

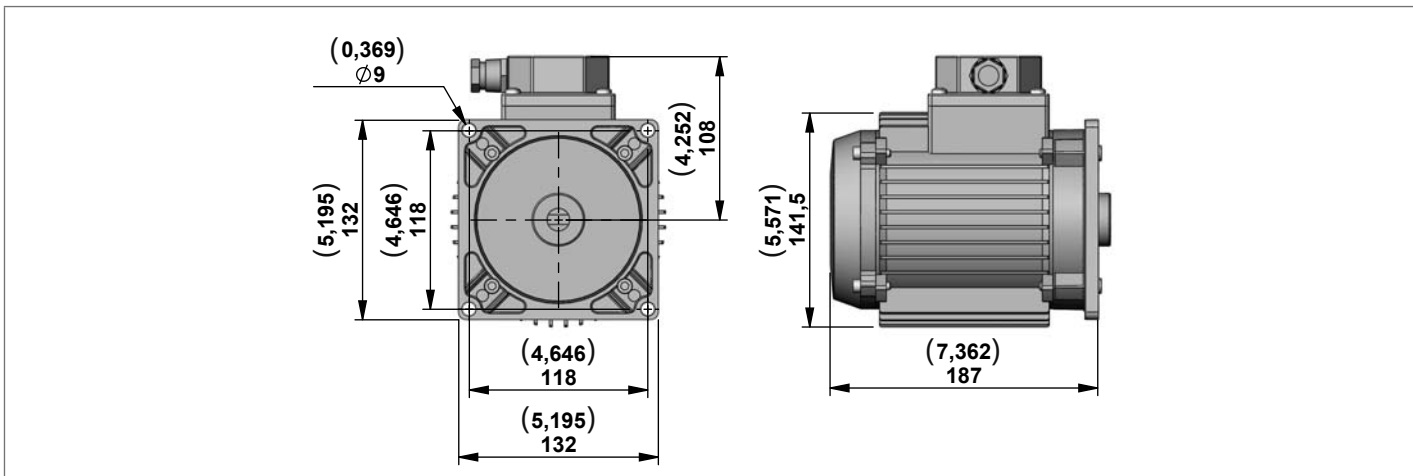
All the components shown in the catalogue ARE NOT suitable for use in potentially explosive atmosphere.

Technical information

Below you will find the most common equations used in hydraulics:

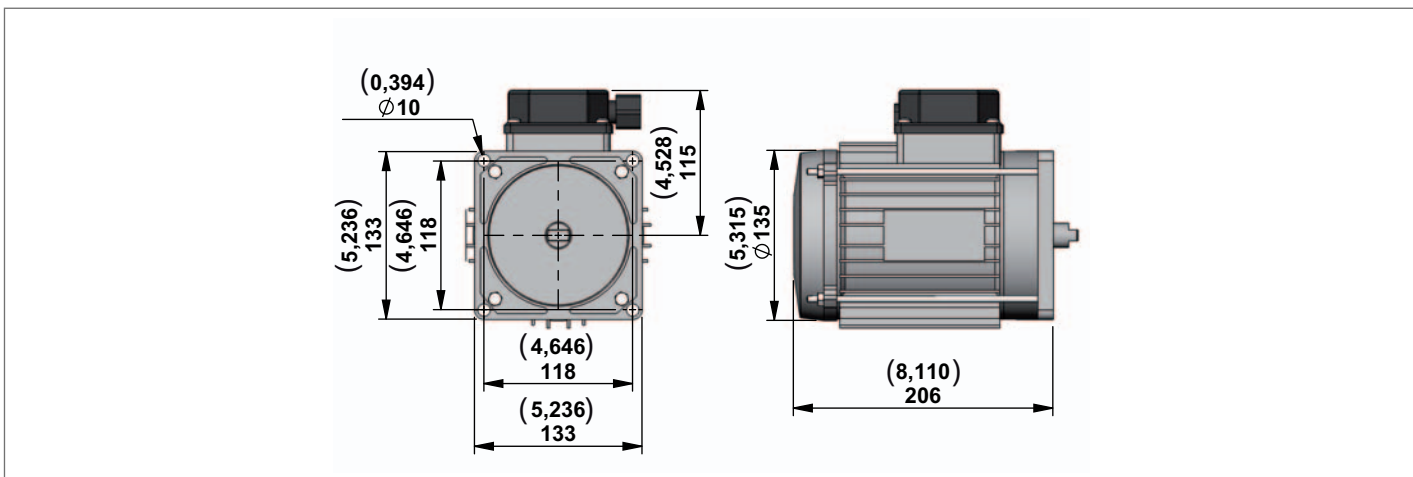
	Common Units	Symbols	Equations
Flow	l/min	Q	$Q = \frac{D \times n}{1000} \times 0,95$
Operating pressure	bar	P	$P = \frac{F}{0,1 \times A}$
Internal diameter hydraulic cylinder	mm	d	–
Area of hydraulic cylinder	mm ²	A	$A = \frac{\pi \times d^2}{4}$
Piston force	N	F	–
Drive shaft	rev/min	n	–
Power requirement for motor	kW	N	$N = \frac{P \times Q}{612}$
Pump displacement	cm ³ /rev	D	–
Torque requirement	Nm	M	$M = \frac{D \times d^2}{62,8 \times 0,87}$

A.C. Electric Motor Compact Mounting Style for Power Module Type DL



**Three Phase Current Motors 230/400V 50Hz
IP54 Size IEC 71**

Code	Type	Material Number	Power (kW)	Power (hp)	Poles	Rpm at 50Hz	Duty Cycle	Thermal Switch
724	C1622S1085C	R932000302	0,75	1	2	2900	S3 30%	no
724T	C1622S1368C	R932006634	0,75	1	2	2900	S3 30%	yes
725	C1622S1083C	R932000301	1,1	1,5	2	2900	S3 30%	no
725T	C1622S1374	R932000423	1,1	1,5	2	2900	S3 30%	yes



**Three Phase Current Motors 230/400V 50Hz
IP54 Size IEC 80**

Code	Type	Material Number	Power (kW)	Power (hp)	Poles	Rpm at 50Hz	Duty Cycle	Thermal Switch
826T	C1622S1410C	R932011320	1,5	2	2	2800	S3 20%	yes
827T	C1622S1409C	R932011321	2,2	3	2	2800	S3 15%	yes

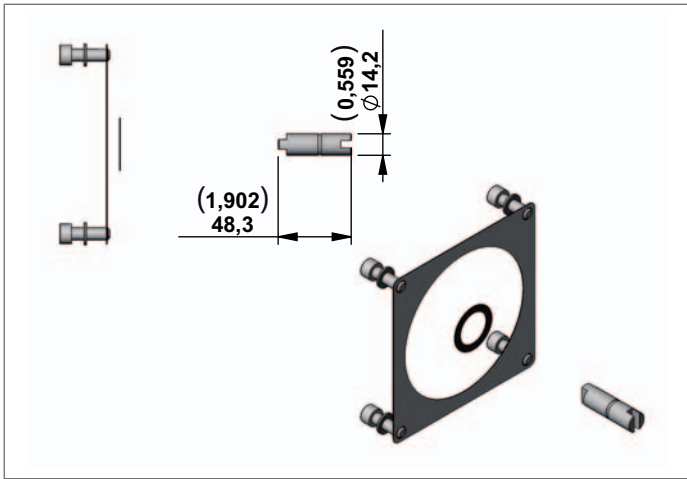
The motors shown in these tables are a selection of our range.
 In case of needs of different technical characteristics
 PLEASE CONTACT OUR SALES DEPARTEMENT.

NOTE

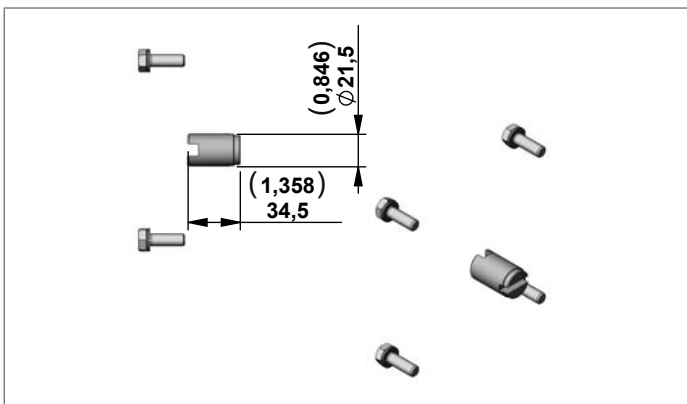
The electric motors shown in this pages are delivered by different certified suppliers.
 This means the indicated dimensions could change a little, depending on which manufacturer will be assembled. On the CPM the choice of the manufacturer is based on our stock availability.

Junction Elements for A.C. Electric Motor Compact Mounting Style for Power Module Type DL

F99



TR08

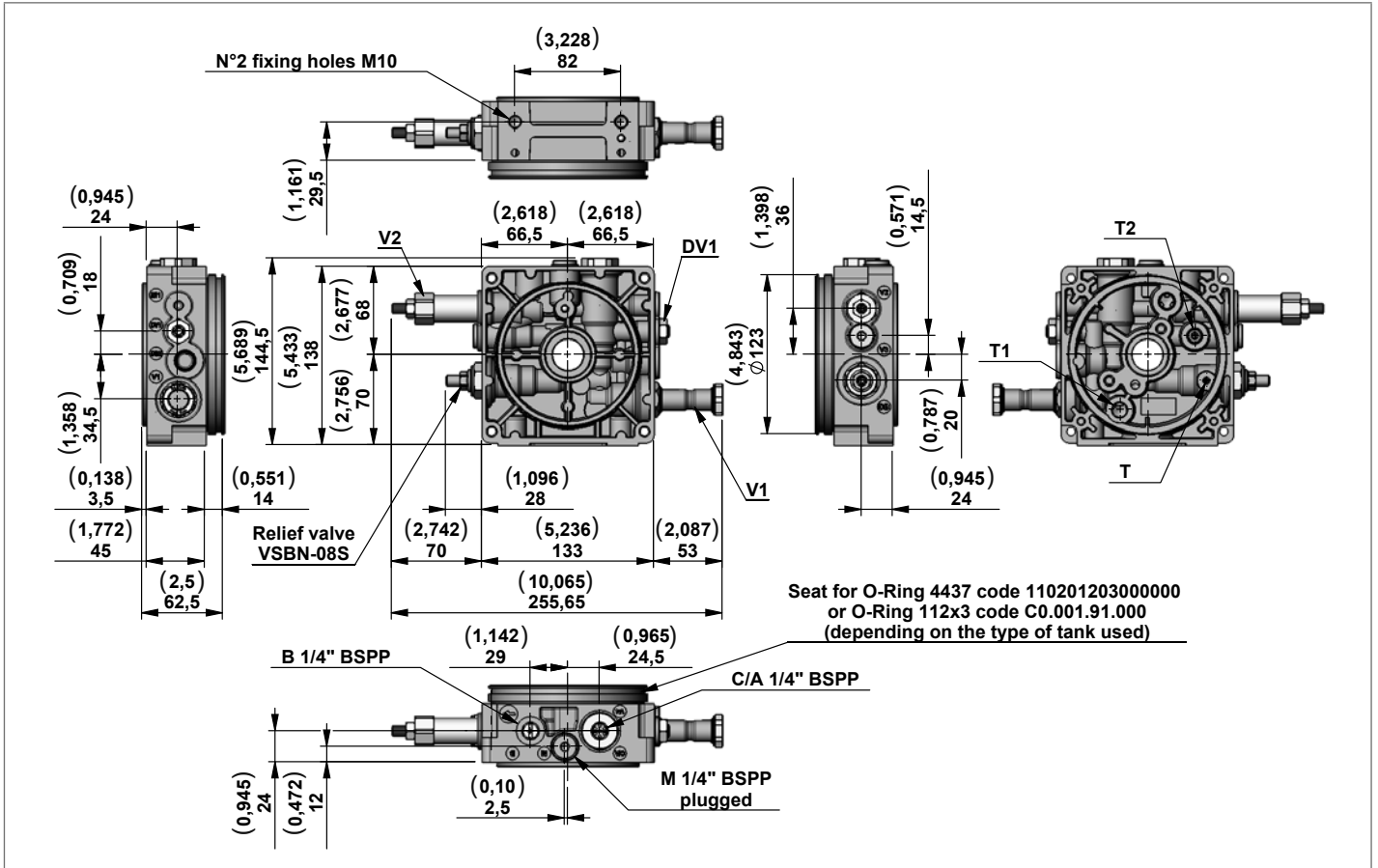


Junction Elements for manifolds MT

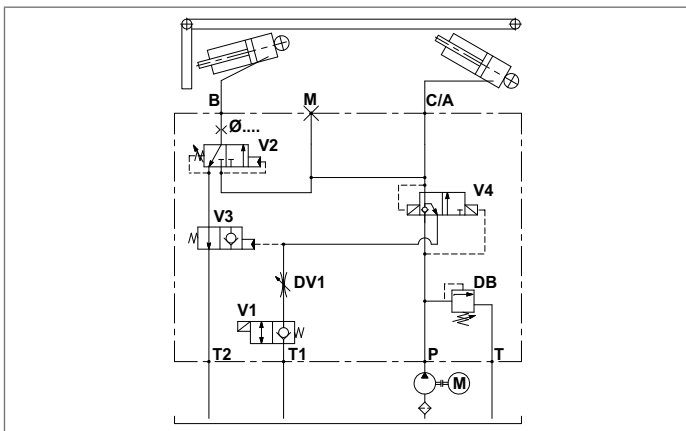
Code	Motor Codes	Size IEC	Type	Material Number
F99	724-724T-725-725T	71	K01K3970TR105	R932001934
TR08	826T-827T	80	K01KE970TR008	R932001900

Central Manifold DL

66

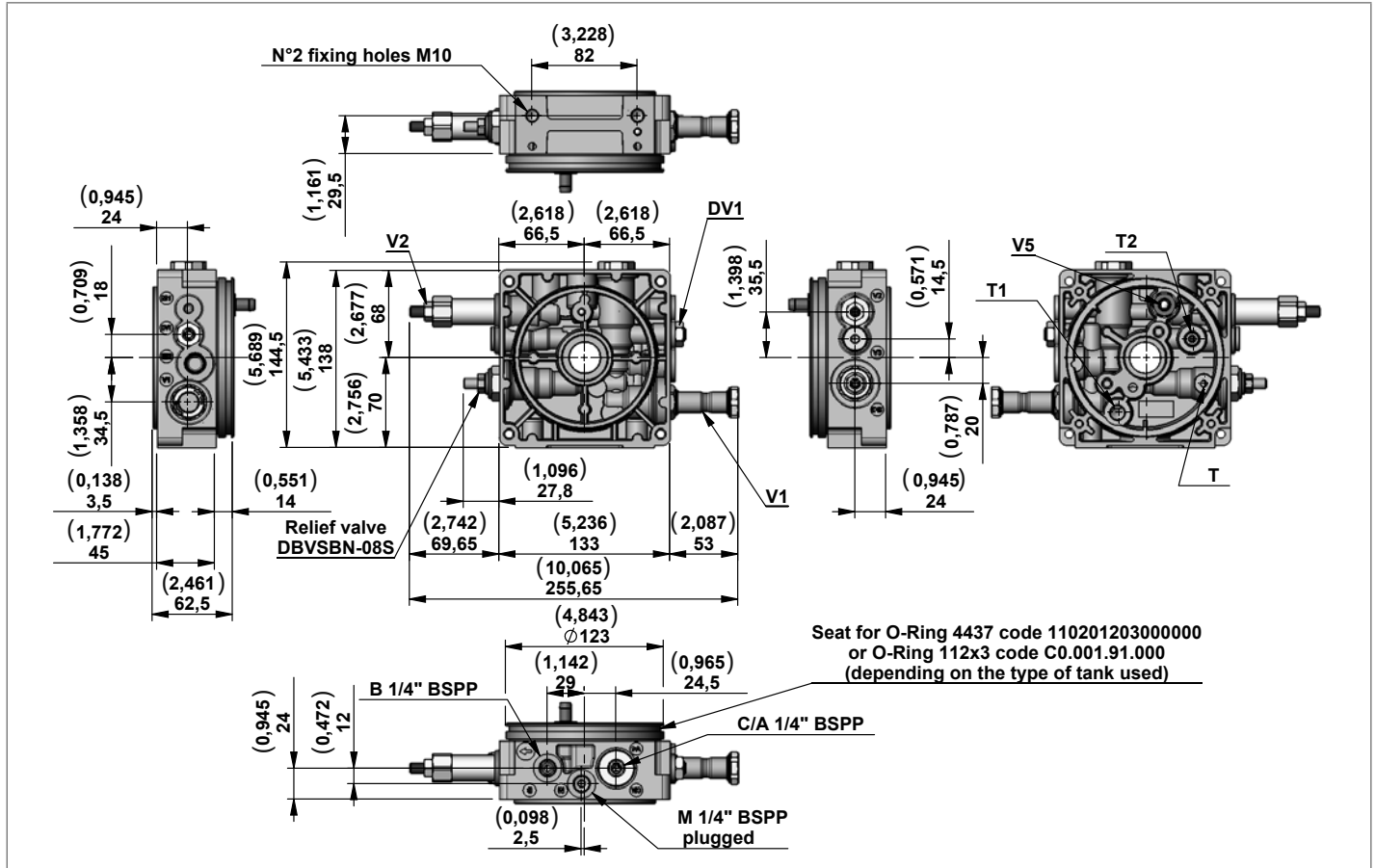


Manifold Hydraulic Diagram

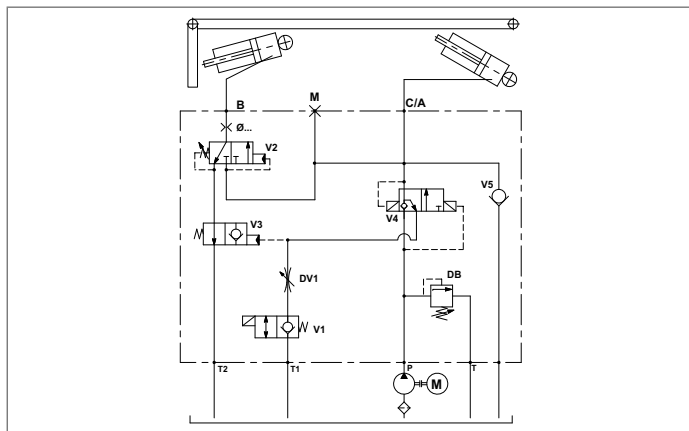


Manifold code with Sequence Valve pressure range	Pressure range Relief Valve DB bar (psi)	Pressure range Sequence Valve V2 bar (psi)	Type	Material Number
66/12	90-250 (1305-3626)	30-120 (435-1740)	766C120NG	R930052303
66/17	90-250 (1305-3626)	60-170 (870-2465)	766C150NG	R930052304

67

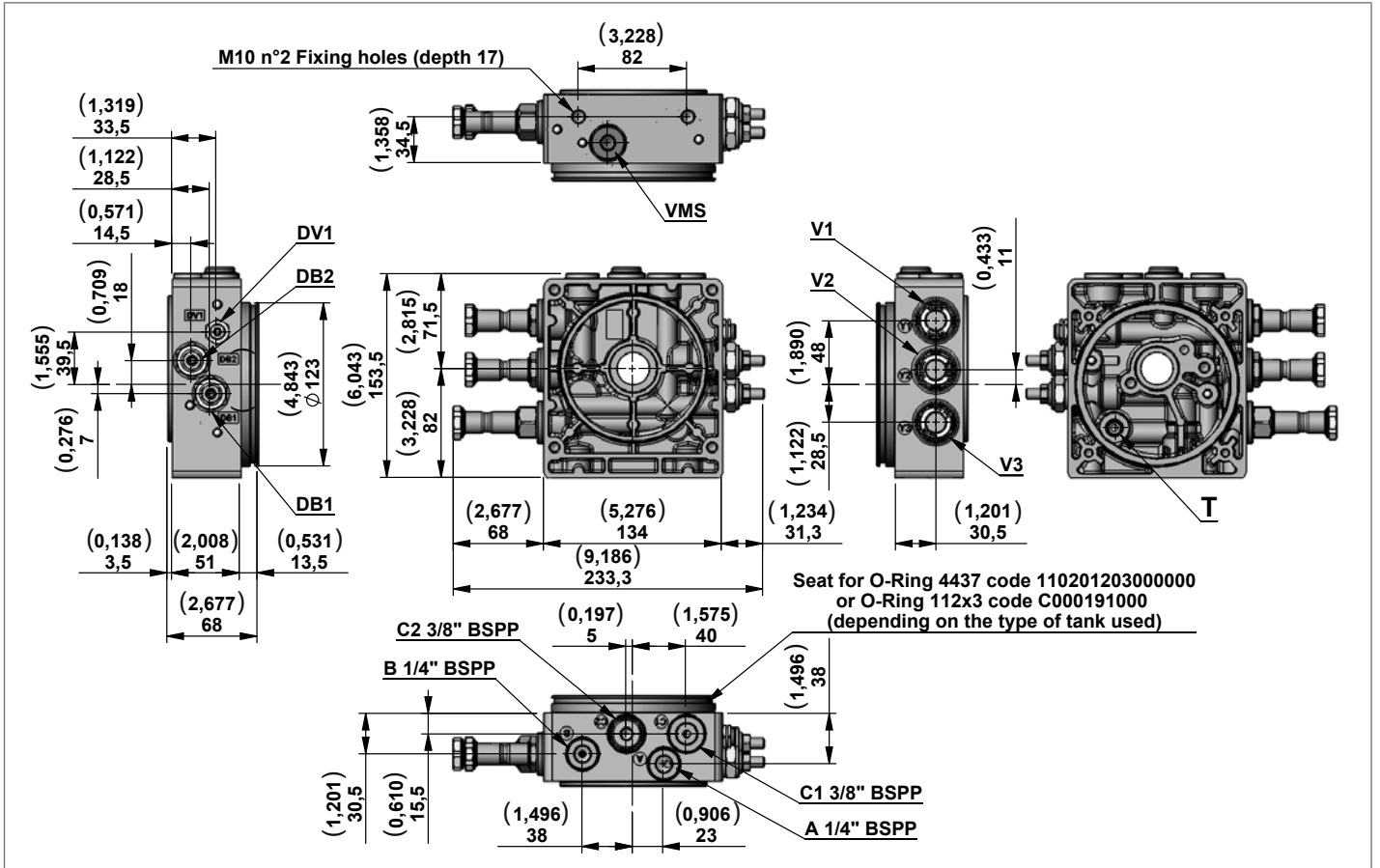


Manifold Hydraulic Diagram

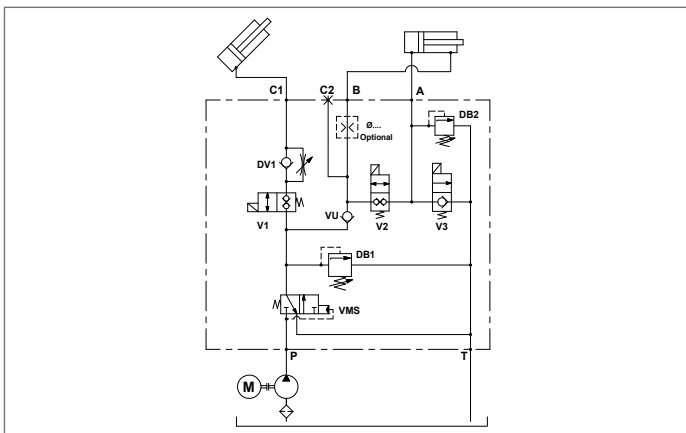


Manifold code with Sequence Valve pressure range	Pressure range Relief Valve DB bar (psi)	Pressure range Sequence Valve V2 bar (psi)	Type	Material Number
67/12	90-250 (1305-3626)	30-120 (435-1740)	767C120NG	R930052305
67/17	90-250 (1305-3626)	60-170 (870-2465)	767C150NG	R930052306

73



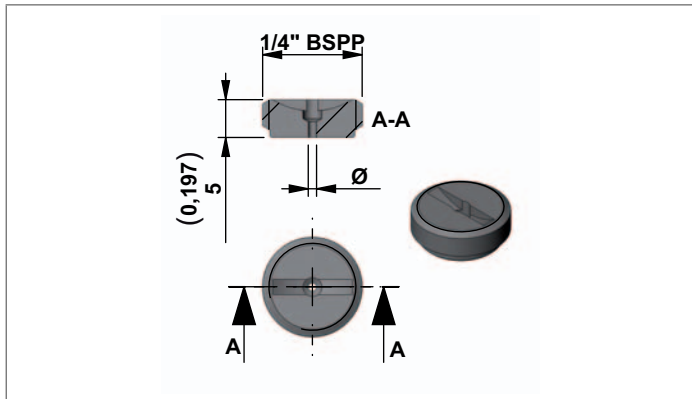
Manifold Hydraulic Diagram



Manifold code with Relief Valve pressure range	Pressure range Relief Valve VM1 bar (psi)	Pressure range Relief Valve VM2 bar (psi)	Type	Material Number
73/20	90-250 (1305-3626)	90-250 (1305-3626)	773C150NG	R930052310

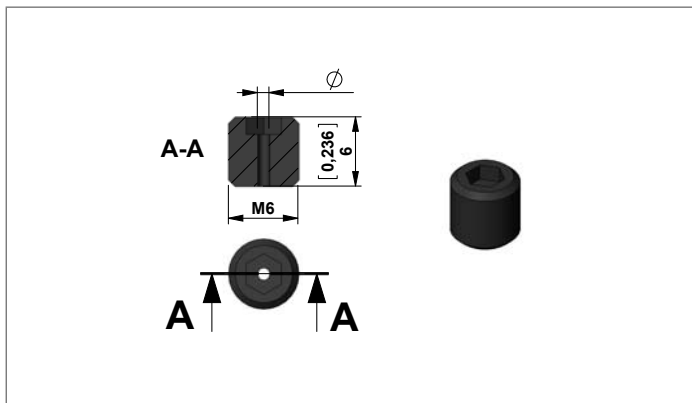
Flow Restrictor

Flow restrictor for manifold code 66-67



Code	Ø of flow restrictor mm	Material Number
G00	Without flow restrictor	
G07	0,7	R930046181
G08	0,8	R930051905
G11	1,1	R930046182
G13	1,3	R930046183
G15	1,5	R930046184
G18	1,8	R930046185

Flow restrictor for manifold code 73



Code	Ø of flow restrictor mm	Material Number
G00	Without flow restrictor	
G08	0,8	R930006600
G1	1	R930028268
G12	1,2	R930028256
G14	1,4	R930028267

Coil

Coil D36 - CLASS H - 20 W

Technical Data

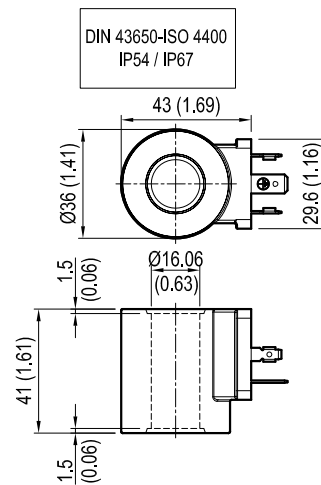
Weight: 0.18 kg (0.40 lbs)

Power: 20 W

Heat insulation Class H: 180°C (356°F)

Ambient temperature range: -30/+90°C (-22/+194°F)

Further performance limits in terms of temperature and voltage fluctuations: please refer to data sheet of the solenoid valve where D36 coil is mounted.



Coils D36 DIN 43650

CODE	VOLTAGE	HEAT INSULATION CLASS	TYPE	MATERIAL NUMBER
OB	12 Volts D.C.	H (180 °C) (356 °F)	OD02360130OB00	R901393412
OC	24 Volts D.C.	H (180 °C) (356 °F)	OD02360130OC00	R901393577
AH*	205 Volts D.C.	H (180 °C) (356 °F)	OD02360130AH00	R901394231

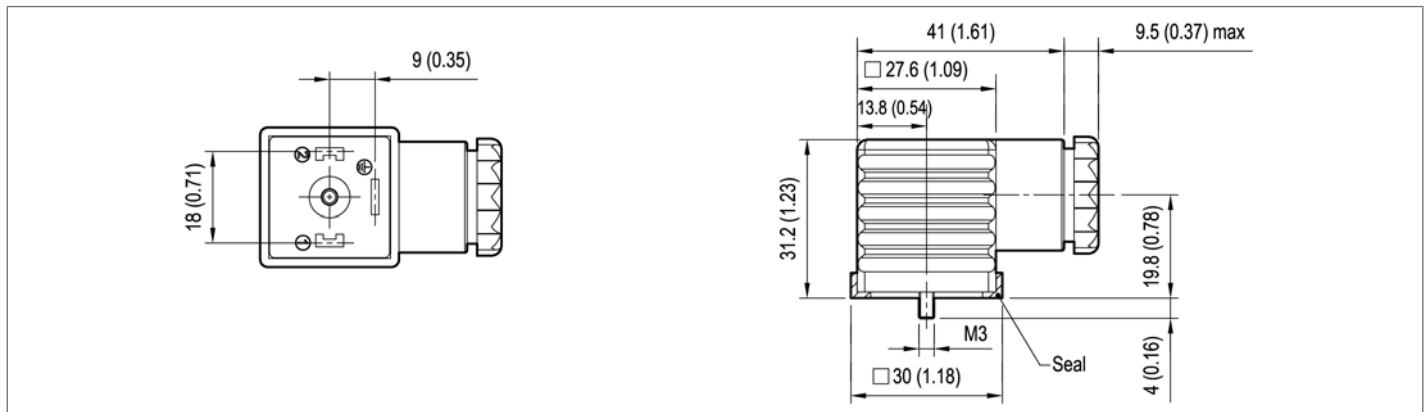
Note

* AH version especially designed in cases of AC supply voltage 220 AC to be used in conjunction with connector with circuit including wave rectifier. Ambient temperature range for AH versions: -30°C / + 75°C

Connectors

CONNECTOR IP67 - EN175000 (DIN 4350-A) / ISO 4400

Ambient temperature - Standard	°C (°F)	- 20 to + 60 (-4 to +140°F)	
Type of protection according to DIN 40050		IP67 with cable socket mounted and locked	
Operating voltage	V	Choose the proper ordering code according to the circuit	
Maximum operating current	Standard	A	16
	With rectifier	A	1
Number of pins		2 + PE	
Clamping range for cables having an outer diameter of	mm (inch)	5, up to 10 (0,2 up to 0,4)	
Cable entry		Pg9 / Pg11 (unified)	
Maximum cable cross-section	mm ² (inch ²)	1.5 (0,002)	



Standard Circuit

Code	Colour	Cable entry	Type	Material Number
WC	Without Connector			
CS	black	Pg9 / Pg11	OD016901000000	R934004344

Circuit with VDR + Wave Rectifier

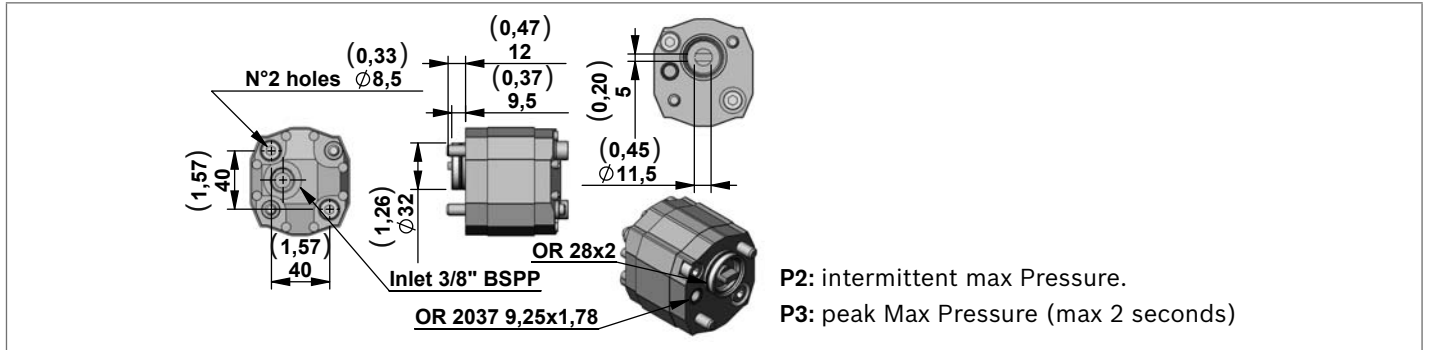
Code	Voltage V		Diode Capacity I max	Colour	Cable entry	Type	Material Number
	AC	DC					
CR	230	/	1A	black	Pg9 / Pg11	OD01690201OZ00	R934004353

Note

Diode with capacity max 1 Amp.

Gear Pumps

Gear Pumps Group 1



Code	Displacement cc/rev	Flow at 1500 rpm l/min (gpm)	P2 bar (psi)	P3 bar (psi)	Type	Material Number
11	1,25	1,88 (0,50)	230(3336)	270(3916)	K01CV79107126	R930068971
12	1,6	2,4 (0,63)	230(3336)	270(3916)	K01CV10110322	R932007475
13	2	3 (0,79)	230(3336)	270(3916)	K01CV10110323	R932007477
14	2,5	3,75 (0,99)	230(3336)	270(3916)	K01CV10112317	R932007479
15	3,15	4,7 (1,24)	210(3046)	250(3626)	K01CV10112318	R932007481

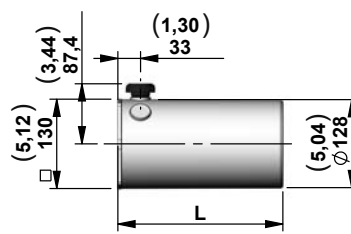
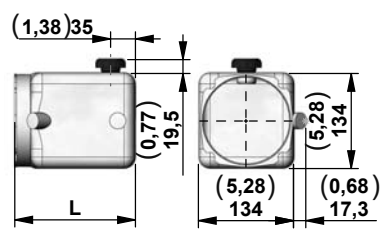
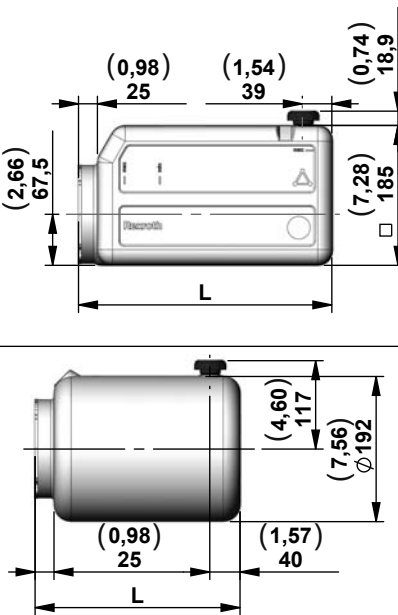
Note

All pumps have anti-clockwise rotation.

Oil Tanks for DL

Technical Data for Plastic Tanks

Temperature range	°C (°F)	-15....+70 (5....158)
Materials	PE=Polyethylene - PP=Polypropilene	
Seal	For tanks codes S335-S336-S337-S338 is necessary to use the O-RING Ø112x3 Code: C000191000 R-Number:R932000190. For all the other tanks except the codes above is necessary to use the O-RING 4437 (Ø110,7x3,53) Code:110201203000000 R-Number:R932000188	

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number
S335	1,0 (0,26)	0,7 (0,18)	140 (5,51)	PP	K01K3976SE372	R932002035
S336	1,8 (0,48)	1,2 (0,32)	180 (7,09)		K01K3976SE373	R932002036
S337	2,5 (0,66)	1,7 (0,45)	240 (9,45)		K01K3976SE374	R932002037
S338	3,0 (0,79)	2,3 (0,61)	285 (11,22)		K01K3976SE375	R932002038
						
For this tanks is necessary to use the O-RING Ø112x3 code: C000191000 R-Number: R932000190						
S247	1,8 (0,48)	1,6 (0,42)	170 (6,71)	PE	K01K3976SE271	R932002017
S248	2,5 (0,66)	2,2 (0,58)	240 (9,45)		K01K3976SE272	R932002018
						
S343	5,0 (1,32)	3,8 (1,00)	230 (9,05)	PE	K01K3976SE380	R932002039
S331	5,0 (1,32)	3,8 (1,00)	230 (9,05)	PE Black	K01K3976SE368	R932007872
S413	7,0 (1,85)	5,5 (1,45)	310 (12,20)	PE	K01K3976SE439	R932007873
S414	7,0 (1,85)	5,5 (1,45)	310 (12,20)	PE Black	K01K3976SE440	R932007874
S415	8,0 (2,11)	6,5 (1,72)	335 (13,19)	PE	K01K3976SE441	R932006036
S416	8,0 (2,11)	6,5 (1,72)	335 (13,19)	PE Black	K01K3976SE442	R932007875
S374	5,0 (1,32)	4,0 (1,06)	219 (8,62)	PE	K01K3976SE415	R932002042
S376	7,0 (1,85)	5,4 (1,43)	271 (10,67)		K01K3976SE417	R932002044
S378	8,0 (2,11)	6,6 (1,74)	323 (12,72)		K01K3976SE419	R932002046
S380	11,0 (2,91)	9,6 (2,54)	453 (17,83)		K01K3976SE421	R932002048
						

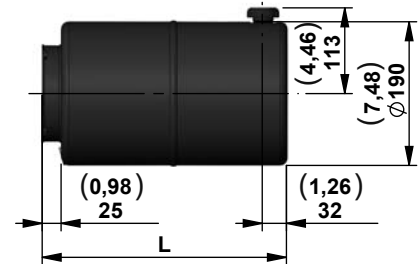
Assembly Kit for Plastic Tank - DL

Oil Tank	Code for DL	Material Number	Please make sure that the tank and motor are mounted correctly
S335 - S336 - S337 - S338	K2501VT016	R932007391	
S247 - S248	K2501VT015	R932008244	
S343 - S331 - S413 - S414 - S415 - S416 - S374 - S376 - S378	K2501VT026	R930053718	

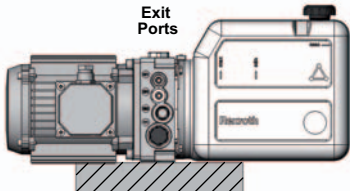
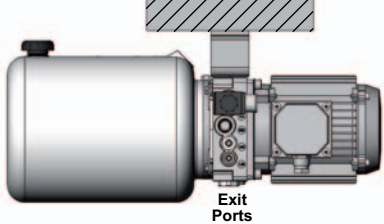
Technical Data for steel Tanks

Temperature range	°C (°F)	-15....+70 (5....158)
Materials		Steel
Colors		Black paint finish
Seal		For all the steel tanks is necessary to use the O-RING 4437 (Ø110,7x3,53) Code: 110201203000000 R-Number: R932000188

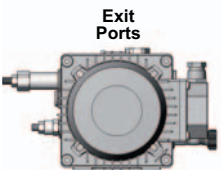
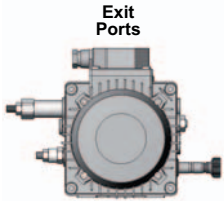
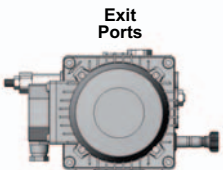
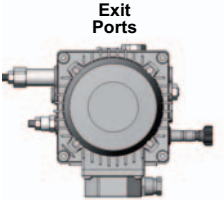
Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Type	Material Number
S03SD	5,0 (1,32)	4,0 (1,06)	219 (8,62)	K01K3976SE005SD	R932007901



Mounting position

Mounting position		1	2
Code	Image		
01	1		
02	2		


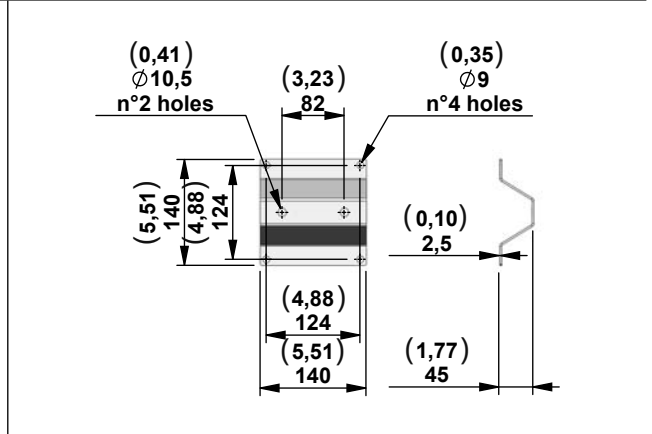
Terminal Box Position for A.C. Motors

Terminal Box Position for A.C. Motors		6-Standard	7
Code	Image		
-	6		
M2	7		
M3	8		
M4	9		

Mounting Brackets

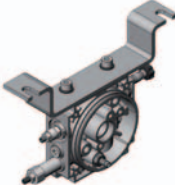
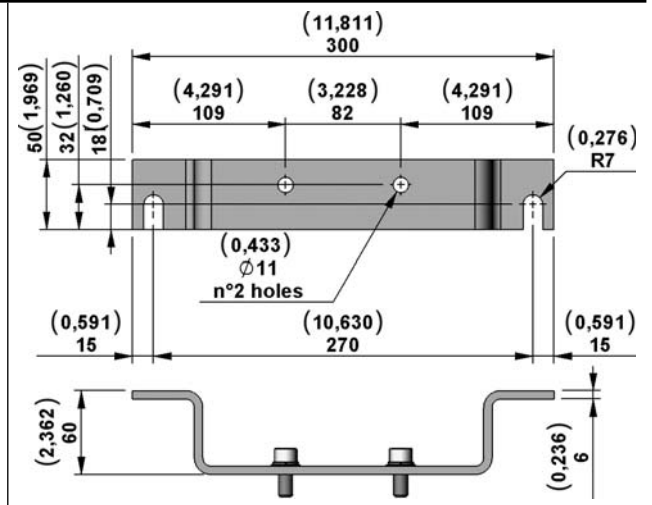
Code	Central manifold	Type	Material number
------	------------------	------	-----------------

G80	DL	K01F331514000	R932009395
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Code	Central manifold	Type	Material number
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G87	DL	K01K331523000	R932010187
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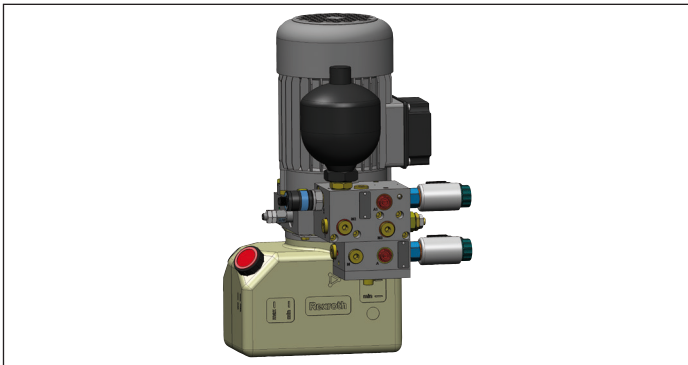



Compact power modules CPM-MT

RE 18306-04

Edition: 07.17

Replaces: 07.14



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Connectors	29
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Ordering details

01	02	03	04	05	06	07	08	09	10	11
MT	-	-	-	-	/ ()	-	-	-	-	-

Family

01	Power module type	MT
----	-------------------	----

Power module type of motor

02	Without motor	0
	With 3ph motor	2

A.C. Electric motor

03	Selection of electric motors (see page 6)	
----	---	--

Junction Elements

04	Coupling (see page 7)	TMT
----	-----------------------	-----

Central Manifold with Pressure range Relief Valve + Request Setting of the Relief Valve in Bar

05	Select the required pressure range of the relief valve and put the required pressure setting in bar between bracket. (see page 8)	
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Gears pump

06	Select the required pump (see page 9)	
----	---------------------------------------	--

Oil Tank

07	Select the required Oil Tank (see page 10 to 13)	
----	--	--

Mounting Position and Mounting Brackets

08	Select the required working position of the Power Module and Oil Filler cap in case of mounting position (see page 14). If needed select the Mounting Bracket (see page 15).	
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Modular Stackable Elements

09	If needed select the additional Modular Stackable Elements ¹⁾ (see page 16 to 27)	
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Coil Voltage and Connector

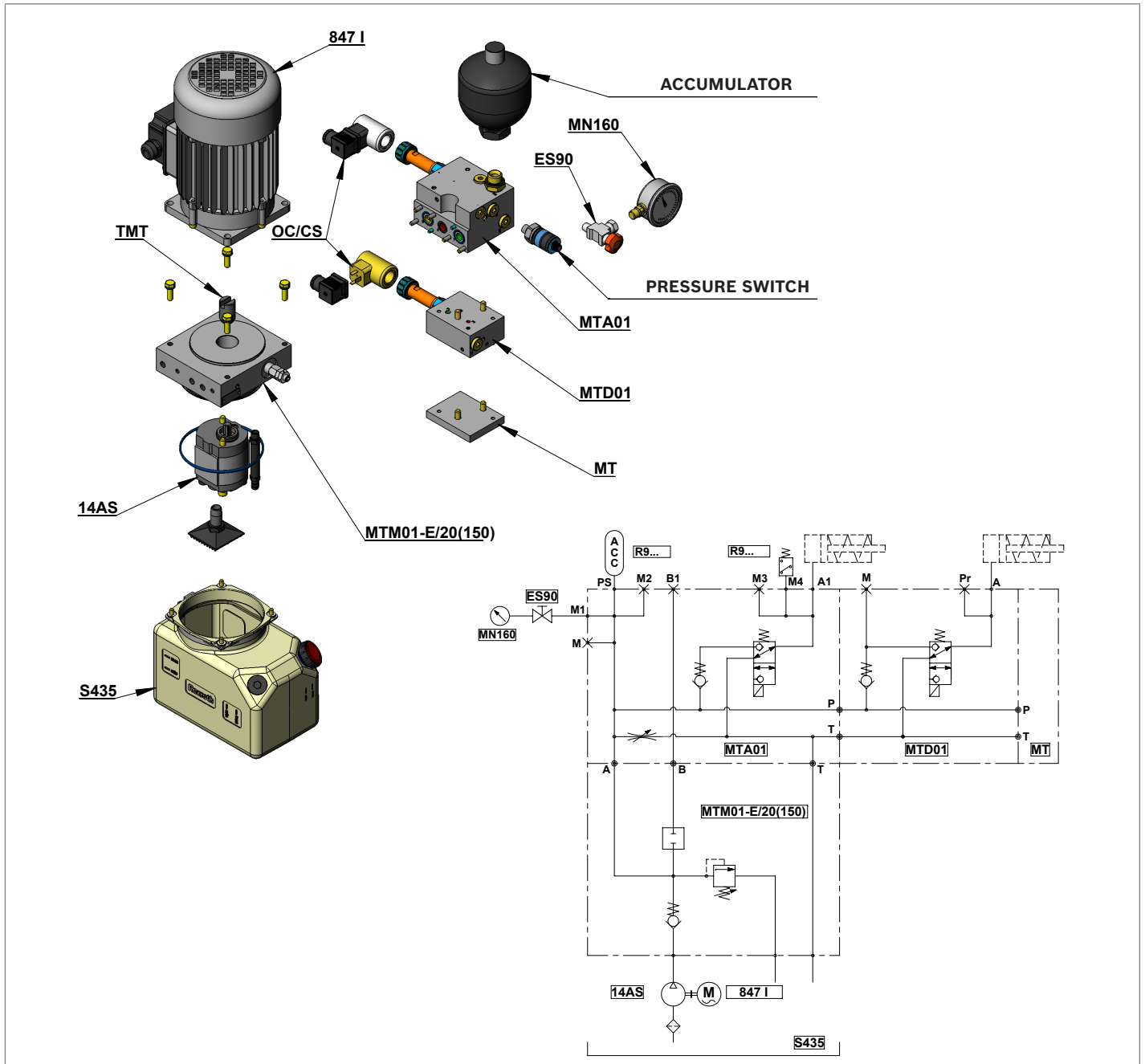
10	In case of selection of modular stackable elements with Solenoid Valve choice the required coil Voltage and the required Connector (see page 28 to 29)	
----	--	--

Accessories

11	If needed select the additional Accessories (see page 30 to 31)	
----	---	--

¹⁾ If using modular installation elements, the end plate MT (see page 27) must also be used.

Example of Ordering Details for Compact Power Modules CPM-MT



Ordering Details for Compact Power Modules with AC Motor

01	02	03	04	05	06	07	08	09	10	11
MT	2	- 847 I	- TMT	- MTM01-E/ 20(150)	- 14AS	- S435	- V1/M3	- MTA01/MTD01/ MT	- OC/CS	- ES90/ MN160/ R9.../R9...
Power module type	Power module type of motor	AC electric motor	Junction element	Central manifold with pressure range relief valve + request setting of the relief valve in bar between brackets	Gears pump	Oil tank	Mounting position and mounting brackets	Modular stackable elements Note: If using modular installation elements, the end plate MT (see page 27) must also be used.	Coil voltage and connector	Accessories

General technical data

With this catalogue Bosch Rexroth introduces the compact power module CPM-MT developed for use in industrial hydraulics applications. The CPM-MT is an assembly of electric motor, central manifold with valves, pump, oil tank and a few modular elements able to cover the most parts of the schemes needed for this kind of application. The CPM-MT power unit is characterized by low noise level and a very space-saving design due to the direct assembly of the motor and modular elements to the central manifold.

Hydraulic details

Max Flow rate Q	up to 20 l/min
Max Intermittent pressure p ₂	up to 250 bar
Max Peak pressure p ₃ (for max. 2 seconds)	up to 270 bar (with a reduced number of cycles depending of pump size)
AC Motors power range	0.55 - 2.2 kW
AC Motors protection class	IP54
Gear pumps displacement	1.25 - 7.4 cc
Tank volume	up to 20 L
Average duty cycle	S3 (intermittent operation) 60 % (except for the 2.2 kW)

Power module selection

Choose the circuit which meets your application requirements.

Take note of all dimensions resulting from the basic components chosen for your application.

NOTE: dimensions may vary slightly and should be confirmed by Bosch Rexroth if the assembly is to be installed in a space with narrow clearance.

The tank capacity and the tank dimensions need to be large enough to assure proper pump suction: there must always be a reserve of oil in the tank when the maximum amount of oil required is in the system. And overflow must be avoided when cylinders are fully retracted.

The tank must be evaluated also for best separation of air from oil, and for settling down oil contamination. It should be placed in a space with, at least, natural ventilation and it should permit enough heat dissipation to prevent high fluid temperature.

Select the electric motor by evaluating the power needed and the motor compliance with the heat developed during the expected run time (or „duty cycle“).

Hydraulic fluid for compact power module

The unit is designed for use with mineral oil-based hydraulic fluids. The required physical and chemical properties of the mineral oils are described in the following

standards:

- ▶ MINERAL OIL BASED HYDRAULIC FLUIDS HL (DIN 51524 part 1)
- ▶ MINERAL OIL BASED HYDRAULIC FLUIDS HL P(DIN 51524 part 2)

For use of environmentally friendly fluids please consult Bosch Rexroth.

Fluid viscosity, temperature range of the operating fluid, ambient temperature

The fluid viscosity should remain within the range 10 to 300 cSt (centistokes); recommended 15 to 120 cSt . Permissive cold start viscosity is maximum 2000 cSt . The fluid temperature should remain within the range -15 °C and 70 °C (5 °F and 158 °F).

Ambient temperature -15 °C +40 °C (5 °F and 104 °F).

Fluid cleanliness requirements and maintenance

We recommend a cleanliness of the operating fluid according to ISO 4406 Class 20/18/15 or cleaner.

All components of the hydraulic circuit, including hoses and actuators, must be flushed and cleaned before assembling, because the compact power module has a suction filter only or an optional return line filter.

The hydraulic fluid should be replaced after the first 50 hours, and then every 1000 hours, or, at least, once a year.

Power module installation

The mounting position is basically un-restricted; just avoid installations that could compromise the pump suction. It is recommended to support the power module on vibration dampening blocks when the mounting structure is expected to vibrate.

Do not assembly the CPM to moving part. Finish required on mounting surface 0.3 mm over 140 mm length.

Wiring and starting-up

The wiring between power source and electric motor should be selected in order to avoid excessive voltage drop. It is strictly forbidden to allow the backwards rotation of the pump even at the first starting: to prevent reverse rotation, the wiring polarities must be correctly connected. Caution: when energized, the surface temperature of the electric motor could reach temperature levels of 60 - 80 °C (140 - 176 °F): care should be taken to avoid any accidental contact of people with the motor surface.

A.C. motors

The tolerances on the nominal voltage are:

Three phase motor: 230 - 400V +/-10 %.

Protection degree : IP54 (protection against dust and water splash).

Insulation class: F (155 °C) (311 °F).

All motors are aluminum alloy die cast without painting.

Central manifolds

The Central Manifold is made of extruded aluminum alloy AL 7020 (AlZn4.5Mg UNI9007/1). The validation of the Central Manifold follows a life-test with 250 bar (625 psi) pulsed pressure repeated for 500.000 cycles.

External gear pumps

All the pumps are pressure compensated with cast iron covers to guarantee the best efficiency and durability. The splined shaft guarantees a big number of start and stop cycles without failure or wearing. The validation of the pumps follows a life-test at p2 (intermittent max pressure) pulsed pressure repeated for 500.000 cycles.

Oil tanks

In this catalogue you will find a wide selection of plastic tanks available as a standard product. Plastic tanks are obtained in one piece in order to avoid welded parts that are weak points at extreme temperature and vibrations. Plastic tanks are suitable for operating temperature range -15 °C / +70 °C (5 °F / 158 °F).

Note: even if the plastic tank mounting system is designed to avoid oil leakage the tank must be securely anchored when subject to shocks and heavy vibrations. Please check that the anchorages do not stress or deform the tank.

Steel tanks are available on request and with a minimum of quantity. Please contact our Sales Department.

Modular stackable elements

Our modular system offers a wide range of standardised elements.

All the Modular Elements are made of extruded aluminum alloy AL 7020 (AlZn4.5Mg UNI9007/1). In the catalogue you will find a selection of the main used models.

The validation of the Modular Elements follows a life-test with 250 bar (625 psi) pulsed pressure repeated for 500.000 cycles.

Note: To reduce the complexity of the system and optimize the available space, special Modular Elements can be designed and manufactured following the customers needs. In this case please contact our Sales Department.

European machine directive 2006/42/CE

According to the Machine Directive 2006/42/CE, a complete power module, as described in paragraph 15 and made available to the European market, enters into the definition of „partly completed machinery“.

Instead, the power module subassemblies (motor, pump, reservoir, central manifold,...), when not assembled into a complete power pack, are considered „components“ which can be employed in a „machinery“ or a „partly completed machinery“. In this case, the Bosch Rexroth components and subassemblies must be fitted in compliance with all the relevant technical data sheet applicable to the product, and shall not be operated, adjusted or disassembled before the complete machinery where they are incorporated has been declared to be in compliance with the Machine Directive 2006/42/CE.

Note

All the components shown in the catalogue ARE NOT suitable for use in potentially explosive atmosphere.

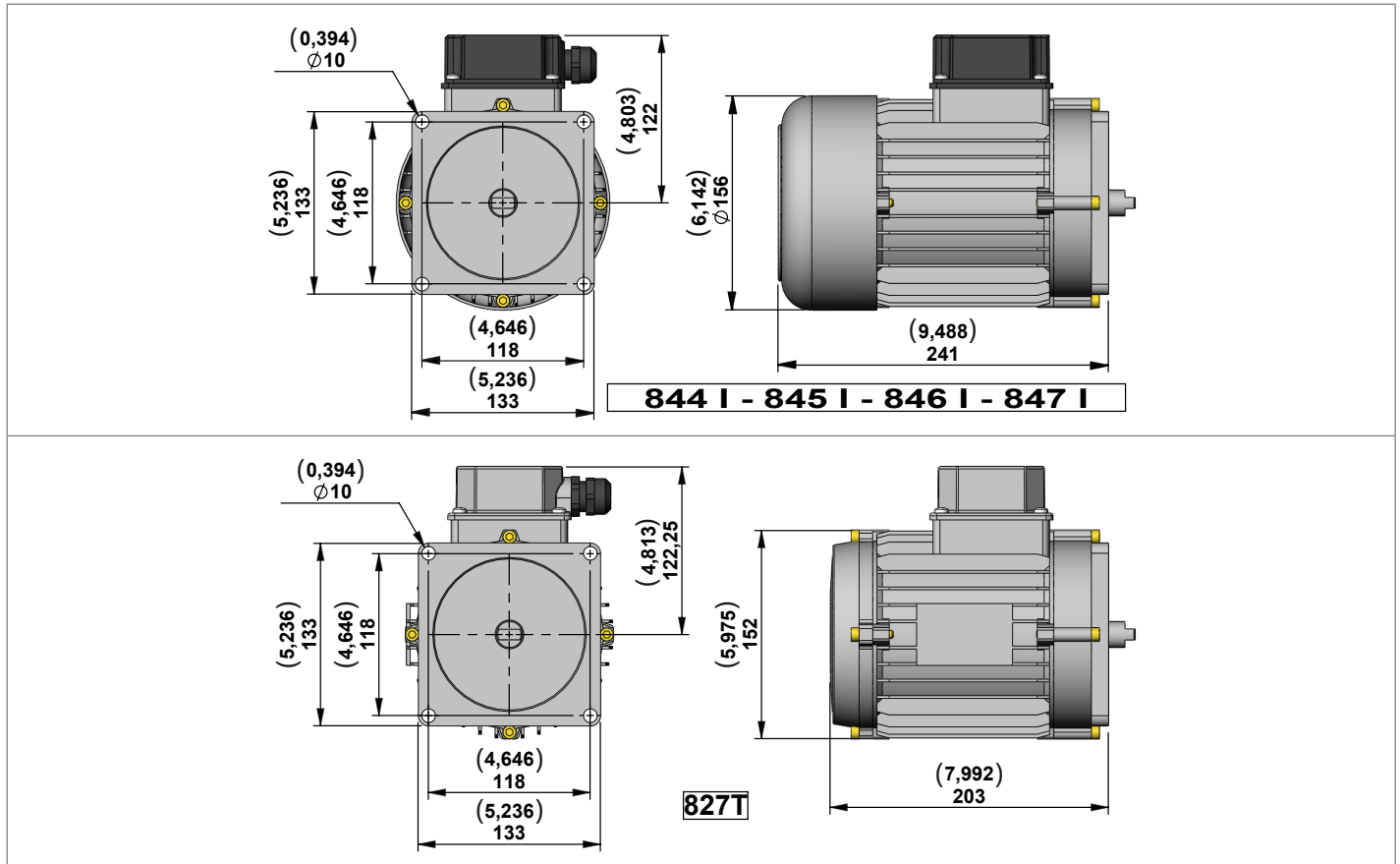
Technical information

Below you will find the most common equations used in hydraulics:

	Common Units	Symbols	Equations
Flow	l/min	Q	$Q = \frac{V \times n}{1000} \times 0,95$
Operating pressure	bar	p	$p = \frac{F}{0,1 \times A}$
Internal diameter hydraulic cylinder	mm	d	–
Area of hydraulic cylinder	mm ²	A	$A = \frac{\pi \times d^2}{4}$
Piston force	N	F	–
Drive shaft	rev/min	n	–
Power requirement for motor	kW	P	$P = \frac{P \times Q}{612}$
Pump displacement	cm ³ /rev	V	–
Torque requirement	Nm	M	$M = \frac{V \times d^2}{62,8 \times 0,87}$

A.C. Electric Motor Compact Mounting Style

These motors are designed to reduce the overall dimensions and the cost of the junction elements.



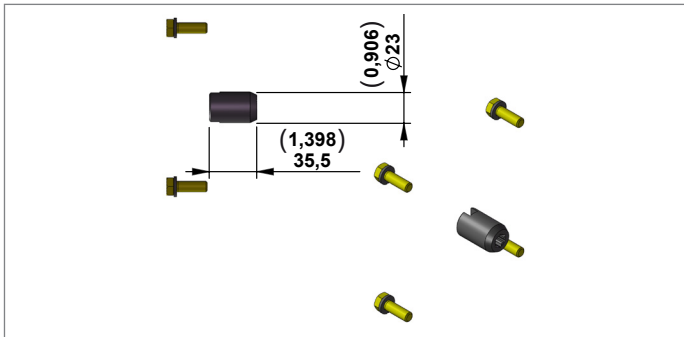
Three Phase Current Motors 230/400V 50Hz IP54 Size IEC 80

Code	Type	Material Number	Power (kW)	Power (hp)	Poles	Rpm at 50Hz	Duty Cycle	Thermal Switch
844 I	C1622S1457	R932010919	0,55	0,75	4	1450	S3 60 %	no
845 I	C1622S1456	R932010924	0,75	1,00	4	1450	S3 60 %	no
846 I	C1622S1453	R932010923	1,10	1,50	4	1450	S3 60 %	no
847 I	C1622S1370	R932000419	1,50	2,00	4	1450	S3 60 %	no
827 T	C1622S1409	R932011321	2,20	3,00	2	2900	S3 15 %	yes

The motors shown in these tables are a selection of our product range.
In case of needs of different technical characteristics
PLEASE CONTACT OUR SALES DEPARTEMENT.

NOTE

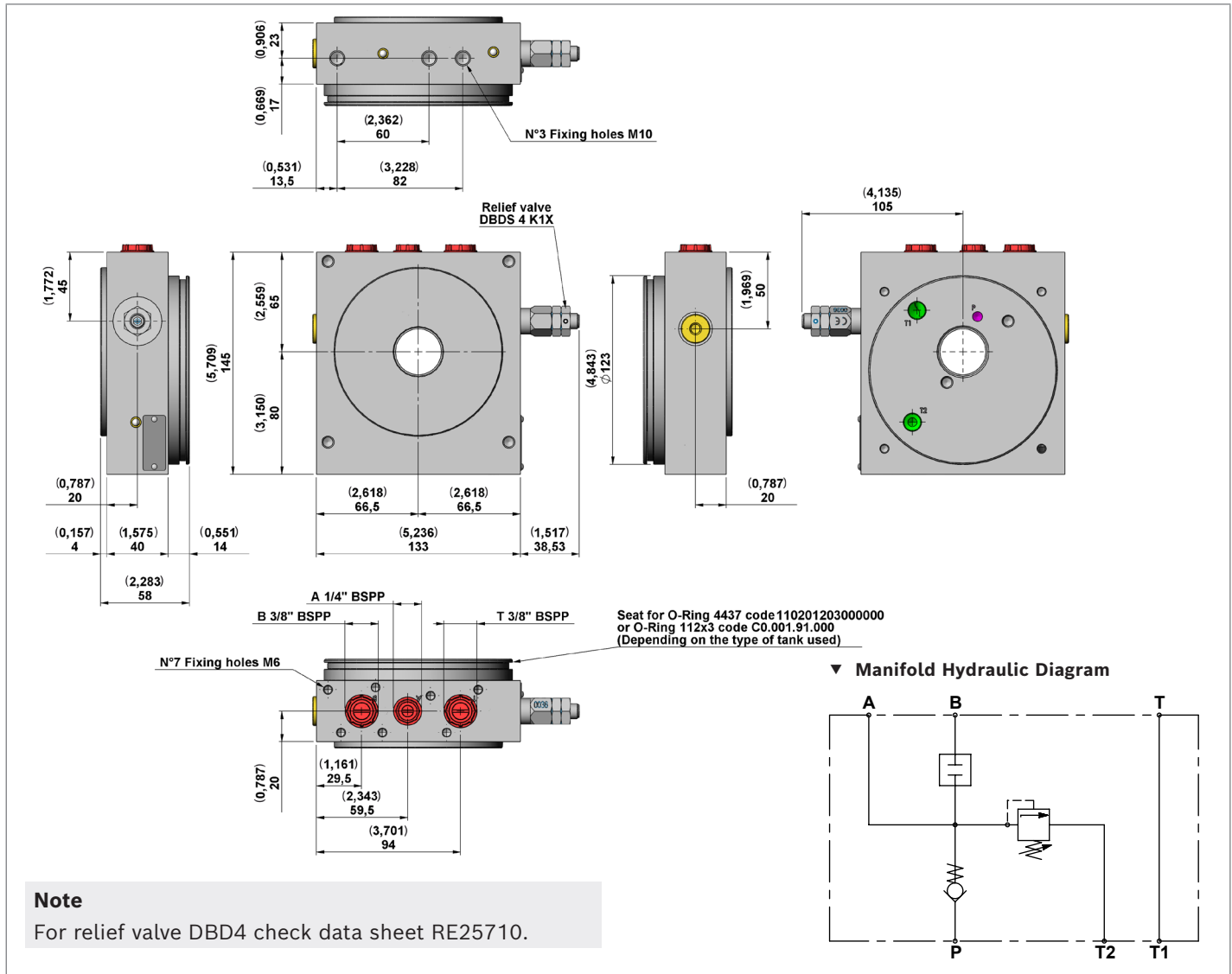
The electric motors shown in this pages are delivered by different certified suppliers.
This means the indicated dimensions could change a little, depending on which manufacturer will be assembled. On the CPM the choice of the manufacturer is based on our stock availability.

Junction Elements for A.C. Electric Motor Compact Mounting Style for Power Module Type MT**Junction Elements for manifolds MT**

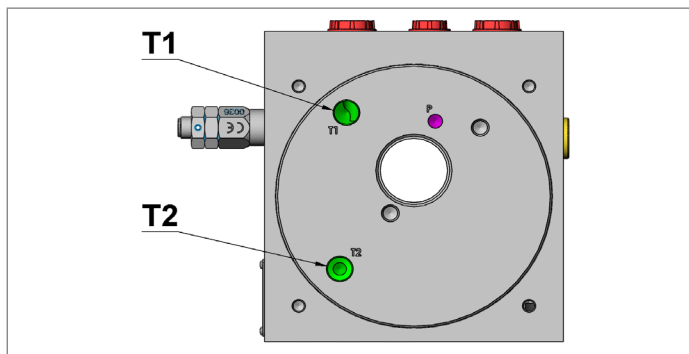
Code	Motor Codes	Size IEC	Type	Material Number
TMT	844 I - 845 I - 846 I - 847 I - 827 T	80	K01K3970TR114	R932011170

Central Manifold MT

MTM01 / MTM01-E



View Manifold Tank side

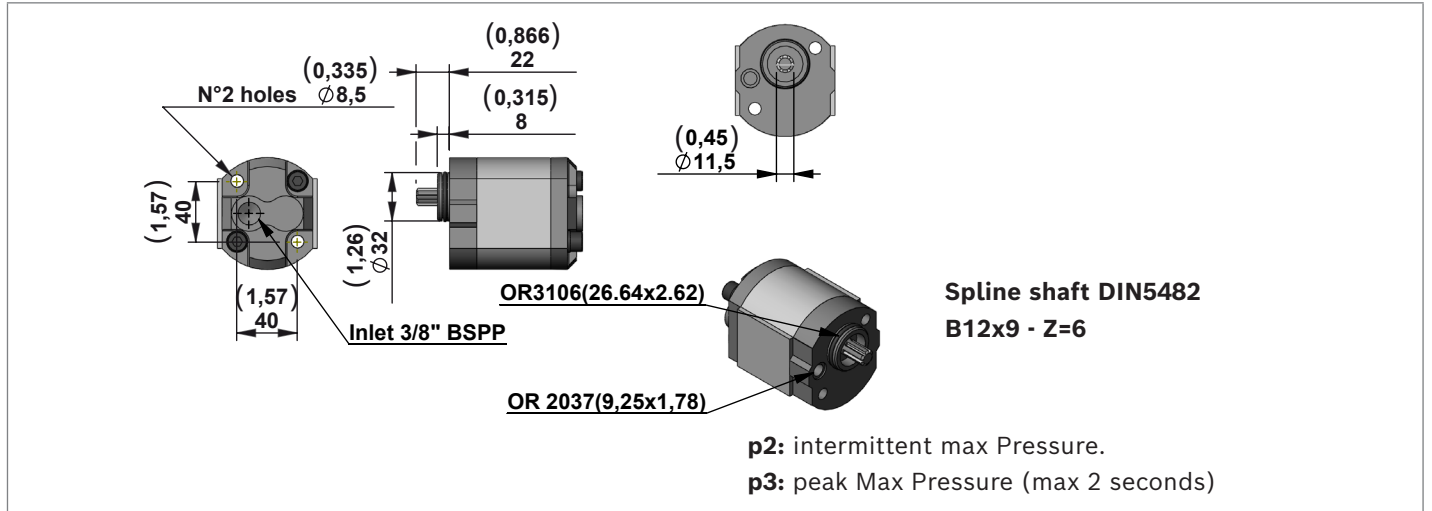


Manifold Code with Relief Valve Pressure Range	Pressure Range bar (psi)	Type	Material Number
MTM01/10	5-100 (72,5-1450)	K397301001	R932007800
MTM01/20	40-200 (580-2901)	K397301002	R932007801
MTM01/31	100-315 (1450-4568)	K397301003	R932007802
MTM01-E/ ¹⁾	5-315 (72,5-4568)	-	-

¹⁾ With TUEV type tested safety relief valve according to PED 97/23/EC, with not adjustable pressure setting value

Gear Pumps

Gear Pumps Group 1 with Splined Shaft



Code	Displacement cc/rev	Flow at 1400 rpm l/min (gpm)	p2 bar (psi)	p3 bar (psi)	Type	Material Number
11AS	1,25	1,8 (0,48)	250 (3626)	270 (3916)	K01CV640S1260	R932011185
12AS	1,60	2,4 (0,63)	250 (3626)	270 (3916)	K01CV640S1261	R932011186
13AS	2,00	3,0 (0,79)	250 (3626)	270 (3916)	K01CV640S1262	R932011187
14AS	2,50	3,7 (0,98)	250 (3626)	270 (3916)	K01CV640S1263	R932011188
15AS	3,15	4,7 (1,24)	250 (3626)	270 (3916)	K01CV640S1264	R932011189
16AS	3,65	5,5 (1,45)	250 (3626)	270 (3916)	K01CV640S1265	R932011190
17AS	4,20	6,3 (1,66)	230 (3336)	250 (3626)	K01CV640S1266	R932011191
18AS	5,00	7,5 (1,98)	210 (3046)	230 (3336)	K01CV640S1252	R932011192
19AS	5,70	8,5 (2,24)	210 (3046)	230 (3336)	K01CV640S1247	R932011193
20AS	7,40	11,1 (2,93)	180 (2611)	200 (2901)	K01CV640S1249	R932011194

Note

All pumps have anti-clockwise rotation.

Flow rate and Pressure

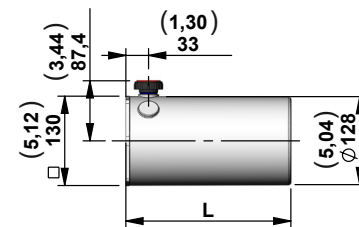
Flow Rate 50 Hz l/min (gpm)	N° poles	RPM	Pump cc/rpm	Motor three phase 230/400V				Flow Rate 50 Hz l/min (gpm)	N° poles	RPM	Pump cc/rpm	Motor three phase 230/400V	
				0,55 kW bar (psi)	0,75 kW bar (psi)	1,1 kW bar (psi)	1,5 kW bar (psi)					2 kW bar (psi)	
1,7 (0,45)	4	1400	1,25	198 (2872)	250(3626)	250(3626)	250(3626)	3,5 (0,92)	2	2800	1,25	250 (3626)	
2,2 (0,58)	4	1400	1,60	153 (2219)	208(3017)	250(3626)	250(3626)	4,4 (1,16)	2	2800	1,60	250 (3626)	
2,8 (0,74)	4	1400	2,00	120 (1740)	163(2364)	240(3481)	250(3626)	5,6 (1,48)	2	2800	2,00	218 (3162)	
3,5 (0,92)	4	1400	2,50	96 (1392)	131(1900)	192(2785)	250(3626)	7,0 (1,85)	2	2800	2,50	174 (2524)	
4,4 (1,16)	4	1400	3,15	76 (1102)	104(1508)	153(2219)	208(3017)	8,8 (2,32)	2	2800	3,15	139 (2016)	
5,1 (1,35)	4	1400	3,65	66 (957)	90 (1305)	132(1914)	180(2611)	10,2 (2,69)	2	2800	3,65	120 (1740)	
5,8 (1,53)	4	1400	4,20	58 (841)	79 (1146)	116(1682)	158(2291)	11,7 (3,09)	2	2800	4,20	104 (1508)	
7,0 (1,85)	4	1400	5,00	48 (696)	65 (957)	96 (1392)	131(1900)	14,0 (3,70)	2	2800	5,00	87 (1262)	
7,9 (2,01)	4	1400	5,70	42 (609)	58 (841)	85 (1233)	116(1682)	15,9 (4,20)	2	2800	5,70	76 (1102)	
10,3 (2,72)	4	1400	7,40	-	44 (638)	65 (943)	89 (1291)	20,7 (5,47)	2	2800	7,40	59 (856)	

Oil Tanks

Technical Data for Plastic Tanks

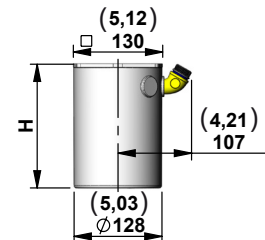
Temperature range	°C (°F)	-15....+70 (5....158)
Materials	PE=Polyethylene - PP=Polypropilene	
Seal	For tanks codes S335-S336-S337-S338-S339-S340-S341-S342 is necessary to use the O-RING Ø112x3, R-Number: R932000190. For all the other tanks except the codes above is necessary to use the O-RING 4437 (Ø110,7x3,53), R-Number:R932000188	

Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number
S335	1,0 (0,26)	0,7 (0,18)	140 (5,51)	PP	K01K3976SE372	R932002035
S336	1,8 (0,48)	1,2 (0,32)	180 (7,09)		K01K3976SE373	R932002036
S337	2,5 (0,66)	1,7 (0,45)	240 (9,45)		K01K3976SE374	R932002037
S338	3,0 (0,79)	2,3 (0,61)	285 (11,22)		K01K3976SE375	R932002038



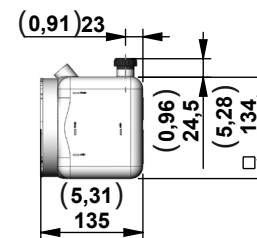
For this tanks is necessary to use the O-RING Ø112x3
code: C000191000 R-Number: R932000190

S339	1,0 (0,26)	0,6 (0,16)	140 (5,51)	PP	K01K3976SE376	R932007882
S340	1,8 (0,48)	1,1 (0,29)	180 (7,09)		K01K3976SE377	R932007883
S341	2,5 (0,66)	1,7 (0,45)	240 (9,45)		K01K3976SE378	R932007884
S342	3,0 (0,79)	2,3 (0,61)	285 (11,22)		K01K3976SE379	R932007885

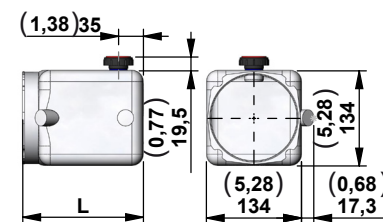


For this tanks is necessary to use the O-RING Ø112x3
code: C000191000 R-Number: R932000190

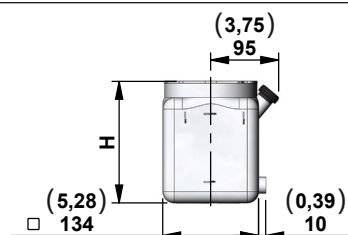
S246	1,0 (0,26)	0,9 (0,24)		PE	K01K3976SE270	R932002016
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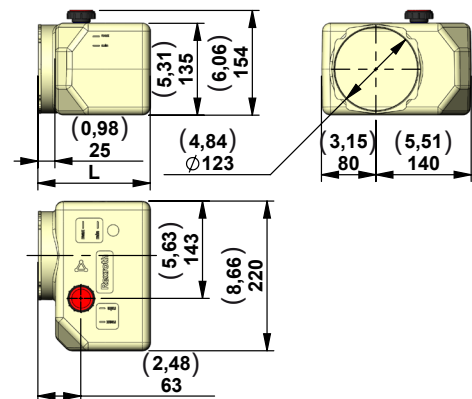
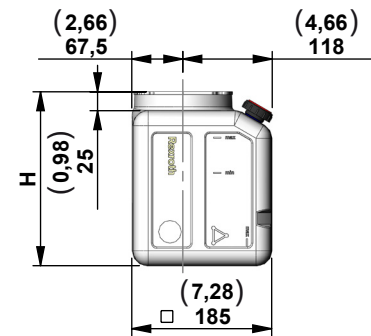
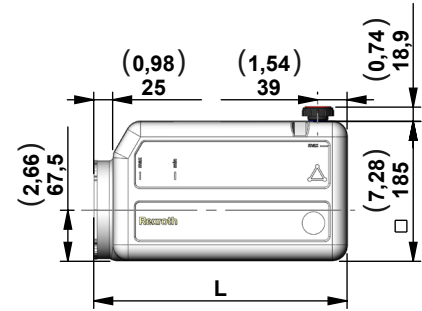
S247	1,8 (0,48)	1,6 (0,42)	170 (6,71)	PE	K01K3976SE271	R932002017
S248	2,5 (0,66)	2,2 (0,58)	240 (9,45)		K01K3976SE272	R932002018



S249	1,0 (0,26)	0,9 (0,24)	135 (5,31)	PE	K01K3976SE273	R932002019
S250	1,8 (0,48)	1,6 (0,42)	170 (6,71)		K01K3976SE274	R932002020
S251	2,5 (0,66)	2,2 (0,58)	240 (9,45)		K01K3976SE275	R932002021

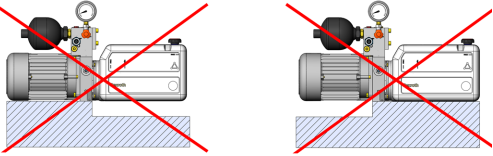
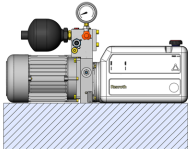


Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number
S343	5,0 (1,32)	3,8 (1,00)	230 (9,05)	PE		K01K3976SE380 R932002039
S331	5,0 (1,32)	3,8 (1,00)	230 (9,05)	PE Black		K01K3976SE368 R932007872
S413	7,0 (1,85)	5,5 (1,45)	310 (12,20)	PE		K01K3976SE439 R932007873
S414	7,0 (1,85)	5,5 (1,45)	310 (12,20)	PE Black		K01K3976SE440 R932007874
S415	8,0 (2,11)	6,5 (1,72)	335 (13,19)	PE		K01K3976SE441 R932006036
S416	8,0 (2,11)	6,5 (1,72)	335 (13,19)	PE Black		K01K3976SE442 R932007875
S316	9,0 (2,38)	7,3 (1,93)	365 (14,37)	PE		K01K3976SE351 R932002031
S314	9,0 (2,38)	7,3 (1,93)	365 (14,37)	PE Black		K01K3976SE451 R932007876
S417	12,0 (3,17)	10,0 (2,64)	495 (19,50)	PE		K01K3976SE443 R932006768
S418	12,0 (3,17)	10,0 (2,64)	495 (19,50)	PE Black		K01K3976SE444 R932007877
S344	5,0 (1,32)	3,5 (0,92)	230 (9,05)	PE		K01K3976SE381 R932002040
S332	5,0 (1,32)	3,5 (0,92)	230 (9,05)	PE Black		K01K3976SE369 R932008240
S419	7,0 (1,85)	5,5 (1,45)	310 (12,20)	PE		K01K3976SE445 R932007879
S420	7,0 (1,85)	5,5 (1,45)	310 (12,20)	PE Black		K01K3976SE446 R932007880
S421	8,0 (2,11)	6,5 (1,72)	335 (13,19)	PE		K01K3976SE447 R932006037
S422	8,0 (2,11)	6,5 (1,72)	335 (13,19)	PE Black		K01K3976SE448 R932007881
S315	9,0 (2,38)	7,3 (1,93)	365 (14,37)	PE		K01K3976SE350 R932002030
S313	9,0 (2,38)	7,3 (1,93)	365 (14,37)	PE Black		K01K3976SE348 R932002029
S423	12,0 (3,17)	10,0 (2,64)	495 (19,50)	PE		K01K3976SE349 R932006038
S424	12,0 (3,17)	10,0 (2,64)	495 (19,50)	PE Black		K01K3976SE450 R932006278
S395	3,0 (0,79)	1,7 (0,45)	140 (5,51)	PE		K01K3976SE470 R932007903
S396	3,7 (0,98)	2,2 (0,58)	165 (6,50)			K01K3976SE471 R932007904
S392	5,0 (1,32)	3,1 (0,82)	215 (8,46)			K01K3976SE464 R932007365
S394	8,4 (2,22)	5,5 (1,45)	340 (13,39)			K01K3976SE466 R932007435
S397	12,7 (3,35)	8,4 (2,2)	500 (19,68)			K01K3976SE472 R932007905

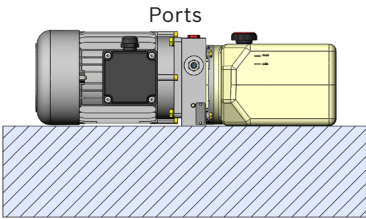
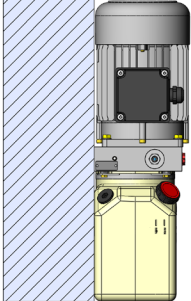
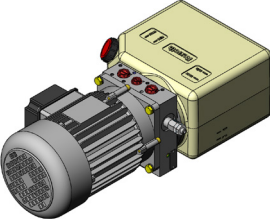
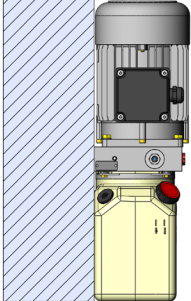
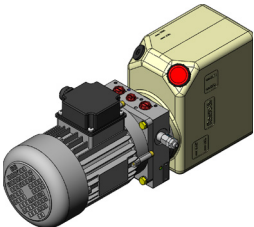
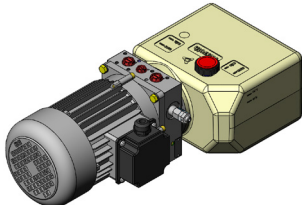
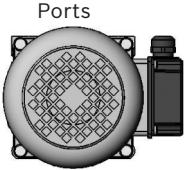
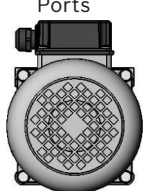
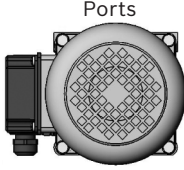
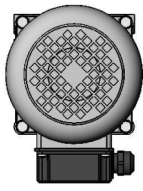
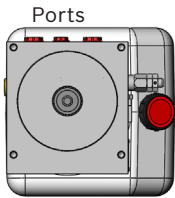
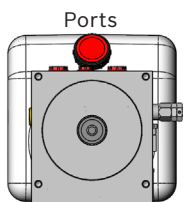
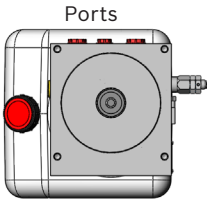
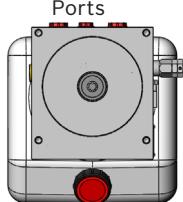


Code	Tank capacity l (USgal)	Useable capacity l (USgal)	L mm (inch)	Material	Type	Material Number	
S395	3,0 (0,79)	1,7 (0,45)	140 (5,51)	PE	K01K3976SE470	R932007903	
S396	3,7 (0,98)	2,2 (0,58)	165 (6,50)		K01K3976SE471	R932007904	
S392	5,0 (1,32)	3,1 (0,82)	215 (8,46)		K01K3976SE464	R932007365	
S394	8,4 (2,22)	5,5 (1,45)	340 (13,39)		K01K3976SE466	R932007435	
S397	12,7 (3,35)	8,4 (2,2)	500 (19,68)		K01K3976SE472	R932007905	
S434	3,0 (0,79)	1,7 (0,45)	140 (5,51)	PE	K01K3976SE478	R932007910	
S435	3,7 (0,98)	2,2 (0,58)	165 (6,50)		K01K3976SE479	R932007911	
S436	5,0 (1,32)	3,1 (0,82)	215 (8,46)		K01K3976SE480	R932007912	
S437	8,4 (2,22)	5,5 (1,45)	340 (13,39)		K01K3976SE481	R932007913	
S438	12,7 (3,35)	8,4 (2,2)	500 (19,68)		K01K3976SE482	R932007914	
S374	5,0 (1,32)	4,0 (1,06)	219 (8,62)	PE	K01K3976SE415	R932002042	
S376	7,0 (1,85)	5,4 (1,43)	271 (10,67)		K01K3976SE417	R932002044	
S378	8,0 (2,11)	6,6 (1,74)	323 (12,72)		K01K3976SE419	R932002046	
S380	11,0 (2,91)	9,6 (2,54)	453 (17,83)		K01K3976SE421	R932002048	
S375	5,0 (1,32)	4,0 (1,06)	219 (8,62)	PE	K01K3976SE416	R932002043	
S377	7,0 (1,85)	5,4 (1,43)	271 (10,67)		K01K3976SE418	R932002045	
S379	8,0 (2,11)	6,6 (1,74)	323 (12,72)		K01K3976SE420	R932002047	
S381	11,0 (2,91)	9,6 (2,54)	453 (17,83)		K01K3976SE422	R932002049	

Assembly Kit for Plastic Tank - MT

Oil Tank	Code for MT	Material Number	Please make sure that the tank and motor are mounted correctly
S335 - S336 - S337 - S338 - S339 - S340 S341 - S342	K2501VT016	R932007391	
S246 - S247 - S248 - S249 - S250 - S251	K2501VT025	R932011181	
S413 - S414 - S419 - S420 - S415 - S416 - S421 - S422 - S332 - S344 - S313 - S315 - S343 - S331 - S316 - S314 - S374 - S375 - S376 - S377 - S378 - S379 - S380 - S381 - S417 - S418 - S423 - S424 - S395 - S396 - S392 - S394 - S397 - S434 - S435 - S436 - S437 - S438	K2501VT015	R932008244	

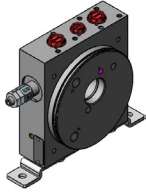
Mounting position

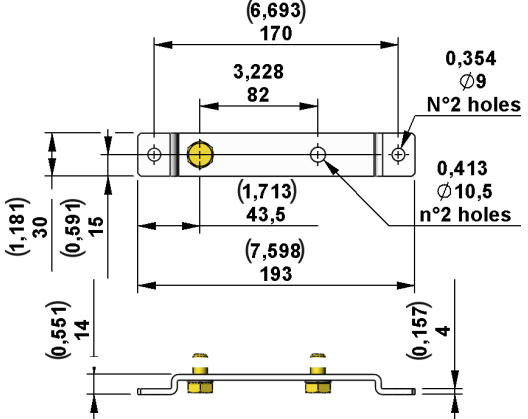
Mounting position		1	2
Code	Image		
01	1		
V1	2		
L	3		
T	4		
R	5		
Terminal Box Position for A.C. Motors		6-Standard	7
Code	Image		
-	6		
M2	7		
M3	8		
M4	9		
Oil Cap Position for V1 only		10	7
Code	Image		
-	10		
LU	11		
LO	12		
LP	13		

Mounting Brackets

Support for Manifold MT series

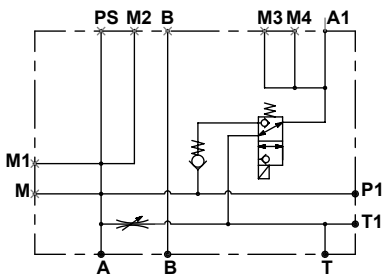
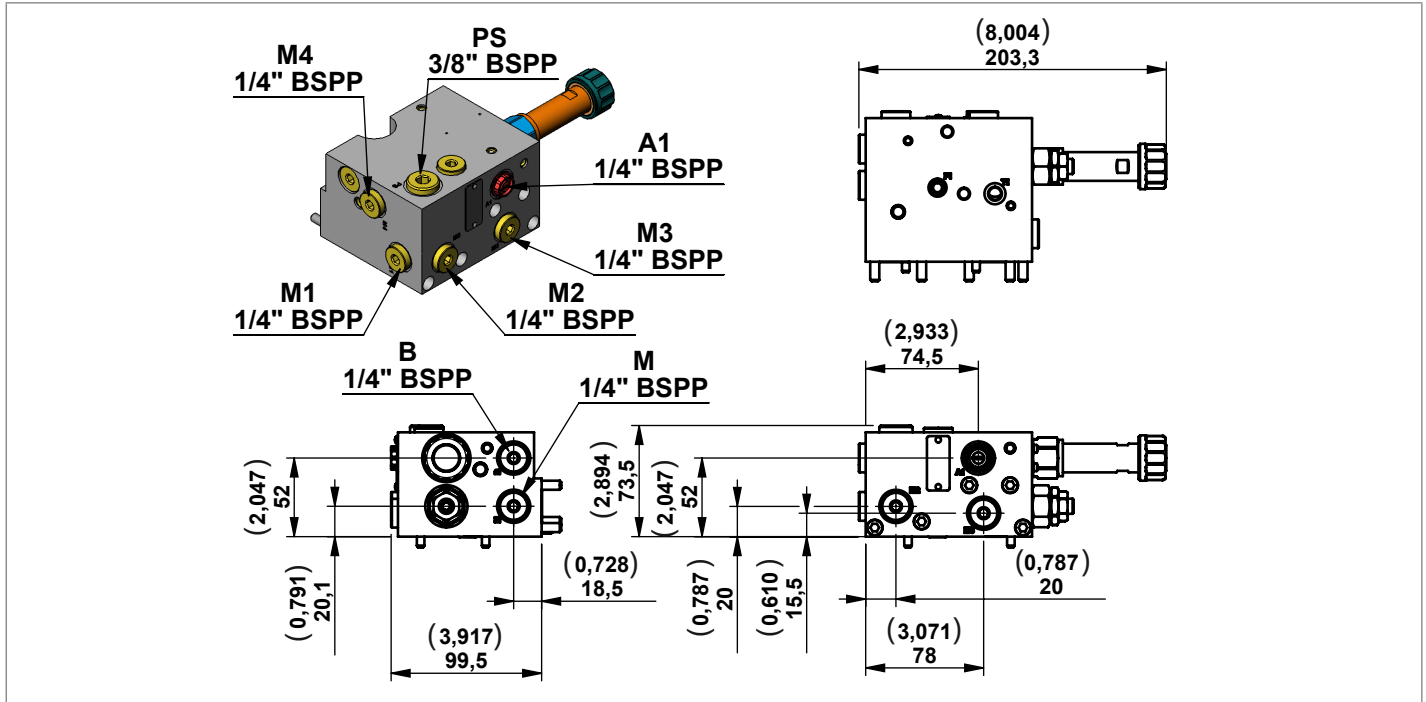
Code	Central manifold	Type	Material number
GMT	MT	K01K331528000	R932011175





Modular Stackable Elements

Modular Stackable Element MTA01

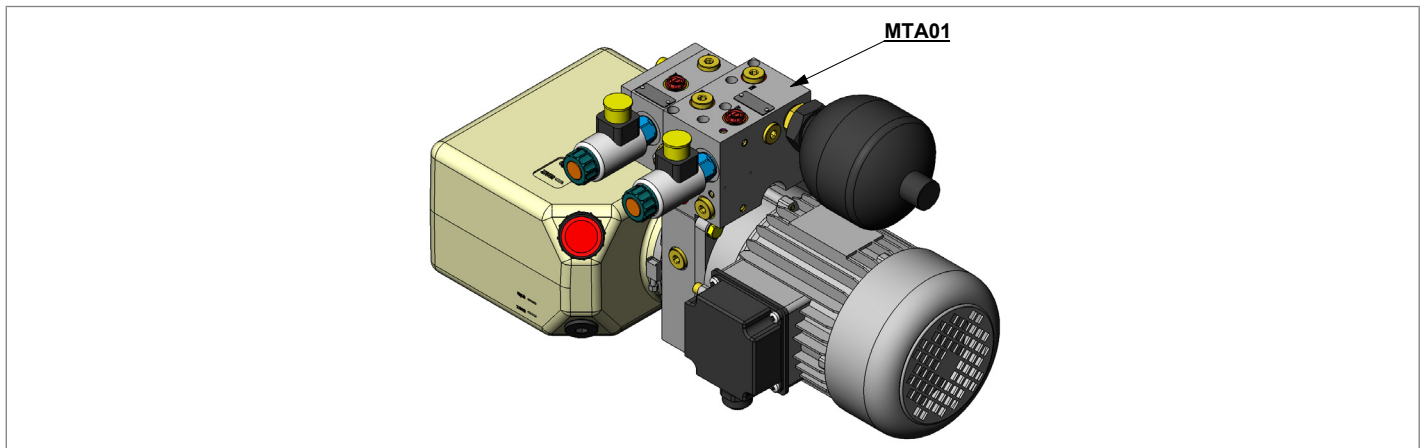


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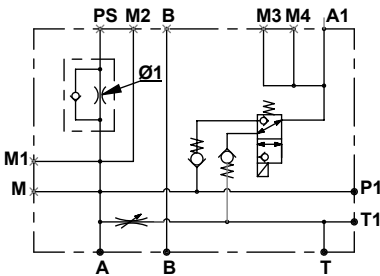
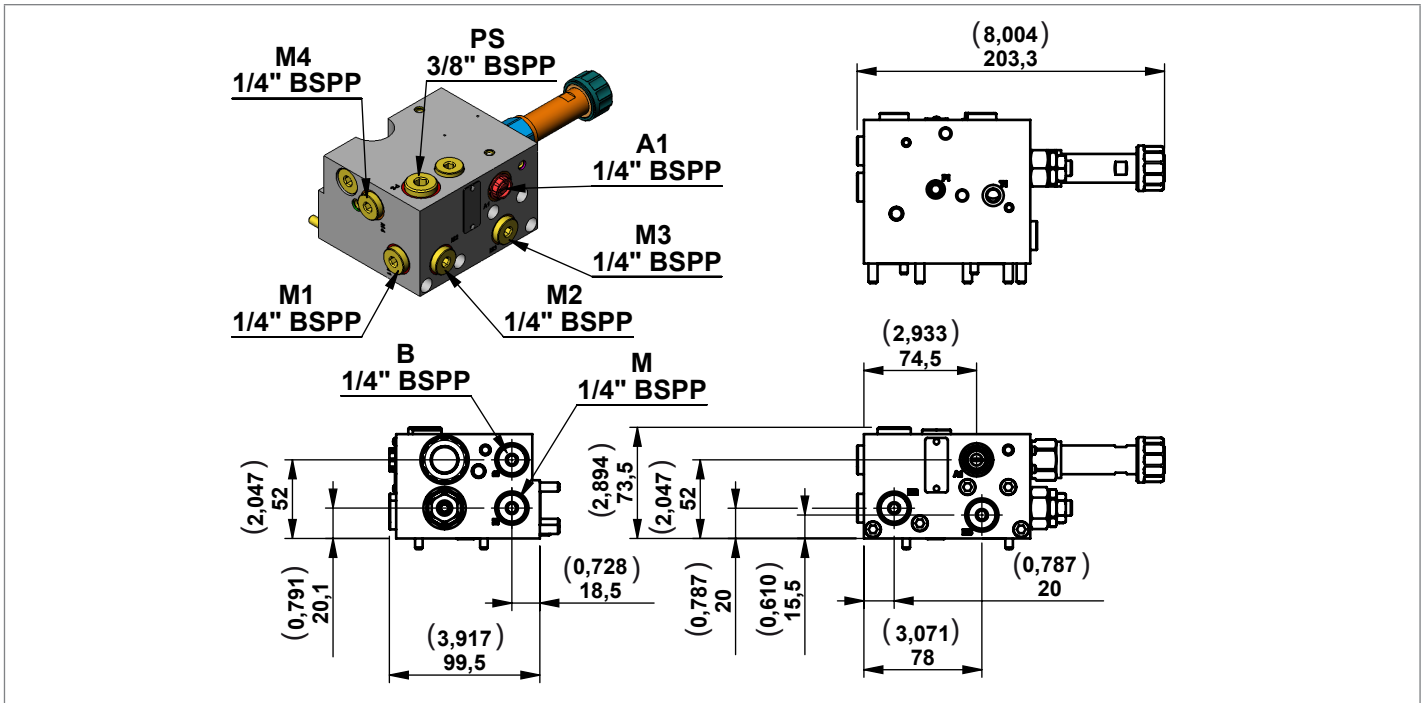
- ▶ Use coil model K4
- ▶ For 3/2 KSDE solenoid valve check data sheet RE18136.
- ▶ If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
MTA01	Kit MTA01 Modular block	250 (3626)	12,0 (3,17)	0985900017	R932008163

Mounting Example



Modular Stackable Element MTA02

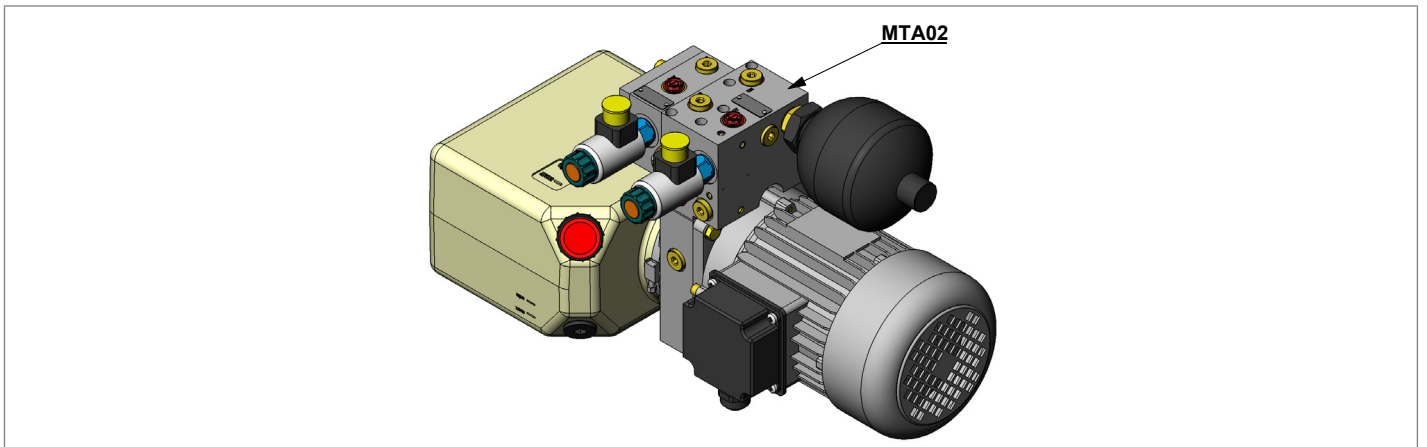


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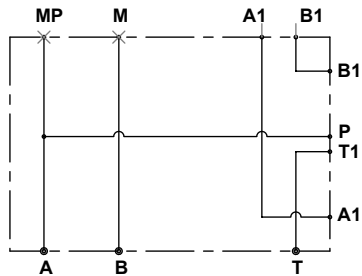
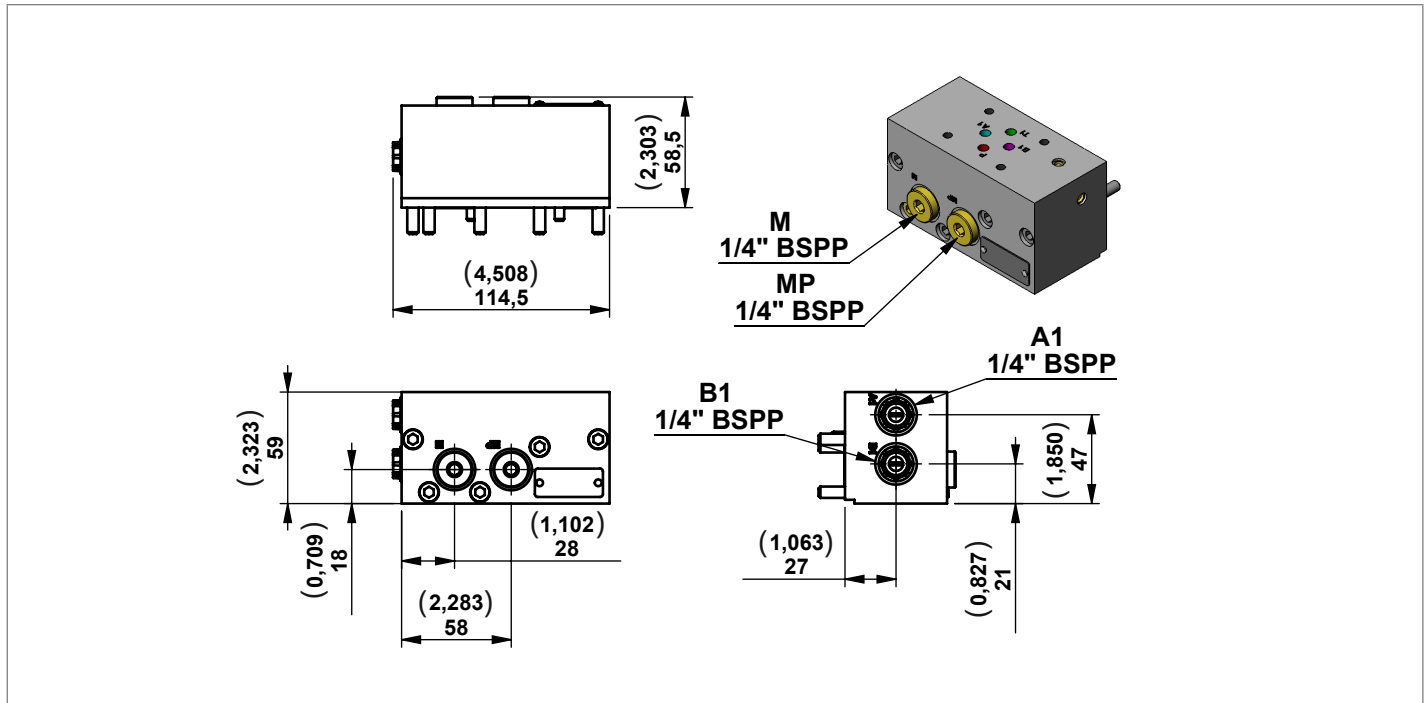
- ▶ Use coil model K4
- ▶ For 3/2 KSDE solenoid valve check data sheet RE18136.
- ▶ If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
MTA02	Kit MTA02 Modular block	250 (3626)	12,0 (3,17)	0985900021	R932010931

Mounting Example

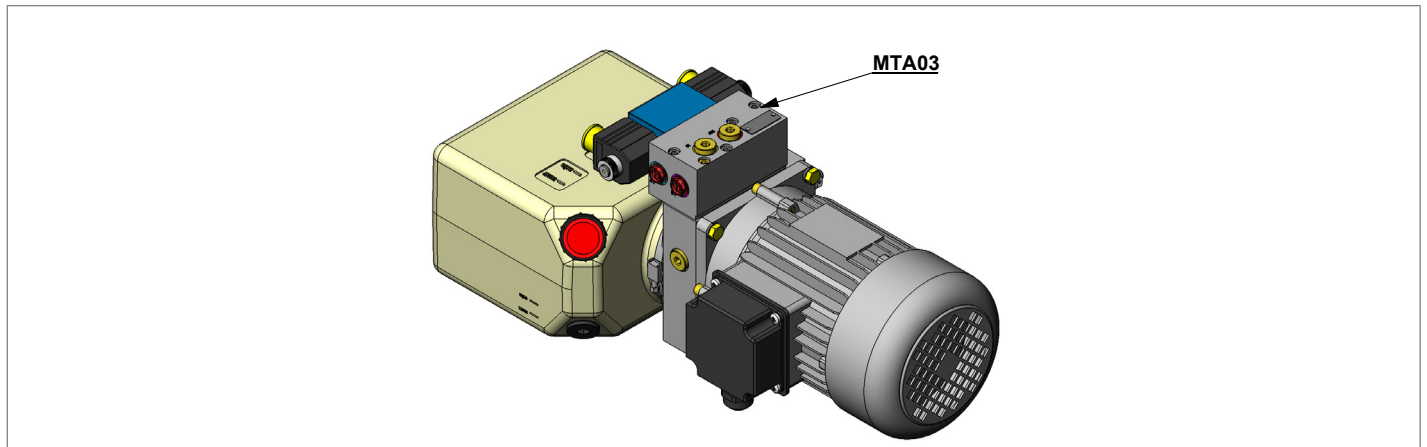


Modular Stackable Element MTA03

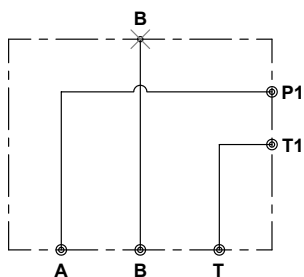
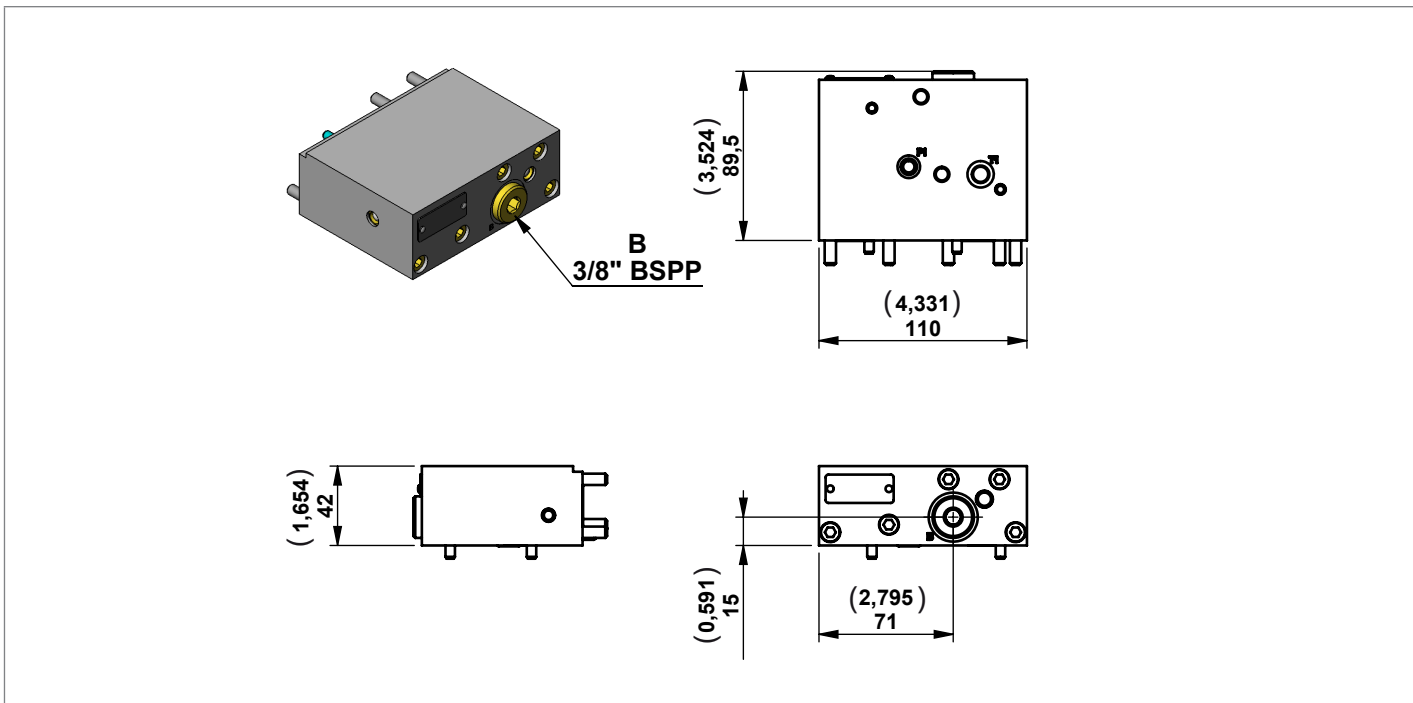


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
MTA03	Kit MTA03 Modular block	250 (3626)	20,0 (5,28)	0985900011	R932007989

Mounting Example



Modular Stackable Element MTA04

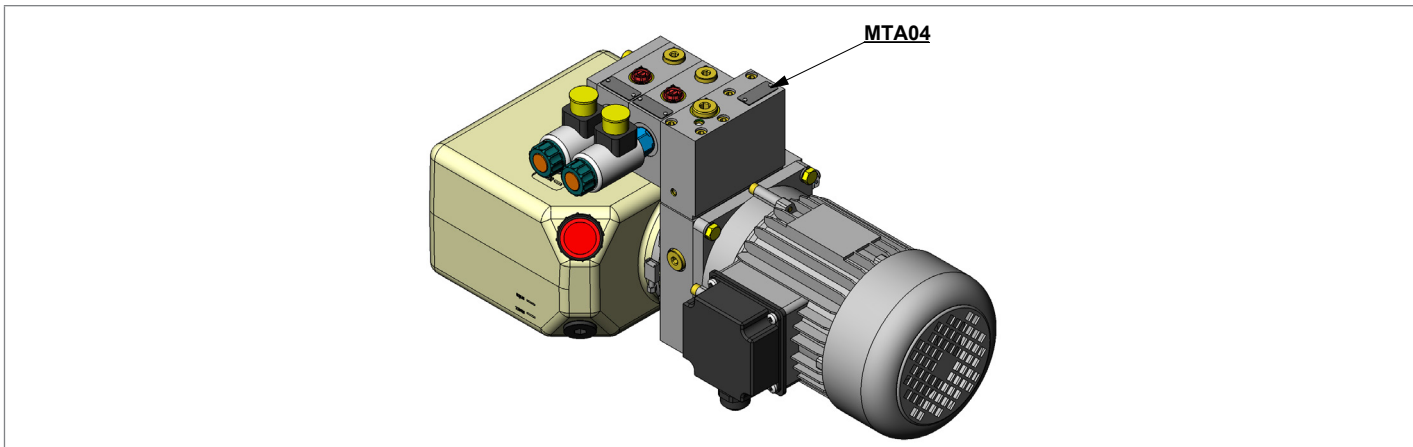


Note

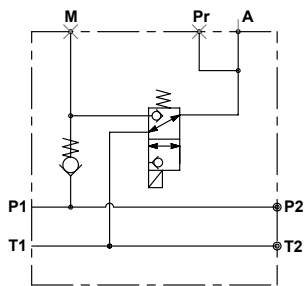
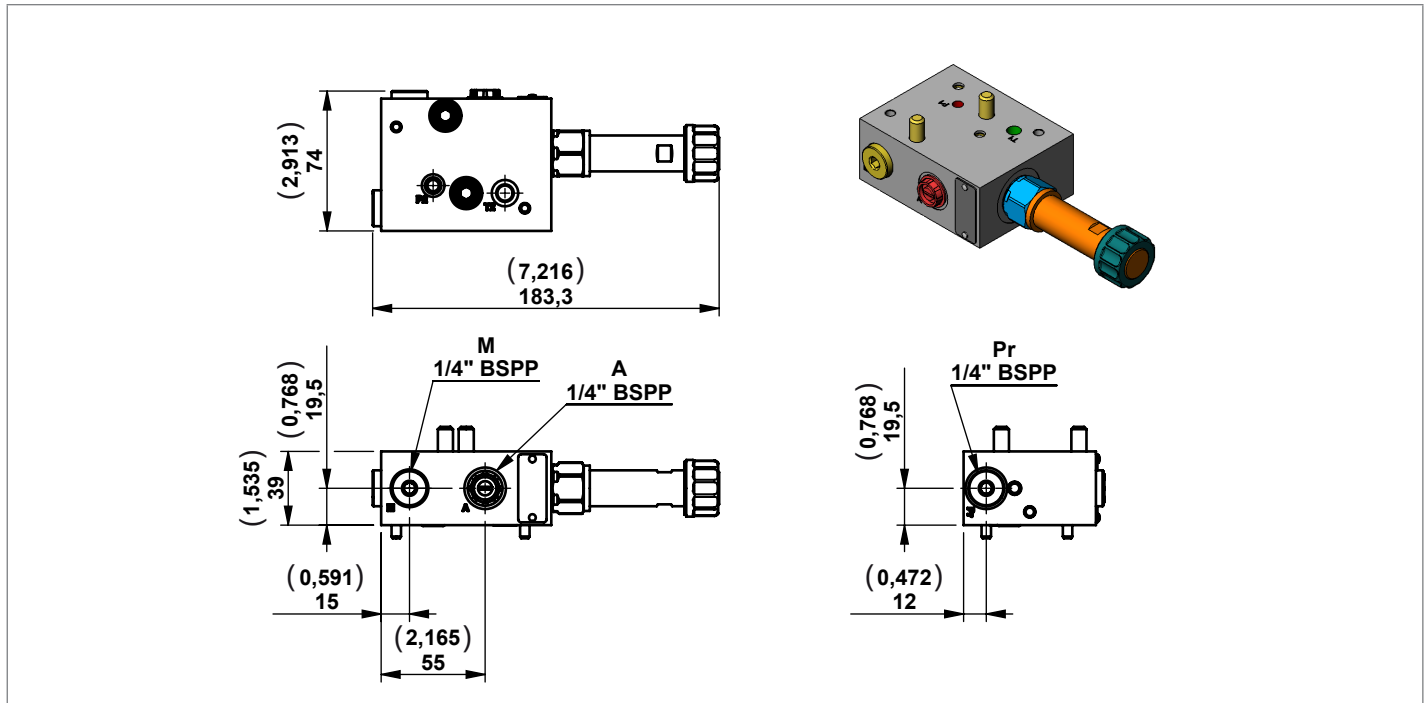
► If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
MTA04	Kit MTA04 Modular block	250 (3626)	20,0 (5,28)	0985900018	R932008172

Mounting Example



Modular Stackable Element MTD01

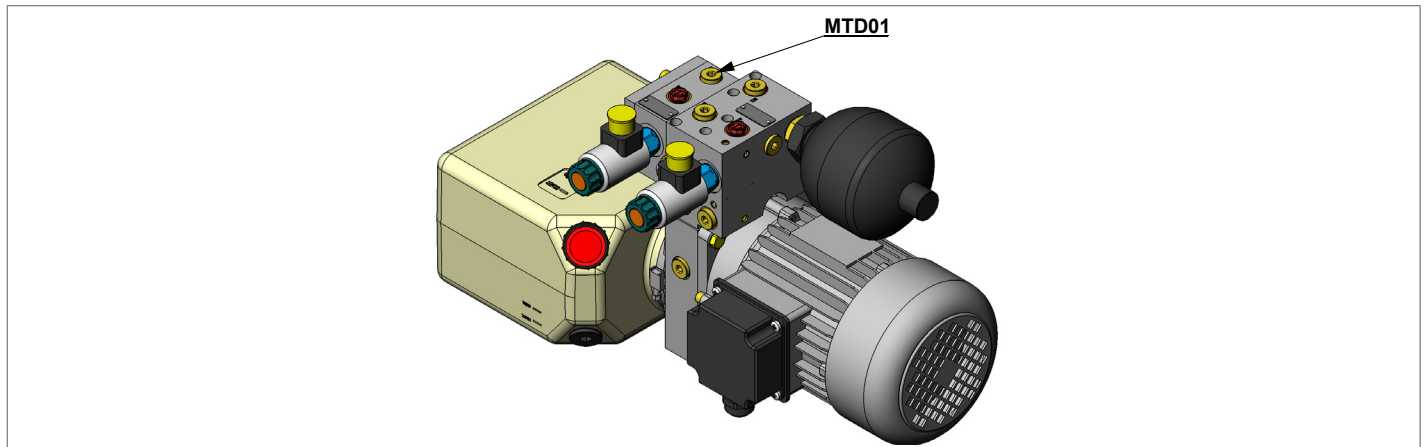


Note

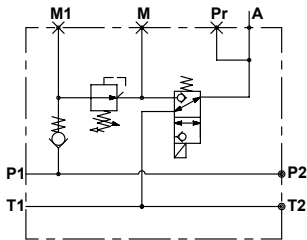
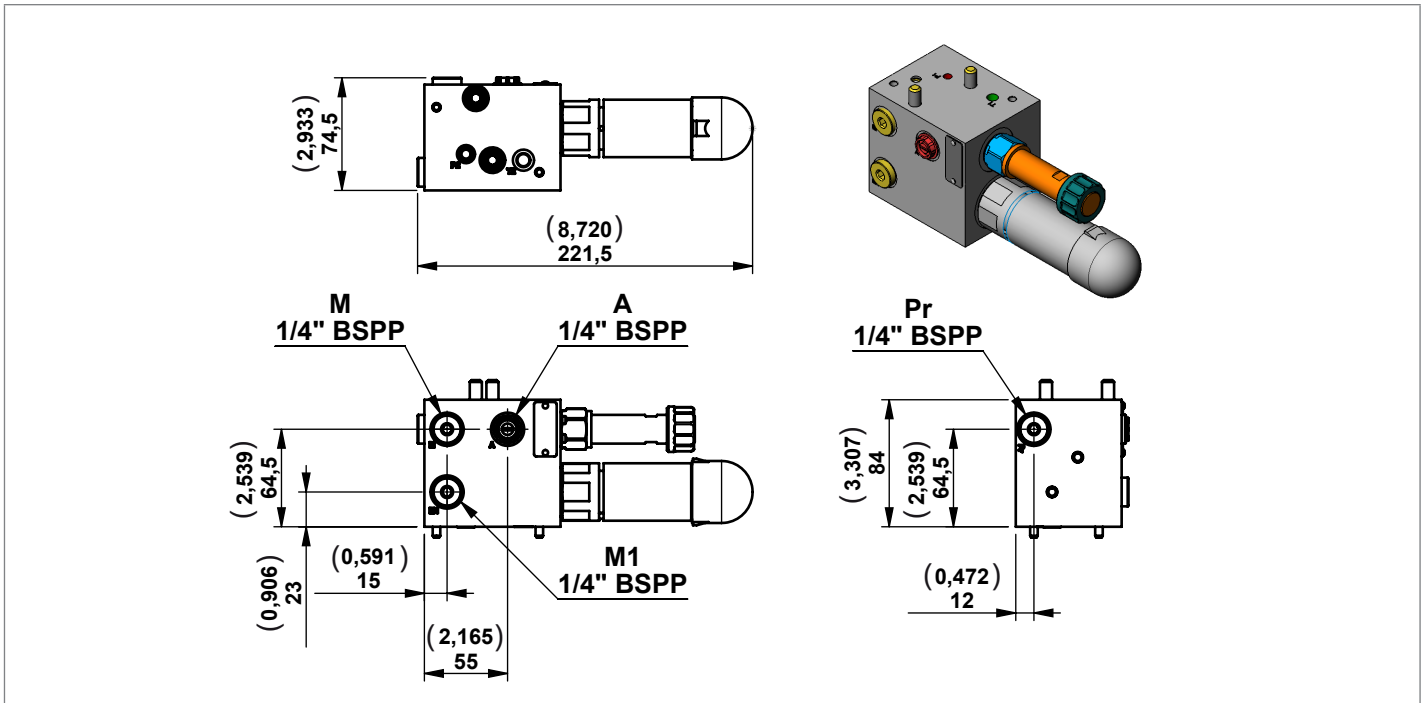
- ▶ Use coil model K4
- ▶ For 3/2 KSDE solenoid valve check data sheet RE18136.
- ▶ If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
MTD01	Kit MTD01 Modular block	250 (3626)	12,0 (3,17)	0985900001	R932007956

Mounting Example



Modular Stackable Element MTD02

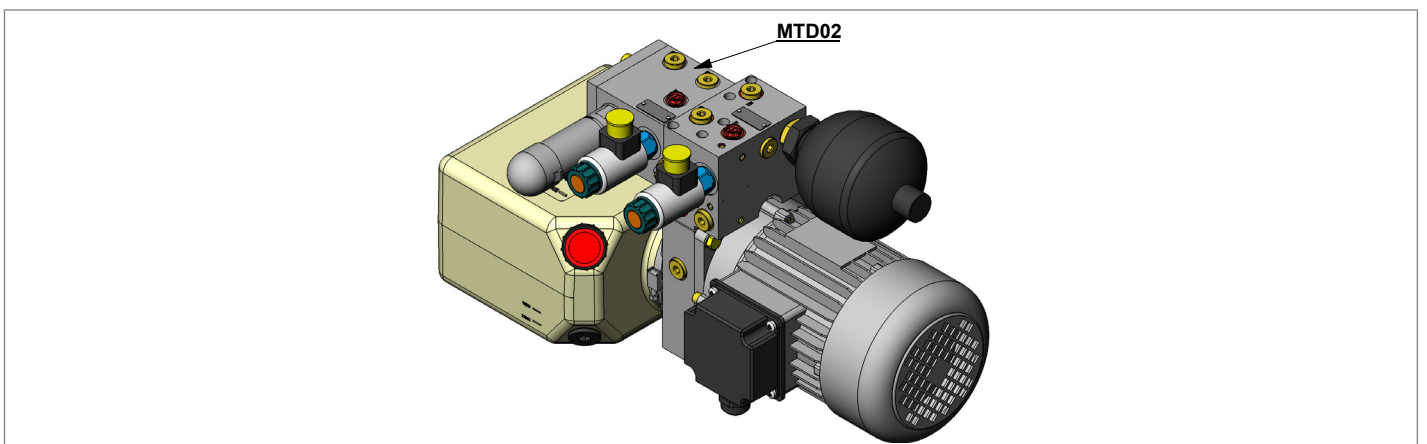


Note

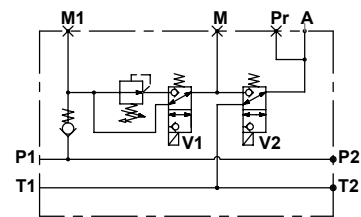
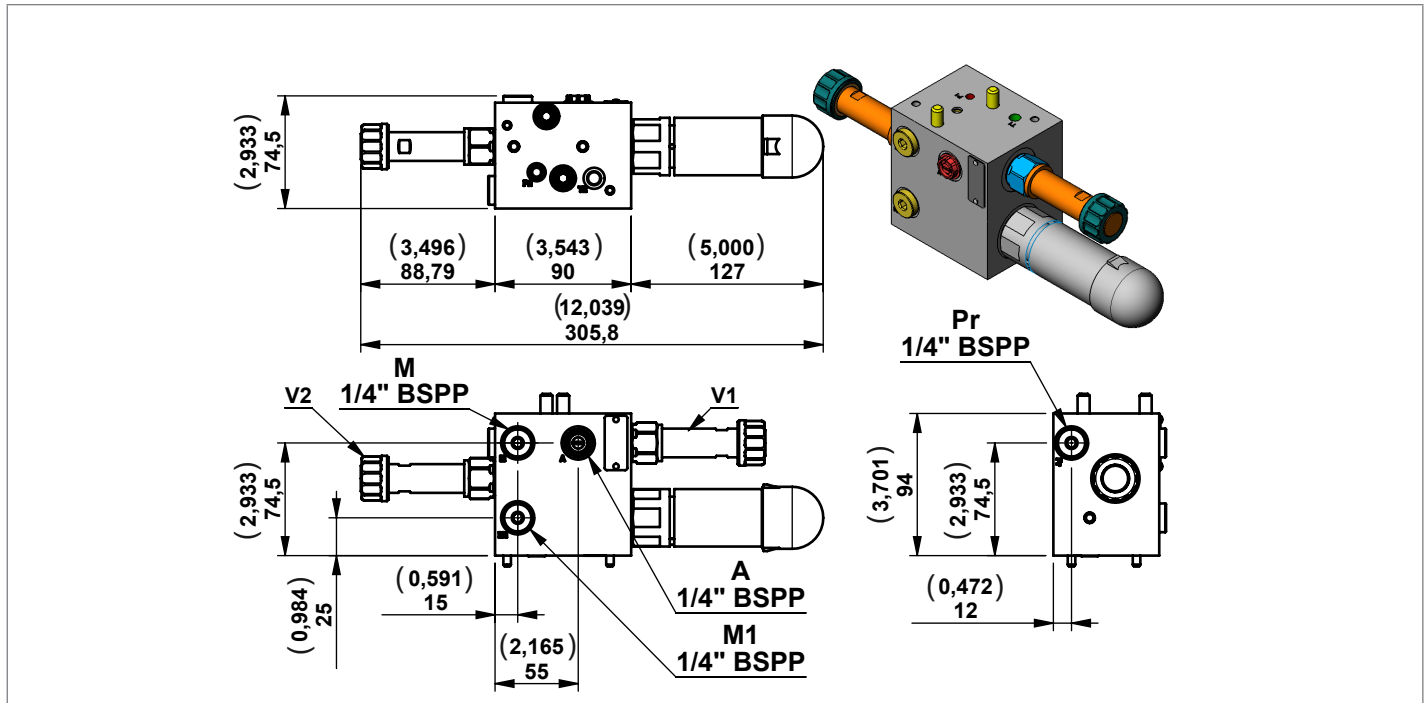
- ▶ Use coil model K4
- ▶ For 3/2 KSDE solenoid valve check data sheet RE18136.
- ▶ For KRD pressure reducing valve check data sheet RE18111.
- ▶ If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max Working Pressure bar (psi)	Max Flow l/min (gpm)	Pressure Stage	Type	Material Number
MTD02/1	Kit MTD02/1 Modular block with pressure reducing valve	250 (3626)	12,0 (3,17)	Pressure setting up to 100 bar (1450)	0985900002	R932007965
MTD02/2	Kit MTD02/2 Modular block with pressure reducing valve	250 (3626)	12,0 (3,17)	Pressure setting up to 210 bar (3046)	0985900003	R932007966

Mounting Example



Modular Stackable Element MTD03

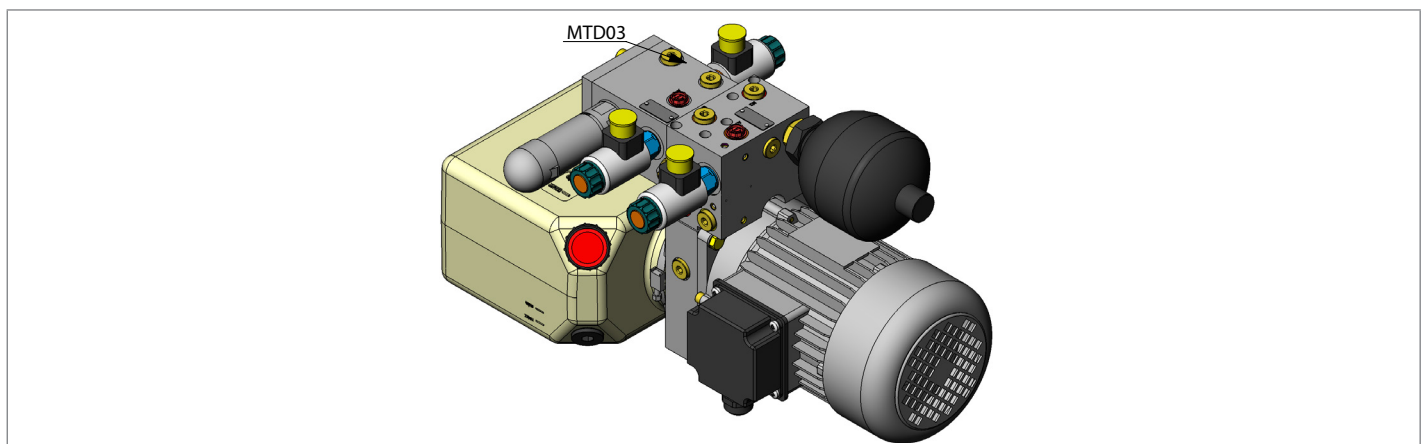


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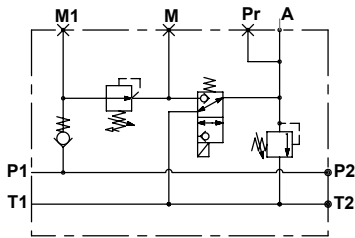
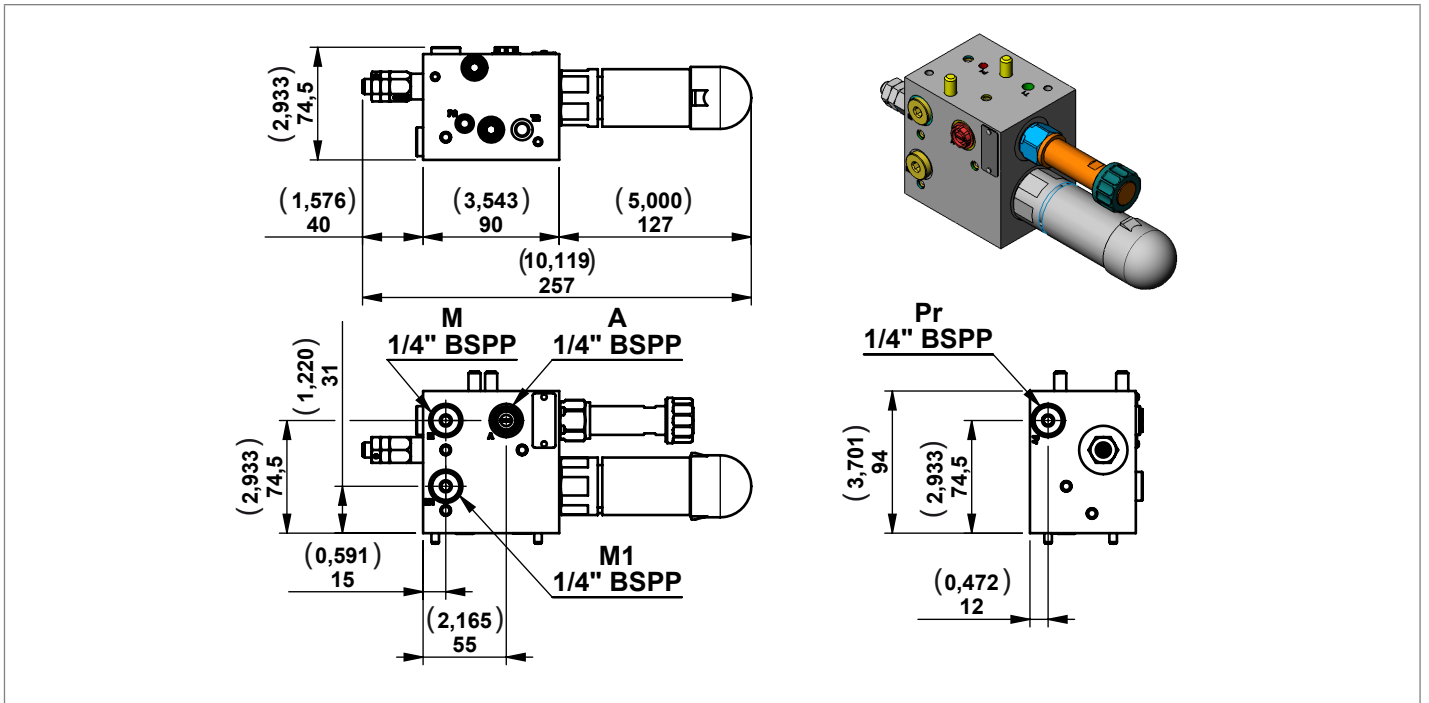
- ▶ Use coil model K4
- ▶ For 3/2 KSDE solenoid valve check data sheet RE18136.
- ▶ For KRD pressure reducing valve check data sheet RE18111.
- ▶ If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max Working Pressure bar (psi)	Max Flow l/min (gpm)	Pressure Stage	Type	Material Number
MTD03/1	Kit MTD03/1 Modular block with pressure reducing valve	250 (3626)	12,0 (3,17)	Pressure setting up to 100 bar (1450)	0985900005	R932007974
MTD03/2	Kit MTD03/2 Modular block with pressure reducing valve	250 (3626)	12,0 (3,17)	Pressure setting up to 210 bar (3046)	0985900006	R932007975

Mounting Example



Modular Stackable Element MTD04

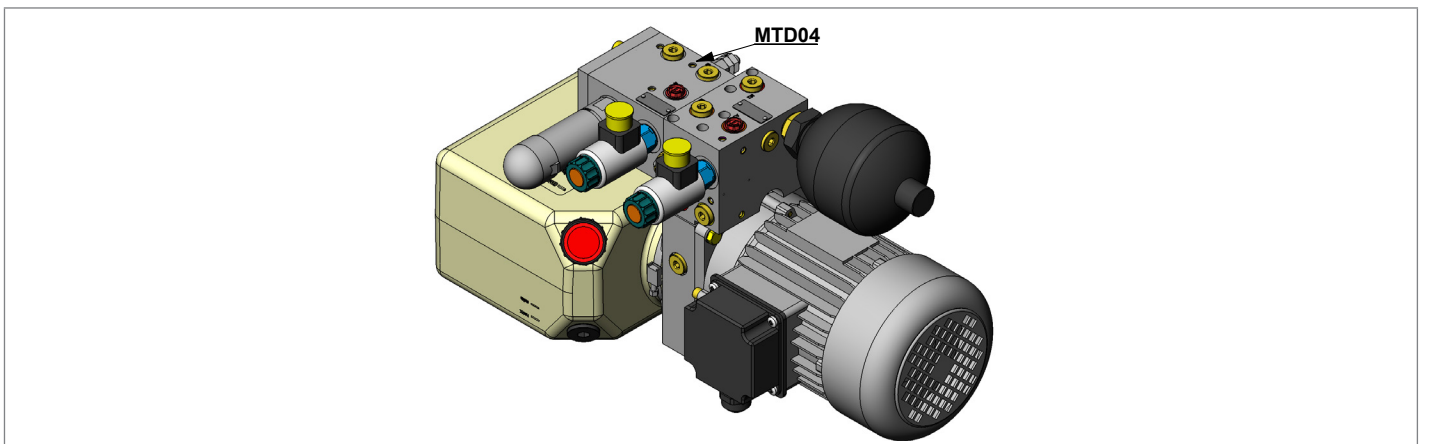


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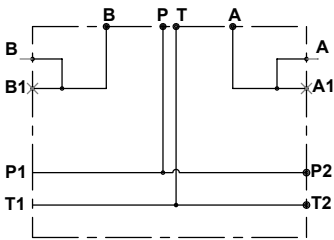
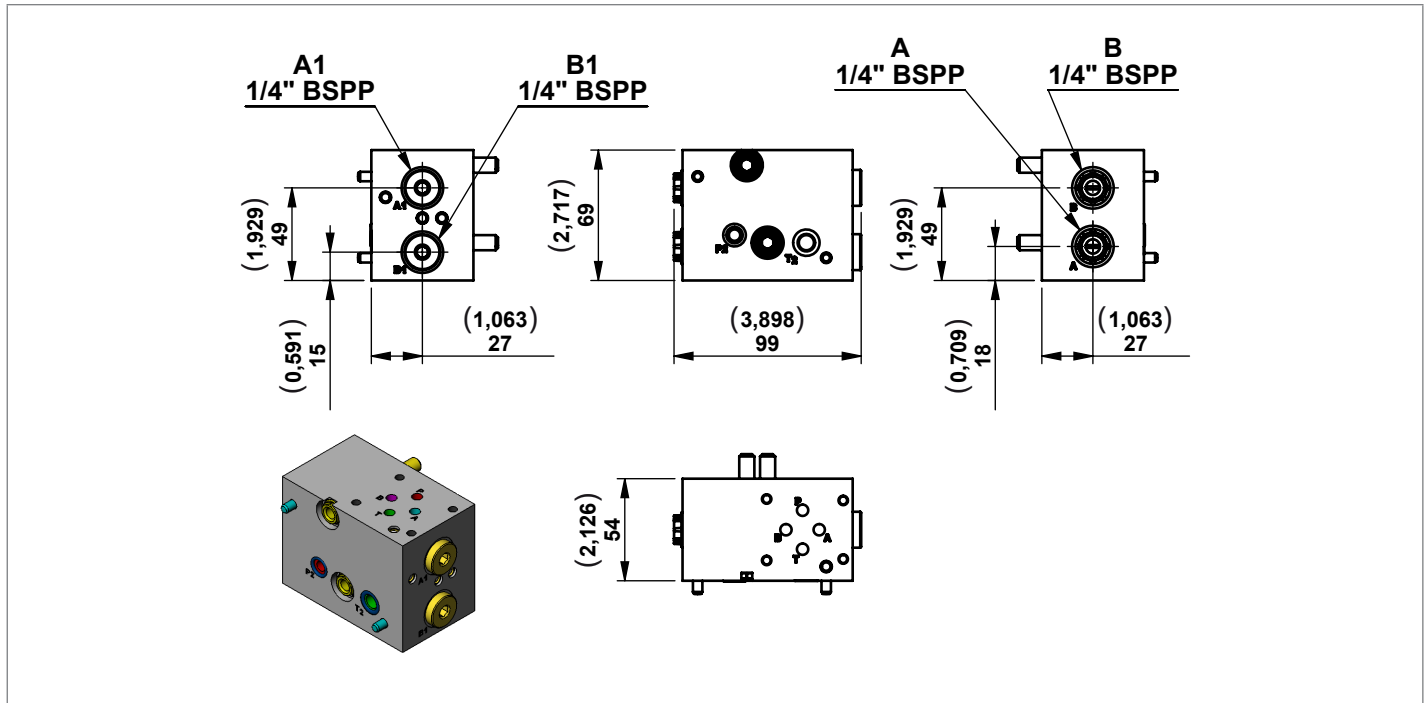
- ▶ Use coil model K4
- ▶ For 3/2 KSDE solenoid valve check data sheet RE18136.
- ▶ For KRD pressure reducing valve check data sheet RE18111.
- ▶ If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max Working Pressure bar (psi)	Max Flow l/min (gpm)	Pressure Stage	Type	Material Number
MTD04/1	Kit MTD04/1 Modular block with pressure reducing valve	250 (3626)	12,0 (3,17)	Pressure setting up to 100 bar (1450)	0985900008	R932007983
MTD04/2	Kit MTD04/2 Modular block with pressure reducing valve	250 (3626)	12,0 (3,17)	Pressure setting up to 210 bar (3046)	0985900009	R932007984

Mounting Example



Modular Stackable Element MTD08

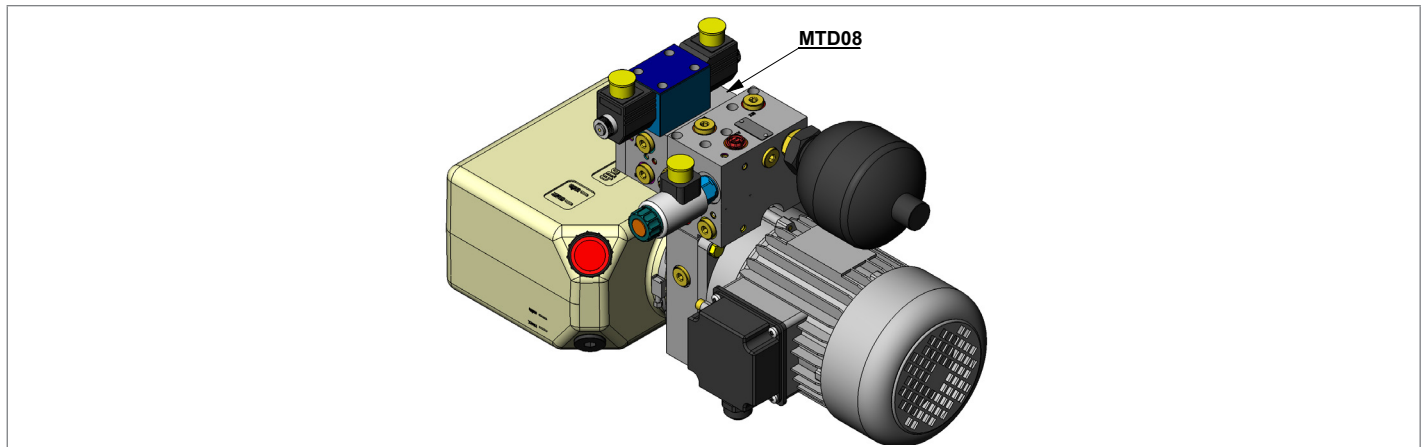


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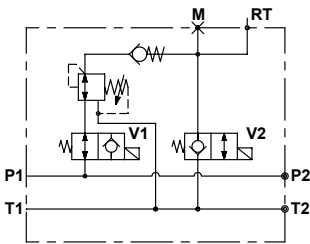
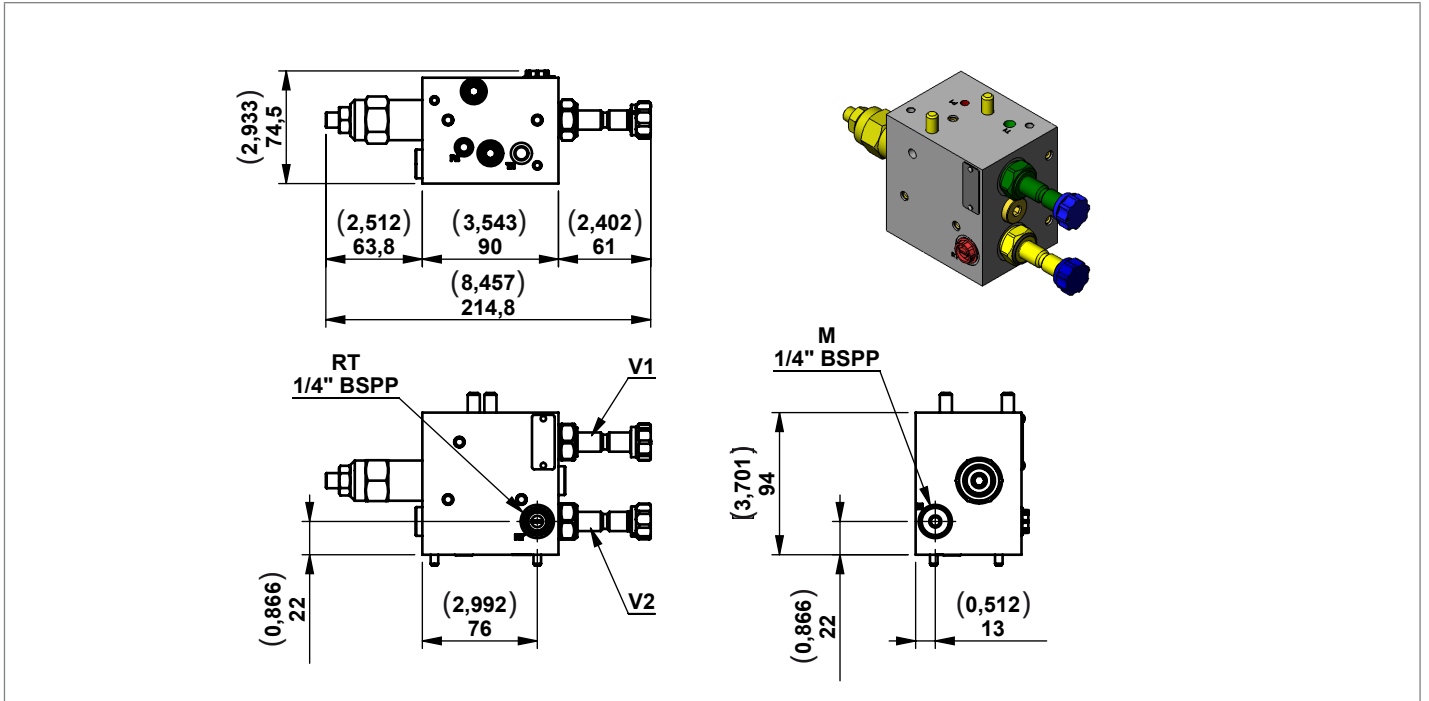
► If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
MTD08	Kit MTD08 Modular block	250 (3626)	20,0 (5,28)	0985900012	R932007997

Mounting Example



Modular Stackable Element RT60

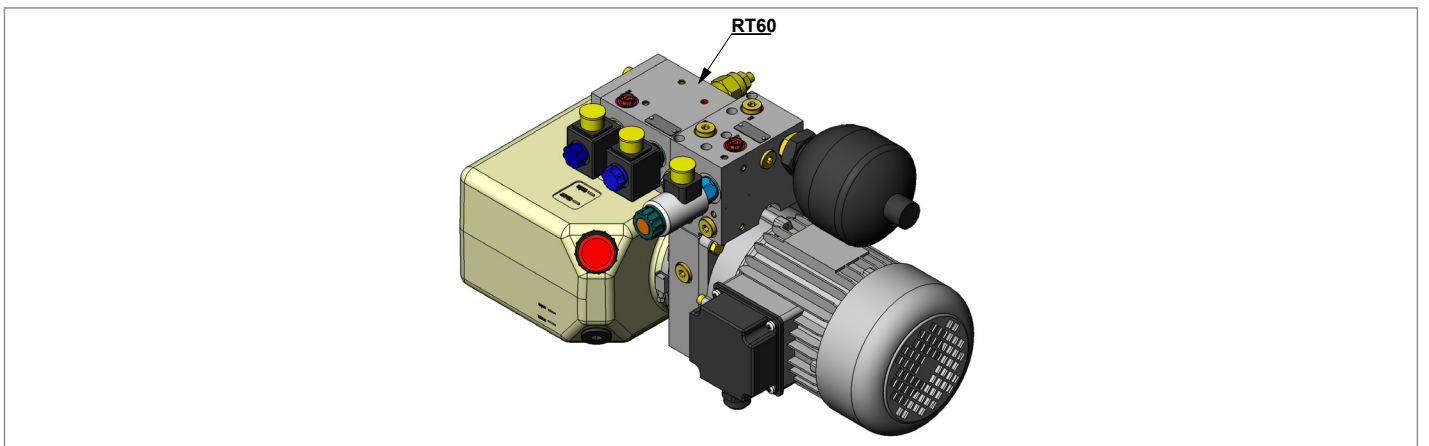


Note

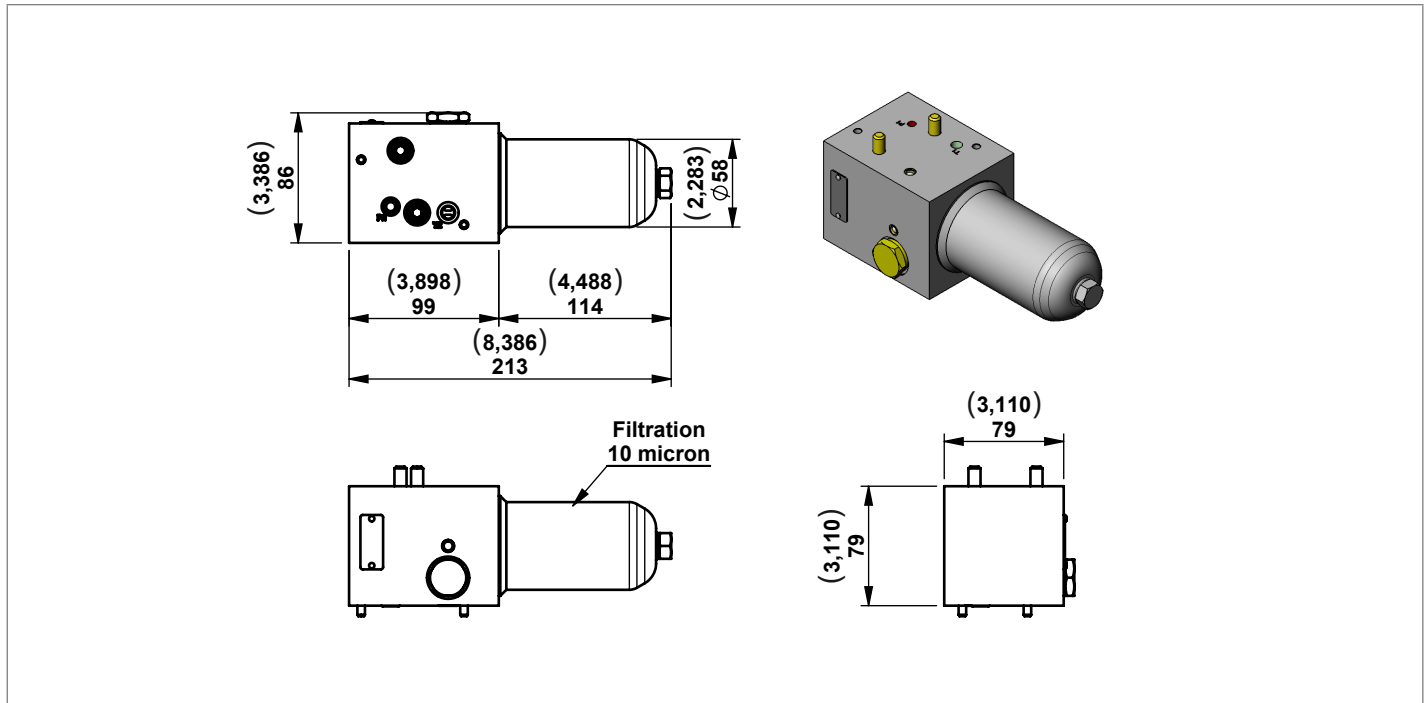
- ▶ Use Coil Model S8
- ▶ If using modular installation elements, the end plate MT (see page 27) must also be used.

Code	Description	Max Working Pressure bar (psi)	Max Flow l/min (gpm)	Pressure Stage	Type	Material Number
RT60/05	Kit RT60/05 Modular block with pressure reducing valve	250 (3626)	20,0 (5,28)	Pressure setting up to 10-50 bar (145-725)	0985900020	R932008367
RT60/08	Kit RT60/08 Modular block with pressure reducing valve	250 (3626)	20,0 (5,28)	Pressure setting up to 28-80 bar (406-1160)	0985900019	R932008361

Mounting Example

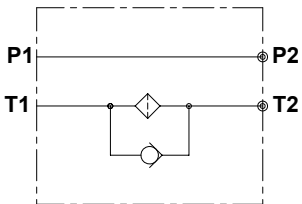


Modular Stackable Element MTF01



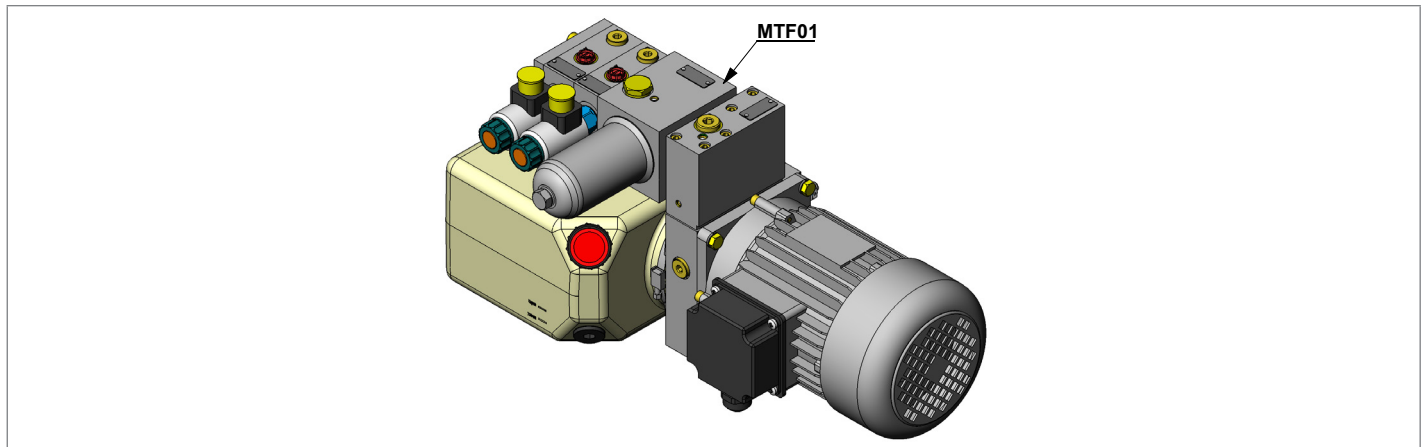
Note

- ▶ If using modular installation elements, the end plate MT (see page 27) must also be used.

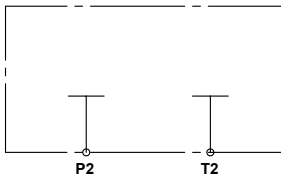
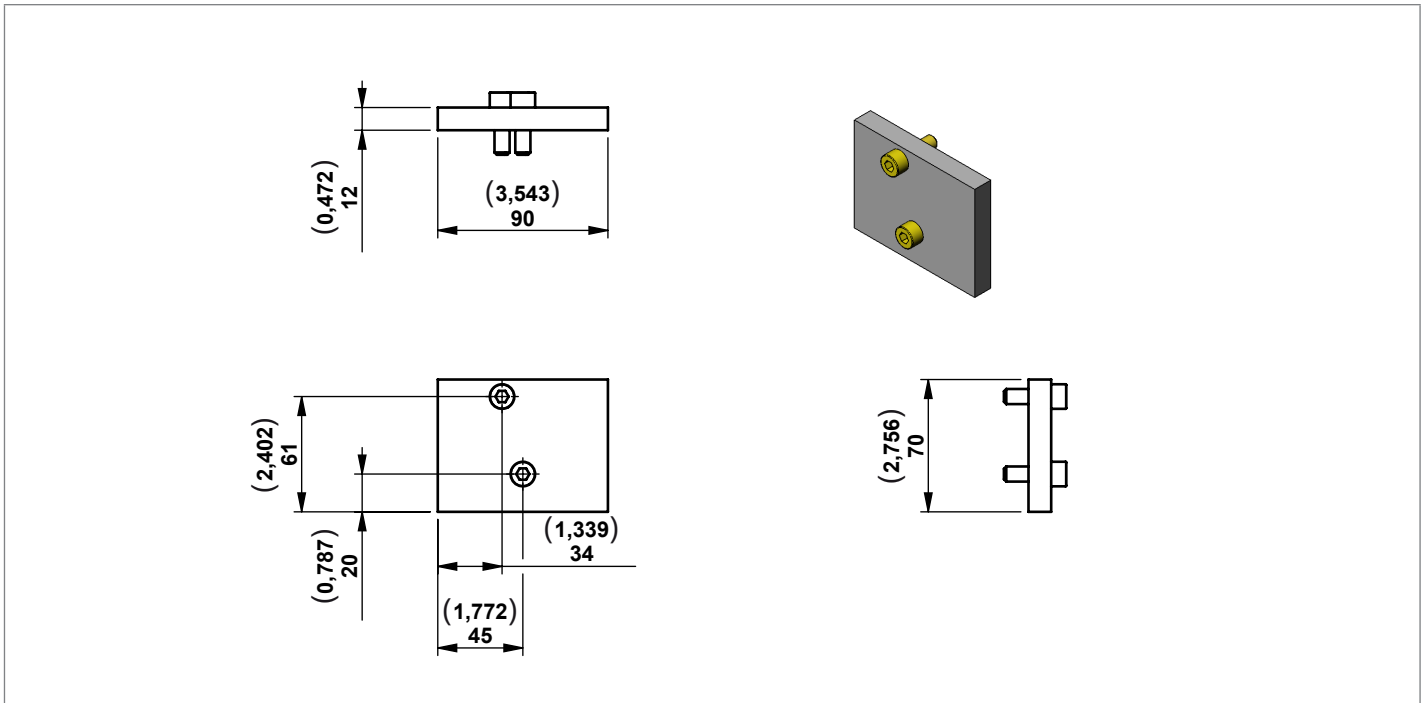


Code	Description	Max working pressure bar (psi)	Max flow l/min (gpm)	Type	Material number
MTF01	Kit MTF01 Modular block	250 (3626)	15,0 (3,96)	0985900022	R932011139

Mounting Example

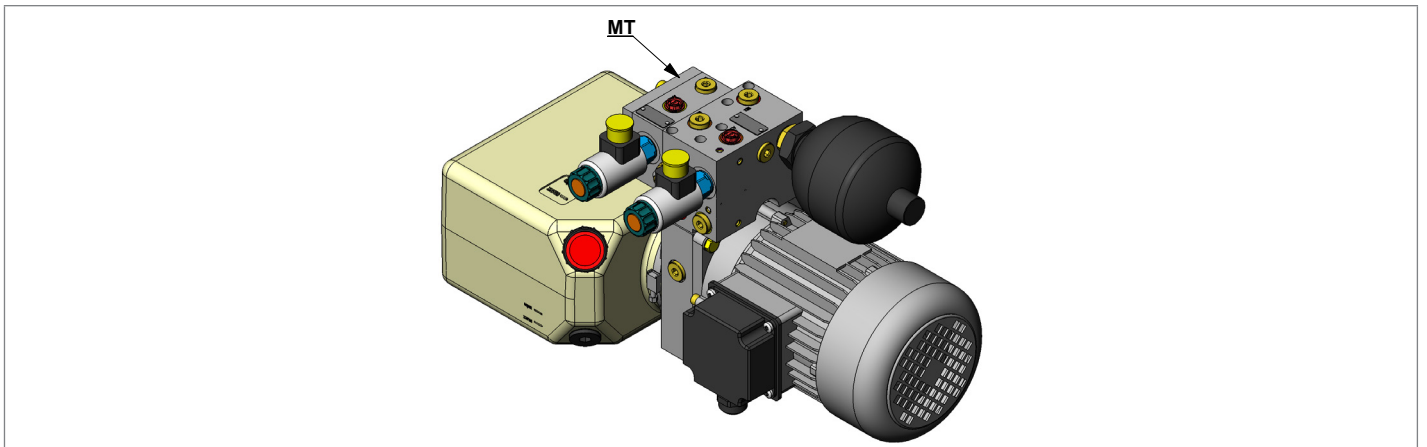


Modular Stackable Element MT



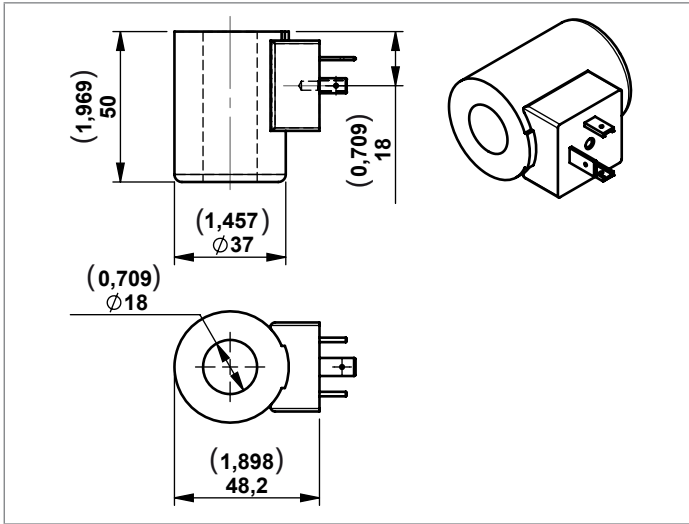
Code	Description	Type	Material number
MT	Kit MT Closing plate	0985900016	R932008159

Mounting Example



Coils

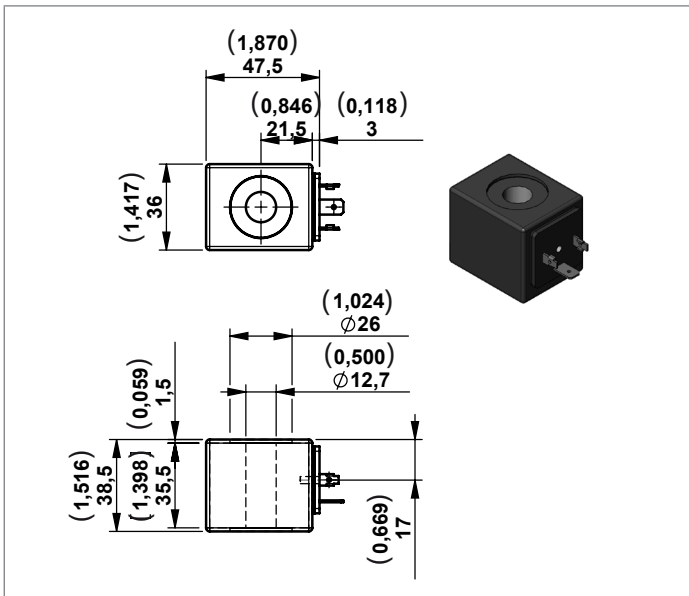
K4



Code	Connection	Voltage	Material Number
OB	03-pin (2+PE) DIN EN 175301-803	12 V	R900991678
OC	03-pin (2+PE) DIN EN 175301-803	24 V	R900991121

S8

Only for modular block RT60

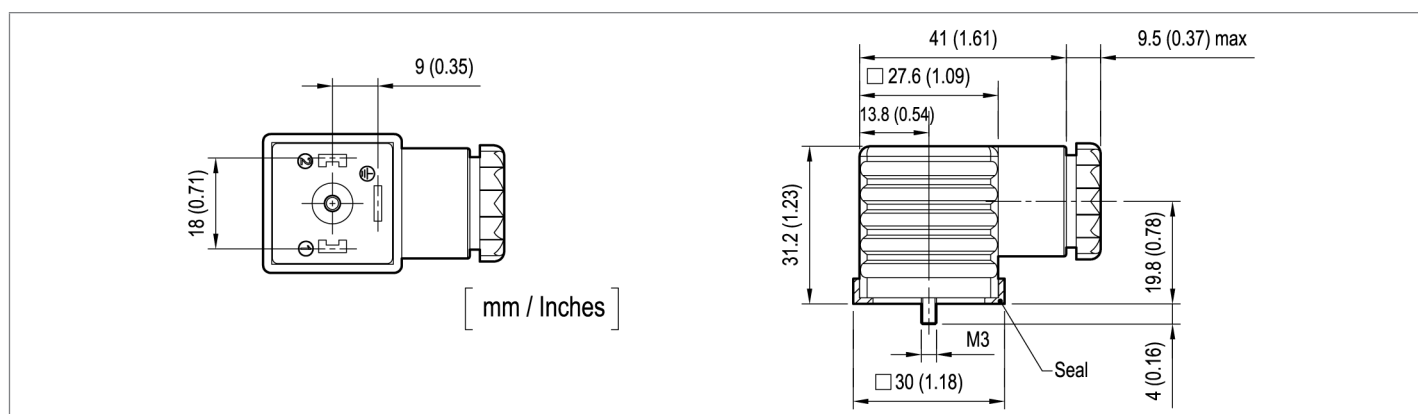


Code	Connection	Voltage	Material Number
OB	DIN 43650 - ISO 4400	12 V	R901090821
OC	DIN 43650 - ISO 4400	24 V	R901083065

Connectors

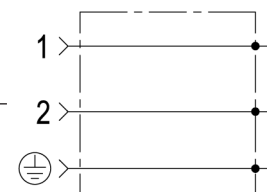
CONNECTOR IP67 - EN175000 (DIN 4350-A) / ISO 4400

Ambient temperature - Standard	°C (°F)	- 20 to + 60 (-4 to +140°F)
Type of protection according to DIN 40050		IP67 with cable socket mounted and locked
Operating voltage	V	Choose the proper ordering code according to the circuit
Maximum operating current - Standard	A	16
Number of pins		2 + PE
Clamping range for cables having an outer diameter of	mm (inch)	5, up to 10 (0,2 up to 0,4)
Cable entry		Pg9 / Pg11 (unified)
Maximum cable cross-section	mm ² (inch ²)	1.5 (0,002)



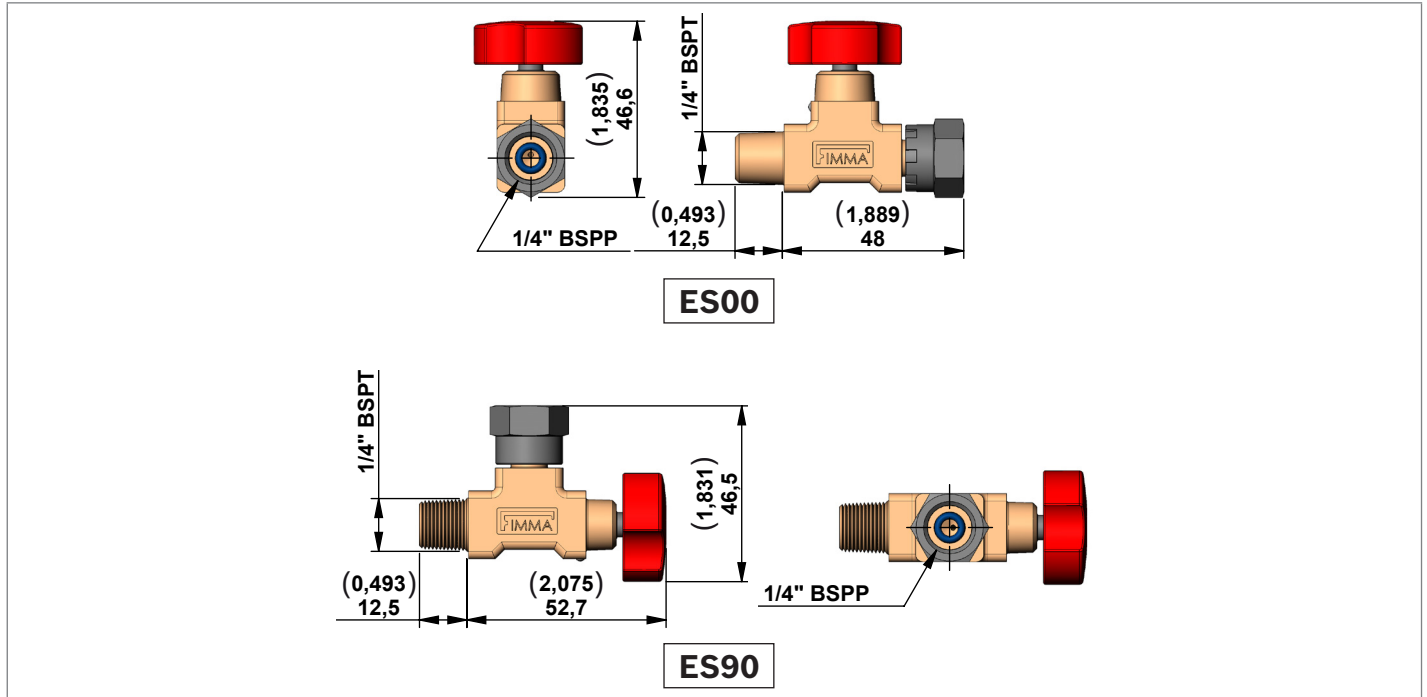
Standard Circuit

Code	Colour	Cable entry	Type	Material Number
WC	Without Connector			
CS	black	Pg9 / Pg11	OD01690100000	R934004344



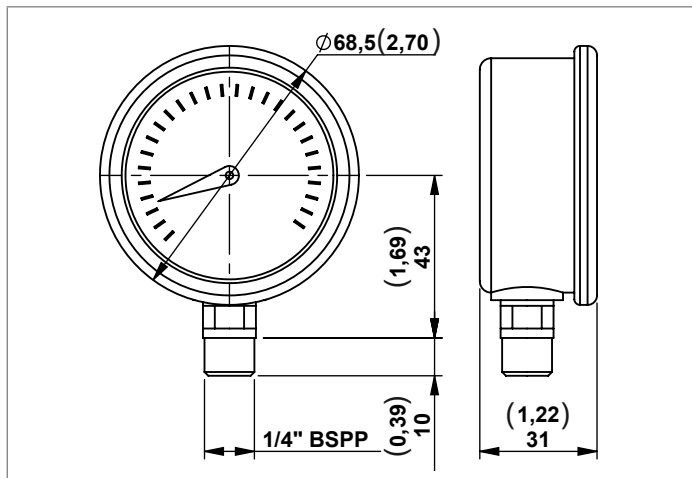
Accessories

Isolator

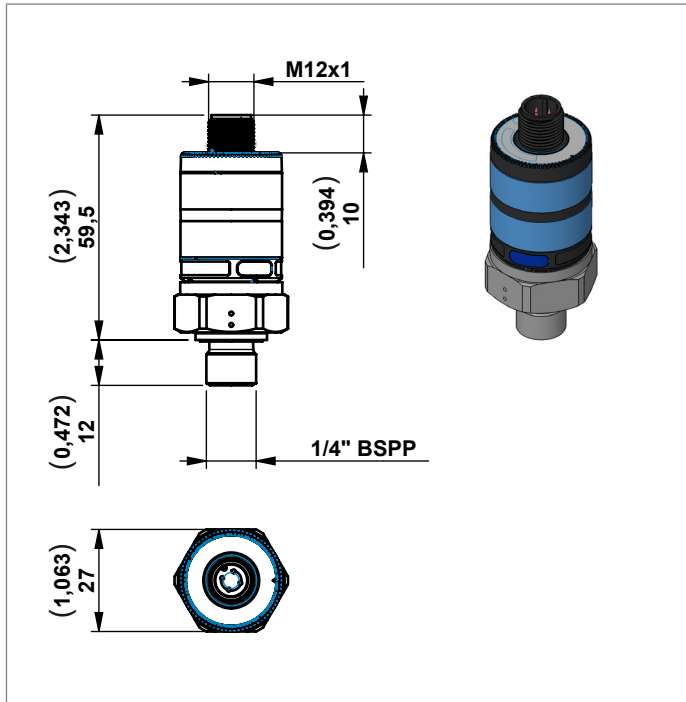


Code	Description	Type	Material Number
ES00	Straight isolator	EM 14	R932500182
ES90	90° isolator	EM 14 T	R932500184

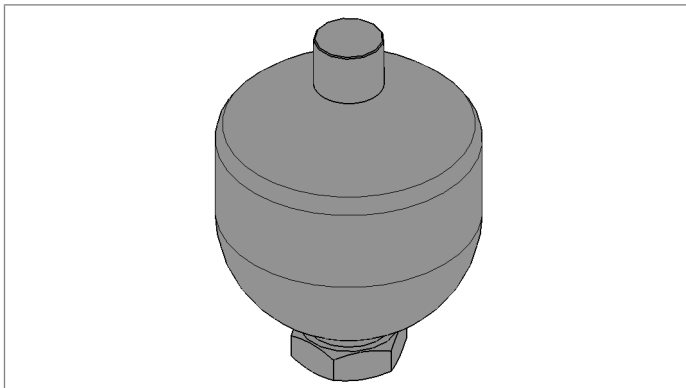
Manometer



Code	Description	Pressure range bar (psi)	Type	Material Number
MN100	Pressure gauge	0-100 (0-1450)	C163017000	R932000582
MN160	Pressure gauge	0-160 (0-2320)	C163018000	R932000583
MN250	Pressure gauge	0-250 (0-3626)	C163019000	R932000584
MN315	Pressure gauge	0-315 (0-4568)	C163020000	R932000585

Pressure Switches**Note**

Further information on the electronic pressure switch with two switching outputs HEDE11 can be found in the data sheet 30279

Accumulator**Note**

Further information on the diaphragm-type accumulator HAD can be found in the data sheet 50150

Hydraulic drive power unit

Low noise compact unit

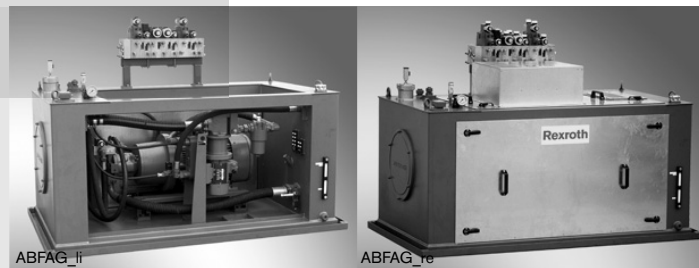
„Wispering power unit“

RE 51096/04.09
Replaces: 02.06

1/10

Type ABFAG

Component series 2X
Reservoir volume 100-1000 litres
horizontal design



Type ABFAG ...open

Type ABFAG ...closed

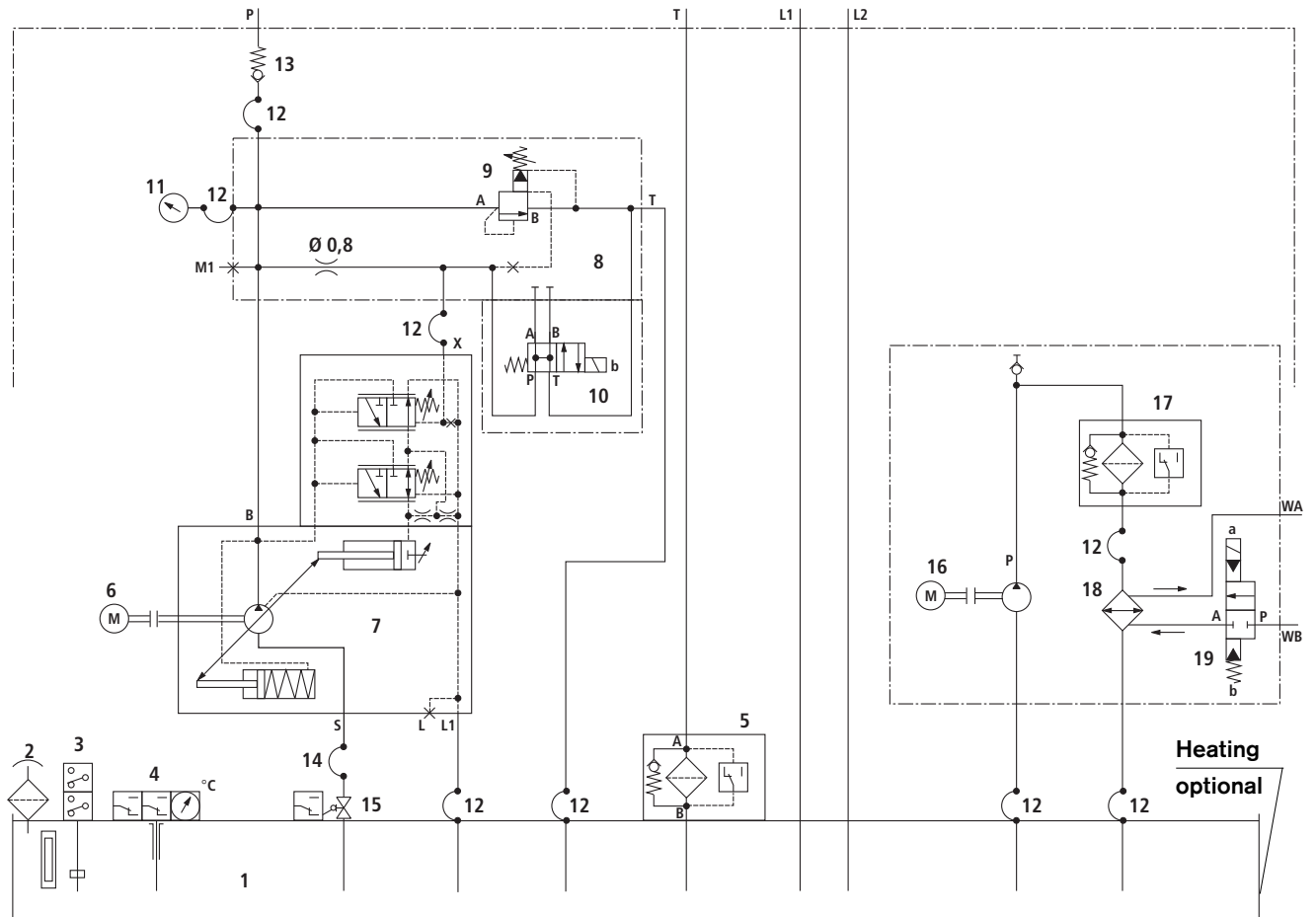
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Features

- Very low noise compact unit
- Areas of application:
 - General machinery
 - Plastic processing machines
 - Stroke and lifting systems
 - Presses
 - Laboratory, schools
- The reservoir is in the form of a U with a flexibly mounted motor pump assembly
- The actuator connections terminate at a flexibly mounted bulk-head panel
- Good air separation characteristics
- Separate filter/cooler circuit
- Very accessible

Circuit: U form whisper power unit



- | | |
|---------------------------|---|
| 1 Oil reservoir | 11 Pressure gauge |
| 2 Filler/breather | 12 Pressure hose |
| 3 Float switch | 13 Check valve |
| 4 Thermostat with display | 14 Suction hose |
| 5 Return filter | 15 Check flap with monitoring of the position |
| 6 Electric motor | 16 Motor pump assembly |
| 7 Axial piston pump | 17 Filter |
| 8 Pressure safety block | 18 Oil/water cooler |
| 9 Pressure relief valve | 19 Water control valve, electric |
| 10 Directional valve | |

Technical data (for applications outside these parameters, please consult us!)

Connections	– Oil		Pipe threads to ISO 1179, pipe connections to DIN 2353/ ISO 8434, flanges to ISO 6162
	– Water		Pipe threads to ISO 228/1
Pump types			A10VSO 18 to catalogue sheet RE 92712
			A10VSO 28 to 140 to catalogue sheet RE 92711
			PV 18 to 60 to catalogue sheet RE 10335
Motor pump assembly			ABAPG to catalogue sheet RE 51062
Type of pipework			Fittings to DIN 2353; light/heavy series; Type Walform
Pressure fluid			Mineral oil (HL, HLP) to DIN 51524; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90221); HETG (rape seed oil); HEPG (polyglycols); HEES (syntetic ester); Other pressure fluids on request. Please take our specifications stated within catalogue sheet RE 07075 into account.
Pressure fluid temperature range		°C	0 to + 80 The optimim power unit operating temperature using mineral oil HLP to DIN 51 524 lies between 40 and 50 °C. For continuous operation the operating temperature should not exceed 70 °C.
Pressure safety			Pump safety valve to catalogue sheet RE 25890 for the variable displacement pump type A10VSO
Cooling medium			Drinking, industrial, stream and river water
Motor voltage/frequency			400/690 V-D/Y-50 Hz; 460 V-D-60 Hz (other voltages on request); frame type B 35
Direction of rotation			Clockwise
Water control valve			Electrically operated 2/2-way water control valve to AB-E 21-23
Viscosity range	– Optimum	mm ² /s	16 to 36
	– Briefly	mm ² /s	10 to 1000 (also see RE 92711; 92712 and RE 10335)
Cleanliness classes in accordance with ISO code			Max. permissible degree of contamination of the hydraulic fluid to ISO 4406 (c) class 21/18/15 ¹⁾
Surface protection	– 1st under coat		All steel components with zinc dust paint
	– 2nd under coat		Epoxy under coat RAL 5010 (RN 123.01)

¹⁾ The cleanliness classes specified for components must be adhered to in hydraulic systems. Effective filtration prevents malfunction and, at the same time, increases the service life of components.

For the selection of filters, see data sheets RE 50070, RE 50076, RE 50081, RE 50086 and RE 50088.

Selection table

The Material No. can be determined after the pump type, nominal size and nominal pressure has been defined.

The Material No. contains all of the components shown in the circuit.

Reservoir volume 100 litres (filling capacity 130 ltrs.)

Pump nom. size	$q_{V \max}$ in l/min	p_{\max} in bar	Power P in kW	E-motor frame size	Cooling cap. in kW	Material Number
A10VSO 18	26	145	7.5	132M-4-B1	4	R900244959

Reservoir volume 250 litres

Pump nom. size	$q_{V \max}$ in l/min	p_{\max} in bar	Power P in kW	E-motor frame size	Cooling cap. in kW	Material Number
A10VSO 28	39	135	11	160M-4-B0	4	R900772815
	39	190	15	160L-4-B1	4	R900244978
	39	230	18.5	180M-4-B0	7.5	R900244979
	39	280	22	180L-4-B1	7.5	R900244980
A10VSO 45	63	115	15	160L-4-B1	7.5	R900772816
	63	145	18.5	180M-4-B0	7.5	R900244981
	63	170	22	180L-4-B1	7.5	R900244982
	63	235	30	200L-4-B0	15	R900244983

Reservoir volume 630 litres

Pump nom. size	$q_{V \max}$ in l/min	p_{\max} in bar	Power P in kW	E-motor frame size	Cooling cap. in kW	Material Number
A10VSO 71	100	90	18.5	180M-4-B0	7.5	R900772817
	100	110	22	180L-4-B1	7.5	R900772818
	100	150	30	200L-4-B0	15	R900244984
	100	185	37	225S-4-B0	15	R900244985
	100	225	45	225M-4-B1	15	R900244986
A10VSO 100	145	100	30	200L-4-B0	15	R900772819
	145	125	37	225S-4-B0	15	R900772820
	145	160	45	225M-4-B1	15	R900244987
	145	195	55	250M-4-B0	30	R900244988
	145	265	75	280S-4-B0	30	R900244989

Reservoir volume 1000 litres

Pump nom. size	$q_{V \max}$ in l/min	p_{\max} in bar	Power P in kW	E-motor frame size	Cooling cap. in kW	Material Number
A10VSO 140	203	110	45	225M-4-B1	15	R900772821
	203	140	55	250M-4-B0	30	R900244993
	203	190	75	280S-4-B0	30	R900244994
	203	220	90	280M-4-B1	30	R900244995

Typical noise values (measured at $n = 1450 \text{ min}^{-1}$, $\vartheta_{\text{oil}} = 50 \text{ °C}$) Details in dB(A)

Pump type	Pressure in bar	Flow ls/min	Pump nominal size					
			18	28	45	71	100	140
A10VSO	100	$q_{V\text{min}}$	59	60	62	65	68	69
		$q_{V\text{max}}$	62	63	65	68	70	71
	200	$q_{V\text{min}}$	61	63	65	68	71	72
		$q_{V\text{max}}$	64	65	68	71	73	75
	300	$q_{V\text{min}}$	63	66	69	71	72	73
		$q_{V\text{max}}$	66	68	71	73	75	75

Noise pressure level to DIN 45635 part 1, 41;

Distance from noise sensor to power unit; -1m

Measured at $n = 1450 \text{ min}^{-1}$; operating temperature $\vartheta = 50 \text{ °C}$

Pressure fluid: Mineral oil HLP to DIN 51524 part 2

Noise reflections at the place of final use can lead to a higher noise pressure level. (Lower noise levels on request)

With $n = 1000 \text{ min}^{-1}$ the noise values can be reduced by approx. 3 dB(A).

With $n = 1800 \text{ min}^{-1}$ the noise values are increased by approx. 3 dB(A).

When using a drip tray which complies with the WHG (Water Protection Act), the typical noise values increase by approx. 3 dB(A). Built-on controls also increase the noise pressure level!

Replacement filter elements – DIN

Reservoir NS	Pump type	E-motor P in kW	Filter element type for the hydraulic power unit	Material No.	Filter element type for the filter cooler circuit	Material No.
100	A10VSO 18	7.5	ABZFE-R0063-10-1X/M-DIN	R901025291	ABZFE-N0063-10-1X/M-DIN	R901025361
250	A10VSO 28	11; 15	ABZFE-R0100-10-1X/M-DIN	R901025293	ABZFE-N0100-10-1X/M-DIN	R901025362
		18.5; 22				
	A10VSO 45	15 - 22	ABZFE-R0160-10-1X/M-DIN	R901025295	ABZFE-N0160-10-1X/M-DIN	R901025363
630	A10VSO 71	18.5 - 22	ABZFE-R0250-10-1X/M-DIN	R901025297	ABZFE-N0100-10-1X/M-DIN	R901025362
		30 - 45				
	A10VSO 100	30 - 45	ABZFE-R0400-10-1X/M-DIN	R901025298	ABZFE-N0160-10-1X/M-DIN	R901025363
		55 - 75				
1000	A10VSO 140	45				
		55 - 90				

Float switch settings

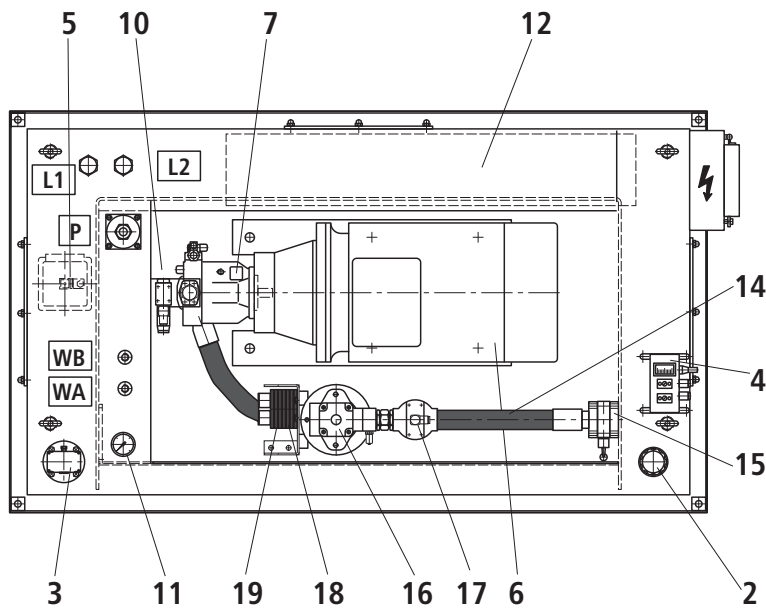
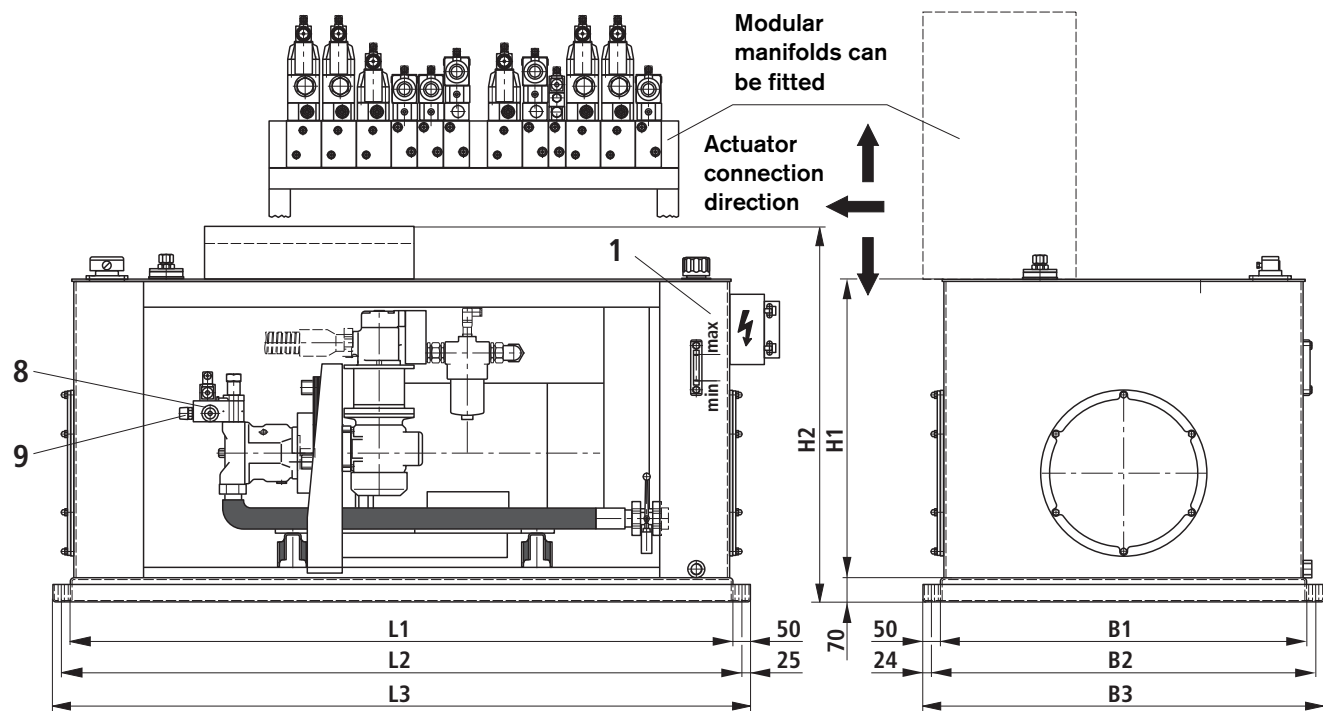
Reservoir nominal size	Residual volume at the upper switching point in litres	Residual volume at the lower switching point in litres
100	93	69
250	160	145
630	515	455
1000	745	685

Flange and fitting sizes (SAE connections 3000 PSI) (in mm)

Reservoir NS (in ltrs.)	Pump type								
	A10VSO 18			A10VSO 28			A10VSO 45		
	P	T	L	P	T	L	P	T	L
100	Ø16	G1	Ø18						
250				Ø20	G1	Ø18	Ø25	G11/4	Ø18
630									
1000									

Reservoir NS (in ltrs.)	Pump type								
	A10VSO 71			A10VSO 100			A10VSO 140		
	P	T	L	P	T	L	P	T	L
100									
250									
630	Ø30	G11/2	Ø22	Ø38	SAE2	Ø28			
1000							Ø38	SAE2	Ø28

Unit dimensions (in mm)



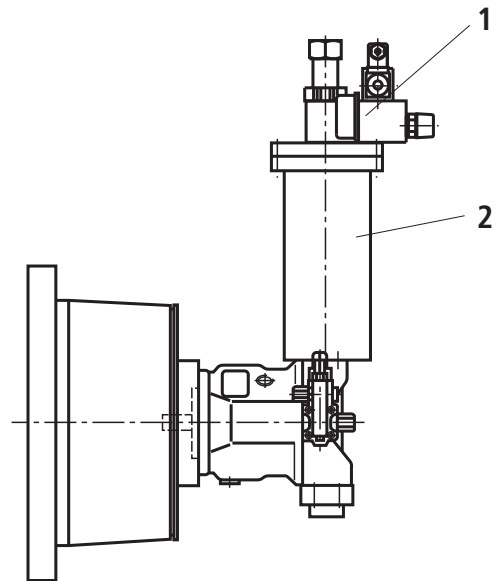
- 1 Oil reservoir
- 2 Filler/breather
- 3 Float switch
- 4 Thermostat with display
- 5 Return filter
- 6 Electric motor
- 7 Axial piston pump
- 8 Pressure safety block
- 9 Pressure relief valve
- 10 Directional valve
- 11 Pressure gauge
- 12 Area for controls
- 13 Check valve (in pipe work)
- 14 Suction hose
- 15 Check flap with monitoring of the position
- 16 Motor pump assembly
- 17 Filter
- 18 Oil/water cooler
- 19 Water control valve, electrical

Reservoir - NS	L1	L2	L3	B1	B2	B3	H1	H2
100	1450	1502	1550	800	852	900	755	1070
250	1850	1902	1950	1000	1052	1100	955	1315
630	2300	2352	2400	1200	1252	1300	1080	1590
1000	2300	2352	2400	1250	1302	1350	1280	1790

Option: Pulsation damper

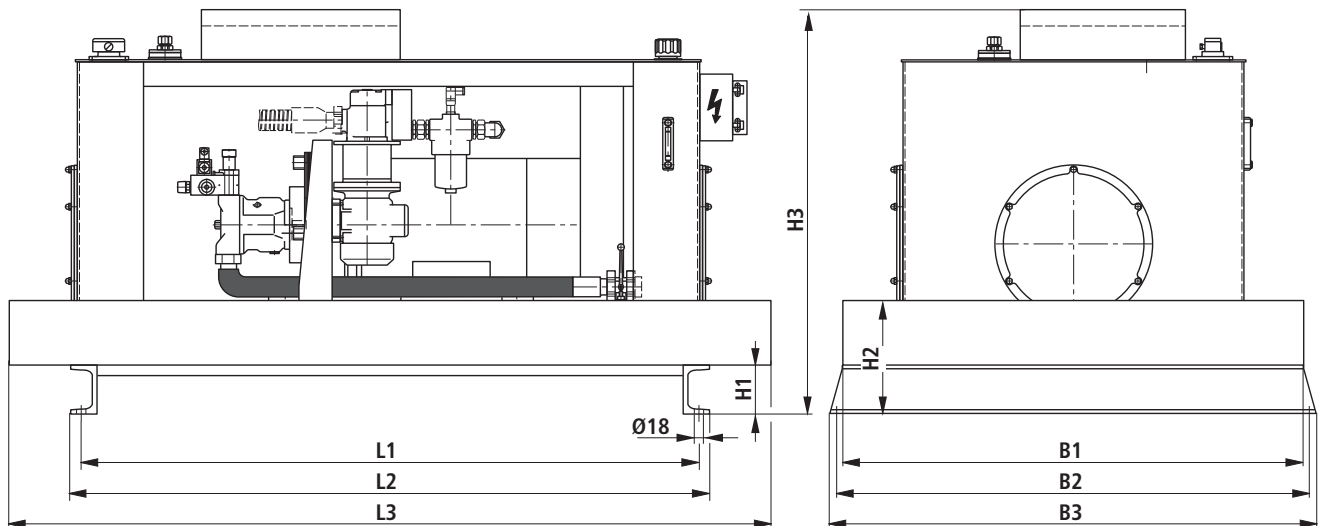
Pulsation dampers are fitted into hydraulic systems that use displacement pumps and where noise is transmitted via the pressure fluid. Controls that are built onto the unit and their associated pipe work increase the noise values. The nominal values can be retained by using the pulsation damper (see page 6). It is fitted directly onto the pumps pressure connection. For further information see RE 50142.

Pump	Nominal size	Material number
A10VSO	18, 28	R900863597
A10VSO	45, 71	R900863407
A10VSO	100, 140	R900863406



- 1 Pump safety block to RE 25890
- 2 Pulsation damper (max. pressure 300 bar)

Option: Drip tray in accordance with the Water Protection Act (WHG) (in mm)



Reservoir - NS	Material No.	L1	L2	L3	B1	B2	B3	H1	H2	H3
100	R900780835	1500	1550	1800	1150	1200	1250	140	260	1215
250	R900780836	1900	1950	2200	1350	1400	1450	140	240	1460
630	R900780837	2350	2400	2650	1550	1600	1650	140	285	1735
1000	R900780838	2350	2400	2650	1600	1650	1700	160	355	1955

When using a drip tray which complies with the WHG (Water Protection Act), the typical noise values increase by approx. 3 dB(A).

Ordering example:

OELWANNE ABFAG 250S 2200 x 1450 x 260
(Material No. **R900780836**)

Engineering guidelines

These units are of a modular design.

For further information please contact your Bosch Rexroth sales office.

Comprehensive instructions and proposals can be found in the Hydraulic Trainer, volume 3, RE 00281, „Planning and design of hydraulic power systems.“

Commissioning guidelines

General

- The power units supplied by ourselves have been tested for function and performance. Changes in any form or manner to the power units are not permitted as this would also invalidate any guarantee claims.
- Repairs may only be carried out by the manufacturer or authorised agent or subsidiary. No guarantee will be accepted for commissioning carried out by third parties.

Commissioning

- Only fill the pressure fluid via a filter which has the necessary retention rate.
- Take into account the direction of rotation arrow when connecting the electric motor.
- Start the pump without load and let it displace oil without pressure for a few seconds in order to provide sufficient lubrication.
- Never run the pump **without** oil.
- If the pump, after approx. 20 seconds, does not displace oil without any bubbles then the system has to be rechecked.
- After the operating values have been reached, check the pipe connections for leakage and check the operating temperature.

Bleeding

- Before commissioning, the pump housing must be filled with oil.

Important guidelines

- Assembly, maintenance and servicing of the power unit must only be carried out by authorised, trained and instructed personnel!
- The power unit must only be operated within the permissible limits!
- When carrying out any work on the power unit, switch the system to zero pressure! Unauthorised conversions and modifications which affect the safety and function are not permitted!
- Provide protective measures and **do not** remove any existing protective devices.
- Ensure that the fixing bolts are correctly fitted! (Take into account the prescribed tightening torque!)
- The general valid safety and accident prevention regulations must be adhered to!
- Reservoir nominal size 100 has to be filled with a minimum of 130 litres (sight glass „max“).

Note: with reference to the EC machinery guidelines 89/392 EWG annex II, section B; manufacturer's declaration:

The supplied assemblies have been manufactured in accordance with the harmonised standards EN 982, EN 983, EN ISO 12100 and DIN EN 60204-1.

Commissioning may not take place until it has been confirmed that the machine, into which the assembly is to be installed, conforms with the regulations stated within the EG guidelines.

Hydraulic drive power unit

Low-noise compact unit

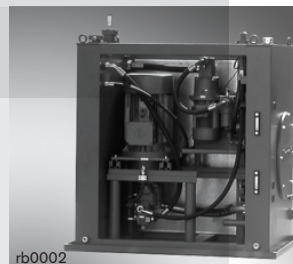
“Whispering power unit“

RE 51094/05.04
Replaces: 08.03

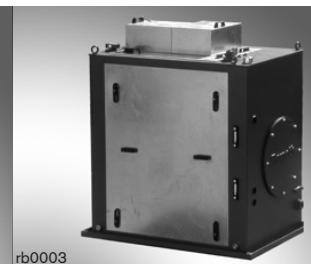
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Type ABFAG-V

Component series 1X
Reservoir volume 160-1000 litres
Vertical design



Type ABFAG-V ...open



Type ABFAG-V ...enclosed

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Features

- Extremely low-noise compact unit
- Fields of application:
 - General machinery construction sector
 - Plastics processing machinery
 - Lifting and elevator equipment
 - Press construction sector
 - Laboratories, schools
- U-shaped tank with motor-pump group fitted using anti-vibration mounts
- Actuator ports terminate at a flexibly supported outlet strip
- Good outgassing of the hydraulic fluid
- Separate filtering-cooling circuit
- Excellent accessibility

Ordering code

ABFAG		V	S	1X	/	/	W	T	M
Standard power unit Type ABFAG	= ABFAG								
Pump-motor group Vertical mounting									
Reservoir volume 160; 250 litres	= A								
Reservoir volume 250; 400 litres	= B								
Reservoir volume 400; 630; 800 litres	= C								
Reservoir volume 800; 1000 litres	= D								
Material Steel	= S								
Component series 10 to 19 (10 to 19: unchanged installation and connection dimensions)	= 1X								
									M = NBR seals (other seals on enquiry) ⚠ Caution! Observe compatibility of the seal with the hydraulic fluid used!
								T = With thermostat	
							W = With oil/water cooler		
									EI. motor frame size e.g. 180M-4-B0 (see page 5)
									Pump type A10VSO18 = A10VSO28 = A10VSO45 = A10VSO71 = A10VSO100 = A10VSO140 =

Order example:

ABFAG-V-BS-1X/A10VSO45-180M-4-B0/WTM

Function

Structure

The tank design is of U-shape, in which the motor-pump group is mounted with anti-vibration mounts. Due to the good isolation of structure-borne noise, the tank walls are only slightly excited so that noise emission of the system can be neglected. A sound insulation panel at the front and on top contribute to these extraordinarily low values. They also allow easy access to the drive unit.

General notes:

- The consumer ports terminate at a flexibly supported outlet fitting.
- The enlarged wall surfaces result in good outgassing of the hydraulic fluid.

Fitting of controls

Room for additional controls is provided at the longitudinal side, at the rear and on top of the tank.

Room for attachments such as hydraulic accumulators, etc. is provided at the broad and at the longitudinal side.

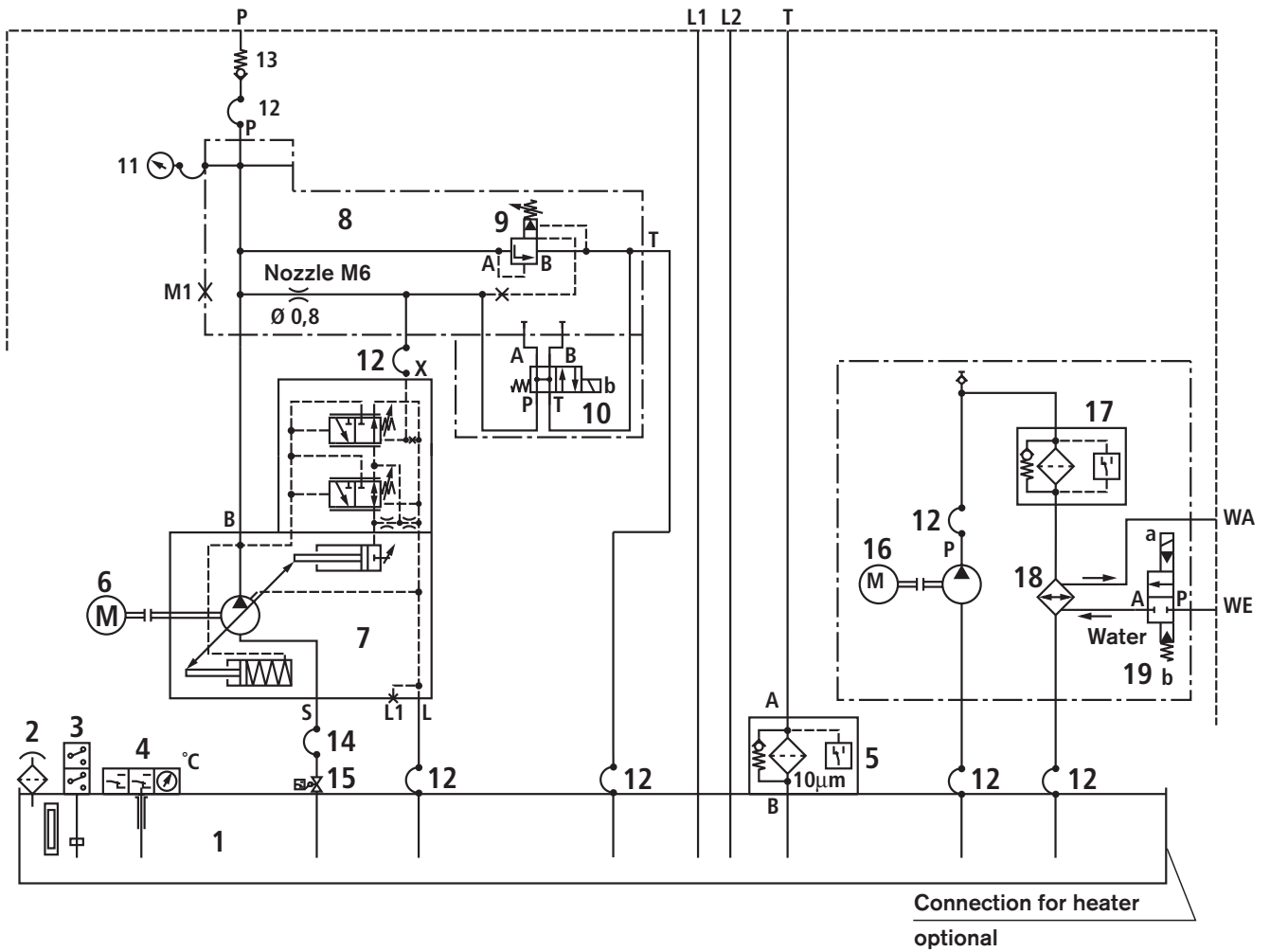
Cooling

The share of the system's power that is converted into heat is dissipated by an oil/water cooler. ¹⁾

The heat exchanger is arranged in a separate filtering-cooling circuit. The separate circuit ensures continuous filtering and cooling.

¹⁾ The use of air heat exchangers is possible, but may result in higher noise pressure levels.

Circuit diagram: Whispering power unit, U-shape



- | | |
|---------------------------------|---|
| 1 Fluid tank | 11 Pressure gauge |
| 2 Tank breather filter | 12 Hoses |
| 3 Float switch | 13 Check valve |
| 4 Thermostat with indicator | 14 Suction hose |
| 5 Return line filter | 15 Check flap with monitoring of the position |
| 6 Electric motor | 16 Pump-motor group |
| 7 Axial piston pump | 17 Line filter |
| 8 Maximum pressure relief block | 18 oil/water cooler |
| 9 Pressure relief valve | 19 Water valve, electrical |
| 10 Directional valve | |

Technical data (for applications outside these parameters, please consult us!)

Line connections	– Oil side		Connection thread to ISO 1179, pipe connections to DIN 2353/ ISO 8434, flanges to ISO 6162
	– Water connections		Pipe thread to ISO 228/1
Pump types			A10VSO 18 to data sheet RE 92712
			A10VSO 28 ... 140 to data sheet RE 92711
	– Circulating unit		PVV 18 ... 60 to data sheet RE 10335 ¹⁾
Type of pipe fittings			Fittings to DIN 2353; light/heavy series; type Walform
Hydraulic fluid			Mineral oil (HL, HLP) to DIN 51524; fast bio-degradable hydraulic fluids to VDMA 24 568 (see also RE 90221); HETG (rape-seed oil); HEPG (polyglycols); HEES (synthetic esters) and other hydraulic fluids on enquiry. Please observe our regulations given in data sheet RE 07075.
Hydraulic fluid temperature range		°C	0 ... + 80 The optimum operating temperature of the power unit in operation with mineral oil HLP to DIN 51524 is between 40 and 50 °C. The operating temperature should not exceed 70 °C in continuous operation.
Max. pressure relief function			Pump pressure relief valve to data sheet RE 25890 for variable displacement pumps of type A10VSO
Cooling medium			Potable, processing water, water from streams and rivers
Motor voltage / frequency			400/690 V-D/Y-50 Hz; 460 V-D-60 Hz (other voltages on enquiry); form B 35
Pump's direction of rotation			Clockwise
Water valve			Electrically operated 2/2 directional water valve to AB 21-23
Viscosity range	– optimum	mm ² /s	16 ... 36
	– briefly	mm ² /s	10 ... 1000 (see also RE 92711; 92712 and RE 10335)
Cleanliness classes in accordance with ISO code			Max. permissible degree of contamination of the hydraulic fluid to ISO 4406 (c) class 21/18/15 ²⁾
Filter rating		µm	10
Surface protection	– 1st primer coat		All steel components with zinc dust paint
	– 2nd primer coat		Epoxy primer to RAL 5010 (RN 123.01)

¹⁾ Other pumps on enquiry

²⁾ The cleanliness classes specified for components must be adhered to in hydraulic systems. Effective filtration prevents malfunction and, at the same time, increases the service life of components.

For the selection of filters, see data sheets RE 50070, RE 50076, RE 50081, RE 50086 and RE 50088.

Selection table

The material number can be established after the selection of the pump type and size and the pump pressure.

The material number includes all the components listed in the circuit diagram. The selection of the tank size depends on the size of the pump-motor group.

Tank size "A": 160; 250 litres ¹⁾

Pump size	$q_{V \max}$ in L/min	p_{\max} in bar	Power P in kW	El. motor frame size	Cooling power in kW	Material number
A10VSO 18	26	200	11	160 M	4	R901005244
A10VSO 28	39	135	11	160 M		R901005245
		190	15	160 L		R901005246

Tank size "B": 250; 400 litres ¹⁾

Pump size	$q_{V \max}$ in L/min	p_{\max} in bar	Power P in kW	El. motor frame size	Cooling power in kW	Material number
A10VSO 28	39	230	18.5	180 M	7,5	R901005247
		280	22	180 L		R901005248
A10VSO 45	63	115	15	160 L		R901005249
		145	18.5	180 M	R901005250	
		170	22	180 L	R901005251	
A10VSO 71	100	235	30	200 L	15	R901005252
		90	18.5	180 M	7,5	R901005253
		110	22	180 L		R901005254
		150	30	200 L	15	R901005255

Tank size "C": 400; 630; 800 litres ¹⁾

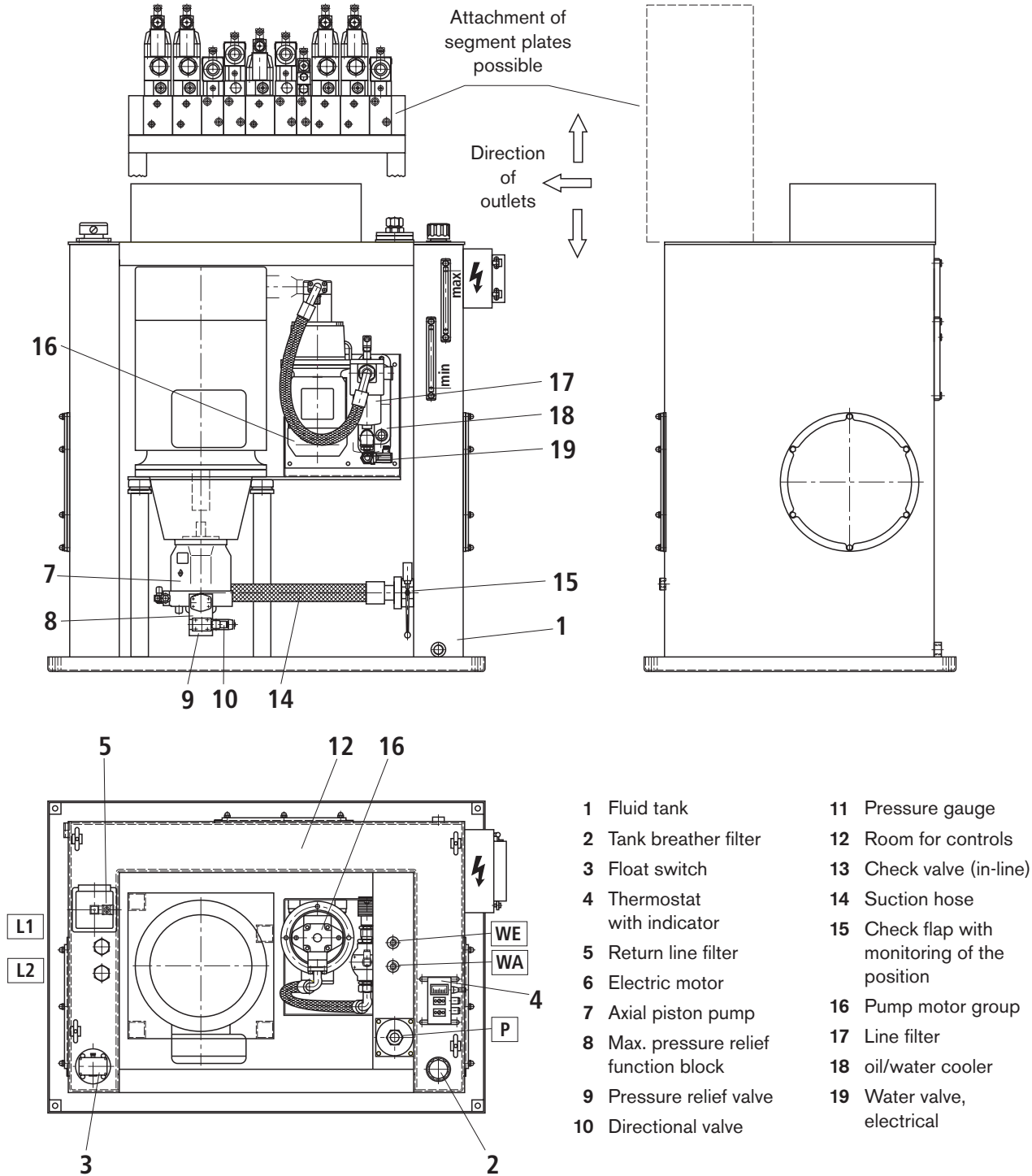
Pump size	$q_{V \max}$ in L/min	p_{\max} in bar	Power P in kW	El. motor frame size	Cooling power in kW	Material number
A10VSO 71	100	185	37	225 S	15	R901005256
		225	45	225 M		R901005257
A10VSO 100	145	100	30	200 L		R901005258
		125	37	225 S		R901005259
		160	45	225 M		R901005260

Tank size "D": 800; 1000 litres ¹⁾

Pump size	$q_{V \max}$ in L/min	p_{\max} in bar	Power P in kW	El. motor frame size	Cooling power in kW	Material number
A10VSO 100	145	195	55	250 M	30	R901005261
		265	75	280 S		R901005262
A10VSO 140	203	110	45	225 M	15	R901005263
		140	55	250 M	30	R901005264
		190	75	280 S		R901005265
		220	90	280 M		R901005266

¹⁾ The individual fill levels are marked on the oil level indicator

Attachment of components



Connection sizes for flanges and fittings (SAE connections 3000 PSI) (in mm)

Pump type; size																	
A10VSO 18			A10VSO 28			A10VSO 45			A10VSO 71			A10VSO 100			A10VSO 140		
P	T	L	P	T	L	P	T	L	P	T	L	P	T	L	P	T	L
Ø16	G1	Ø18															
			Ø20	G1	Ø18	Ø25	G11/2	Ø18									
									Ø30	G11/2	Ø22	Ø38	SAE2	Ø28			
															Ø38	SAE2	Ø28

Typical noise data (measured at $n = 1450 \text{ min}^{-1}$, $\vartheta_{\text{oil}} = 50 \text{ °C}$) Details in dB(A)

Pump type	Pressure in bar	Flow L/min	Pump size					
			18	28	45	71	100	140
A10VSO	100	$q_{V\text{min}}$	60	60	62	65	68	69
		$q_{V\text{max}}$	63	63	65	68	70	71
	200	$q_{V\text{min}}$	63	63	65	68	71	72
		$q_{V\text{max}}$	65	65	68	71	73	75
	300	$q_{V\text{min}}$	66	66	69	71	72	73
		$q_{V\text{max}}$	68	68	71	73	75	75

Noise pressure level to DIN 45635 part 1, 41;

Distance between microphone and power unit: -1m

Measured at $n = 1450 \text{ min}^{-1}$; operating temperature $\vartheta = 50 \text{ °C}$

Hydraulic fluid: Mineral oil HLP to DIN 51524 part 2

Sound reflections at the place of installation can lead to a higher noise pressure level (lower noise pressure levels on enquiry).

At $n = 1000 \text{ min}^{-1}$ the noise data can be reduced by approx. 3 dB(A).

At $n = 1800 \text{ min}^{-1}$ the noise data can be assumed to be + 3 dB(A).

When an oil drip tray is used in accordance with the Water Resources Act, the typical noise values are about + 3 dB(A). Attached controls increase the noise pressure level!

Spare filter elements – DIN

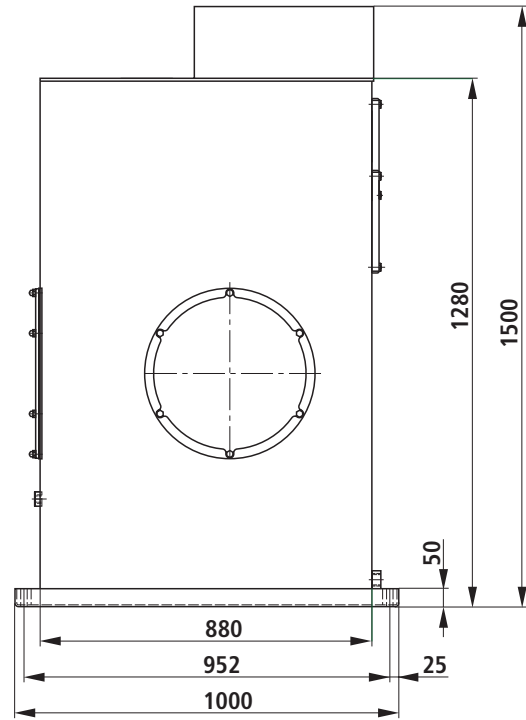
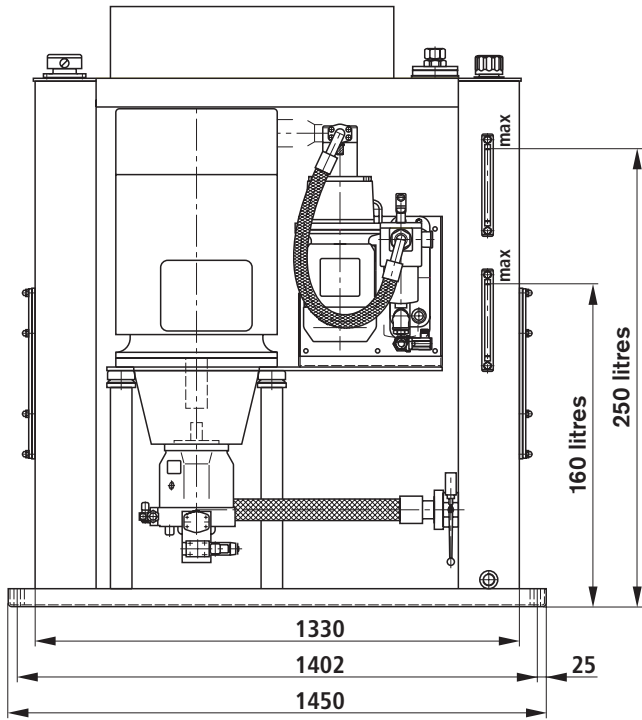
Tank size	Pump type	El. motor P in kW	Filter element type for hydraulic system	Material no.	Filter element type for filter/cooler circuit	Material no.
A	A10VSO 18	7.5	ABZFE-R0063-10-1X/M-DIN	R901025291	ABZFE-N0063-10-1X/M-DIN	R901025361
	A10VSO 28	11; 15	ABZFE-R0100-10-1X/M-DIN	R901025293		
B	A10VSO 28	18.5; 22	ABZFE-R0160-10-1X/M-DIN	R901025295	ABZFE-N0100-10-1X/M-DIN	R901025362
	A10VSO 45	15 - 22			ABZFE-N0160-10-1X/M-DIN	R901025363
	A10VSO 71	18.5 - 22	ABZFE-R0250-10-1X/M-DIN	R901025297	ABZFE-N0100-10-1X/M-DIN	R901025362
		30			ABZFE-N0160-10-1X/M-DIN	R901025363
C	A10VSO 71	37 - 45	ABZFE-R0400-10-1X/M-DIN	R901025298		
	A10VSO 100	30 - 45				
D	A10VSO 100	55 - 75				
	A10VSO 140	45				
		55 - 90				

Float switch settings

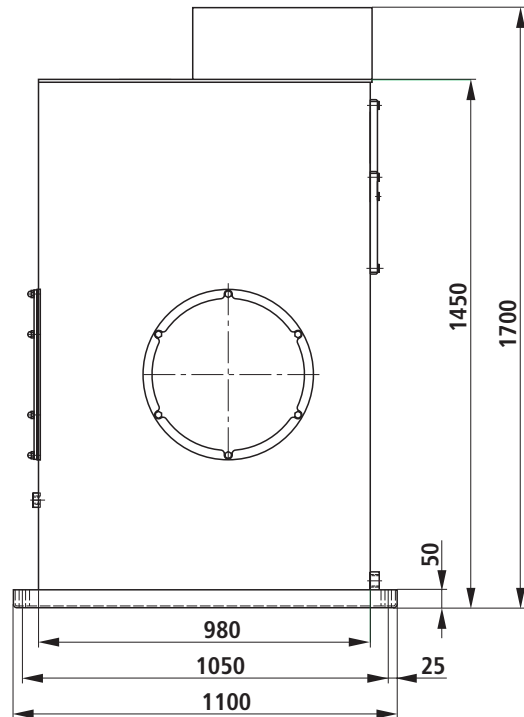
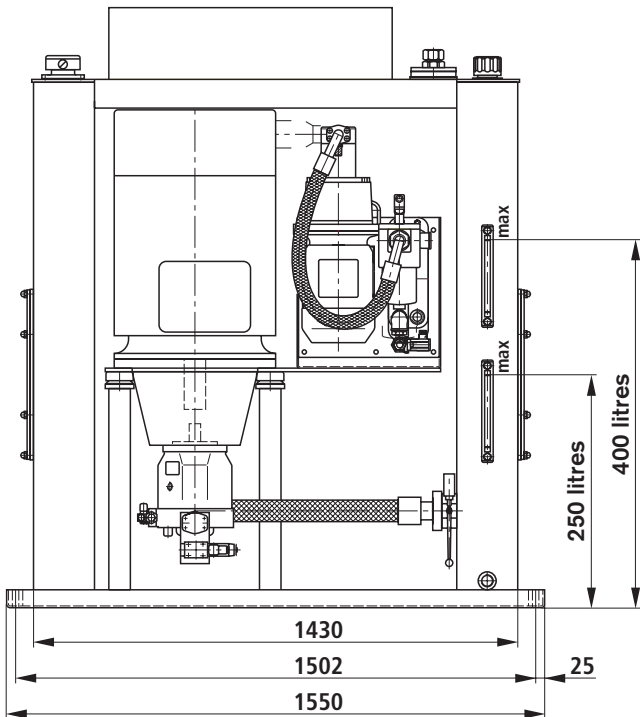
Size	Tank size		Residual capacity at upper switching point in litres	Capacity fluctuation in litres
	Tank capacity in litres			
A	160		132	43
	250		218	43
B	250		195	49
	400		350	49
C	400		356	58
	630		560	70
	800		730	70
D	800		749	79
	1000		950	79

Unit dimensions (in mm)

Tank size "A"

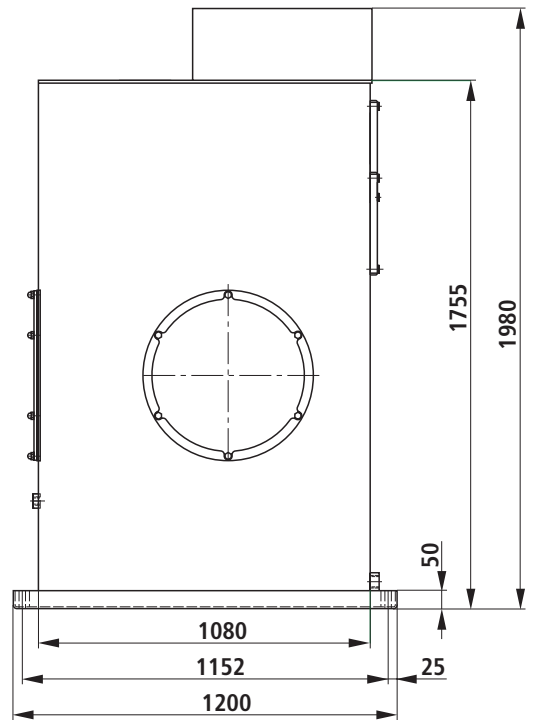
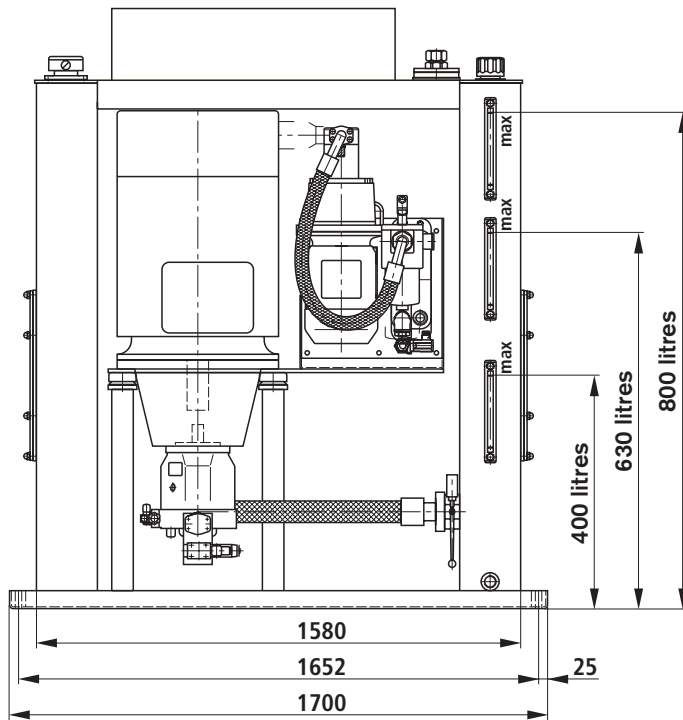


Tank size "B"

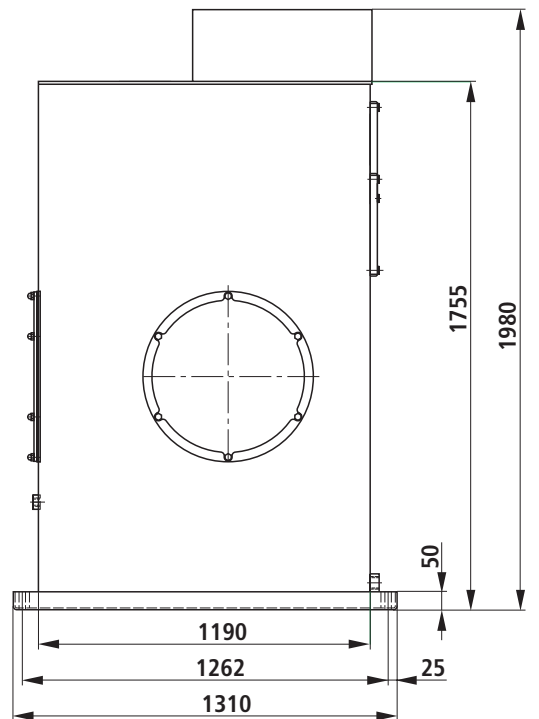
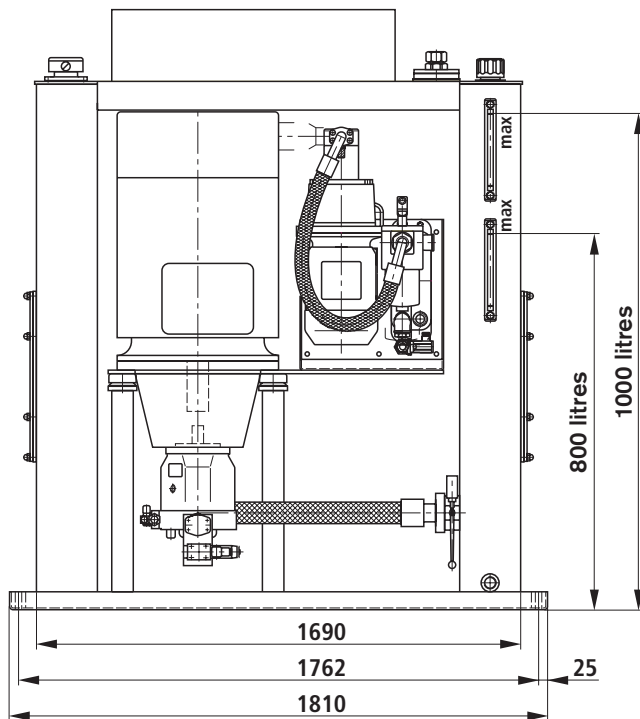


Unit dimensions (in mm)

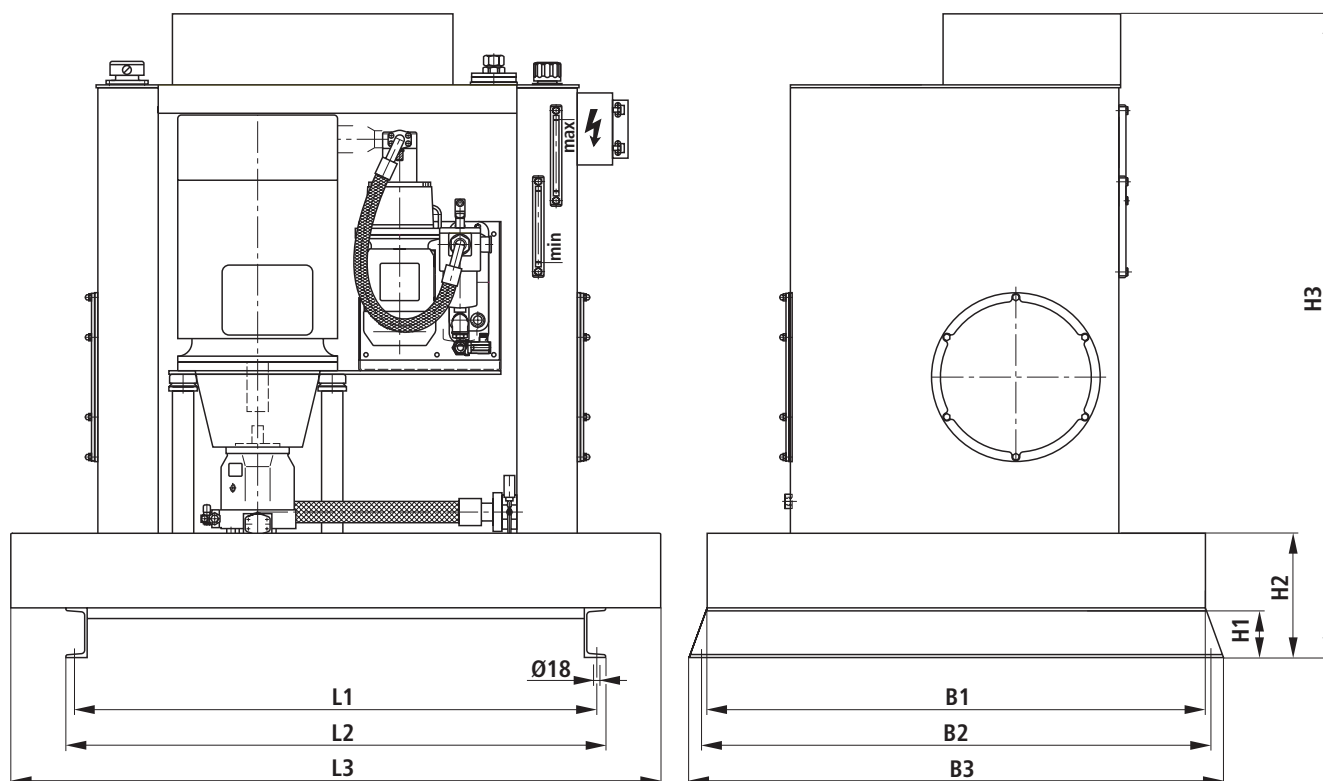
Tank size "C"



Tank size "D"



Option: Oil drip tray in accordance with the Water Resources Act (in mm)



Tank size	Oil drip tray Material no.	L1	L2	L3	B1	B2	B3	H1	H2	H3
A	R901005589	1365	1420	2030	1580	1630	1680	160	295	1795
B	R901005592	1465	1520	2130	1680	1730	1780	160	335	2035
C	R901005593	1630	1685	2280	1780	1830	1880	160	415	2305
D	R901005595	1750	1805	2390	1890	1900	1950	180	475	2455

When an oil drip tray according to the Water Resources Act is used, the assumed typical noise pressure level amounts to + 3 dB(A).

Order example:

OELWANNE ABFAG-V-A-2030X1680X295
(Material no. R901005589)

Engineering notes

The assembly is designed according to the modular principle. For further information, please contact your Bosch Rexroth Sales Partner.

Comprehensive notes and suggestions can be found in The Hydraulic Trainer Volume 3, RE 00281, "Design of hydraulic systems."

Commissioning notes

General

- Power units supplied by us have been tested for function and performance. Changes and modifications of any kind are not permitted, otherwise the warranty will become void.
- Repairs may only be carried out by the manufacturer or his authorised dealers and subsidiaries. We will not assume any warranty for repairs carried out by customers.

Commissioning

- Always fill the hydraulic fluid in through a filter with the required minimum retention rate.
- Observe the arrow for direction of rotation when connecting the electric motor.
- Start up the pump under no-load conditions and let it displace at zero pressure for some seconds in order to provide sufficient lubrication.
- In no case may the pump be operated **without** oil.
- Should the pump not displace oil without bubbles after approx. 20 seconds, re-check the system.
- After the system has reached operating values, check the pipe connections for freedom from leakage. Check the operating temperature.

Bleeding

- Prior to initial commissioning the pump case must be filled with oil.

Important notes

- Installation, maintenance and repairs of the power units may only be carried out by authorised, trained and instructed personnel!
- The power units may only be operated within the permissible limits!
- When carrying out any work on the power unit, depressurise the system! Unauthorised changes and modifications that affect the safety and function are not permitted!
- Provide protective equipment and do **not** remove any existing protective equipment and guards.
- Take care that all fixing screws are always tightened! (Observe prescribed tightening torque!)
- The generally valid safety regulations and regulations for the prevention of accidents must be adhered to!
- With tank size 100, fill in at least 130 litres (level indicator "max").

Note in the sense of the 98/37 EEC Machinery Directive, Annex II, Section B; manufacturer's declaration:

The assemblies delivered have been manufactured in accordance with the harmonised standards EN 982, EN 983, EN ISO 12100 and DIN EN 60204-1.

Commissioning is prohibited until it has been established that the machine into which the assemblies are to be installed comply with the stipulations of EC Directives.

Гидравлические системы Häggglunds

Надежная высококачественная продукция для повышения производительности

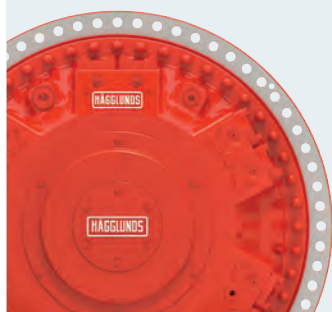


Привод для ваших достижений

Гидравлический привод Hägglunds – это система, превосходящая границы обычного. Занимая гораздо меньше места, чем другие приводы, при меньшем весе и незначительной конструктивной сложности, эта система обеспечивает адаптивность и надежность.

Механизм, работающий от привода Hägglunds, получает неограниченный доступ к высоким крутящим моментам. При этом ваше оборудование остается защищенным от перегрузок по крутящему моменту. При меньших усилиях, меньшем износе и меньших затратах на техобслуживание гидравлическая система обеспечивает мощность, которой хватает, чтобы сделать больше.

Проще говоря, вы получаете привод, который делает свою работу. Так же, как и компания, которая выполняет свою работу вместе с вами.



Преимущества гидравлической системы

- ▶ Прочная конструкция высочайшей надежности
- ▶ Максимальный крутящий момент во всем диапазоне скоростей вращения
- ▶ Устойчивость к жестким условиям окружающей среды
- ▶ Абсолютный контроль над скоростью вращения и крутящим моментом и, как результат, точная и плавная работа
- ▶ Адаптивность монтажа благодаря свободному расположению насосной станции гидромотора, установленного на валу.



Мощность и простота

Гидравлические системы Hägglunds включают в себя гидромотор и насосную станцию с электронной системой управления и диагностики. Такая простая конфигурация позволяет справляться практически с любыми задачами практически в любых условиях окружающей среды.

Компактный гидромотор, смонтированный непосредственно на приводном валу, обеспечивает необходимую мощность. Усилие и направление вращения гидромотора определяются регулируемыми аксиально-поршневыми насосами, размещаемыми в насосной станции, в то время как электронная система управления снабжает необходимой информацией и предлагает расширенные функциональные возможности.

▲ От трескучих сибирских морозов до обжигающей жары Африки – гидравлические системы Hägglunds способны работать в любых условиях и в любой отрасли промышленности. Мы производим гидроагрегаты в широком диапазоне мощностей и различных конфигураций. Перед отгрузкой заказчику все они проходят необходимые функциональные испытания.

Работа этих элементов возможна благодаря разнообразным клапанам и принадлежностям, которые способствуют еще большей адаптивности при установке и эксплуатации системы.

Ваш путь к эффективности



Мы предлагаем комплексное решение, в котором гидравлическая система сама по себе – всего лишь один из компонентов. Наше решение – исчерпывающий ответ на ваши потребности, основанный в равной мере как на знаниях, опыте и энтузиазме, так и на приводных технологиях.

Все начинается с того, что мы внимательно слушаем вас, чтобы понять суть стоящей перед вами задачи. Наш огромный опыт позволяет нам проникнуть в самую суть проблемы, не забывая при этом, что каждый конкретный

случай уникален. Поэтому мы используем все имеющиеся у нас профессиональные знания, технические средства и инновации в работе над решением ваших задач. В итоге вы получаете привод высокого качества, поставляемый в надлежащие сроки и в надлежащем виде и получающий полную поддержку с нашей стороны. Вы можете быть абсолютно спокойны: наши приводные технологии и люди, стоящие за ними, решат ваши проблемы.

Наша поддержка – залог вашей уверенности



Схема работы

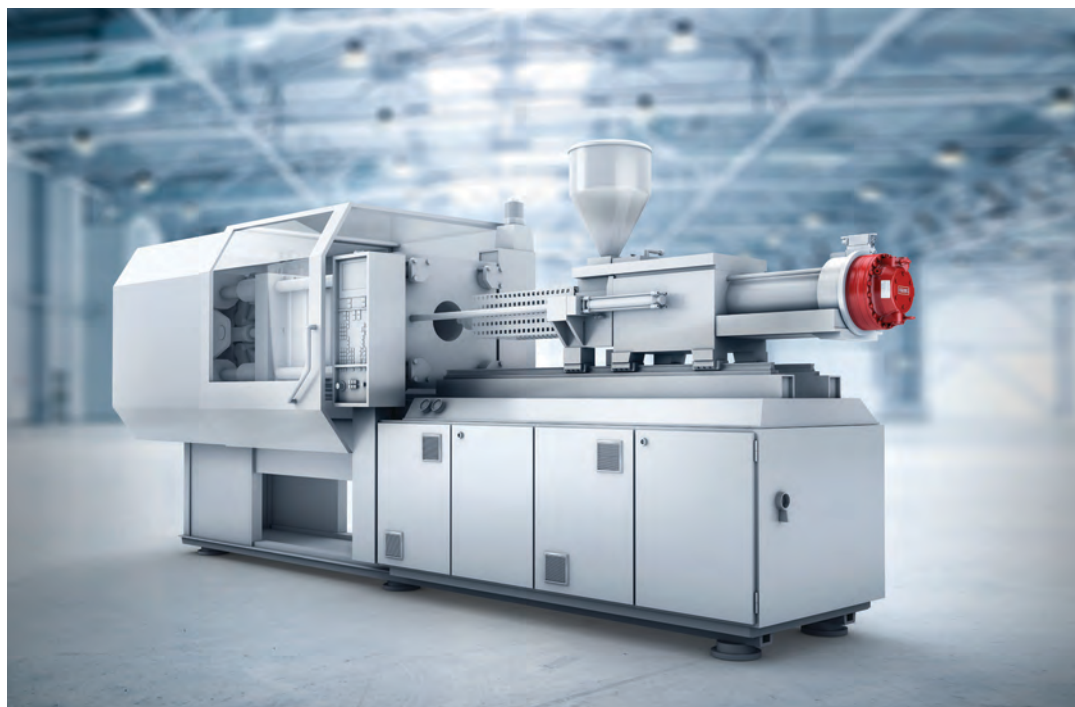


Решение, предложенное вам, действительно комплексное, благодаря поддержке, которую вы получаете на всем протяжении срока службы привода. Все, что вам нужно для оптимизации работы: от оригинальных запчастей Hägglunds до сервисного обслуживания на месте эксплуатации и своевременной модернизации – находится в вашем непосредственном распоряжении благодаря мировому охвату компании Бош Рексрот.

При составлении договора о выполнении услуг мы можем предусмотреть необходимую поддержку и услуги с учетом именно ваших нужд. Вместе с нашим представителем вы составляете договор таким образом, чтобы он наилучшим образом отвечал вашим критериям к приводу и его рабочим показателям.

Исключительная удельная мощность

Гидромоторы Hägglunds CAb – оптимальный выбор, если для вас важен небольшой вес привода.



Новые гидромоторы серии Hägglunds CAb, обладая исключительной удельной мощностью и высокой адаптивностью, делают выбор гидравлической системы оптимальным решением для задач, где важен небольшой вес оборудования.

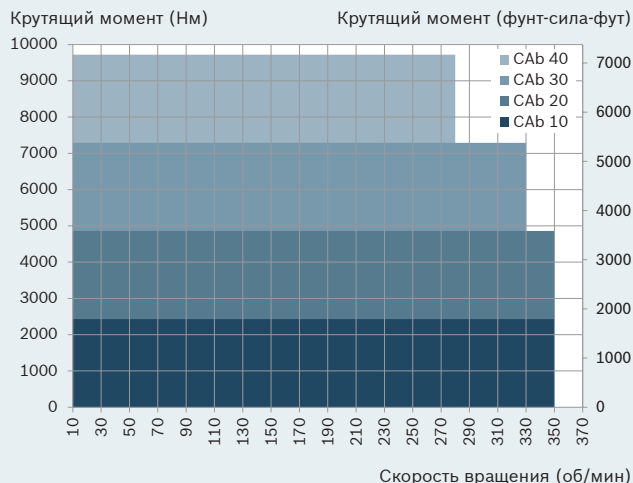
Эти гидромоторы характеризуются удельной мощностью, не имеющей себе равных, одновременно обеспечивая максимальный крутящий момент и максимальную скорость вращения. Идеальная внутренняя симметрия гарантирует постоянство крутящего момента на протяжении всего оборота, а также безупречный баланс сил, который сводит уровень шума и вибраций к минимуму.

По сравнению с конкурентными решениями, гидромоторы CAb обеспечивают крутящий момент на 10-15% выше на единицу затраченной энергии. Поскольку они весят значительно меньше, они расходуют меньше энергии в диапазоне высоких скоростей.

Четырнадцать типоразмеров с маленьким шагом по крутящему моменту позволяют удовлетворить даже самые жесткие требования к размерам и выбрать оптимальные гидравлические насосы. Поскольку во всех исполнениях присутствуют только два технологических интерфейса, выполнить подгонку системы также несложно.

Новая серия гидромоторов Hägglunds CAb будет чрезвычайно полезна на производствах пластмасс, а также и на других производствах, предлагая массу преимуществ: от высокого КПД до благоприятной рабочей обстановки.

Широкий диапазон рабочих характеристик



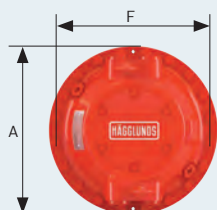
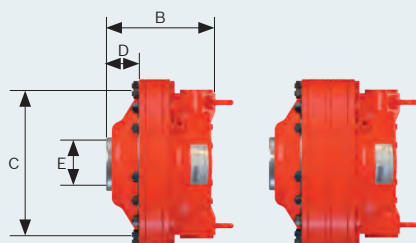
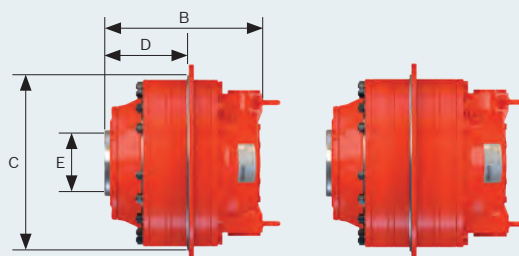
Параметры гидромоторов Hägglunds CAb

Тип гидромотора	Рабочий объем см³/об	Удельный крутящий момент Нм/бар	Макс. скорость вращения об/мин	Макс. давление бар	Макс. крутящий момент Нм	Макс. рабочая мощность* кВт
CAb 10 8	503	8	350	250	1 945	70
CAb 10	628	10	350	250	2 430	86
CAb 10 12,5	785	12,5	350	250	3 040	105
CAb 20 16	1 005	16	350	250	3 890	139
CAb 20 18	1 131	18	350	250	4 375	155
CAb 20	1 257	20	350	250	4 860	171
CAb 20 22,5	1 414	22,5	350	250	5 470	190
CAb 20 25	1 571	25	350	250	6 075	209
CAb 30 28	1 759	28	350	250	6 805	226
CAb 30	1 885	30	330	250	7 290	226
CAb 30 32,5	2 042	32,5	290	250	7 900	216
CAb 30 35	2 199	35	290	250	8 505	233
CAb 30 37,5	2 356	37,5	260	250	9 115	224
CAb 40	2 513	40	280	250	9 720	257

* Требуется промывка корпуса гидромотора.

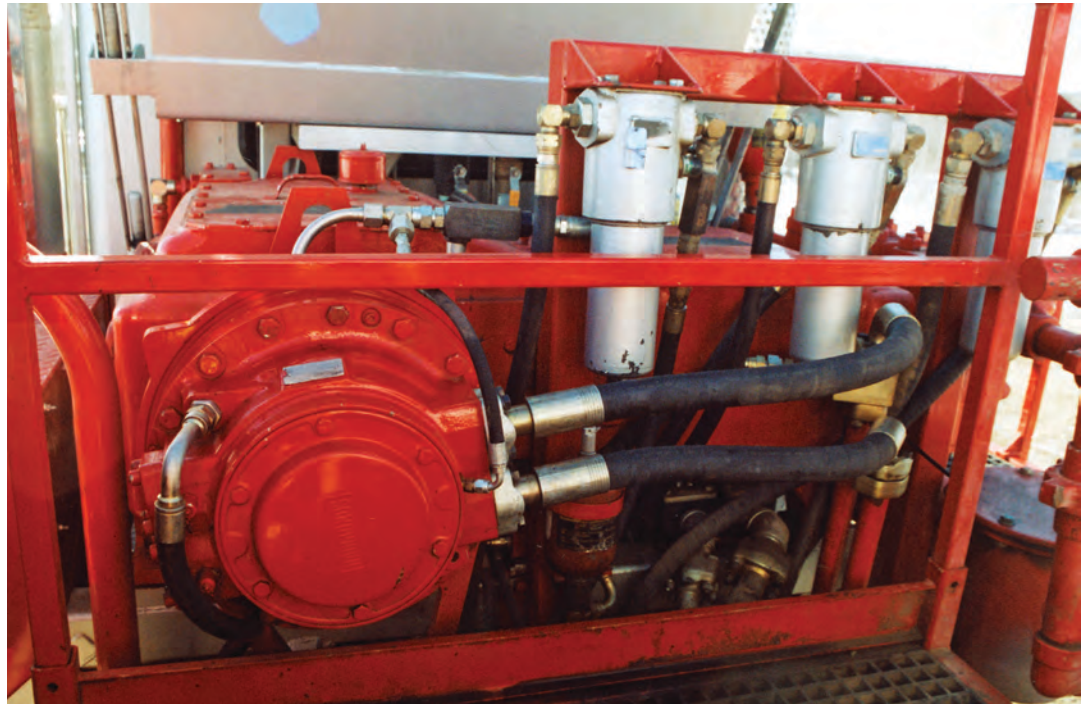
Размеры гидромоторов со шлицами

Тип гидромотора	Ø A (мм)	B (мм)	Ø C (мм)	D (мм)	E (шлицы)	Ø F (мм)	Масса (кг)	Основные каналы
CAb 10	300	194	256	58	DIN 5480 N70x3x30x22	279	46	G1
CAb 20		234					63	
CAb 30	355	285	315	151	DIN 5480 N100x3x30x32	333	80	
CAb 40		325					95	

Hägglunds CAb 10 - 40

Hägglunds CAb 10, 20

Hägglunds CAb 30, 40


Мощь в компактном исполнении

Серия Hägglunds CA представляет собой компактные гидромоторы, предназначенные для использования в тех случаях, когда большое значение имеют размеры и масса привода.

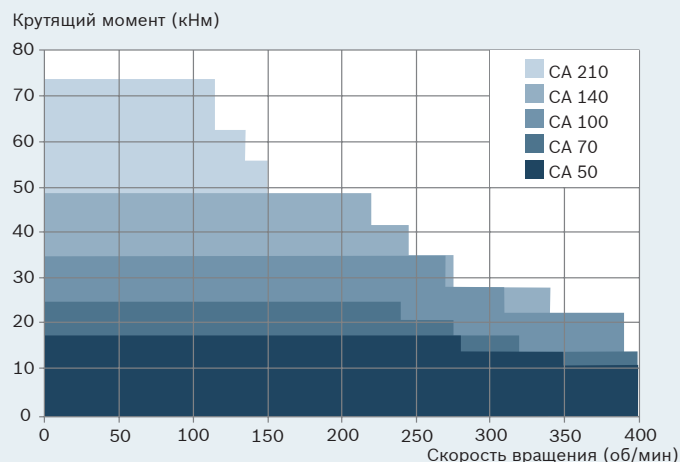


Гидромоторы Hägglunds CA были разработаны для решения вполне конкретной задачи: обеспечить требуемую мощность в тяжелых условиях эксплуатации, когда большое значение имеют размеры и масса привода. В результате получилась действительно компактная гидравлическая система, не уступающая по своей долговечности, рабочим характеристикам и надежности другим гидромоторам Hägglunds производства компании Рексрот. При небольшом размере и малом весе гидромоторы Hägglunds CA имеют отличную удельную мощность.

Среди важнейших преимуществ гидромоторов Hägglunds CA можно отметить различные варианты монтажа, функциональный полный вал и способность выдерживать различные пиковые нагрузки. Адаптированные к вашим потребностям, гидромоторы Hägglunds CA обеспечивают неоспоримые конкурентные преимущества. Использование данных гидромоторов позволит сделать вашу работу более эффективной в целом ряде аспектов.

Широкий диапазон рабочих характеристик

Максимальные значения крутящего момента и скорости вращения.



Параметры гидромоторов Hägglunds CA

Тип гидромотора*	Режим полного рабочего объема				Макс. давление*** (бар)	Режим неполного рабочего объема				Отношение рабочих объемов
	Рабочий объем (см³/об)	Удельный крутящий момент (Нм/бар)	Ном. скорость вращения** (об/мин)	Макс. скорость вращения (об/мин)		Рабочий объем (см³/об)	Удельный крутящий момент (Нм/бар)	Ном. скорость вращения** (об/мин)	Макс. скорость вращения (об/мин)	
CAb 50 20	1 256	20	400	400	350					
CA 50 25	1 570	25	350	400	350					
CA 50 32	2 010	32	280	400	350					
CA 50 40	2 512	40	230	350	350					
CA 50	3 140	50	200	280	350	1 570	25	200	280	1:2
CA 70 40	2 512	40	270	400	350					
CA 70 50	3 140	50	225	320	350	1 570	25	225	320	1:2
CA 70 60	3 771	60	195	275	350	1 886	30	195	275	1:2
CA 70	4 400	70	180	240	350	2 200	35	180	240	1:2
CA 100 40	2 512	40	390	400	350					
CA 100 50	3 140	50	320	400	350					
CA 100 64	4 020	64	260	390	350					
CA 100 80	5 024	80	220	310	350	2 512	40	220	310	1:2
CA 100	6 280	100	190	270	350	3 140	50	190	270	1:2
CA 140 80	5 024	80	245	340	350					
CA 140 100	6 280	100	205	275	350	3 140	50	205	275	1:2
CA 140 120	7 543	120	180	245	350	3 771	60	180	245	1:2
CA 140	8 800	140	170	220	350	4 400	70	170	220	1:2
CA 210 160	10 051	160	105	150	350	5 026	80	105	150	1:2
CA 210 180	11 314	180	100	135	350	5 675	90	100	135	1:2
CA 210	13 200	210	85	115	350	6 600	105	85	115	1:2

Размеры гидромоторов со шлицами

Тип гидромотора	A (мм)	B (мм)	C (мм)	D (мм)	E (мм)	Масса (кг)	Основные каналы	Дренажные каналы
CA 50	464	312,5	390	46,5	N120x5x30x22x9H	175	SAE 1 1/4 "	BSP 3/4 "
CA 70	495	312,5	435	46,5	N120x5x30x22x9H	205	SAE 1 1/4 "	BSP 3/4 "
CA 100	560	399,5	470	135,5	N140x5x30x26x9H	265	SAE 1 1/4 "	BSP 3/4 "
CA 140	600	399,5	510	135	N140x5x30x26x9H	305	SAE 1 1/4 "	BSP 3/4 "
CA 210	600	501	510	156,5	N150x5x30x28x9H	395	SAE 1 1/4 "	BSP 3/4 "

Размеры гидромоторов со стяжной дисковой муфтой.

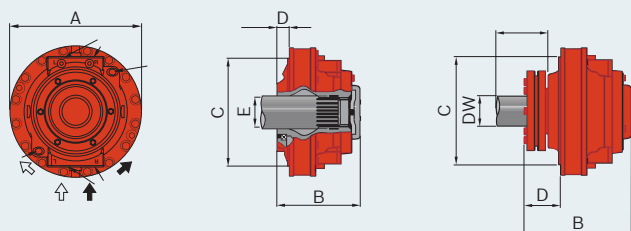
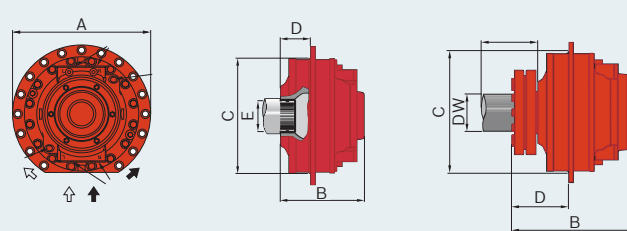
Тип гидромотора	A (мм)	B (мм)	C (мм)	D (мм)	DW (мм)	Масса (кг)	Основные каналы	Дренажные каналы
CA 50	464	404,5	390	138	120	203	SAE 1 1/4 "	BSP 3/4 "
CA 70	495	404,5	435	138	120	232	SAE 1 1/4 "	BSP 3/4 "
CA 100	560	505	470	241	140	310	SAE 1 1/4 "	BSP 3/4 "
CA 140	600	505	510	241	140	347	SAE 1 1/4 "	BSP 3/4 "
CA 210	600	644,5	510	300	160	456	SAE 1 1/4 "	BSP 3/4 "

*) Гидромоторы всех типов могут монтировать в тандеме.

**) При значениях скорости выше номинального необходимо обратить особое внимание на давление подпора, расход промывки и другие параметры гидравлической системы.

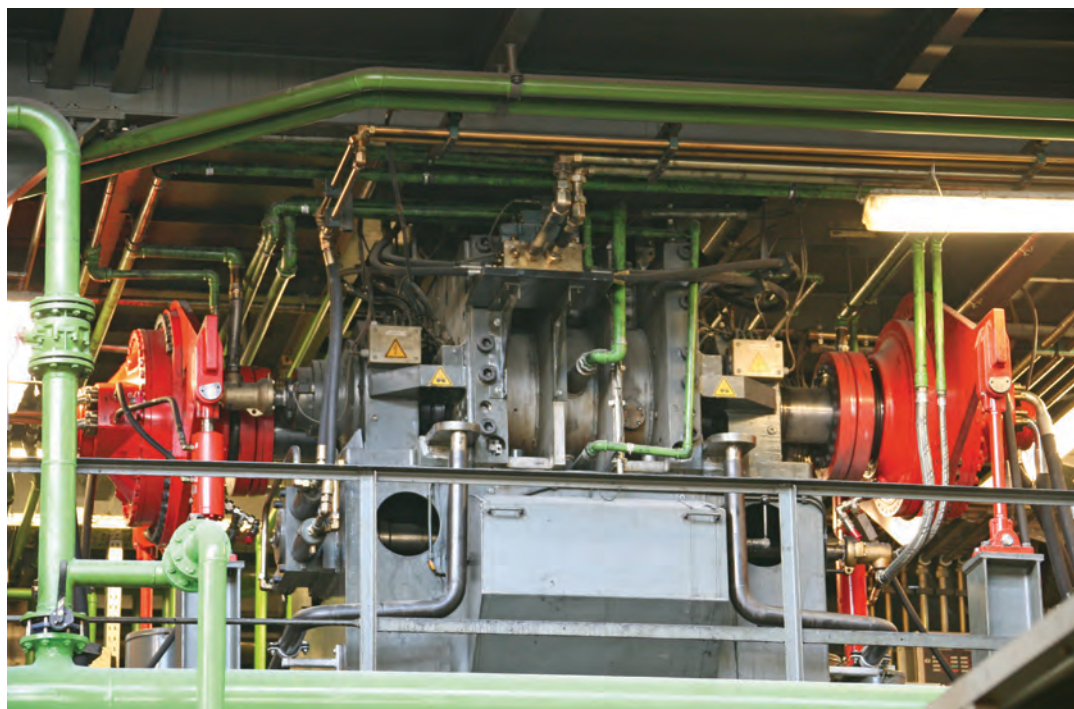
***) Гидромотор разработан согласно нормам DNV. Испытания проводились под давлением 420 бар (6000 фунт/кв. дюйм). В процессе эксплуатации допускаются скачки давления до 420 бар (6000 фунт/кв. дюйм), но не более 10000 циклов.

К заказу доступны исполнения с другими крутящими моментами. Приведенные данные характеризуют лишь основные типоразмеры гидромоторов Hägglunds CA.

Hägglunds CA 50, CA 70

Hägglunds CA 100, CA 140, CA 210


Мощь, дающая адаптивность

Компактная серия Hägglunds CB, решающая различные задачи в сложных условиях эксплуатации, служит подтверждением факта, что размер не пропорционален функциональности.



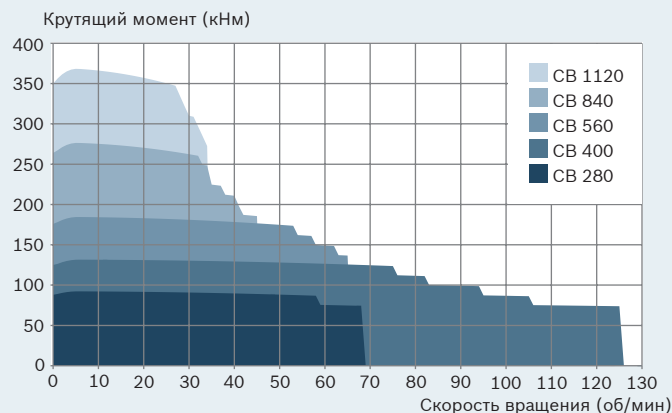
Гидромоторы серии Hägglunds CB могут применяться в различных областях промышленности, предполагающих значительные нагрузки, в частности, в шредерах, питателях и шаровых мельницах. Среди их многочисленных преимуществ следует особо отметить малые габаритные размеры и различные варианты монтажа.

Широкий диапазон размеров и рабочих объемов дает возможность оптимизировать систему при выборе гидромотора и гидравлического насоса. Полный вал гидромотора является еще одним преимуществом, благодаря которому гидромотор может стать незаменимым в некоторых областях применения, таких как бурение.

Гидромоторы быстро реагируют на изменения нагрузок, способны воспринимать пиковые нагрузки и при необходимости мгновенно останавливаться. Гидромоторы серии Hägglunds CB – это по-настоящему долговечные, практичные и надежные приводы.

Широкий диапазон рабочих характеристик

Максимальные значения крутящего момента и скорости вращения.



Данные для давления в напорной линии 350 бар и давления подпора 15 бар.

Параметры гидромоторов Hägglunds CB

Тип гидромотора	Рабочий объем (см³/об)	Удельный крутящий момент (Нм/бар)	Ном. скорость вращения *(об/мин)	Макс. скорость вращения (об/мин)	Макс. давление **(бар)	Макс. крутящий момент *** (кНм)
CB 280 240	15 100	240	53	68	350	79
CB 280	17 600	280	44	58	350	92
CB 400 240	15 100	240	94	125	350	79
CB 400 280	17 600	280	73	105	350	92
CB 400 320	20 100	320	71	94	350	110
CB 400 360	22 600	360	59	82	350	120
CB 400	25 100	400	58	75	350	130
CB 560 440	27 600	440	49	65	350	140
CB 560 480	30 200	480	48	62	350	160
CB 560 520	32 700	520	41	57	350	170
CB 560	35 200	560	40	53	350	180
CB 840 600	37 700	600	30	45	350	200
CB 840 640	40 200	640	28	41	350	210
CB 840 680	42 700	680	27	40	350	220
CB 840 720	45 200	720	25	37	350	240
CB 840 760	47 800	760	23	34	350	250
CB 840 800	50 300	800	23	34	350	260
CB 840	52 800	840	21	32	350	280
CB 1120 880	55 300	880	25	34	350	290
CB 1120 920	57 800	920	24	33	350	300
CB 1120 960	60 300	960	24	32	350	315
CB 1120 1000	62 800	1 000	22	31	350	330
CB 1120 1040	65 300	1 040	21	29	350	340
CB 1120 1080	67 900	1 080	20	28	350	355
CB 1120	70 400	1 120	20	27	350	370

Размеры гидромоторов со шлицами

Тип гидромотора	A (мм)	B (мм)	C (мм)	E (мм)	Масса (кг)	Основные каналы	Дренажные каналы
CB 280	782	501	680	N200x5x30x38x9H	705	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"
CB 400	782	619	680	N200x5x30x38x9H	1 060	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"
CB 560	940	669	800	N260x5x30x50x9H	1 115	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"
CB 840	940	787	800	N260x5x30x50x9H	1 445	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"
CB 1120	940	904	800	N260x5x30x50x9H	1 770	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"

Размеры гидромоторов с полым валом и стяжной дисковой муфтой

Тип гидромотора	A (мм)	B (мм)	C (мм)	DW (мм)	Масса (кг)	Основные каналы	Дренажные каналы
CB 280	782	612	680	180	800	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"
CB 400	782	740	680	200	1 160	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"
CB 560	940	767	800	260	1 290	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"
CB 840	940	885	800	260	1 620	SAE 1 1/4" и 1 1/2"	BSP 1 1/4"

*) При значениях скорости выше номинального необходимо обратить особое внимание на давление подпора, расход промывки и другие параметры гидравлической системы.

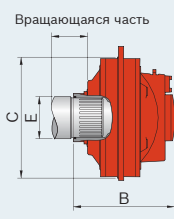
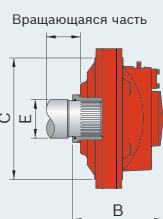
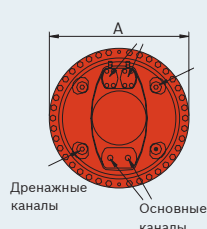
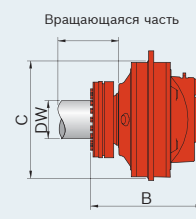
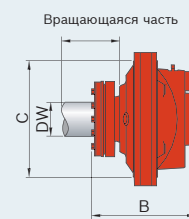
**) Гидромотор разработан согласно нормам DNV. Испытания проводились под давлением 420 бар (6000 фунт/кв. дюйм). В процессе эксплуатации допускаются скачки давления до 420 бар (6000 фунт/кв. дюйм), но не более 10000 циклов.

***) Рассчитано по формуле:

$T = T_s \times (350-15) \times 0,98$.

К заказу доступны исполнения с другими крутящими моментами.

Приведенные данные характеризуют лишь основные типоразмеры гидромоторов Hägglunds CB.

Hägglunds CB со шлицами

Hägglunds CB со стяжной дисковой муфтой


Неограниченные возможности

Привод Hägglunds СВм способен на многое при меньших затратах.



Когда речь заходит о производстве, все мечтают о большем. Однако в наше время, напротив, во всем наблюдается дефицит: от времени до энергии и трудовых ресурсов. Эту задачу проще решить, используя привод Hägglunds СВм, предлагаемый компанией Бош Рексрот.

Привод Hägglunds СВм обеспечивает гидромотор крутящим моментом на 50% больше, при этом сам гидромотор меньше и на 50% легче своих предшественников, благодаря чему он обладает самым высоким в мире соотношением крутящего момента и веса. Тем не менее эта серия предлагает все преимущества, которые вы обычно ожидаете от прямого привода.

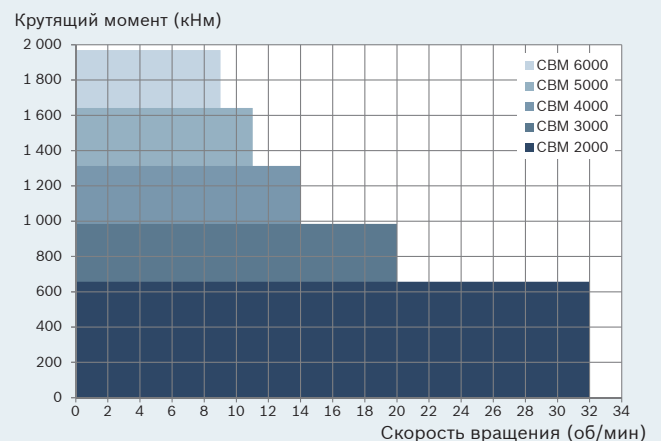
Выход на максимальный крутящий момент с нуля, защита от пиковых нагрузок и работа во всех четырех квадрантах – вот некоторые функции этого стандартного компактного комплекта.

Проще говоря, привод Hägglunds СВм способен на большее при меньших затратах и позволяет вам делать то же самое. От промышленного объекта до работ в море – абсолютно везде вы можете справиться с большими объемами работ при меньших требованиях к пространству, энергии и нагрузкам на приводной вал.

Это означает более высокую производительность при меньших затратах.

И это гениальное решение.

Широкий диапазон рабочих характеристик



Параметры гидромоторов Hägglunds CBm

Тип гидромотора	Рабочий объем (см³/об)	Удельный крутящий момент (Нм/бар)	Макс. скорость вращения (об/мин)	Макс. давление *(бар)	Макс. крутящий момент **(кНм)
CBm 2000 1000	63 108	1 000	70	350	328
CBm 2000 1200	75 832	1 200	58	350	394
CBm 2000 1400	88 301	1 400	48	350	460
CBm 2000 1600	100 770	1 600	41	350	525
CBm 2000 1800	113 748	1 800	36	350	591
CBm 2000	126 726	2 000	32	350	657
CBm 3000 2200	138 686	2 200	29	350	722
CBm 3000 2400	151 155	2 400	26	350	788
CBm 3000 2600	164 133	2 600	24	350	854
CBm 3000 2800	177 111	2 800	22	350	919
CBm 3000	190 089	3 000	20	350	985
CBm 4000 3200	201 540	3 200	18	350	1 051
CBm 4000 3400	214 518	3 400	17	350	1 116
CBm 4000 3600	227 496	3 600	16	350	1 182
CBm 4000 3800	240	3 800	15	350	1 248
CBm 4000	253 452	4 000	14	350	1 313
CBm 5000 4600	290 859	4 600	12	350	1 510
CBm 5000	316 815	5 000	11	350	1 642
CBm 6000 5600	354 222	5 600	9	350	1 838
CBm 6000	380 178	6 000	9	350	1 970

*) Гидромотор разработан согласно нормам DNV. Испытания проводились под давлением 420 бар (6 000 фунт/кв. дюйм). В процессе эксплуатации допускаются скачки давления до 420 бар (6 000 фунт/кв. дюйм), но не более 10000 циклов.

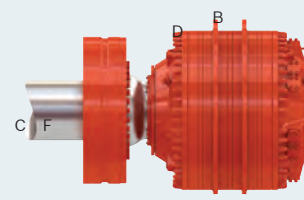
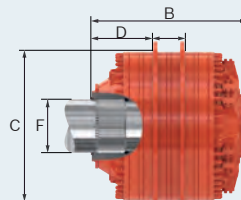
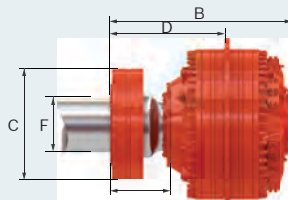
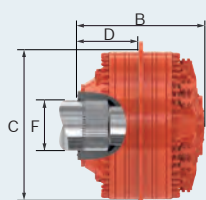
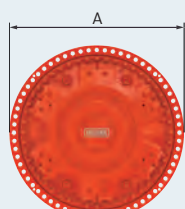
**) Рассчитано по формуле: $T = T_s \times (350-15) \times 0,98$.

Размеры гидромоторов со шлицами

Тип гидромотора	A (мм)	B (мм)	C (мм)	D (мм)	E (мм)	F (мм)	Масса (кг)	Основные каналы	Дренажные каналы
CBm 2000	1 460	872	1 300	419	-	N360x8x30x44x9H	4 100	SAE 2"	BSP 1 1/4" и 2"
CBm 3000	1 460	990	1 300	419	-	N440x8x30x54x9H	5 000	SAE 2"	BSP 1 1/4" и 2"
CBm 4000	1 460	1 108	1 300	537	-	N440x8x30x54x9H	5 800	SAE 2"	BSP 1 1/4" и 2"
CBm 5000	1 460	1 224	1 300	535	270	N460x8x30x56x9H	6 700	SAE 2"	BSP 1 1/4" и 2"
CBm 6000	1 460	1 342	1 300	535	270	N460x8x30x56x9H	7 500	SAE 2"	BSP 1 1/4" и 2"

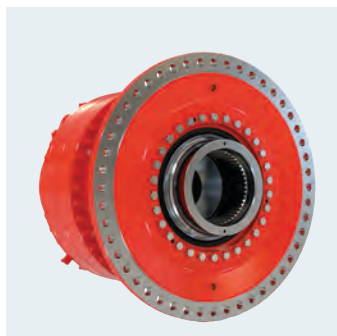
Размеры гидромоторов с полым валом и муфтой сцепления валов

Тип гидромотора	A (мм)	B (мм)	C (мм)	D (мм)	E (мм)	F (мм)	Масса (кг)	Основные каналы	Дренажные каналы
CBm 2000	1 460	1 227	720	773	-	360	4 850	2"	BSP 1 1/4" и 2"
CBm 3000	1 460	1 434	950	863	-	460	6 600	2"	BSP 1 1/4" и 2"
CBm 4000	1 460	1 552	950	981	-	460	7 450	2"	BSP 1 1/4" и 2"
CBm 5000	1 460	1 719	1 180	1 030	270	480	9 700	2"	BSP 1 1/4" и 2"
CBm 6000	1 460	1 838	1 180	1 030	270	480	10 500	2"	BSP 1 1/4" и 2"

CBm 2000-6000
CBm 2000, 3000, 4000
CBm 5000, 6000


Мощный потенциал

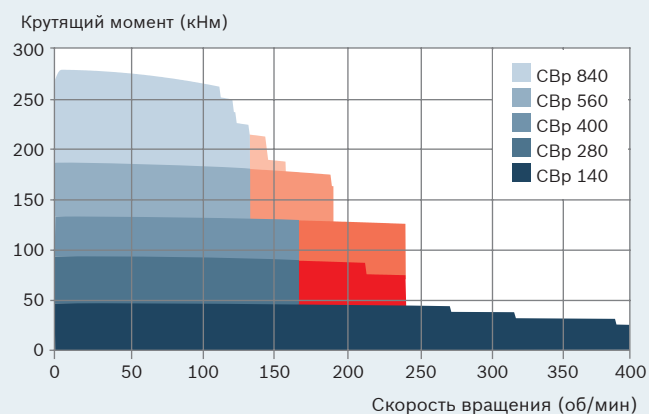
Линейка гидромоторов Hägglunds CBp повышенной мощности.



Гидромоторы серии Hägglunds CBp являются по-настоящему мощными. Они обладают всеми преимуществами гидромоторов Hägglunds: они компактные, легкие и чрезвычайно мощные. Фактически они обладают самой большой удельной мощностью среди всех гидромоторов Hägglunds и способны работать на высокой мощности непрерывно. Эти гидромоторы можно монтировать с помощью фланцев или моментного рычага, при этом они снабжены шлицами и полым проходным валом. Гидромоторы этой серии открывают новые возможности применения приводов в различных областях, поскольку они способны работать с более высокой скоростью вращения и большим КПД.

Широкий диапазон рабочих характеристик

Максимальные значения крутящего момента и скорости вращения.



■ Максимальная скорость вращения при постоянном режиме работы ограничивается характеристиками уплотнения вала. Данные для давления в напорной линии 350 бар и давления подпора 15 бар.

Параметры гидромоторов Hägglunds CBp

Тип гидромотора	Рабочий объем (см³/об)	Удельный крутящий момент (Нм/бар)	Ном. скорость вращения (об/мин)	Макс. скорость вращения (об/мин)	Макс. давление (бар)
CBp 140 80	5 024	80	320	400	350
CBp 140 100	6 280	100	270	390	350
CBp 140 120	7 543	120	230	320	350
CBp 140	8 800	140	210	275	350
CBp 280 160	10 100	160	170	170	350
CBp 280 200	12 600	200	170	170	350
CBp 280 240	15 100	240	170	170	350
CBp 280	17 600	280	150	170	350
CBp 400 240	15 100	240	170	170	350
CBp 400 280	17 600	280	170	170	350
CBp 400 320	20 100	320	170	170	350
CBp 400 360	22 600	360	170	170	350
CBp 400	25 100	400	170	170	350
CBp 560 440	27 600	440	135	135	350
CBp 560 480	30 200	480	135	135	350
CBp 560 520	32 700	520	135	135	350
CBp 560	35 200	560	135	135	350
CBp 840 600	37 700	600	110	135	350
CBp 840 640	40 200	640	100	135	350
CBp 840 680	42 700	680	100	135	350
CBp 840 720	45 200	720	95	135	350
CBp 840 760	47 800	760	90	125	350
CBp 840 800	50 300	800	85	120	350
CBp 840	52 800	840	80	115	350

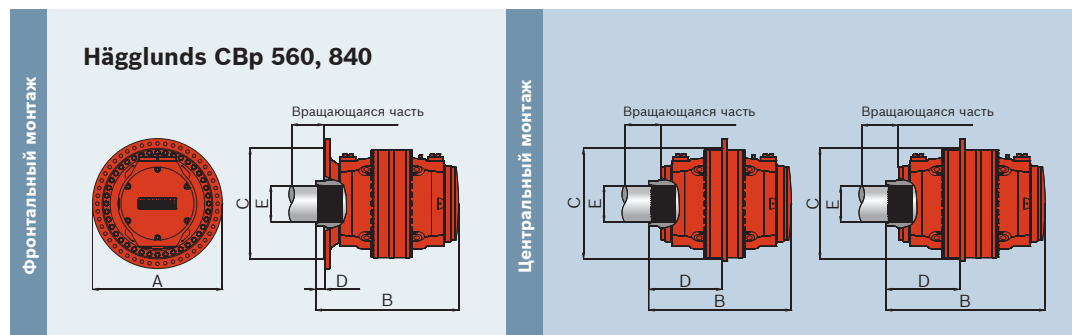
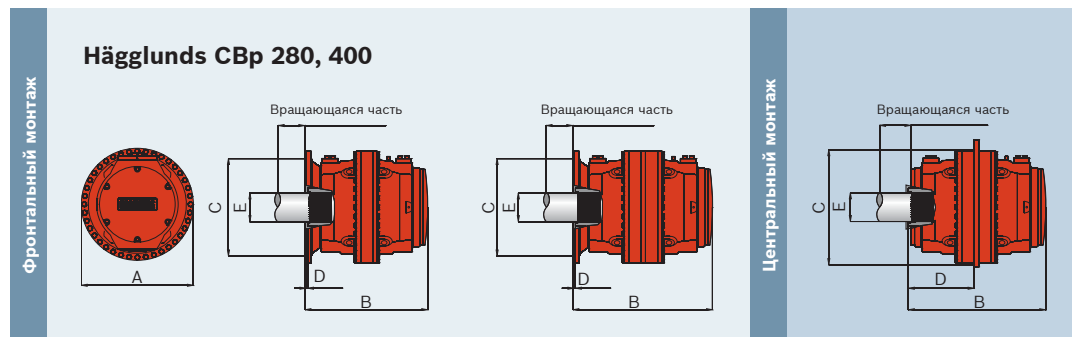
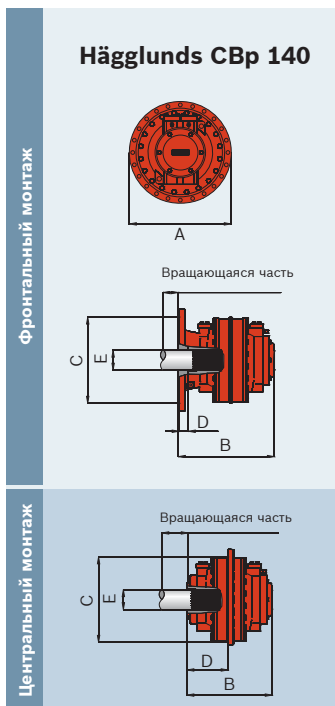
*) Возможен монтаж в тандеме. Более подробную информацию можно получить в ближайшем представительстве компании.

Размеры гидромоторов со шлицами для фронтального монтажа

Тип гидромотора	A (мм)	B (мм)	C (мм)	D (мм)	E
CBp 140	600	570	510	54	N120x5x30x22x9H
CBp 280	782	860	680	11,6	N200x5x30x38x9H
CBp 400	782	978	680	11,6	N200x5x30x38x9H
CBp 560	940	1 037	800	65,5	N260x5x30x50x9H

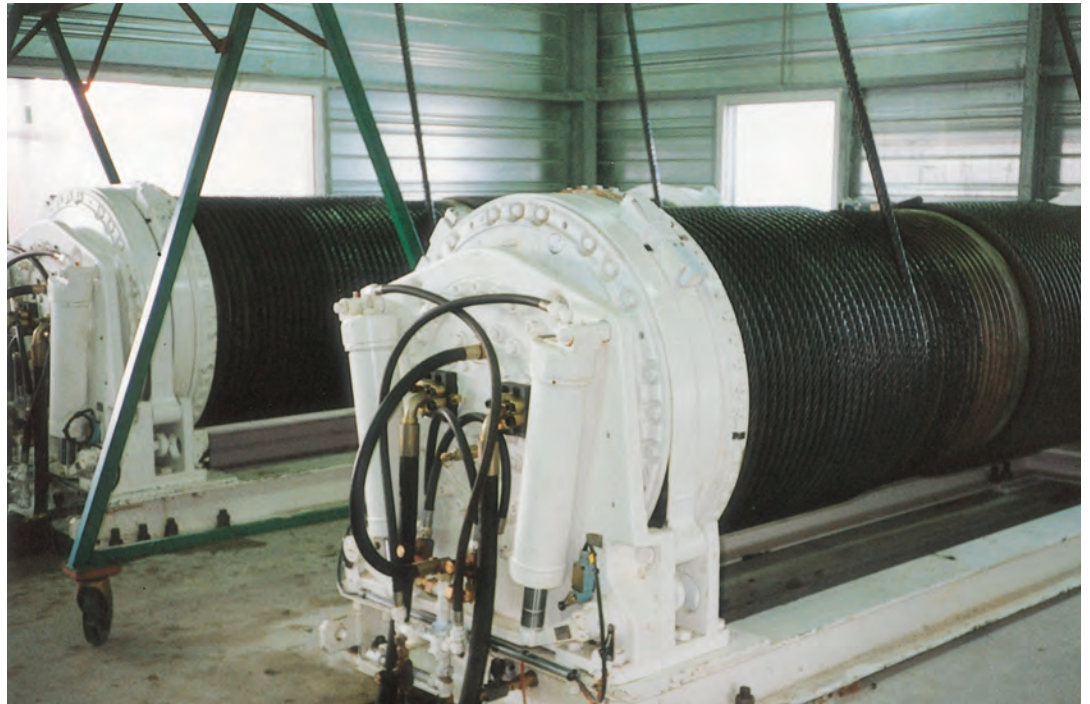
Размеры гидромоторов со шлицами для центрального монтажа

Тип гидромотора	A (мм)	B (мм)	C (мм)	D (мм)	E
CBp 140	600	511	510	246	N120x5x30x22x9H
CBp 400	940	960	800	457	N200x5x30x38x9H
CBp 560	940	1 037	800	534	N260x5x30x50x9H
CBp 840	940	1 155	800	534	N260x5x30x50x9H



Сильный игрок

Модель Hägglunds VI была первым гидромотором, собранным нашей компанией. Этот мощный, надежный и легкоуправляемый гидромотор первоначально создавался для судостроения.



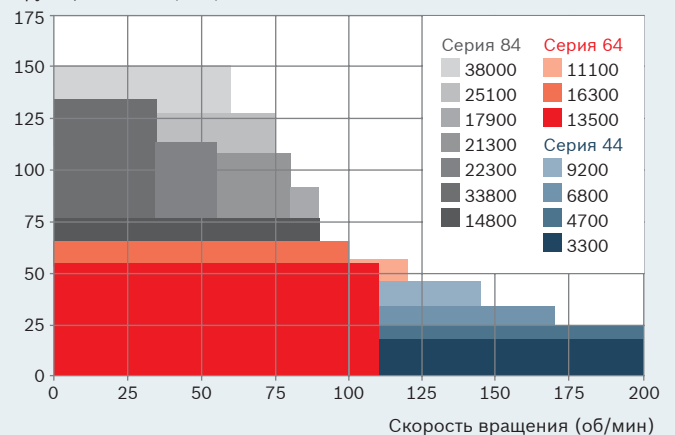
Гидромоторы серии Hägglunds VI первыми сошли с конвейера Hägglunds. Изначально они были разработаны с целью увеличения эффективности, надежности и управляемости судовых приводов. Однако благодаря этим характеристикам они нашли применение и в других отраслях, в частности, в целлюлозно-бумажной и горнодобывающей промышленности.

В судостроении, в частности в составе мощных лебедок, гидромоторы Hägglunds VI продемонстрировали лучшие в мире характеристики в отношении регулирования крутящего момента (натяжения троса) во всем диапазоне скоростей вращения. Благодаря этому снижается риск поломок и простоя оборудования и, соответственно, уменьшается стоимость технического обслуживания и увеличивается производительность. Среди других преимуществ, сделавших гидромоторы Hägglunds VI столь популярными среди самых требовательных потребителей, стоит отметить возможность свободного вращения, чрезвычайно малый момент инерции и некоторые другие характеристики.

Широкий диапазон рабочих характеристик

Максимальные значения крутящего момента и скорости вращения.

Крутящий момент (кНм)



Параметры гидромоторов Hägglunds VI

Тип гидромотора	Режим полного рабочего объема					Режим неполного рабочего объема					Отношение рабочих объемов
	Рабочий объем (см³/об)	Удельный крутящий момент (Нм/бар)	Ном. скорость вращения *(об/мин)	Макс. скорость вращения (об/мин)	Макс. давление **(бар)	Рабочий объем (см³/об)	Удельный крутящий момент (Нм/бар)	Ном. скорость вращения *(об/мин)	Макс. скорость вращения (об/мин)		
44-03300	3 325	53	100	200	320	1 662	26	100	200	1:2	
44-04700	4 710	75	100	200	320	2 356	37	100	200	1:2	
44-06800	6 790	108	90	170	320	3 393	54	90	170	1:2	
44-09200	9 240	147	80	145	320	4 618	74	80	145	1:2	
64-11100	11 080	176	70	120	320	5 542	88	70	120	1:2	
64-13500	13 499	215	60	110	250	6 750	107	60	110	1:2	
64-16300	16 340	260	50	100	250	8 171	130	50	100	1:2	
84-14800	14 840	236	55	90	320	-	-	-	-	-	
84-17900	17 961	286	55	85	320	-	-	-	-	-	
84-21300	21 375	340	55	80	320	-	-	-	-	-	
84-25100	25 090	399	55	75	320	-	-	-	-	-	
84-38000	38 000	605	40	60	250	-	-	-	-	-	
84-22300	22 300	355	55	55	320	11 150	177	60	85	1:2	
84-33800	33 780	538	35	35	250	16 889	269	50	70	1:2	
84-25100	25 090	399	40	55	250	8 362	133	45	75	1:3	
84-38000	38 000	605	25	35	250	12 667	202	35	60	1:3	
84-25100	25 090	399	40	55	250	16 724	266	45	75	2:3	
84-38000	38 000	605	25	35	250	25 334	403	35	60	2:3	

*) При значениях скорости выше номинального необходимо обратить особое внимание на давление подпора, расход промывки и другие параметры гидравлической системы.

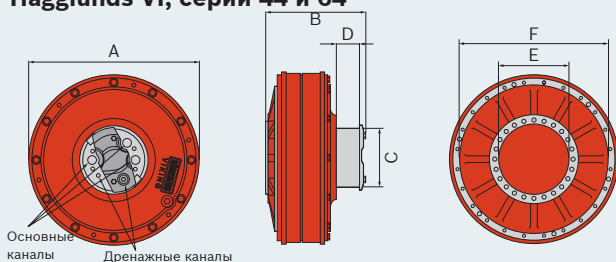
**) Гидромотор разработан согласно нормам DNV. Испытания проводились при давлении на 70 бар (1000 фунт/кв. дюйм) выше максимального.

В процессе эксплуатации допускается кратковременное превышение максимального давления до 70 бар (1000 фунт/кв. дюйм), но не более 10000 циклов.

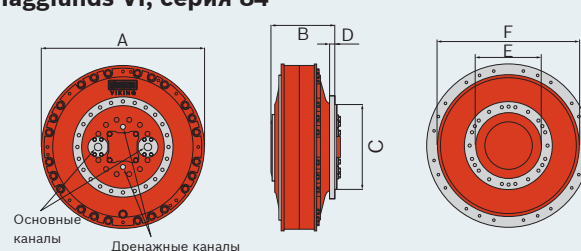
Размеры

Тип гидромотора	A (мм)	B (мм)	C (мм)	D (мм)	E (мм)	F (мм)	Масса (кг)	Основные каналы	Дренажные каналы	Монтаж
Серия 44	770	438	260	100	320	676	520	BSP 1 1/4"	BSP 3/4"	Шпоночное соединение
Серия 64	858	450	260	100	390	766	750	BSP 1 1/4"	BSP 3/4"	Шпоночное соединение
Серия 84	1 100	450	560	71	440	955	1 550	SAE 2 "	BSP 1"	Болтовое/фланцевое соединение

Hägglunds VI, серии 44 и 64



Hägglunds VI, серия 84



Несколько компонентов – множество сочетаний

Широкий выбор насосных станций, обеспечивающий максимальную надежность.



Насосные станции просты при монтаже. Перед отгрузкой с завода они проходят полный цикл испытаний. Наши хорошо зарекомендовавшие себя модульные решения обеспечивают максимальную продолжительность безотказной работы оборудования, а также позволяют значительно ускорить и упростить процедуры технического обслуживания. Помимо этого, мы готовы выполнить быструю поставку оборудования

с точным соблюдением оговоренных сроков. Наша АСУ (Hägglunds Spider) обеспечивает прекрасную управляемость гидравлической системы. Насосная станция Hägglunds, спроектированная для работы с нашими гидромоторами, позволит обеспечить одинаково высокий КПД всей гидравлической системы.

Сочетания насосов и электродвигателей насосных станций Hägglunds

		Насосы SP																
		Одинарный							Тандем									
		40	71	125	180	250	355	500	750	125	180	250	250	355	355	500	500	500
Компактный (С)	Электродвигатель (кВт)	11	■															
	15	■																
	22	■																
	30	■	■															
	37		■															
	45		■	■														
	55		■															
	75			■														
	90				■													
Малогабаритный (S)	22		■															
	30		■	■														
	37		■															
	45		■	■														
	55		■															
Среднегабаритный (M)	75			■														
	90				■													
	110					■												
	132						■											
	160							■										
	200								■									
Крупногабаритный (L)	250								■									
	315									■								
	355										■							
	400											■						
	500												■					

Преимущества

- ▶ Модульная система дает возможность комбинировать насосы различной производительности с электродвигателями разной мощности
- ▶ Возможность установки вблизи оборудования или в любом удобном месте
- ▶ Обновление системы управления происходит легко и быстро
- ▶ Звукоизолированный шкаф
- ▶ Компактность
- ▶ Простота монтажа и технического обслуживания

■ Стандартные сочетания

Габаритные размеры насосных станций Hägglunds DUe

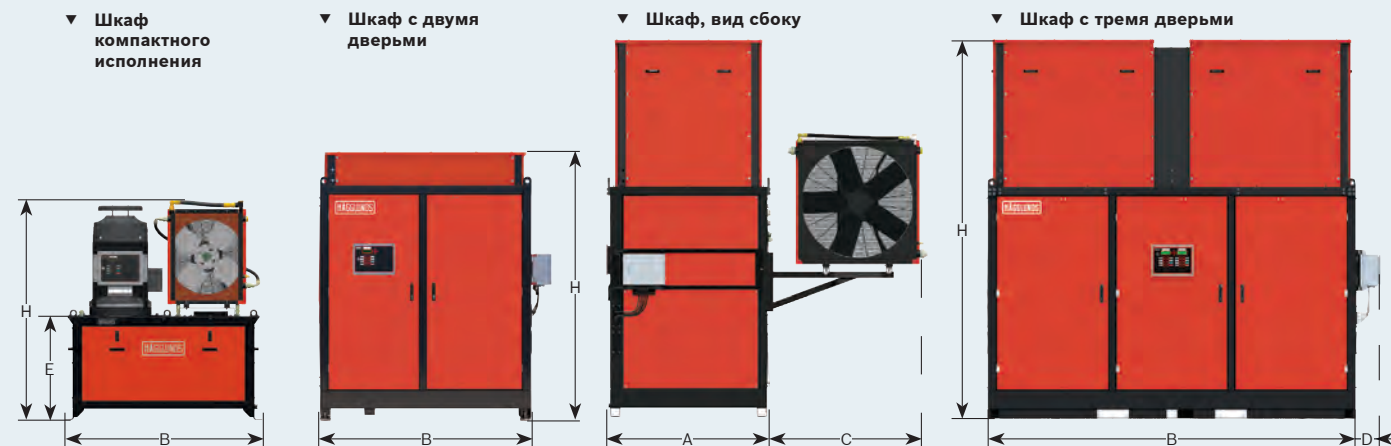
Размеры, мм \ Тип*	DUeC1	DUeS2	DUeS3	DUeM2	DUeM3	DUeL2	DUeL3
H ***	1570-2000	2220	2220	2520-3500	2520-3500	2820-4200	2820-4200
B	1740	1820	2720	2000	3000	2190	3500
A	1000	1225	1225	1500	1500	1500	1500
C****	Воздушно-масляные	-	1199	1428	1310	1640	1503
	Водомасляные	-	470	470	470	470	470
D**	-	250	250	250	250	250	250
E	916	-	-	-	-	-	-

*) Насосные станции, обозначение которых заканчивается буквой С, являются компактными; буквой S – малогабаритными; буквой М – среднегабаритными; буквой L – крупногабаритными.

Цифры в конце обозначения шкафа соответствует количеству дверей: одна, две или три.

**) Блок управления Spider может размещаться с любой стороны шкафа.

***) Высота насосной станции зависит от используемого сочетания насоса и гидромотора.



Сочетания насосов и электродвигателей серии Hägglunds PAC (насосные станции по стандартам США)

		Насосы SP																				
		Одинарный								Тандем												
		40	71	125	180	250	355	500	750	40	71	125	180	250	250	355	355	500	500	500		
Малогобаритный (S)	Электродвигатель, л.с. (кВт)	15 (11)	■																			
		20 (15)	■																			
		25 (19)	■	■																		
		30 (23)	■	■	■						■											
		40 (30)	■	■	■						■	■										
		50 (38)		■	■	■					■	■										
		60 (45)		■	■	■					■	■										
		75 (56)		■	■	■					■	■										
		100 (75)		■	■	■					■	■										
		125 (94)			■	■	■	■				■	■	■	■							
Среднегабаритный (M)	Электродвигатель, л.с. (кВт)	150 (113)			■	■	■				■	■	■	■	■	■						
		200 (150)			■	■	■				■	■	■	■	■	■	■	■				
		250 (188)			■	■	■				■	■	■	■	■	■	■	■	■			
		300 (225)			■	■	■				■	■	■	■	■	■	■	■	■	■		
		350 (263)			■	■	■				■	■	■	■	■	■	■	■	■	■	■	
Крупногабаритный (L)	Электродвигатель, л.с. (кВт)	400 (300)				■	■					■	■	■	■	■	■	■	■	■		
		450 (338)				■	■					■	■	■	■	■	■	■	■	■		
		500 (375)				■	■					■	■	■	■	■	■	■	■	■		
Увеличенный (XL)	Электродвигатель, л.с. (кВт)	600 (450)					■						■	■	■	■	■	■	■	■		
		700 (525)					■						■	■	■	■	■	■	■	■		
		800 (600)					■						■	■	■	■	■	■	■	■		

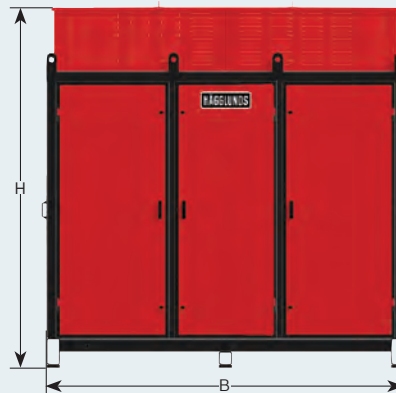
▼ Шкаф с двумя дверьми



▼ Шкаф, вид сбоку



▼ Шкаф с тремя дверьми



Преимущества

- ▶ В наличии имеется множество исполнений с различным сочетанием объемного расхода и установленной мощности
- ▶ Возможность установки вблизи оборудования или в любом удобном месте
- ▶ Обновление системы управления происходит легко и быстро
- ▶ Звукоизолированный шкаф
- ▶ Компактность
- ▶ Простота монтажа и технического обслуживания.
- ▶ Допускается установка вне помещений без навеса
- ▶ Доказанная эффективность и техническая поддержка

Основные размеры насосных станций Hägglunds PAC

Размеры, дюйма (мм)	Тип*	PAC-202 (S)	PAC-203 (S)	PAC-402 (M)	PAC-602 (M)	PAC-603 (M)	PAC-803 (M)	PAC-1003 (L)	PAC-1203 (XL)	PAC-1603 (XL)
H**		93 (2362) / 97 (2464)	93 (2362)	106 (2692) / 124 (3150)	116 (2946) / 128 (3251)	106 (2692) / 126 (3200)	118 (2997) / 136 (3455)	118 (2997) / 136 (3455)	125 (3175) / 161 (4090)	125 (3175) / 161 (4090)
B		55 (1397)	83 (2108)	66 (1676)	69 (1753)	105 (2667)	122 (3099)	122 (3099)	144 (3658)	144 (3658)
A		39 (991)	39 (991)	53 (1346)	53 (1346)	53 (1346)	53 (1346)	53 (1346)	72 (1829)	72 (1829)
C	Водомасляные	15 (381)	15 (381)	15 (381)	15 (381)	15 (381)	15 (381)	15 (381)	15 (381)	15 (381)
	Воздушно-масляные	32 (813)	37 (940)	37 (940)	45 (1143)	45 (1143)	R	R	R	R

*) Обозначения шкафов, заканчивающиеся цифрой 2, соответствуют двухдверному исполнению. Обозначения шкафов, заканчивающиеся цифрой 3, соответствуют трехдверному исполнению.
 Насосные станции, обозначение которых заканчивается буквой S являются малогабаритными; буквой M – среднегабаритными; буквой L – крупногабаритными; буквами XL – увеличенными.
 **) Высота до верхней крышки зависит от используемого сочетания насоса и гидромотора.
 ***) Для общего размера
 R) Охлаждитель устанавливается отдельно.

Параметры насосной станции серии Hägglunds PBC (аналогичной серии PAC, но имеющей меньшую высоту и без панелей)

Тип	Макс. установленная мощность (кВт)	Макс. расход масла *(л/мин)	Макс. давление (бар)	Масса (кг)
PBC 202	112	409	350	1 951
PBC 203	2x93	2x409**	350	2 586
PBC 402	373	893	350	3 039
PBC 603	2x373	2x893	350	3 901

*) 1785 об/мин.

**) Допускается работа только одной пары насоса и электродвигателя.
Вторая пара является резервной.

Нägglunds DUр

Нägglunds DUр (Gemini) – э адаптивная комплексная насосная станция модульного исполнения, рассчитанная на выполнение самых строгих требований к гидравлической системе.

Основной принцип устройства насосных станций Нägglunds DUр – адаптивность, т.е. возможность размещения модулей наиболее удобным для эксплуатации и обслуживания образом. Насосная станция этой серии включает в себя один или несколько насосных модулей, резервуарный модуль и обслуживающие модули. Насосная станция серии DU способна обеспечивать высокую мощность в непрерывном режиме на большой скорости вращения, сохраняя при этом традиционные преимущества насосных станций Нägglunds, необходимый высокий крутящий момент при малой скорости вращения, управляемость и надежность.

Коротко о модулях Нägglunds DUр:

Насосный модуль Нägglunds DUр

Насосная станция Нägglunds DUр может комплектоваться одним или более насосными модулями, каждый из которых включает в себя один насос. Они поддерживают установленную мощность до 500 кВт каждого модуля.

Обслуживающий модуль Нägglunds DUр

Данный модуль содержит в своем составе фильтрующую установку и блок охладителей.

Фильтрующая установка:

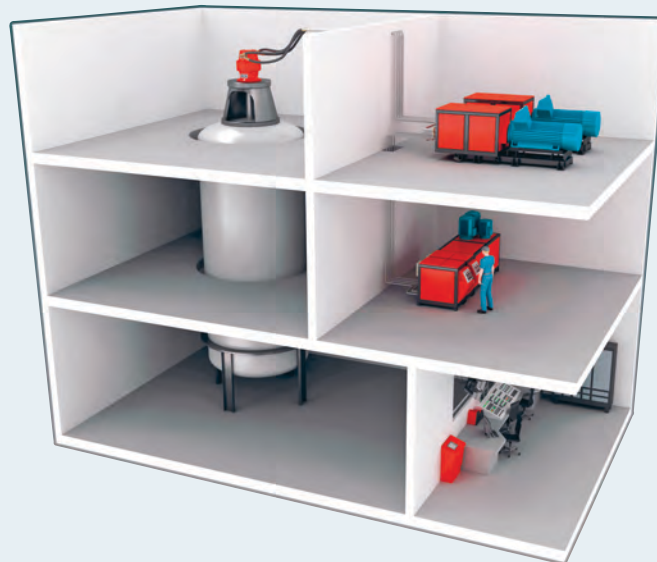
Фильтрующая установка состоит из фильтров, фильтрующих рабочую среду для одной или более насосных установок.

Блок охладителей:

Данный блок содержит в своем составе сборный пластинчатый водомасляный охладитель.

Резервуарный модуль Нägglunds DUр

Резервуарный модуль состоит из гидробака и датчиков и может размещаться в любом месте, наиболее удобном с точки зрения его эксплуатации и обслуживания. На стенке бака установлены промывочный и подпитывающий насосы, подающие рабочую жидкость с низким давлением.



Система управления Hägglunds Spider

Hägglunds Spider – система контроля и управления насосной станцией Hägglunds DU, обеспечивающая прекрасную управляемость гидравлической системы. Эта система может работать как автономно, так и в качестве подчиненного блока заводской системы и включает в себя управление приводами насосов, элементами гидравлической системы и выполнение многих других функций. Система Hägglunds Spider устанавливается на насосной станции в наиболее удобном месте, полностью запрограммированной и готовой к использованию.

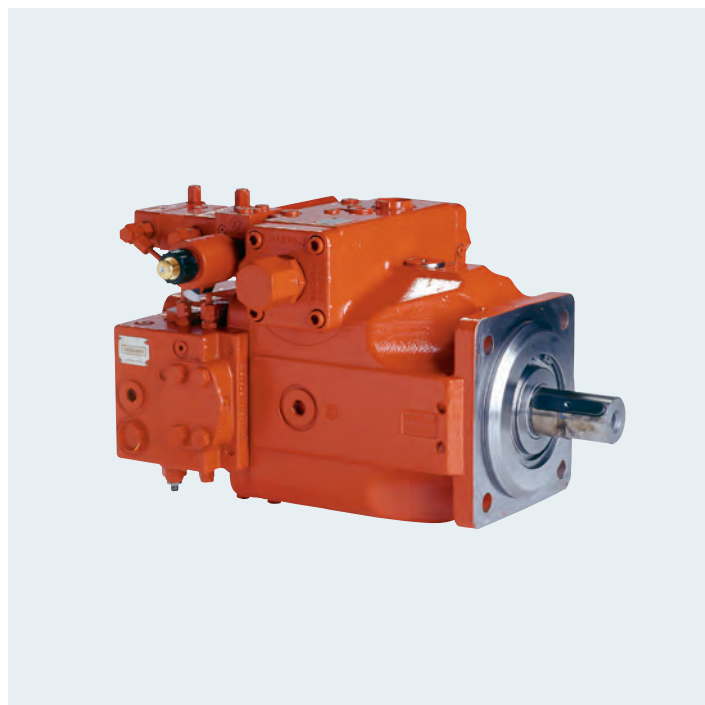
По своему устройству система Hägglunds Spider чрезвычайно адаптивная и может быть подстроена под выполнение различных задач, обеспечивая необходимый алгоритм пуска и останова. Она служит точкой подключения кабелей удаленного интерфейса, например, к распределенной системе управления заказчика, с помощью системы отдельных кабелей или некоторого количества шин различных типов.



Насос Hägglunds SP

Насос Hägglunds SP спроектирован с учетом технических характеристик Hägglunds и укомплектован встроенным подпитывающим насосом, электрогидравлическим регулятором производительности и быстродействующим компенсатором, сокращающим скачки давления на мощных приводах. Также предусмотрены регулировочные винты максимального объема и индикатор рабочего объема. Для защиты от утечек предусмотрено двойное уплотнение на валу. Насос SP характеризуется низким уровнем шума и рассчитан на длительную безотказную работу совместно с гидравлическими системами Hägglunds в целом.

Насосы SP могут иметь самые разнообразные рабочие объемы, а также монтироваться в тандеме. Благодаря сдвоенному насосу на один электродвигатель распределяется нагрузка двух приводов, что позволяет сэкономить место, повысить эффективность и уменьшить расходы. Насос SP – это очень хорошая возможность оптимизации выбранного привода и обеспечения максимальной эффективности и соответствия применению.

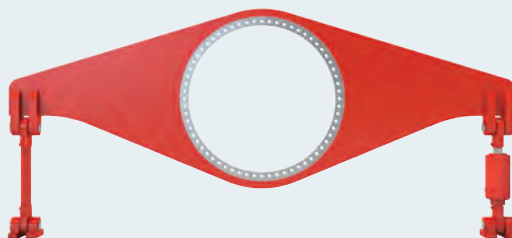


Вспомогательное оборудование Hägglunds

Стандартный набор аксессуаров Hägglunds позволяет сделать конструкцию гидравлической системы более компактной и эффективной. На рисунках ниже представлена часть производимого компанией вспомогательного оборудования. Помимо этого, в продаже имеются наборы оборудования для тяжелых условий эксплуатации.



Моментные рычаги и кронштейны



Двулучие моментные рычаги



Тормоз для гидромоторов серий Hägglunds CA и Hägglunds CB



Датчики скорости и крепления



Клапаны и гидроблоки для всех типов гидромоторов Hägglunds



Блокирующий механизмы для гидромоторов Hägglunds VI



Тормоза для гидромоторов Hägglunds VI



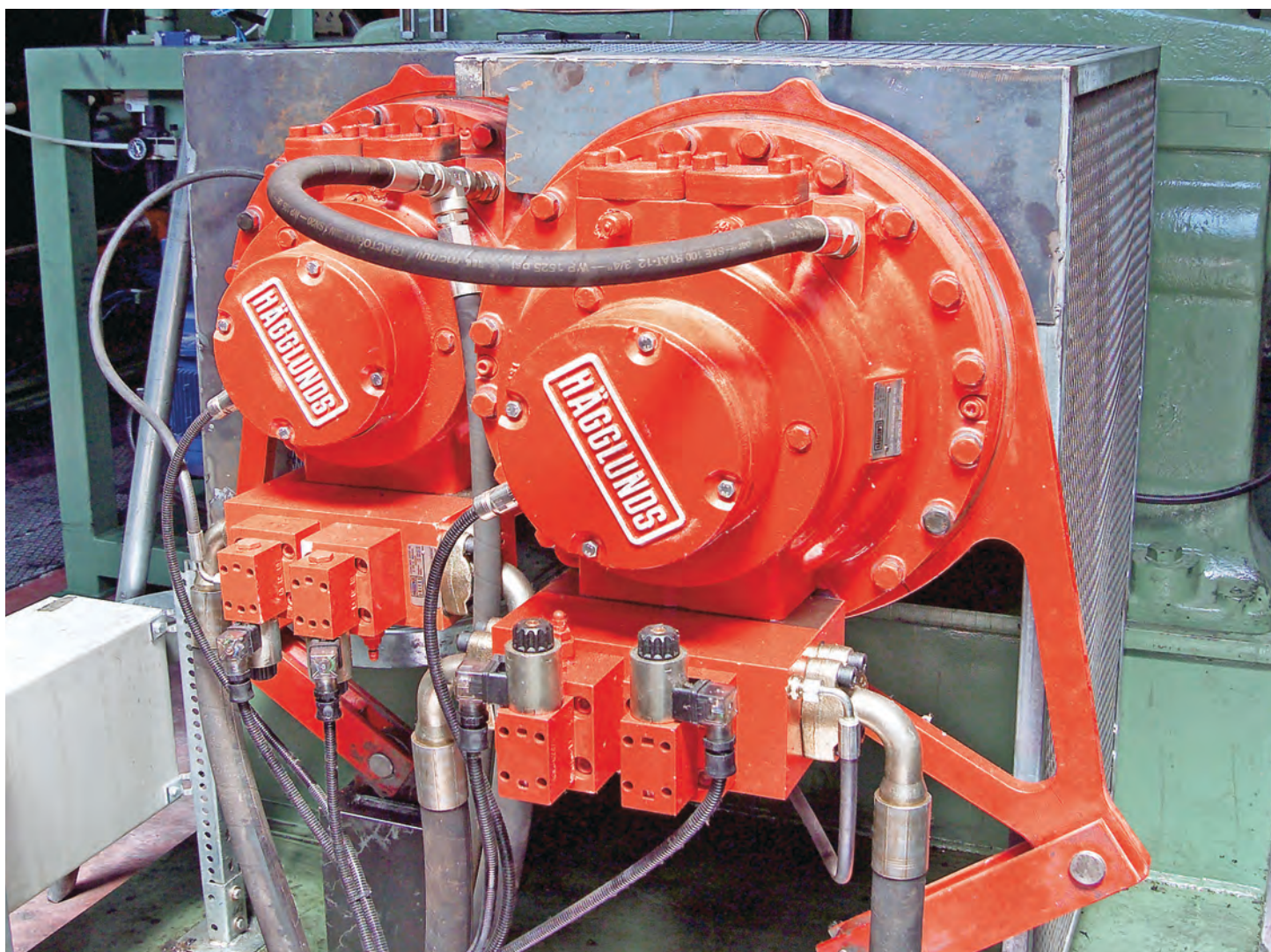
Кронштейн крепления гидромотора Hägglunds VI



Защитная крышка гидромотора Hägglunds VI

Широкие возможности и высокая адаптивность

Широкая линейка клапанов Hägglunds делает гидравлические системы более функциональными, адаптивными и надежными.



Мы разработали широкую линейку клапанов, позволяющих упростить использование и улучшить функциональность производимых компанией гидравлических систем. Клапаны можно использовать по самым разнообразным назначениям и для выполнения различных требований, что сокращает время, необходимое для проектирования, и повышает безопасность.

Все клапаны имеют прочную, надежную конструкцию и способны работать в самых жестких окружающих условиях, при этом многие из этих клапанов можно использовать совместно друг с другом. Клапаны превосходно сочетаются с нашими гидравлическими системами, позволяя быстро и эффективно сделать систему адаптивной и управляемой.

Клапаны ограничения давления Hägglunds

Клапан	Размер	Краткое описание	Используется с гидромотором типа	Макс. давление (бар)	Расход (л/м)	Масса (кг/с)
СОСА 300	20	Защита основных трубопроводов системы от разрыва	CA/CB	350	300	8
СОСВ 1000-1	40	Защита основных трубопроводов системы от разрыва	CA/CB	350	1000	30
СОСВ 1000-1	40	Защита основных трубопроводов системы от разрыва Имеет встроенный контур промывки	CA/CB	350	1000	33

Клапаны контроля нагрузки Hägglunds

Клапан	Размер	Краткое описание	Используется с гидромотором типа	Макс. давление (бар)	Расход (л/м)	Масса (кг/с)
VCBCA 480	32	Защита от перегрузок за счет управления подпором	CA/CB	350	480	20
VCBCA 1000	50/40	Защита от перегрузок за счет управления подпором	CA/CB	350	1000	40
СТСА 1000	40/30	Предназначен для управления нагрузкой на тросе лебедки с поддержанием постоянного натяжения	CA/CB	350	2000	34

Клапаны управления движением Hägglunds

Клапан	Размер	Краткое описание	Используется с гидромотором типа	Макс. давление (бар)	Расход (л/м)	Масса (кг/с)
VTCA 600	30	Предназначены для переключения рабочего объема двухскоростного гидромотора	CA	350	600	30
VFCCA 1000	40	Предназначен для переключения гидромотора в режим свободной циркуляции, при котором поршни перемещаются, окатываясь по статору.	CA/CB	350	1 000	85
VFWCB 600	50	Предназначен для переключения гидромотора в режим свободного вращения, при котором поршни отводятся от статора	CA/CB	350	600	40
VFW+	25	Предназначен для переключения гидромотора Hägglunds VI в режим свободного вращения, при котором поршни отводятся от статора.	VI	350	800	56
V4WCA 1000	40	Пропорциональный гидрораспределитель с функцией реализации подпора	CA/CB	350	1 000	78

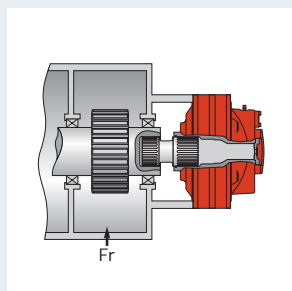
Встроенные клапаны Hägglunds

Клапан	Размер	Краткое описание	Используется с гидромотором типа	Макс. давление (бар)	Расход (л/м)	Масса (кг/с)
V 46-O	25	Встроенный клапан лебедки для гидравлических систем с открытым контуром	VI	350	600	100
V 46-C	25	Встроенный клапан лебедки для гидравлических систем с закрытым контуром	VI	350	600	88

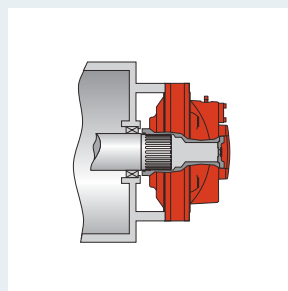
Примеры монтажа

Примеры монтажа гидромоторов Hägglunds компактного исполнения

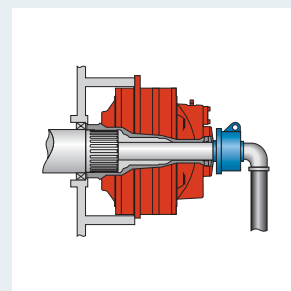
Эти долговечные гидромоторы мало весят, занимают немного места и допускают разнообразные варианты монтажа.



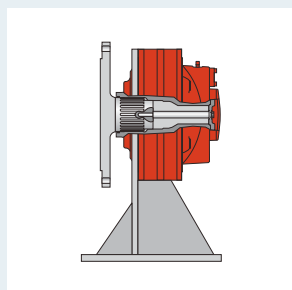
▲ Гидромотор фланцевого монтажа со шлицами при большой осевой нагрузке на приводной вал



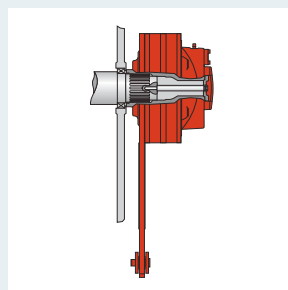
▲ Гидромотор фланцевого монтажа со шлицами при малой осевой нагрузке на приводной вал



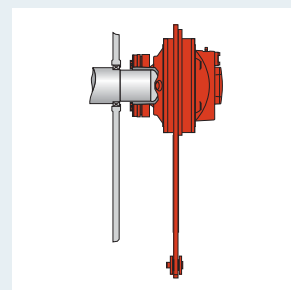
▲ Гидромотор фланцевого монтажа со шлицами и полым валом для охлаждения приводного механизма



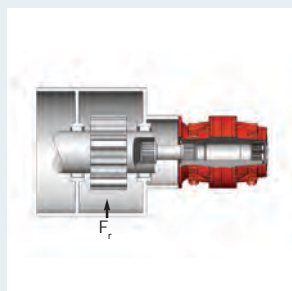
▲ Гидромотор, монтируемый на кронштейн, с фланцевым переходником



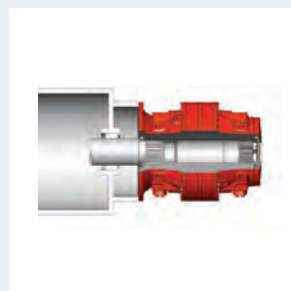
▲ Гидромотор, монтируемый с моментным рычагом, со шлицами



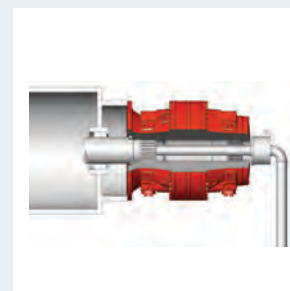
▲ Гидромотор, монтируемый с моментным рычагом, со стяжной дисковой муфтой



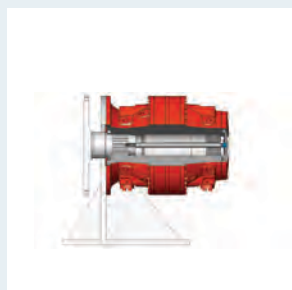
▲ Гидромотор фланцевого монтажа со шлицами при большой осевой нагрузке на приводной вал



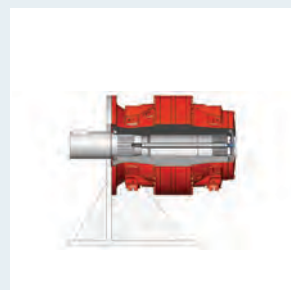
▲ Гидромотор фланцевого монтажа со шлицами при малой осевой нагрузке на приводной вал



▲ Гидромотор фланцевого монтажа со шлицами и полым валом для охлаждения приводного механизма



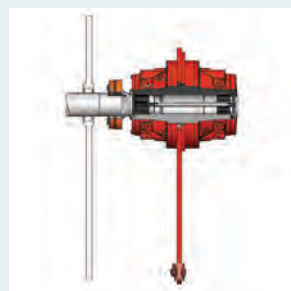
▲ Гидромотор, монтируемый на кронштейн, с фланцевым переходником



▲ Гидромотор, монтируемый на кронштейн, с коротким валом



▲ Гидромотор, монтируемый с моментным рычагом, со шлицами



▲ Гидромотор, монтируемый с моментным рычагом, с соединительной муфтой

Программа Hägglunds Original Service

Мировая сеть специалистов по обслуживанию гидравлических систем



Программа Hägglunds Original Service, предлагаемая компанией Бош Рексрот, – единственно верный выбор, если речь идет об обслуживании вашей гидравлической системы. С тех пор как компания Hägglunds Drives вошла в состав Бош Рексрот, компания предлагает услуги по обслуживанию систем Hägglunds, запасные части Hägglunds, а также работы по ремонту гидравлических систем Hägglunds. Только компания Бош Рексрот обладает знаниями, накопленными за полувековую историю обслуживания гидравлических систем Hägglunds.

Почему необходимо остановить свой выбор на программе Hägglunds Original Service?

Высокоэффективные гидравлические системы требуют ухода на высоком уровне качества. В компании Бош Рексрот работают сертифицированные специалисты, которые проходят обучение по обслуживанию именно техники Hägglunds. Они не просто обслуживают гидромоторы Hägglunds. Они выполняют весь комплекс работ, обеспечивающий максимальный срок безотказной службы вашей гидравлической системы.

В распоряжении наших специалистов есть специализированные мастерские со всем необходимым инструментом, отвечающие новейшим технологиям. Все, что необходимо для обслуживания, модернизации или доработки гидравлических систем Hägglunds, находится у них под рукой, включая оригинальные запчасти Hägglunds, поставляемые напрямую с завода.

С вами в любой точке мира

Бош Рексрот без преувеличения мировая компания, благодаря чему гарантируется максимальный срок безотказной работы и эффективность предлагаемых гидравлических систем в любой точке земного шара. Программа Hägglunds Original Service доступна на всех региональных уровнях и включает в себя полный комплекс услуг: от ввода в эксплуатацию и ремонта до профилактического технического обслуживания, обслуживания на месте эксплуатации и многого другого.



Полный диапазон услуг по обслуживанию гидравлической системы Hägglunds

Будучи производителем гидравлических систем Hägglunds, только компания Бош Рексрот может предложить вам полный комплект услуг по обслуживанию систем Hägglunds с учетом самых современных открытий и технологий.

Услуги на месте эксплуатации

Инженеры компании Бош Рексрот по обслуживанию на месте эксплуатации готовы выполнить любую работу: от внешнего осмотра до планово-профилактического технического обслуживания, где бы вы не находились. Региональные специалисты по обслуживанию знают абсолютно всё именно о вашей гидравлической системе Hägglunds, а также о специфике ее эксплуатации. Располагая необходимыми навыками и оборудованием, они способны решить любой вопрос быстро и качественно.

В качестве примеров услуг, оказываемых на месте эксплуатации, можно привести: **сопровождение при пуске, техническое обслуживание по состоянию, проверка на пригодность к эксплуатации и экстренное обслуживание.**

Ремонт приводов Hägglunds

Повышенная прочность конструкции продукции Hägglunds и соответствие современным технологиям – результат изготовления продукции на мировом уровне качества. Такое же качество обеспечивают также и уникальные инструменты и процессы, применяемые специалистами компании Бош Рексрот при ремонте гидромоторов и гидравлических систем Hägglunds. Наши опытные специалисты по ремонту продукции Hägglunds проходят аттестацию на заводах Hägglunds, а значит, вы можете быть уверены в том, что все работы будут выполнены верно.

Комплекс наших услуг по ремонту включает в себя:

ремонтные работы с фиксированной стоимостью, первоочередной ремонт, замена на восстановленные компоненты, модернизация, а также многое другое.

Запасные части Hägglunds

Только оригинальные запасные части Hägglunds обеспечивают ту же первоклассную эффективность, что и гидравлические системы производства Hägglunds. Благодаря нашей программе по обеспечению запасными частями, которую можно комбинировать с различными скидками и возможностями продлевать срок гарантии, вы получаете запасные части быстро и в точности на оговоренных условиях. Этому способствует стратегически верное расположение складов запчастей на базе центров обслуживания компании Бош Рексрот по всему миру.

Помимо самих запасных частей, мы можем предложить вам **услуги по управлению запасами, специализированные запасные части и комплекты запчастей и хранение резервных блоков.**

Дополнительные услуги Hägglunds

Компания Бош Рексрот может также предложить широкий диапазон других услуг в отношении приводов и гидравлических систем Hägglunds, в том числе:

• Удаленную техническую поддержку

Вы можете обратиться к нашим специалистам за консультацией по телефону, электронной почте и т. д. Оплата может осуществляться на почасовой основе или входить в договор на оказание услуг.

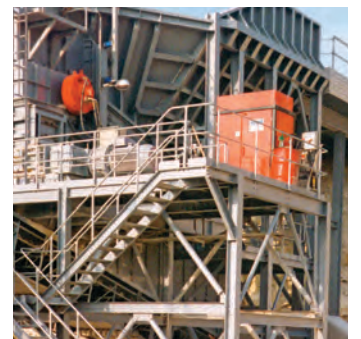
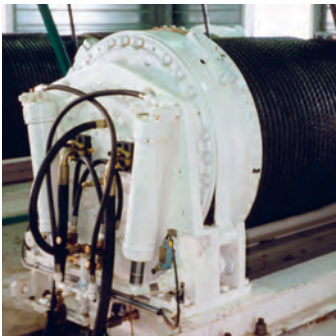
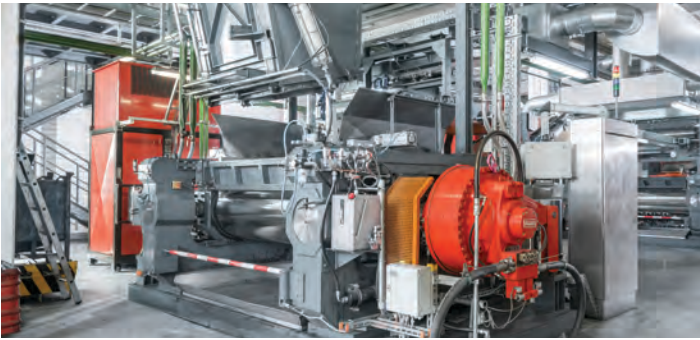
• Модернизацию

Изучив ваши потребности, мы можем предложить варианты по модернизации используемого вами привода Hägglunds и изменению эксплуатационных параметров. Например, сократить потребление энергии или увеличить удельную мощность.

• Обучение персонала заказчика

Мы можем предложить вам обучающие программы с учетом вашей специфики, ориентированных на правильное техническое обслуживание вашего привода Hägglunds и повышение его эффективности.





Clamping and drive module

RE 51142/05.13
Replaces: 02.11

1/10

Type UPE 2

Drive power 1.1 kW / 2.2 kW
 Component series 1X
 Maximum operating pressure 700 bar



UPE2_1X**

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Features

- Duty cycle, short-time operation S2 and intermittent operation S3
- Compact design
- Low-noise
- Broad field of application
- Large number of variants
- Complete hydraulic control possible
(in this connection see data sheet 51144)
- Ready for connection

Applications

- Clamping, locking, releasing and indexing at machines
- Drive for hydraulic tools
- Drive for lifting and swiveling units
- Use in the general mechanical engineering sector
- Test machines and test stands

Description, symbol

The UPE 2 clamping and drive module constitutes a complete drive system that is delivered ready for connection. It is used for supplying hydraulic circuits with hydraulic fluid.

For reasons in connection with the thermal load, the clamping and drive module is to be operated in short-time operation and intermittent operation. The duty cycle is to be selected depending on the power output and the environmental conditions so that the maximum admissible operating temperature of 80 °C is not exceeded.

The clamping and drive module basically consists of the aluminum housing, the pump (radial piston pump or external gear pump) and the oil-immersed motor. The stator of the oil-immersed motor is pressed into the aluminum housing. It transfers the heat of the winding directly to the exterior aluminum housing wall.

- For the installation, four through holes have been provided in the tank bottom for the mounting screws. The clamping and drive module is to be operated in vertical installation position.

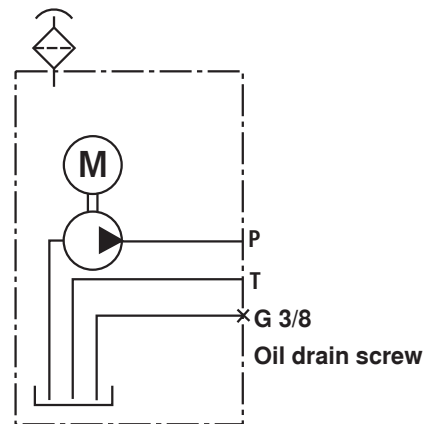
Optionally, the UPE 2 clamping and drive module can be equipped with an electric monitor for the oil level as well as the oil temperature, a ventilation filter and a complete hydraulic control (see 51144).



Attention!

The clamping and drive module may heat up during operation => **risk of injury!**

Symbol



Ordering code

UPE 2-1X//	/	-			V	*
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Component series 10 to 19 = 1X
(10 to 19: unchanged installation and connection dimensions)

Drive power

1.1 kW = 1.1
2.2 kW = 2.2

Radial piston pump

Flow

0.49 liters/min = R0.49
0.82 liters/min = R0.82
1.00 liter/min = R1.00
1.25 liters/min = R1.25
1.70 liters/min = R1.70
1.95 liters/min = R1.95
2.55 liters/min = R2.55
2.60 liters/min = R2.60
4.00 liters/min = R4.00

External gear pump

Flow

1.4 liters/min = G1.40
2.8 liters/min = G2.80
4.4 liters/min = G4.40
5.6 liters/min = G5.60
7.0 liters/min = G7.00
8.8 liters/min = G8.80
11.2 liters/min = G11.2
14.0 liters/min = G14.0

3 = 1)
4 =
5 = 1)
7 =

Further details in the plain text

Seal

V = FKM seals

Mounting hydraulic control

(in this connection see data sheet 51144)

0 = without mounting
1 = with mounting

Carrying handle

no code = without carrying handle
T = with carrying handle

Filling plug

no code = Filler neck with dipstick
B = Ventilation filter

Oil monitoring

A = Oil level display
AN = Oil level display with level switch
AT = Oil level display and temperature switch
ANT = Oil level display with level and temperature switch

Nominal tank size

1.1 kW drive power

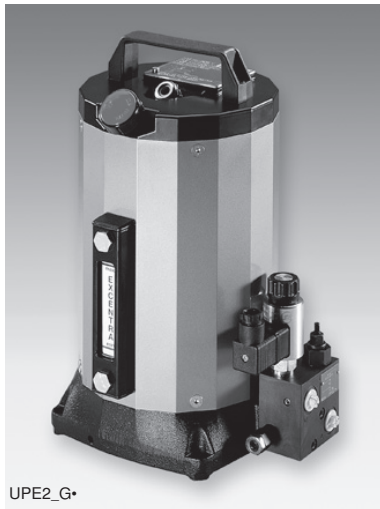
Filling quantity 2.4 liters
Filling quantity 4.5 liters

2.2 kW drive power

Filling quantity 4.3 liters
Filling quantity 7.2 liters

1) Version with external gear pump not possible!

Overview of the attachment modules

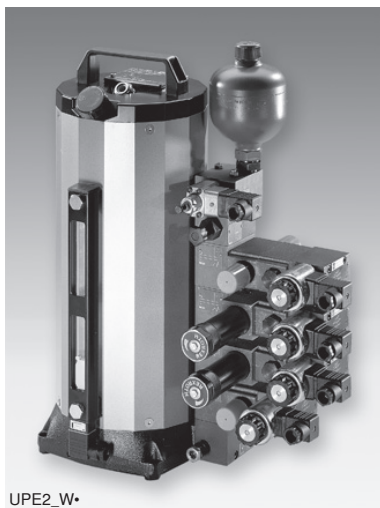


UPE2_G*

Basic module "G"

Basic module "G"

- Basic module with integrated pressure relief valve for simple stroke lowering or pressure holding functions
- If the "G" basic modules are used, no further stacking is possible.
- For further details see data sheet 51144
"Control block for clamping and drive modules type IH15A"

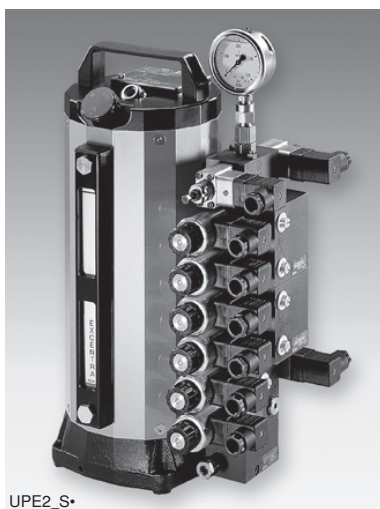


UPE2_W*

Directional valve module "W"

Directional valve module "W" ¹⁾

- Allows the design of controls using valves with porting pattern according to DIN 24340 form A
- The number of directional valve modules depends on the draw-off volume and the displacement of the pump
- For further details see data sheet 51144
"Control block for clamping and drive modules type IH15A"



UPE2_S*

Seat valve module "S"

Seat valve module "S" ¹⁾

- Seat valves basically consist of:
 - a pressure relief block
 - one or several control blocks
 - one end block
- The control is designed depending on the relevant application
- The number of seat valve modules depends on the draw-off volume and the displacement of the pump
- For further details see data sheet 51144
"Control block for clamping and drive modules type IH15A"

¹⁾ The directional valve modules and the seat valve modules can be combined!

Technical Data (For applications outside these parameters, please consult us!)

Hydraulic fluid	Mineral oil (HLP) according to DIN 51524, part 2 Please observe our specifications according to data sheet 07075!										
Hydraulic fluid temperature range °C	-20 to +80										
Maximum permitted degree of contamination of the hydraulic fluid cleanliness class according to ISO 4406 (c)	Class 20/18/15 ⁴⁾										
Optimum viscosity range mm ² /s	10 to 200										
Direction of rotation	Optional (radial piston pump), clockwise (external gear pump)										
Installation position	Vertical										
Mode of operation	All modes of operations in which the steady-state oil temperature remains below 80 °C.										
Radial piston pump											
Flow ³⁾	q_V in l/min	0.49	0.82	1.00 ²⁾	1.25	1.70 ²⁾	1.95	2.55 ²⁾	2.60	4.00 ²⁾	
Drive power	Speed ³⁾	n in min ⁻¹	1380	1380	2820	1380	2820	1380	2820	1380	2820
1.1 kW ¹⁾	Nominal pressure ³⁾	p_{max} in bar	700	700	700	450	310	250	200	180	140
	Speed ³⁾	n in min ⁻¹	1400	1400	2890	1400	2890	1400	2890	1400	2890
2.2 kW ¹⁾	Nominal pressure ³⁾	p_{max} in bar	700	700	700	450	700	350	450	250	280
	External gear pump										
Flow ³⁾	q_V in l/min	1.40	2.80	4.40	5.60	7.00	8.80	11.2 ²⁾	14.0 ²⁾		
Drive power	Speed ³⁾	n in min ⁻¹	1380	1380	1380	1380	1380	1380	2820	2820	
1.1 kW ¹⁾	Nominal pressure ³⁾	p_{max} in bar	260	180	140	110	90	70	45	37	
	Speed ³⁾	n in min ⁻¹	1400	1400	1400	1400	1400	1400	2890	2890	
2.2 kW ¹⁾	Nominal pressure ³⁾	p_{max} in bar	260	260	260	220	170	140	110	85	
	Protection class according to VDE 0530 / EN 60034		IP 54 with power unit completely mounted								
Nominal tank size / type		3/R	4/R	4/G	5/R	7/R	7/G				
Weight (without hydraulic fluid) kg		17.8	18.4	19.6	23.0	25.0	26.6				

¹⁾ See the following performance diagram

²⁾ 60 Hz is not possible!

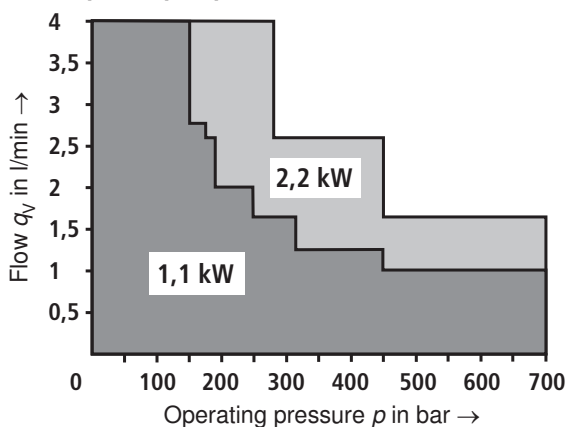
³⁾ Referred to the speed at 50 Hz

⁴⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.

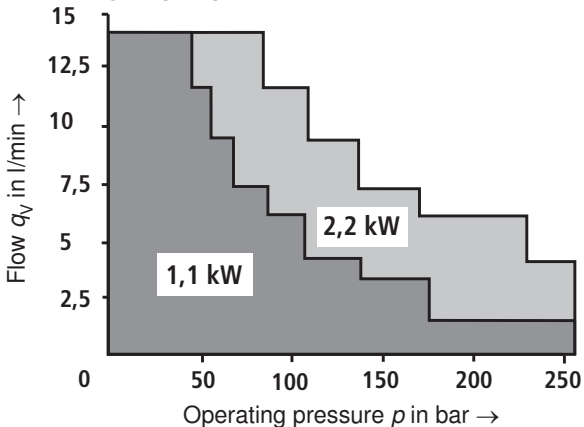
For selecting the filters, see data sheet 51144.

Performance diagram ⁵⁾

Radial piston pump



External gear pump



⁵⁾ The data is valid at a frequency of 50 Hz

Electric motor

The clamping and drive module is designed for the mode of operation according to VDE 0530 (EN 60034) for short-time operation S2 and intermittent operation S3 in the area of the nominal power. The electric motor complies with insulation

class F and the complete clamping and drive module with protection class IP 54.

The electric motor's direction of rotation depends on the pump installed (in this connection see Technical data page 4).

Technical Data (For applications outside these parameters, please consult us!)

Voltage ¹⁾	U	V	230 / 400 $\pm 6\%$ Δ/Y
Frequency	f	Hz	50 / 60
Mode of operation	S2 short-time operation, S3 intermittent operation		
Insulation class	F (winding)		
Protection class	IP 54		
Number of poles	2 / 4		

Frequency 50 Hz

Power kW	Speed min ⁻¹	Power factor cos φ	Nom. current at	
			Δ 230 V	Y 400 V
1.1 ²⁾	1380	0.80	4.70 A	2.70 A
1.1 ³⁾	2820	0.85	4.45 A	2.55 A
2.2 ²⁾	1400	0.82	9.20 A	5.30 A
2.2 ³⁾	2890	0.85	8.35 A	4.80 A

Frequency 60 Hz

Power kW	Speed min ⁻¹	Power factor cos φ	Nom. current at	
			Δ 230 V	Y 400 V
1.1 ²⁾	1670	0.84	4.45 A	2.55 A
1.1 ³⁾	3380	0.88	4.10 A	2.35 A
2.2 ²⁾	1690	0.83	8.70 A	5.00 A
2.2 ³⁾	3420	0.88	7.80 A	4.50 A

¹⁾ Other voltages on request

²⁾ Number of poles 4

³⁾ Number of poles 2

Electromagnetic compatibility of devices (EMVG)

According to the "Act on the electromagnetic compatibility of devices (§2, subsection 4)" of the EEC directive, the clamping and drive module is no device that is ready-for-use. In order to avoid electromagnetic interference that might occur, we

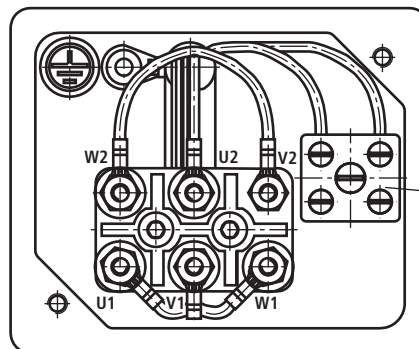
recommend using the interference suppression elements by the company Murr-Elektronik in 71570 Oppenweiler.

e.g. type 23050, 3 x400 VAC, 50-60 Hz

Terminal assignment

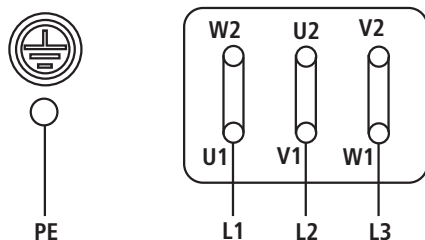
Terminal assignment in the terminal box at the clamping and drive module

Factory side:

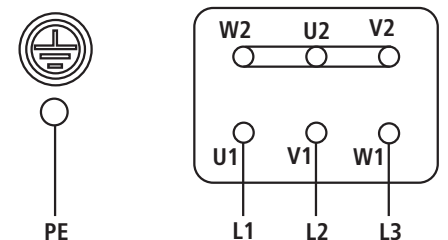


Temperature switch
(optional)

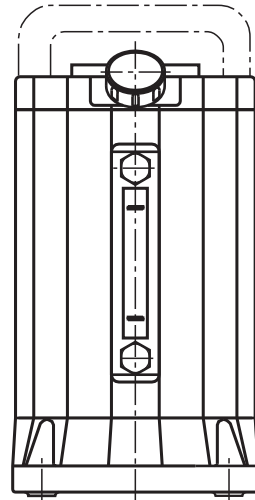
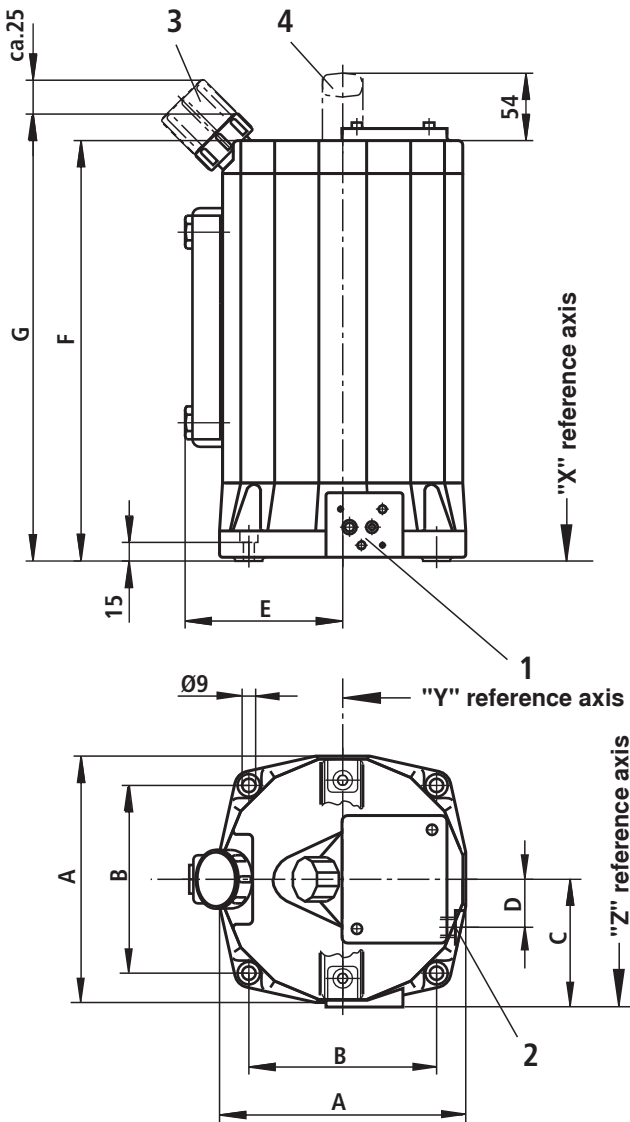
Customer side: Δ triangle $U = 230$ V



Customer side: Y star $U = 400$ V



Dimensions (dimensions in mm)



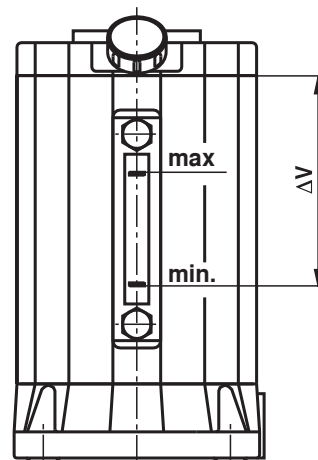
Tank size	A	B	C	D	E	F	G
3	164	125	85	40	105	280	295
4	164	125	85	40	105	390	405
5	190	156	98	50	118	320	335
7	190	156	98	50	118	450	465

X, Y and Z are reference axes for determining the installation dimensions when control blocks are mounted.

- 1 Control connection surface
- 2 Oil drain screw G 3/8
- 3 Ventilation filter
- 4 Carrying handle

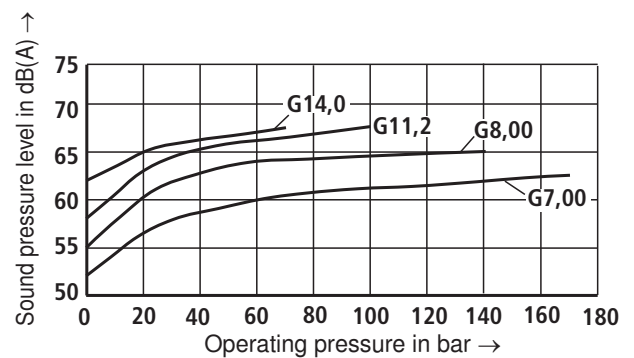
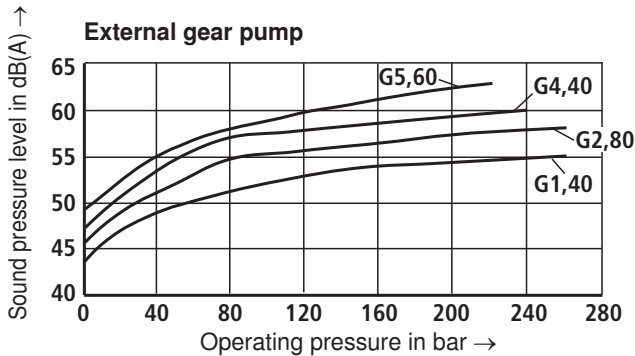
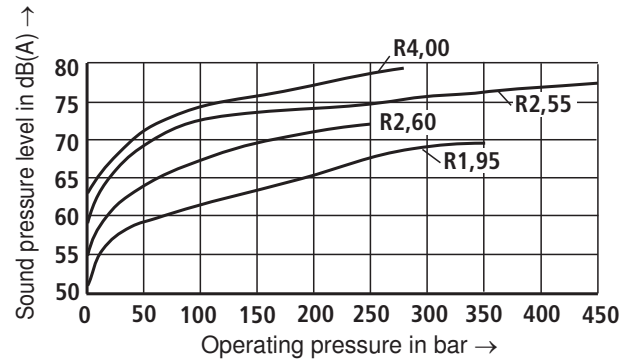
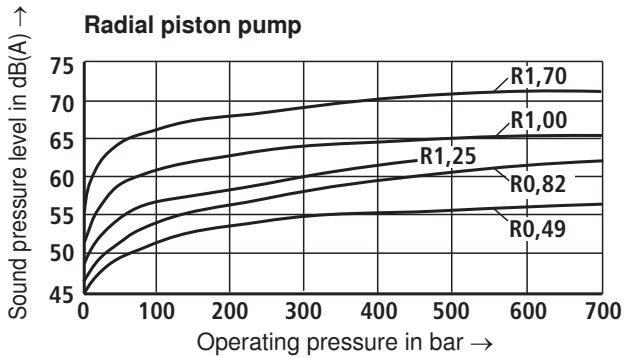
Filling and removal quantity

	Tank Size	Size in liters	
		Radial piston pump	External gear pump
Filling quantity	3	2.4	
	4	4.5	4.1
	5	4.3	
	7	7.2	6.8
Removal quantity	3	1.0	
	4	3.0	2.6
	5	2.3	
	7	5.1	4.7
Removal quantity up to switching point of level switch	3	0.8	
	4	2.8	2.4
	5	2.0	
	7	4.8	4.4



Not possible

Sound pressure level (measured at $v = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50 \text{ }^\circ\text{C}$)

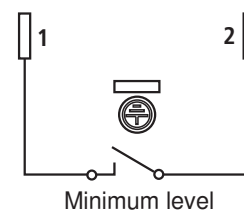
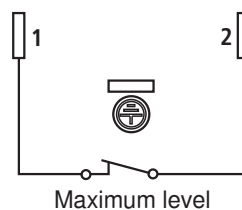


Level switch (option)

Description

The level switch provides for the electric monitoring of the hydraulic fluid level. If the minimum oil level is reached, the contact opens and thus outputs a signal to the control.

Electrical function



Technical data


Maximum voltage	V	50 AC / DC
Maximum current consumption	A	0.25
Maximum power consumption	W	3.0
Protection class		IP 65
Contact type		Normally closed contact


Temperature switch (option)

By means of the temperature switch, the clamping and drive module is protected from inadmissibly high hydraulic fluid temperatures. The temperature switch has a fixedly set switching point switching at a hydraulic fluid temperature of 80 °C.

The switch-back hysteresis is ca. 10 K.

Electrical function

 Temperature < 80 °C

 Temperature ≥ 80 °C

Technical data

Nominal current with 250 V AC 50/60 Hz (cos φ 0.95 / 0.60)	A	2.5 / 1.6
Nominal current with 50 V DC	A	0.25
Contact type		Normally closed contact
Tripping temperature	°C	80 ±3 K

Ventilation filter (option)

When the clamping and drive module is used in a heavily contaminated environment, we recommend using a ventilation filter.

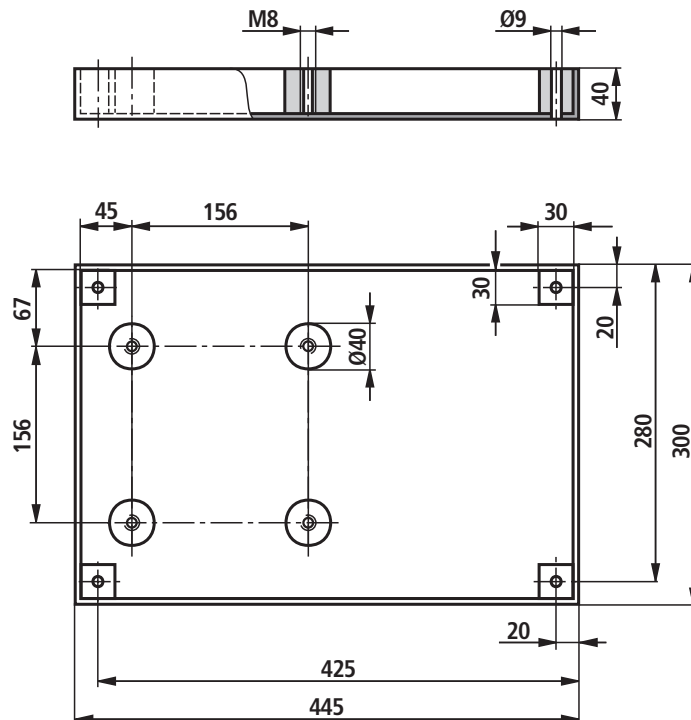
The ventilation filter has a filter rating of 10 µm.

Oil tray (option) (dimensions in mm)

Size 3 and size 4 Material no. **R901109231**

Size 5 and size 7 Material no. **R901109235**

Color: RAL 7035 "Light gray"



Commissioning notes

- Check whether the clamping and drive module has been connected to the machine to be operated in a professional form (hydraulically and electrically).
- For the electrical connections of the motor, the washers and connection bridges that are included in the scope of delivery must be used.
- The electric motor must be protected by means of equipment with an overload relay.
The latter must be set to the nominal current that is specified on the name / rating plate.
- When installing the clamping and drive module at an external gear pump, you must imperatively observe the direction of rotation of the motor; see arrow indicating the direction of rotation.
(Practical check: Switch on the motor briefly and check whether the pump delivery fluid.)
(Optical check: Remove the ventilation filter at the tank cover, switch on the electric motor briefly and check the direction of rotation of the rotor shaft.)
- Only fill in the hydraulic fluid through a filter with the required minimum retention rate.
- The clamping and drive module must maximally be filled with hydraulic fluid until the dipstick is reached and/or to the lower edge of the cover.
- The clamping and drive module must in no case be operated without hydraulic fluid.
- Start up the clamping and drive module without load and allow it to run at zero pressure for some seconds in order to provide for sufficient lubrication.

- After bleeding the hydraulic control as well as the actuators by moving them back and forth several times or by opening available bleeding points, the hydraulic fluid in the clamping and drive module is to be refilled to the correct level.
- The clamping and drive module may only be operated within the permitted limits. It may moreover only be operated if it is in an unobjectionable condition.
- When carrying out any work at the clamping and drive module, the system must be depressurized and de-energized.
- Unauthorized conversions or modifications, which affect safety and function are not permitted.
- Existing protective devices must not be removed.
- The generally valid safety and accident prevention regulations must be observed and complied with.

Attention!

The clamping and drive module may heat up during operation => **risk of injury!**

The clamping and drive module may only be set, maintained and serviced by authorized, trained and instructed personnel.

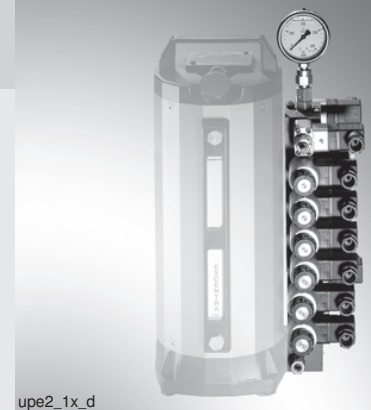
In repairs, only original spare parts may be used!

Control modules for clamping and drive modules UPE2

RE 51144/05.13
Replaces: 09.11

1/92

Type IH15A

Component series 1X
Maximum operating pressure 500 bar
Maximum flow 14 l/min

upe2_1x_d

Table of contents

Contents	Page	Contents	Page
Features	2	• Cooler module	18
Description, general	3	• Sandwich module	19 to 21
Technical data	4		
Project planning information	4	Seat valve module	
Overview of the modules	5 to 7	• Attachment	22
		• Pressure filter module with pressure relief valve size 6	27
Basic module		• Pressure relief module	28
• Attachment	8	• Pressure relief module size 6	29
• Connection module	9	• Pressure relief module with circulation valve	30
• Distance module	9 to 10	• Pressure reducing module	33
• Pressure relief module	11	• End module	61
• Pressure holding module	13 to 14	• End module with pressure switch	62 to 64
• Lifting/lowering module	12	• End module with pressure switch and stop valve	65 to 67
		• End module with accumulator and stop valve	68 to 70
Directional valve module		• Filter module	23
• Attachment	15	• Filter module with pressure relief valve	24 to 25
• Connection module with electrical unloading	16	• Filter module with pressure relief valve and circulation valve	26
• Pressure relief module with one valve station	17	• Module with pressure switch	58 to 59
		• Module with check valve	56 to 57

Continued on page 2

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• Module SAB4	53 to 55	• Tank connection module with reduction to IH15A	79
• Module SAT2	40	• Reducing module IH15B to IH15A (right)	79
• Module SBAT2 with pressure relief valve	44 to 45		
• Module SPA2	38 to 39	Module for external attachment	
• Module SPA3	48 to 50	• Tank connection module	80
• Module SPAT2	41 to 42		
• Module SPAT2 with pressure relief valve	43	Module with threaded connection for pipeline installation	
• Module SPAT3 with pressure relief valve	51 to 52	• Pressure reducing module	81
• Module SPBAT2 with pressure relief valve	46 to 47	• Module SPA2G	82
• Proportional pressure relief module	31	• Module SPA3G	83
• Proportional pressure reducing valve	32		
• Accumulator shut-off module	71 to 72	Type key	
• Circulation module	35	• Information on the type key	84 to 89
• Circulation module with stop valve	34	• Type keys for modules with vertical stacking	90
• Sandwich module with P1 channel interruption	60		
		Accessories	
Module for external attachment		• Filter element	91
• Attachment with application examples	73	• Assembly tool	91
• Connection module	74		
• Connection module with pressure relief valve	75	Dimensions	
• End module	78	• Dimensions	3
• Sandwich module	76	• Tank break-through	91
• Sandwich module with pressure relief valve	77		

Features

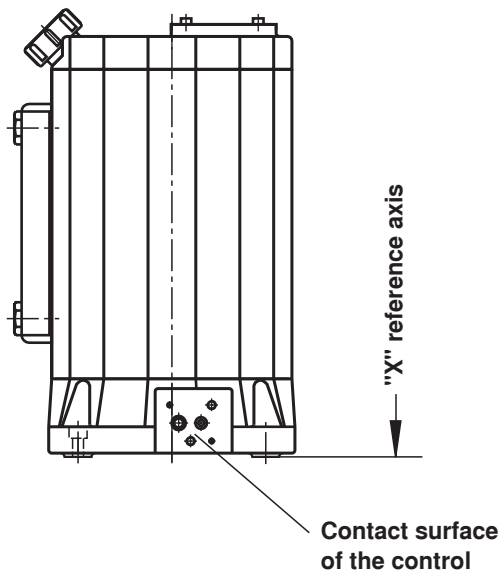
- Compact design
- No piping of the control
- Few joints
- Variable set-up
- Can be combined individually
- Direct attachment to the clamping and drive module, external attachment possible, as well
- Direct mounting on drive unit tank cover
- Ready for connection

Description, general

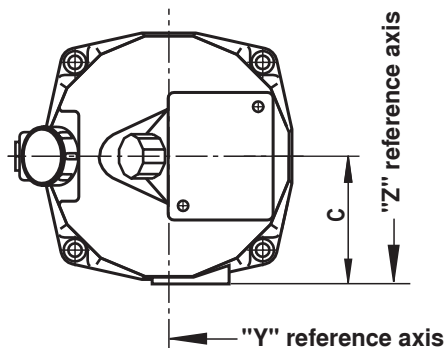
The IH15A control modules for the UPE2 clamping and drive module (51142) serve the realization of complete hydraulic controls. They can be fitted and mounted individually. The directional valve modules and seat valve modules can be combined. The control modules allow for direct attachment to the UPE2 clamping and drive module. Using the modules for external attachment, the hydraulic controls can, however, also be installed arbitrarily into every system. The reducing module

type RBAIH15A allows for direct attachment of the IH15A modules to the tank cover of a conventional drive unit. Using the reducing module type RIH15AR, the hydraulic control can be attached to one control of the IH15B control module family. The modules have preferably been designed for hydraulic controls for low-flow actuators up to a flow of 14 l/min. They are connected by means of two tie rods.

Dimensions (dimensions in mm)



Type	Size	C
UPE2	3	85
	4	85
	5	98
	7	98



X, Y and Z are **reference axes** for determining the installation dimensions for attachment of the control blocks.

For calculating the installation height, the height dimension X on pages 16 to 21 and 23 to 71 must be added up according to the control blocks used.

Technical data (For applications outside these parameters, please consult us!)

hydraulic

Installation position	Any ¹⁾		
Hydraulic fluid	Mineral oil (HL, HLP) according to DIN 51524 part 2 other hydraulic fluids upon request		
Hydraulic fluid temperature range	°C	-20 to +80 (with FKM seals) (observe the admissible viscosity range of the pump and the valves!)	
Ambient temperature range	°C	-30 to +50	
Viscosity range	mm ² /s	2.8 to 500 ¹⁾	
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)	Class 20 / 18 / 15 ¹⁾ Class 18 / 16 / 13 applies to SPDB and SPDR		
Valve pressure rating	Refer to the related data sheet		
Maximum flow of the directional seat valves type: KSDR1...	q_v	l/min	20 (2/2 directional seat valve) 12 (3/2 directional seat valve)

electric

Voltage type	Direct voltage			
Available voltage ²⁾	U	V	24	
Voltage tolerance (nominal voltage)		%	±10	
Power consumption	P	W	19 and/or 30 ¹⁾	
Switching time according to ISO 6403	ON	T	ms	25 to ≤ 80
	OFF	T	ms	10 to 25
Switching frequency		cy/h	Up to 15,000	
Protection class according to DIN 40050 ³⁾	IP 65			
Coil temperature ⁴⁾		°C	150	

¹⁾ Observe the valve details

²⁾ Special voltage on request

³⁾ With mating connector mounted and locked

⁴⁾ Due to the temperatures occurring at the surfaces of
the solenoid coils, the European standards EN563 and
EN982 need to be adhered to!

Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks.

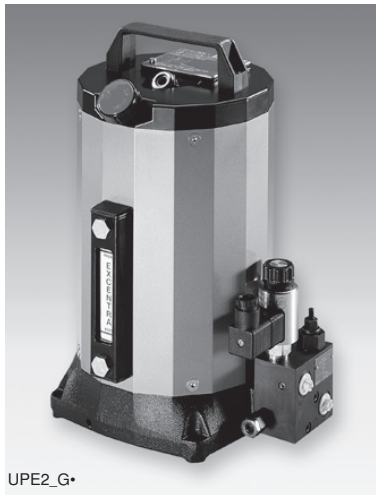
The set pressure of the type-examination tested pressure relief valve must be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

$$p_o = 0.9 \times p_{(\text{minimum operating pressure})}$$

When using the SPDB and SPDR modules, a filter with a filter rating of 6 µm is to be used.

Overview of the modules

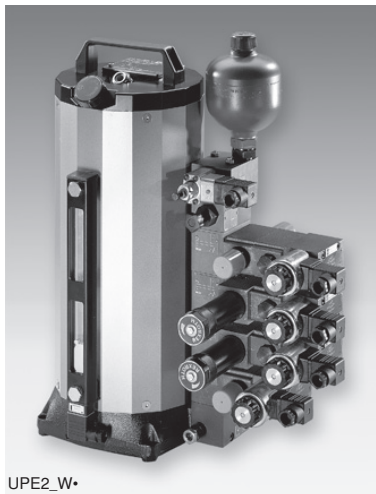


UPE2_G•

Basic module "G"

Basic module "G"

- Basic module with integrated pressure relief valve for simple lifting/lowering or pressure holding functions
- If the "G" basic modules are used, no further stacking is possible
- For more information see page 8

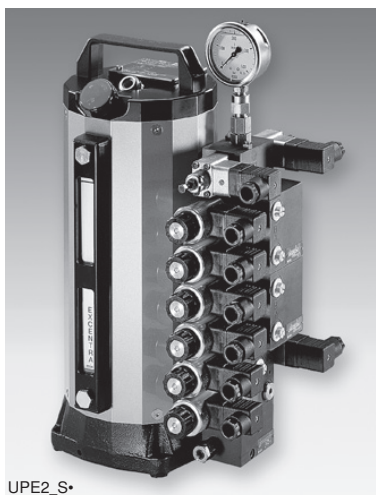


UPE2_W•

Directional valve module "W"

Directional valve module "W"

- Allows the design of controls using valves with porting pattern according to DIN 24340 form A
- The number of directional valve modules depends on the working volume and the delivery volume of the pump
- Directional valve modules and seat valve modules can be combined
- For more information see page 15



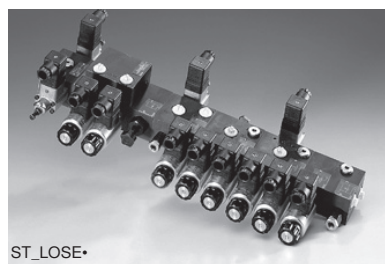
UPE2_S•

Seat valve modules "S"

Seat valve modules "S"

- Seat valve modules basically consist of:
 - A pressure relief module
 - One or several control blocks
 - One end block
- The control is designed depending on the relevant application
- The number of seat valve modules depends on the working volume and the delivery volume of the pump
- Seat valve modules and directional valve modules can be combined
- For more information see page 22

Overview of the modules



ST_LOSE

Modules for external attachment

Module for external attachment

- Allows for the attachment of the directional seat valve modules to any hydraulic system or any machine
- For more information see page 73

Overview of the modules

Short designation	Basic module, type "G"	Page
GA	Connection module	9
GD45	Distance module	9
GD45R	Distance module with check valve	10
GDB	Pressure relief module	11
GDH	Pressure holding module	13
GHS	Lifting/lowering module	12

Short designation	Directional valve module, type "W"	Page
WAE	Connection module with electrical unloading	16
WDB	Pressure relief module with one valve station	17
WSK	Cooler module	18
WZ	Sandwich module	19
WZ3	Sandwich module with 3 valve stations	20
WZ4	Sandwich module with 4 valve stations	21
WZP1	Sandwich module with P1 channel	19

Short designation	Seat valve module, type "S"	Page
DF40DB6	Pressure filter module with pressure relief valve size 6 (P line $p_{\max} = 250$ bar)	27
F06	Filter module (flow $q_{v\max} = 6$ l/min)	23
F06DB	Filter module with pressure relief valve (flow $q_{v\max} = 6$ l/min)	24
F30DB	Filter module with pressure relief valve (T line $p_{\max} = 7$ bar)	25
F30DBU	Filter module with pressure relief valve and circulation valve (T line $p_{\max} = 7$ bar)	26
SAB4	Module SAB4	53
SAB4P1	Module SAB4 with P1 channel	54
SAT2	Module SAT2	40
SBAT2DB	Module SBAT2 with pressure relief valve	44
SD	Module with pressure switch	58
SDB	Pressure relief module	28
SDB6	Pressure relief module size 6	29
SDBU	Pressure relief module with circulation valve	30
SDP1	Module with pressure switch and P1 channel	58

Overview of the modules

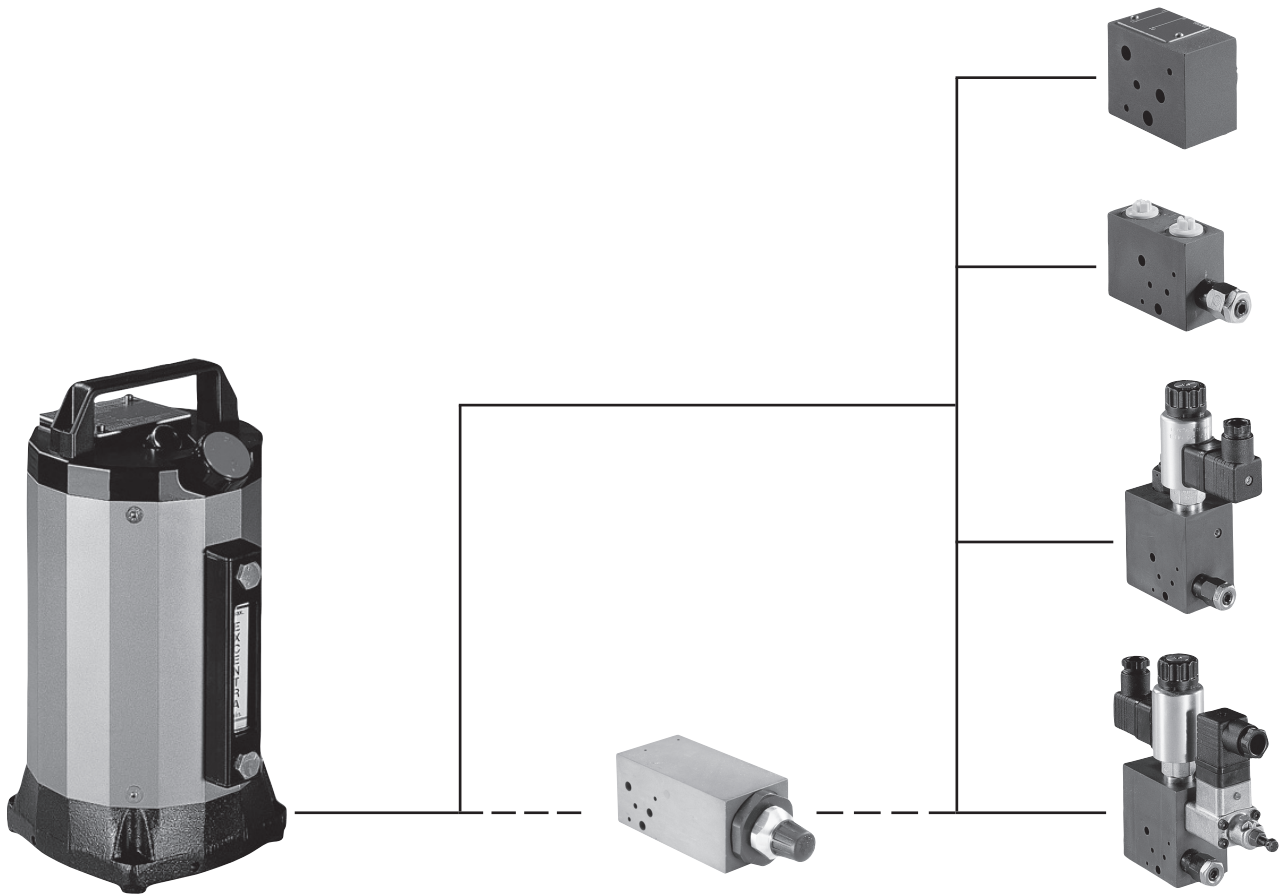
Short designation	Seat valve module, type "S"	Page
SDR	Pressure reducing module	33
SDRP1	Pressure reducing module with P1 channel	33
SESA	End module with accumulator and drain cock	68
SESAP1	End module with accumulator, drain cock and P1 channel	69
SP	Module SP	36
SPA2	Module SPA2	38
SPA3	Module SPA3	48
SPA3P1	Module SPA3 with P1 channel	49
SPAT2	Module SPAT2	41
SPAT2DB	Module SPAT2 with pressure relief valve	43
SPAT3DB	Module SPAT3 with pressure relief valve	51
SPBAT2DB	Module SPBAT2 with pressure relief valve	46
SPDB	Module with proportional pressure relief valve	31
SPDR	Module with proportional pressure reducing valve	32
SPDV	Module SP with throttle valve	37
SPDVP1	Module SP with throttle valve and P1 channel	37
SPP1	Module P with P1 channel	36
SR	Module with check valve	56
SSB	Accumulator shut-off module	71
SSBP1	Accumulator shut-off module with P1 channel	71
SU	Circulation module	35
SUA	Circulation module with stop valve	34
SUAP1	Circulation module with stop valve and P1 channel	34
SUP1	Circulation module with P1 channel	35
SZP1	Sandwich module with P1 channel interruption	60
WSE	Directional seat valve module	61
WSED	End module with pressure switch	62
WSEDA	End module with pressure switch and stop valve	65
WSEDAP1	End module with pressure switch, stop valve and P1 channel	66
WSEDP1	End module with pressure switch and P1 channel	63
WSEP1	End module with P1 channel	61

Short designation	Module for external attachment	Page
A	Connection module	74
ADB	Connection module with pressure relief valve	75
BA	Tank connection module	80
E	End module	78
EP1	End module with P1 channel	78
Z	Sandwich module	76
ZDB	Sandwich module with pressure relief valve	77
ZP1	Sandwich module with P1 channel	76

Short designation	Reducing module, type "R"	Page
RBAlH15A	Tank connection module with reduction to IH15A	79
RIH15AR	Reducing module IH15B to IH15A (right)	79

Short designation	Module with threaded connection for pipeline installation	Page
SDRG	Pressure reducing module with threaded connection	81
SPA2G	Module SPA2 with threaded connection	82
SPA3G	Module SPA3 with threaded connection	83

Basic module, type "G": Attachment



Basic module, type "G" (dimensions in mm)

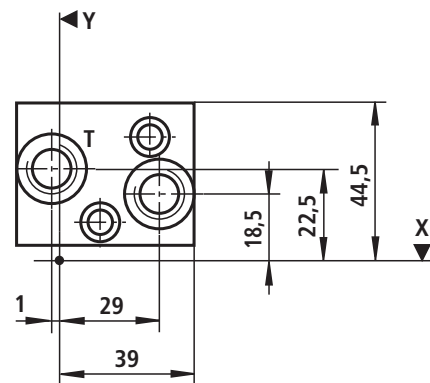
Connection module, type "GA"

Symbol



Dimensions

Dimension Z = 30 mm

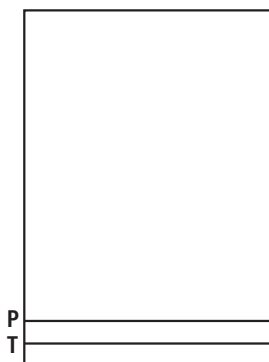


Material no.	Device designation	Type designation
	Connection module	IH15MA-1X/GA- ²⁶ <input type="text"/>
R900992205		IH15MA-1X/GA-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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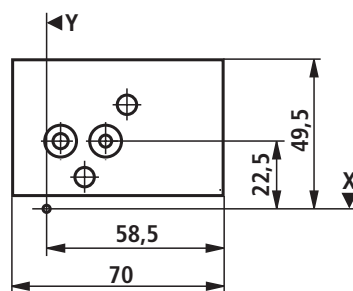
Distance module, type "GD45"

Symbol



Dimensions

Dimension Z = 45 mm



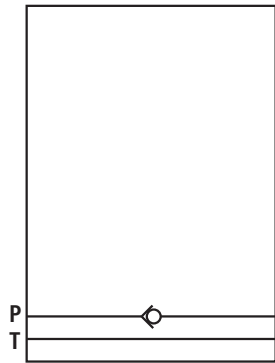
Material no.	Device designation	Type designation
	Distance module	IH15MA-1X/GD45- ²⁶ <input type="text"/>
R901178923		IH15MA-1X/GD45-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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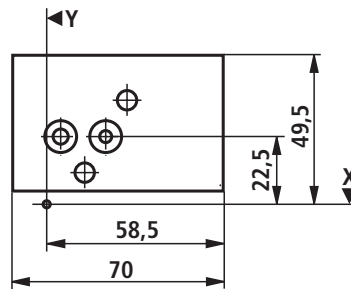
Basic module, type "G" (dimensions in mm)

Distance module with check valve, type "GD45R"

Symbol



Dimensions



Dimension Z = 45 mm

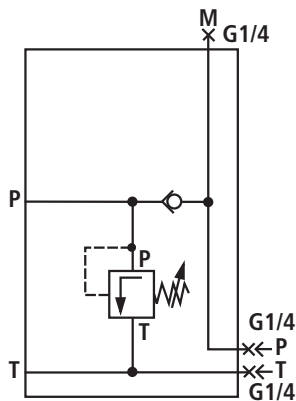
Material no.	Device designation	Type designation
	Distance module with check valve	IH15MA-1X/GD45R- ²⁶ <input type="text"/>
R901256485		IH15MA-1X/GD45R- V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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Basic module, type "G" (dimensions in mm)

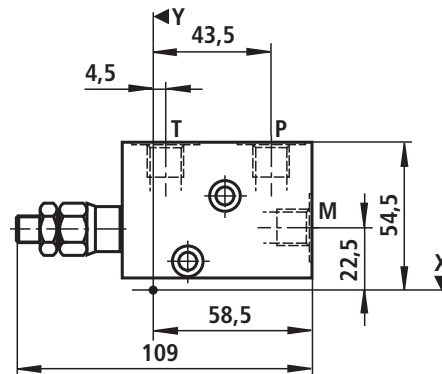
Pressure relief module, type "GDB"

Symbol



Dimensions

Dimension Z = 30 mm



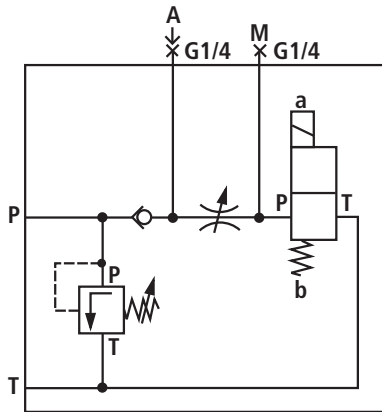
Material no.	Device designation	Type designation
	Pressure relief module	IH15EA-1X/GDB- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 14 <input type="checkbox"/> 26
R900249996		IH15EA-1X/GDB-S350/D/V
R900333690		IH15EA-1X/GDB-S350/M/V
R900992206		IH15EA-1X/GDB-S350/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 200 bar 350 bar 500 bar = 50 = 100 = 200 = 350 = 500
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar 250 bar 400 bar 500 bar = 210E = 250E = 400E = 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../.E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="checkbox"/> 14	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> 26	Seal	Seal material	FKM = V

Basic module, type "G" (dimensions in mm)

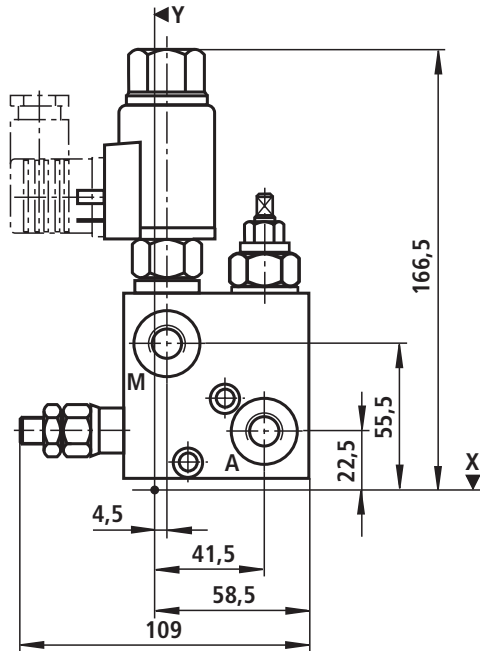
Lifting/lowering module, type "GHS"

Symbol



Dimensions

Dimension Z = 45 mm



Material no.	Device designation	Type designation
	Lifting/lowering module	IH15EA-1X/GHS- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 14 <input type="checkbox"/> 4 <input type="checkbox"/> 8 <input type="checkbox"/> 26
R900712062		IH15EA-1X/GHS-S350/DPG/V
R904100577		IH15EA-1X/GHS-S350/MPG/V
R901099456		IH15EA-1X/GHS-S350/OPG/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 500 bar = 500

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)
More pressure ratings on request!

		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar = 210E 250 bar = 250E 400 bar = 400E 500 bar = 500E
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Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E
Type testing according to Pressure Equipment Directive 97/23/EC

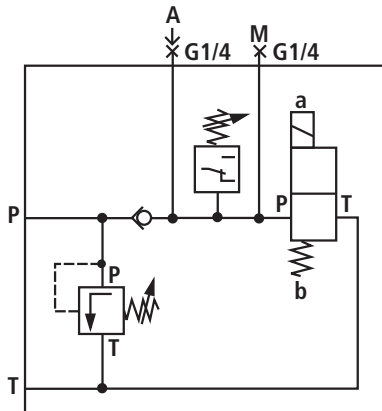
See page 85

<input type="checkbox"/> 4	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="checkbox"/> 8	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/> 14	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> 26	Seal	Seal material	FKM = V

Basic module, type "G" (dimensions in mm)

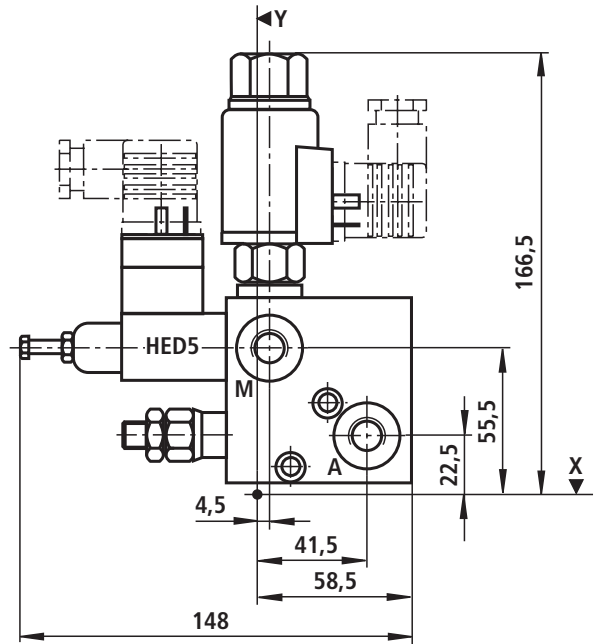
Pressure holding module, type "GDH"

Symbol

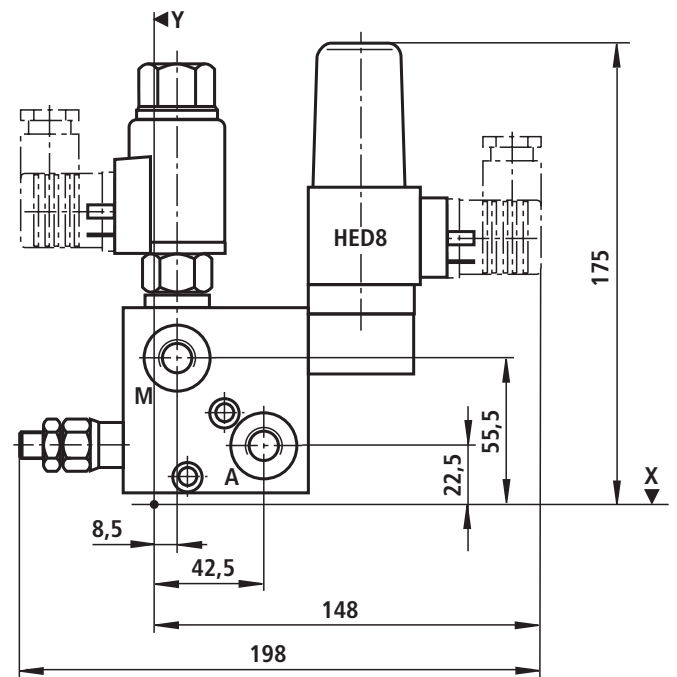


Dimensions

Dimension Z = 45 mm



Dimension Z = 45 mm



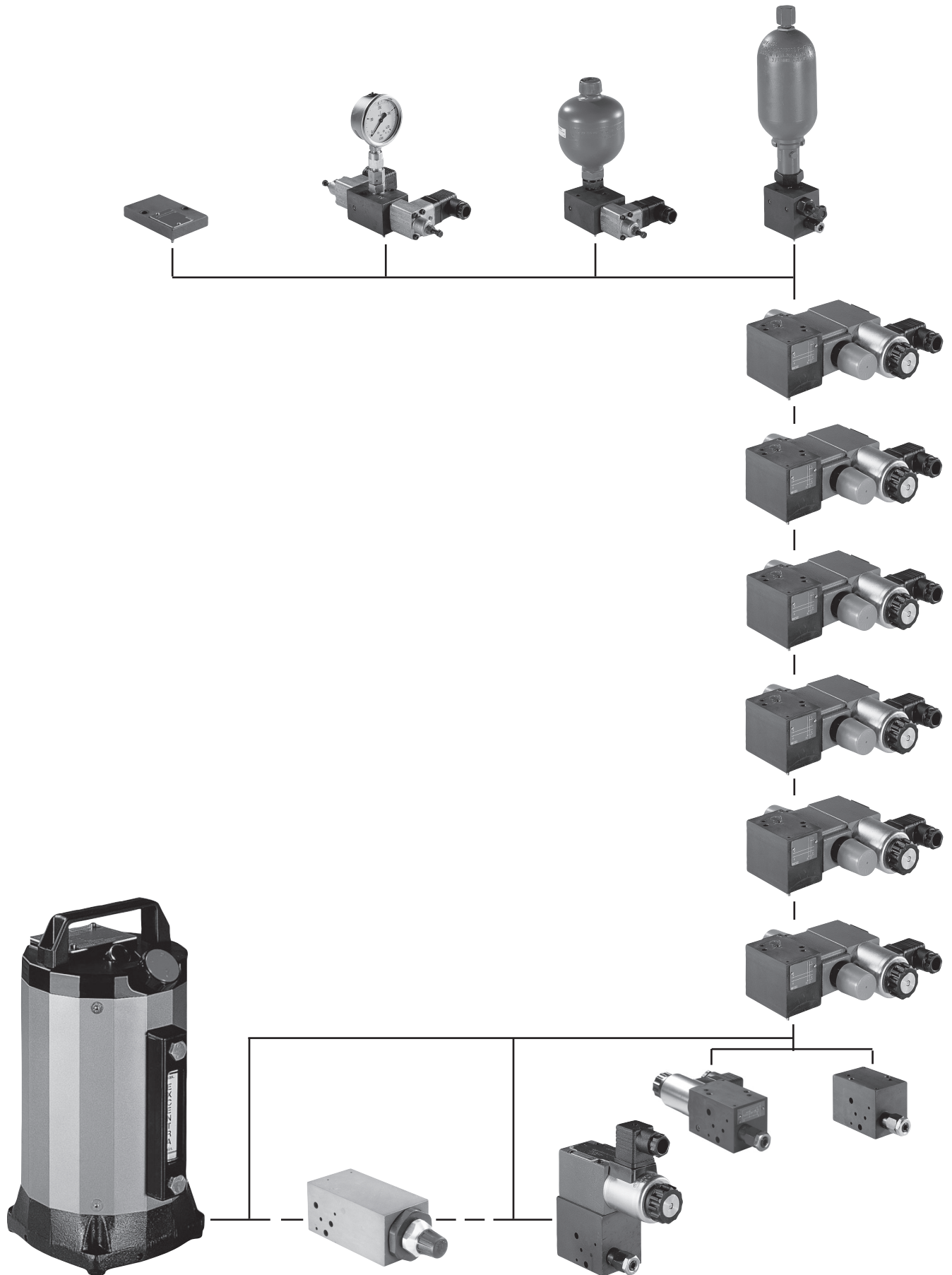
Basic module, type "G" (dimensions in mm)

Material no.	Device designation	Type designation
	Pressure holding module	IH15EA-1X/GDH- <input type="checkbox"/> ¹ <input type="checkbox"/> ² / <input type="checkbox"/> ¹⁴ <input type="checkbox"/> ⁴ <input type="checkbox"/> ¹¹ <input type="checkbox"/> ⁸ / <input type="checkbox"/> ²⁶
R900714698		IH15EA-1X/GDH-S350/DPHED8G24/V
R901099353		IH15EA-1X/GDH-S350/MPHED8G24/V
R900266488		IH15EA-1X/GDH-S350/OPHED8G24/V

<input type="checkbox"/> ¹	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> ²	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 500 bar = 500 ¹⁾
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar = 210E 250 bar = 250E 400 bar = 400E ¹⁾ 500 bar = 500E ¹⁾
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="checkbox"/> ⁴	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="checkbox"/> ⁸	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/> ¹¹	Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2	= no code = HED 5 = HED 8 = HEDE 10
<input type="checkbox"/> ¹⁴	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> ²⁶	Seal	Seal material	FKM = V

¹⁾ Not possible with HED 5

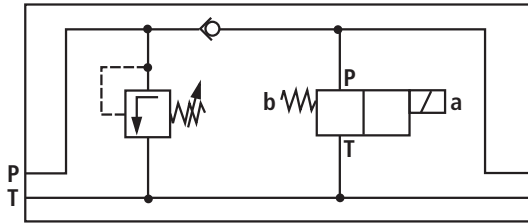
Directional valve module, type "W": Attachment



Directional valve module, type "W" (dimensions in mm)

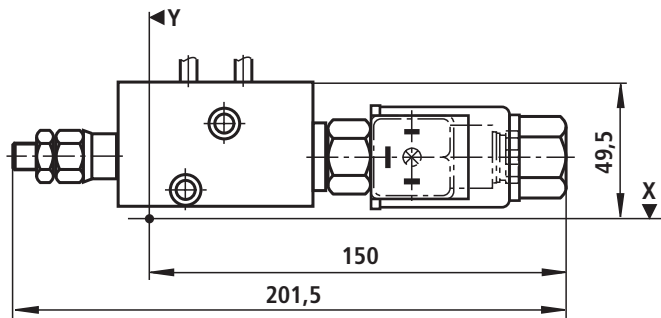
Connection module with electrical unloading, type "WAE"

Symbol



Dimensions

Dimension Z = 45 mm



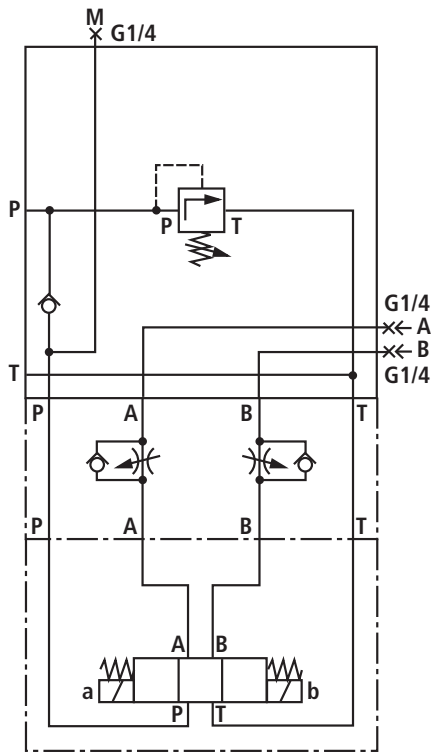
Material no.	Device designation	Type designation
	Connection module with electrical unloading	IH15EA-1X/WAE- <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/>
R904100245		IH15EA-1X/WAE-S350/NG24/V
R900992207		IH15EA-1X/WAE-S350/PG24/V

<input type="text"/>	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="text"/>	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 200 bar 350 bar 500 bar = 50 = 100 = 200 = 350 = 500
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
			Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.
			210 bar 250 bar 400 bar 500 bar = 210E = 250E = 400E = 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="text"/>	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text"/>	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text"/>	Seal	Seal material	FKM = V

Directional valve module, type "W" (dimensions in mm)

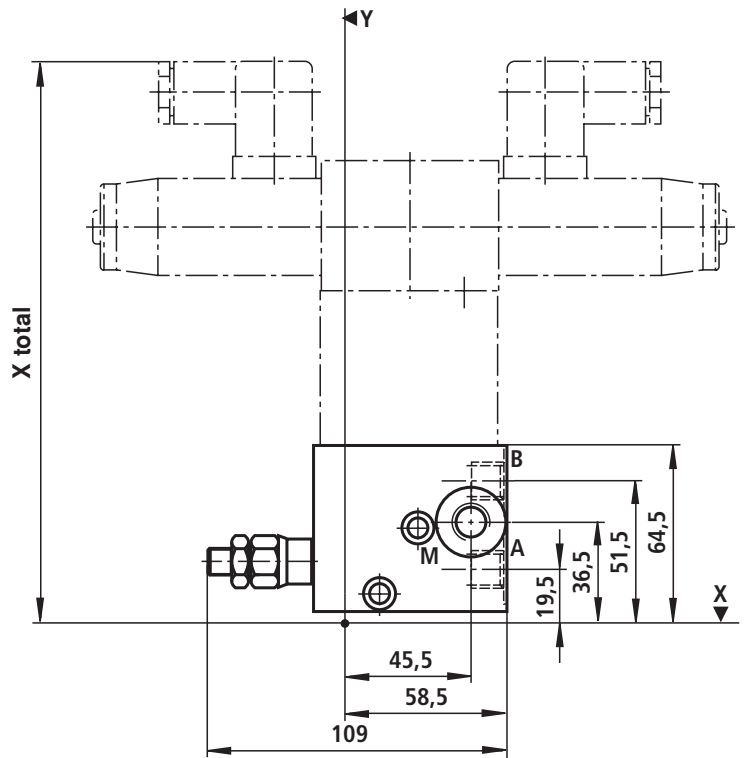
Pressure relief module with one valve station, type "WDB"

Symbol



Dimensions

Dimension Z = 50 mm



Material no.	Device designation	Type designation
	Pressure relief module with one valve station	IH15EA-1X/WDB- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 14 / <input type="checkbox"/> 26
R904101462		IH15EA-1X/WDB-S350/D/V
R904101434		IH15EA-1X/WDB-S350/M/V
R901099354		IH15EA-1X/WDB-S350/O/V

1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 500 bar = 500

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)
More pressure ratings on request!

		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar 250 bar 400 bar 500 bar	= 210E = 250E = 400E = 500E
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Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E
Type testing according to Pressure Equipment Directive 97/23/EC

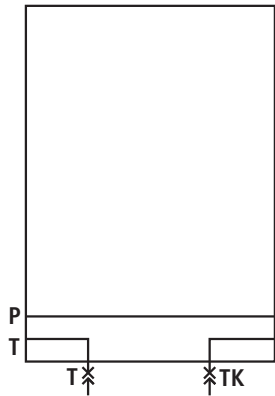
See page 85

14	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
26	Seal	Seal material	FKM = V

Directional valve module, type "W" (dimensions in mm)

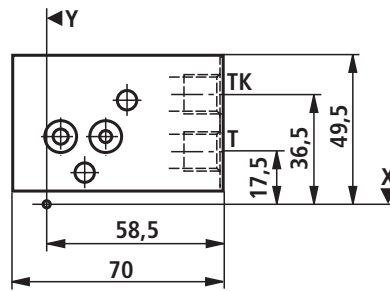
Cooler module, type "WSK"

Symbol



Dimensions

Dimension Z = 45 mm



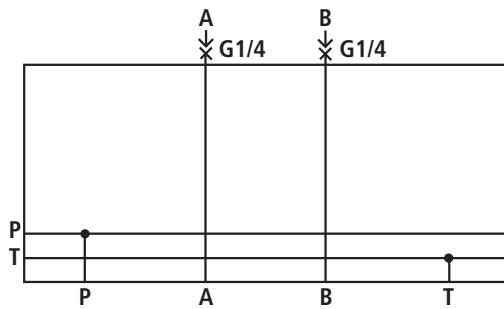
Material no.	Device designation	Type designation
	Cooler module	IH15MA-1X/WSK- ²⁶ <input type="text"/>
R904100535		IH15MA-1X/WSK-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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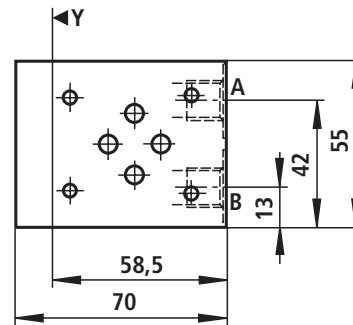
Directional valve module, type "W" (dimensions in mm)

Sandwich module, type "WZ"

Symbol



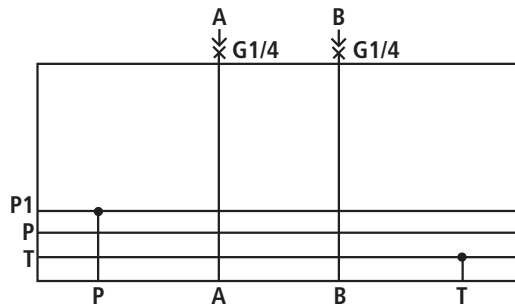
Dimensions



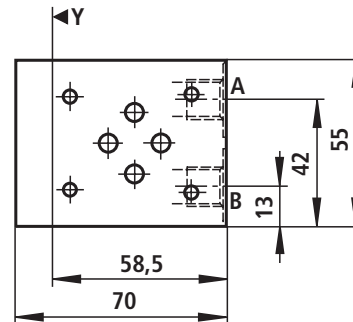
Dimension Z = 45 mm

Sandwich module with P1 channel, type "WZP1"

Symbol



Dimensions



Dimension Z = 45 mm

Material no.	Device designation	Type designation
	Sandwich module	IH15MA-1X/WZ- <input type="text" value="26"/>
R900991532		IH15MA-1X/WZ-V

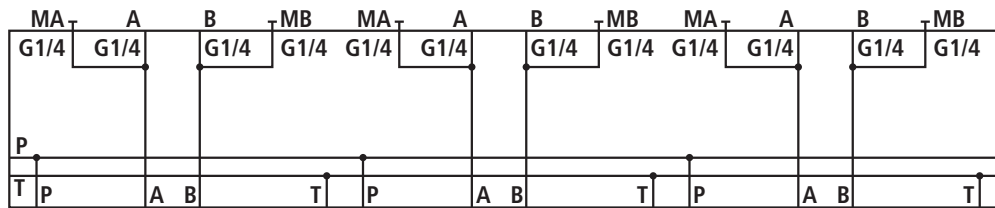
Material no.	Device designation	Type designation
	Sandwich module with P1 channel	IH15MA-1X/WZP1- <input type="text" value="26"/>
R904100110		IH15MA-1X/WZP1-V

<input type="text" value="26"/> Seal	Seal material	FKM	= V
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Directional seat valve module, type "W" (dimensions in mm)

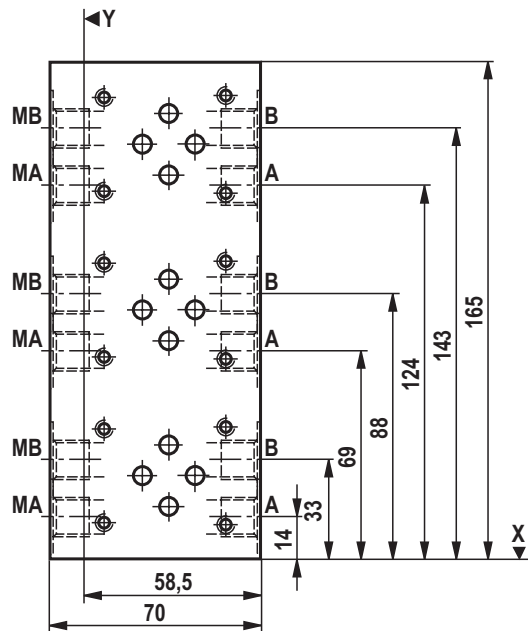
Sandwich module with 3 valve stations, type "WZ3"

Symbol



Dimensions

Dimension Z = 64 mm



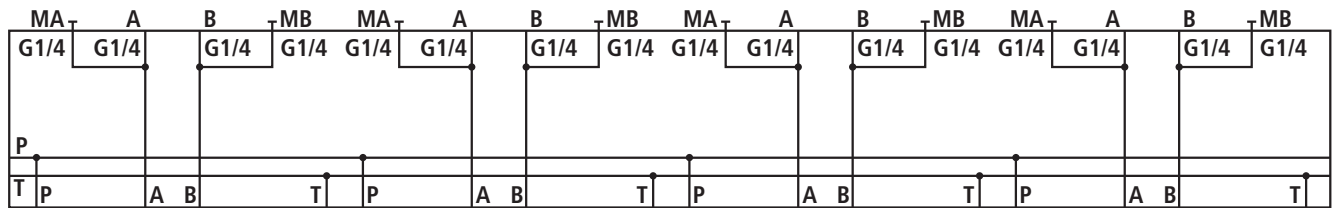
Material no.	Device designation	Type designation
		IH15MA-1X/WZ3- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901176548	Sandwich module with 3 valve stations	IH15MA-1X/WZ3-M/V
R901176546		IH15MA-1X/WZ3-O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM = V

Directional seat valve module, type "W" (dimensions in mm)

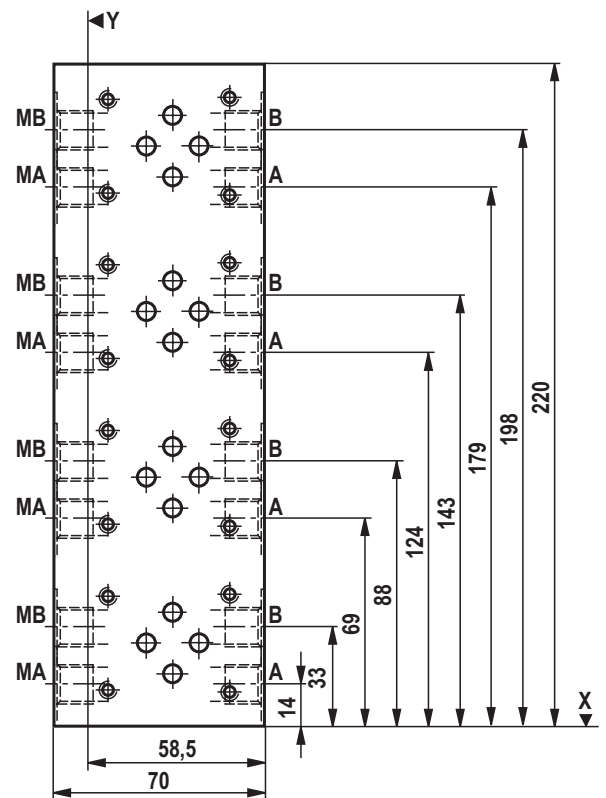
Sandwich module with 4 valve stations, type "WZ4"

Symbol



Dimensions

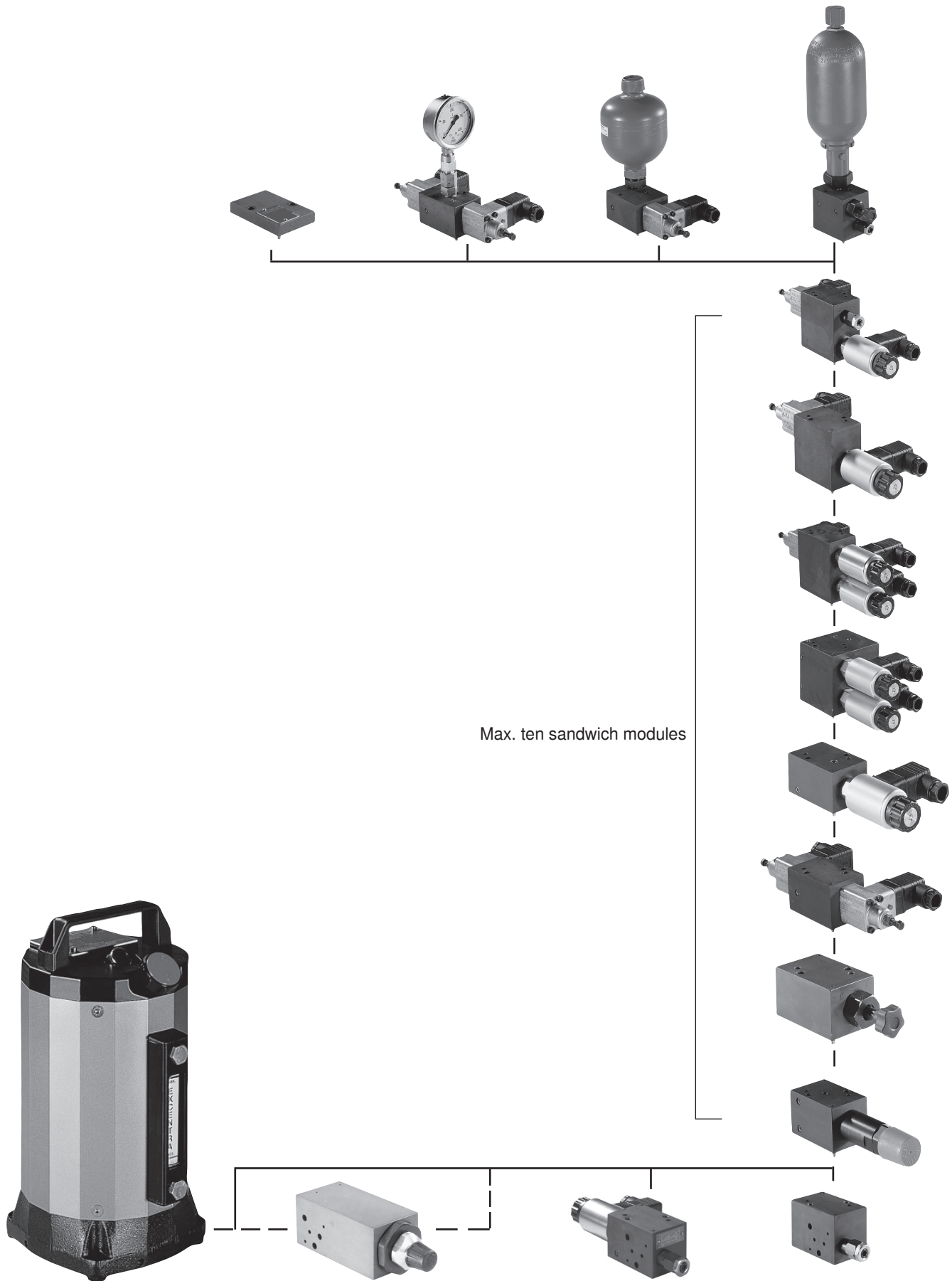
Dimension Z = 64 mm



Material no.	Device designation	Type designation
		IH15MA-1X/WZ4- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901176552	Sandwich module with 4 valve stations	IH15MA-1X/WZ4-M/V
R901176550		IH15MA-1X/WZ4-O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM = V

Seat valve module, type "S": Attachment

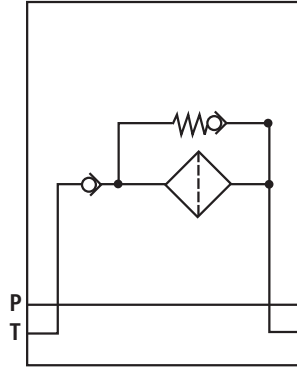


Seat valve module, type "S" (dimensions in mm)

Filter module, type "F06"

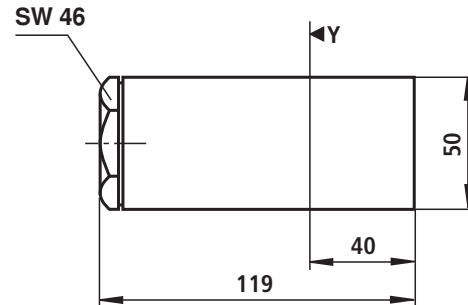
(max. flow $q_{vmax} = 6$ l/min)

Symbol



Dimensions

Dimension Z = 55 mm



Spare part: Filter element see page 91

Material no.	Device designation	Type designation
	Filter module	IH15EA-1X/F06- <input type="text" value="19"/> / <input type="text" value="20"/> / <input type="text" value="26"/>
R900260940		IH15EA-1X/F06-10/A/V
R900242844		IH15EA-1X/F06-10/E/V
R900992204		IH15EA-1X/F06-10/O/V

<input type="text" value="19"/>	Filter rating		06 μ m 10 μ m	= 06 ¹⁾ = 10 ²⁾
<input type="text" value="20"/>	Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator		= A = O = E
<input type="text" value="26"/>	Seal	Seal material	FKM	= V

¹⁾ For degree of contamination class 18 / 16 / 13

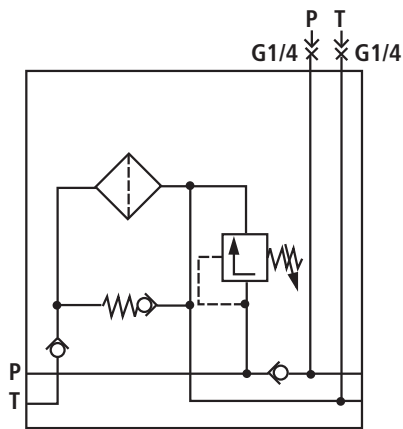
²⁾ For degree of contamination class 20 / 18 / 15

Seat valve module, type "S" (dimensions in mm)

Filter module with pressure relief valve, type "F06DB"

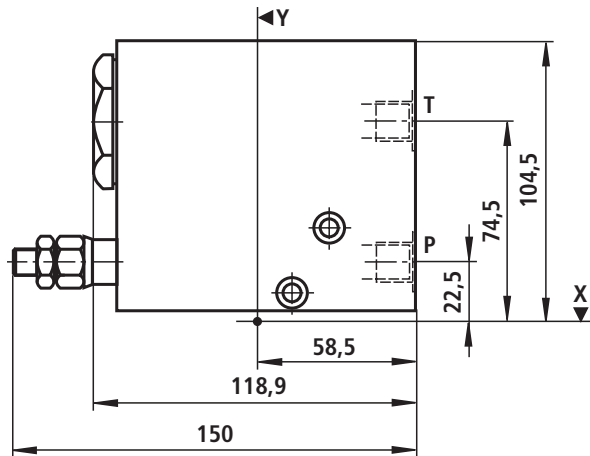
(max. flow $q_{vmax} = 6 \text{ l/min}$)

Symbol



Dimensions

Dimension Z = 55 mm



Spare part: Filter element see page 91

Material no.	Device designation	Type designation
	Filter module with pressure relief valve	IH15EA-1X/F06DB- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 19 / <input type="checkbox"/> 20 / <input type="checkbox"/> 26
R900993488		IH15EA-1X/F06DB-S350/10/A/V
R900702053		IH15EA-1X/F06DB-S350/10/E/V
R904100676		IH15EA-1X/F06DB-S350/10/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 500 bar = 500

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)

More pressure ratings on request!

	Setting pressure up to max.	210 bar	= 210E
	Setting pressure up to max.	250 bar	= 250E
	Setting pressure up to max.	400 bar	= 400E
	Setting pressure up to max.	500 bar	= 500E

Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E
Type testing according to Pressure Equipment Directive 97/23/EC

See page 85

<input type="checkbox"/> 19	Filter rating	06 μm 10 μm	= 06 ¹⁾ = 10 ²⁾
<input type="checkbox"/> 20	Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator	= A = O = E
<input type="checkbox"/> 26	Seal	Seal material	FKM = V

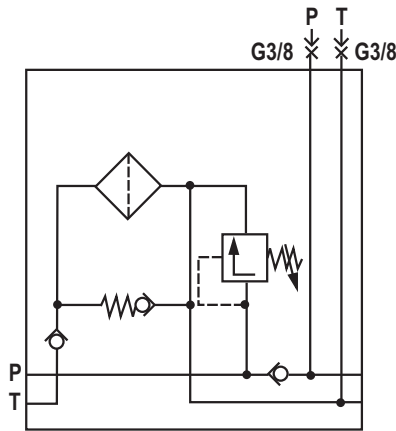
¹⁾ For degree of contamination class 18 / 16 / 13

²⁾ For degree of contamination class 20 / 18 / 15

Seat valve module, type "S" (dimensions in mm)

Filter module with pressure relief valve, type "F30DB"
 (max. flow $q_{vmax} = 30$ l/min, $p_{vmax} = 7$ bar)

Symbol

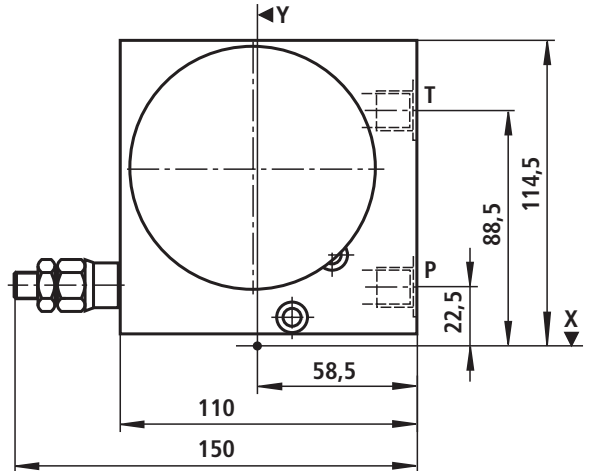


Installation information:

Wind the filter cartridge as tight as possible on the block. Then, wind the filter cartridge by further 1/3 of a rotation.

Dimensions

Dimension Z = 140 mm



Spare part: Filter cartridge see page 91

Assembly tool: Strap wrench Material no. R904001048

Material no.	Device designation	Type designation
	Filter module with pressure relief valve	IH15EA-1X/F30DB- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 19 / <input type="checkbox"/> 20 / <input type="checkbox"/> 26
R901099541		IH15EA-1X/F30DB-S350/10/A/V
R901099029		IH15EA-1X/F30DB-S350/10/E/V
R904100109		IH15EA-1X/F30DB-S350/10/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 200 bar 350 bar 500 bar = 50 = 100 = 200 = 350 = 500

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)

More pressure ratings on request!

		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar 250 bar 400 bar 500 bar	= 210E = 250E = 400E = 500E
--	--	--	--	--------------------------------------

Characteristic curve for type-examination tested pressure relief valves type: DBD 4../.E
 Type testing according to Pressure Equipment Directive 97/23/EC

See page 85

<input type="checkbox"/> 19	Filter rating		06 µm 10 µm	= 06 ¹⁾ = 10 ²⁾
<input type="checkbox"/> 20	Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator		= A = O = E
<input type="checkbox"/> 26	Seal	Seal material	FKM	= V

¹⁾ For degree of contamination class 18 / 16 / 13

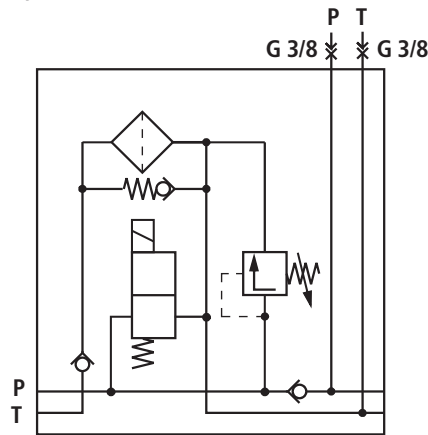
²⁾ For degree of contamination class 20 / 18 / 15

Seat valve module, type "S" (dimensions in mm)

Filter module with pressure relief valve and circulation valve, type "F30DBU"

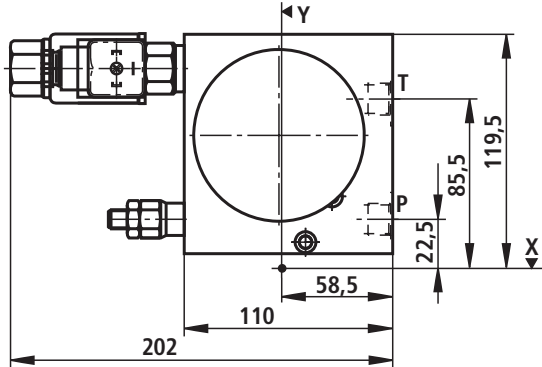
(max. flow $q_{vmax} = 30$ l/min, $p_{vmax} = 7$ bar)

Symbol



Dimensions

Dimension Z = 140 mm



Installation information:

Wind the filter cartridge as tight as possible on the block. Then, wind the filter cartridge by further 1/3 of a rotation.

Spare part: Filter cartridge see page 91

Assembly tool: Strap wrench Material no. **R904001048**

Material no.	Device designation	Type designation
	Filter module with pressure relief valve and circulation valve	IH15EA-1X/F30DBU- <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 4 <input type="checkbox"/> 8 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 26
R901099530		IH15EA-1X/F30DBU-S200/PG24/10/A/V
R904102272		IH15EA-1X/F30DBU-S200/PG24/10/E/V
R901095317		IH15EA-1X/F30DBU-S200/PG24/10/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. 50 bar Setting pressure up to max. 100 bar Setting pressure up to max. 200 bar Setting pressure up to max. 350 bar Setting pressure up to max. 500 bar	= 50 = 100 = 200 = 350 = 500

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive). More pressure ratings on request!

		Setting pressure up to max. 210 bar Setting pressure up to max. 250 bar Setting pressure up to max. 400 bar Setting pressure up to max. 500 bar	= 210E = 250E = 400E = 500E
--	--	--	--------------------------------------

Characteristic curve for type-examination tested pressure relief valves type: DBD 4../.E
Type testing according to Pressure Equipment Directive 97/23/EC

See page 85

<input type="checkbox"/> 4	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="checkbox"/> 8	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/> 19	Filter rating		06 μ m = 06 ¹⁾ 10 μ m = 10 ²⁾
<input type="checkbox"/> 20	Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator	= A = O = E
<input type="checkbox"/> 26	Seal	Seal material	FKM = V

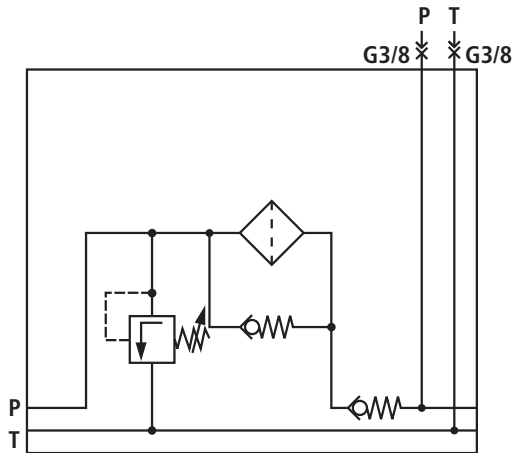
¹⁾ For degree of contamination class 18 / 16 / 13

²⁾ For degree of contamination class 20 / 18 / 15

Seat valve module, type "S" (dimensions in mm)

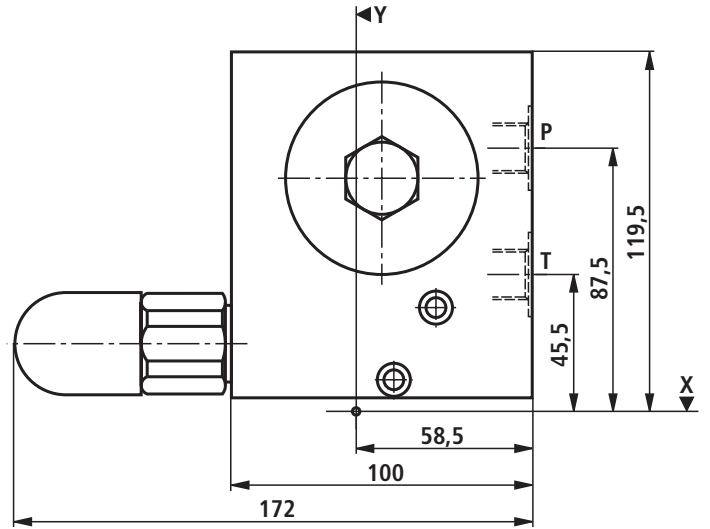
Pressure filter module with pressure relief valve size 6, type "DF40DB6"
 (max. flow $q_{vmax} = 40$ l/min, $p_{vmax} = 250$ bar)

Symbol



Dimensions

Dimension Z = 195 mm



Installation information:

Wind the filter cartridge as tight as possible on the block. Then, wind it back by 1/8 to 1/4 of a rotation.

Spare part: Filter cartridge see page 91

Assembly tool: Strap wrench Material no. **R904001048**

Material no.	Device designation	Type designation
	Pressure filter module with pressure relief valve size 6	IH15EA-1X/DF40DB6- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 19 <input type="checkbox"/> 20 / <input type="checkbox"/> 26
R901278258		IH15EA-1X/DF40DB6-S200/10/A/V
R901278259		IH15EA-1X/DF40DB6-S200/10/E/V
R901278260		IH15EA-1X/DF40DB6-S200/10/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve (size 6)	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 315 bar = 315

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)
 More pressure ratings on request!

		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50E 100 bar = 100E 140 bar = 140E 210 bar = 210E
--	--	--	--

Characteristic curve for type-examination tested pressure relief valves type: DBD 6...E
 Type testing according to Pressure Equipment Directive 97/23/EC

See page 86

<input type="checkbox"/> 19	Filter rating		06 µm = 06 ¹⁾ 10 µm = 10 ²⁾
<input type="checkbox"/> 20	Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator	= A = O = E
<input type="checkbox"/> 26	Seal	Seal material	FKM = V

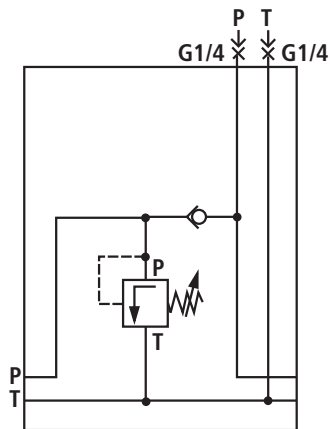
¹⁾ For degree of contamination class 18 / 16 / 13

²⁾ For degree of contamination class 20 / 18 / 15

Seat valve module, type "S" (dimensions in mm)

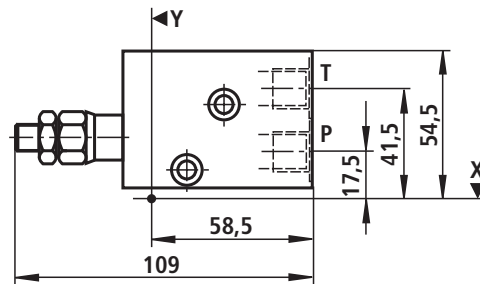
Pressure relief module, type "SDB"

Symbol



Dimensions

Dimension Z = 45 mm



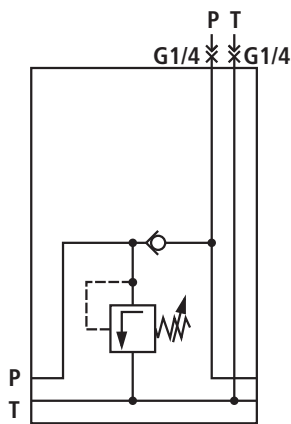
Material no.	Device designation	Type designation
	Pressure relief module	IH15EA-1X/SDB - <input type="checkbox"/> ¹ <input type="checkbox"/> ² / <input type="checkbox"/> ²⁶
R900991533		IH15EA-1X/SDB-S200/V
R900992136		IH15EA-1X/SDB-S350/V
R900242499		IH15EA-1X/SDB-S500/V

<input type="checkbox"/> ¹	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H	
<input type="checkbox"/> ²	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 200 bar 350 bar 500 bar	= 50 = 100 = 200 = 350 = 500
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!				
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar 250 bar 400 bar 500 bar	= 210E = 250E = 400E = 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85	
<input type="checkbox"/> ²⁶	Seal	Seal material	FKM = V	

Seat valve module, type "S" (dimensions in mm)

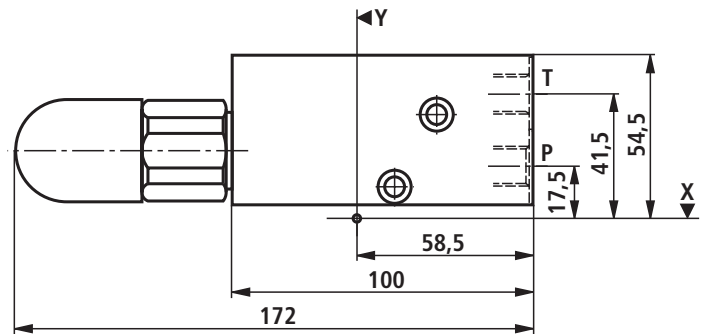
Pressure relief module, size 6, type "SDB6"

Symbol



Dimensions

Dimension Z = 45 mm



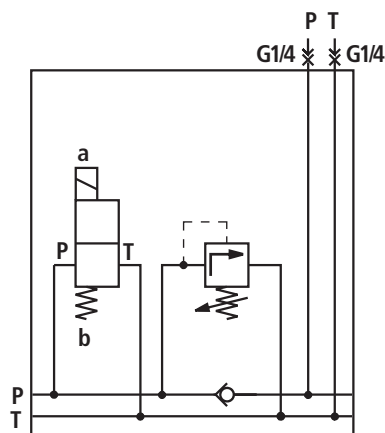
Material no.	Device designation	Type designation
	Pressure relief module size 6	IH15EA-1X/SDB6 - <input type="text"/> <input type="text"/> / <input type="text"/>
R904101817		IH15EA-1X/SDB6-S50/V
R901099611		IH15EA-1X/SDB6-S100/V
R901099613		IH15EA-1X/SDB6-S200/V
R901099614		IH15EA-1X/SDB6-S315/V

<input type="text"/>	Adjustment element at the pressure relief valve	Setscrew with internal hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="text"/>	Pressure rating of the pressure relief valve (size 6)	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 315 bar = 315
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50E 100 bar = 100E 140 bar = 140E 210 bar = 210E 330 bar = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD 6.../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 86
<input type="text"/>	Seal	Seal material	FKM = V

Seat valve module, type "S" (dimensions in mm)

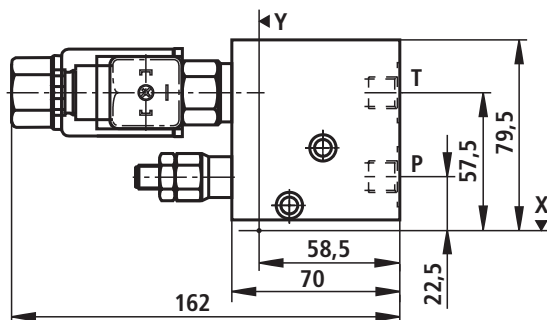
Pressure relief module with circulation valve, type "SDBU"

Symbol



Dimensions

Dimension Z = 45 mm



Material no.	Device designation	Type designation
	Pressure relief module with circulation valve	IH15EA-1X/SDBU- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 4 <input type="checkbox"/> 8 / <input type="checkbox"/> 26
R901099615		IH15EA-1X/SDBU-S350/NG24/V
R904101274		IH15EA-1X/SDBU-S350/PG24/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 200 bar 350 bar 500 bar = 50 = 100 = 200 = 350 = 500
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar 250 bar 400 bar 500 bar = 210E = 250E = 400E = 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="checkbox"/> 4	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="checkbox"/> 8	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/> 26	Seal	Seal material	FKM = V

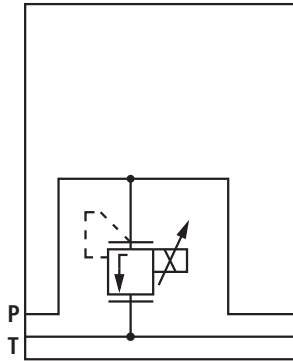
Seat valve module, type "S" (dimensions in mm)

Project planning information

When using the SPDB module, a filter with a filter rating of 6 µm is to be used.

Proportional pressure relief module, type "SPDB"

Symbol

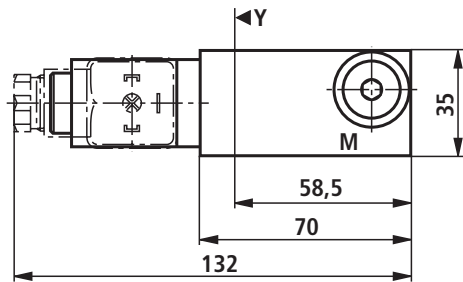


Area of application pressure rating:

$p = 20 \text{ bar}$	$q_{\text{max}} = 8 \text{ l/min}$
$p = 100 \text{ bar}$	$q_{\text{max}} = 8 \text{ l/min}$
$p = 200 \text{ bar}$	$q_{\text{max}} = 6 \text{ l/min}$
$p = 315 \text{ bar}$	$q_{\text{max}} = 3 \text{ l/min}$

Dimensions

Dimension Z = 45 mm



Material no.	Device designation	Type designation
	Proportional pressure relief module	IH15EA-1X/SPDB- <input type="text" value="24"/> <input type="text" value="8"/> / <input type="text" value="26"/>
R904101391		IH15EA-1X/SPDB-100G24/V
R900993538		IH15EA-1X/SPDB-315G24/V

<input type="text" value="8"/>	Solenoid voltage of the seat valves	Volt	24 V DC	= G24
<input type="text" value="26"/>	Seal	Seal material	FKM	= V
<input type="text" value="35"/>	Pressure rating of the proportional valve	Setting pressure up to max.	20 bar	= 20
		Setting pressure up to max.	100 bar	= 100
		Setting pressure up to max.	200 bar	= 200
		Setting pressure up to max.	315 bar	= 315

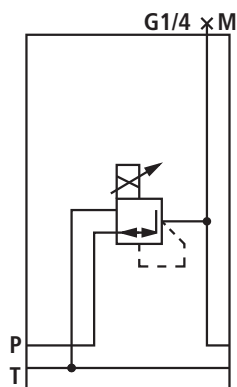
Seat valve module, type "S" (dimensions in mm)

Project planning information

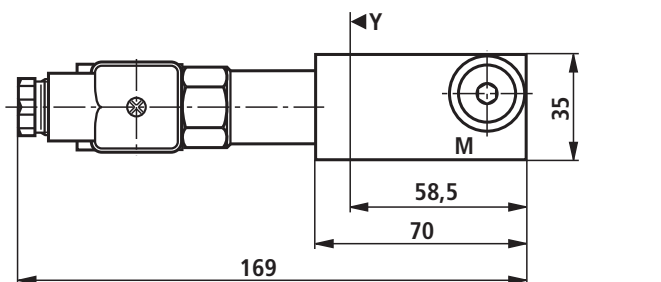
When using the SPDR module, a filter with a filter rating of 6 µm is to be used.

Proportional pressure reducing valve, type "SPDR"

Symbol



Dimensions

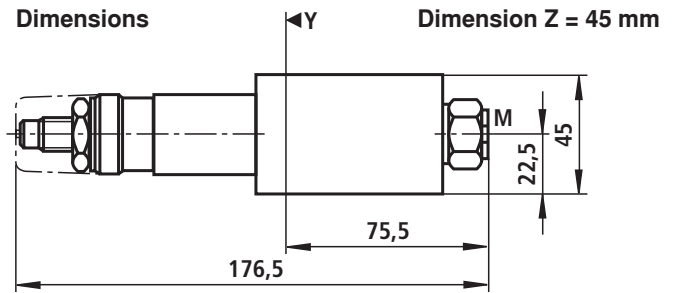
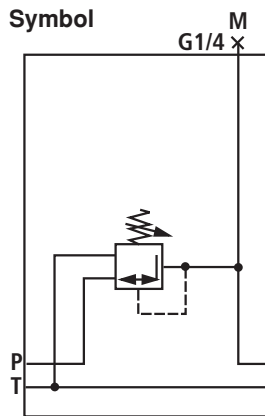


Material no.	Device designation	Type designation
	Proportional pressure reducing valve	IH15EA-1X/SPDR- <input type="text" value="24"/> / <input type="text" value="14"/> <input type="text" value="8"/> / <input type="text" value="26"/>
R904101209		IH15EA-1X/SPDR-315/DG24/V

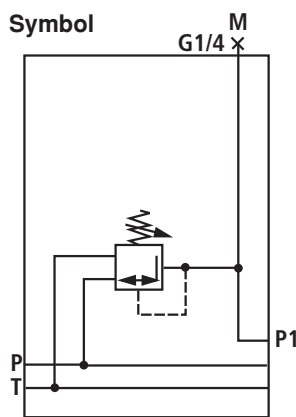
<input type="text" value="8"/>	Solenoid voltage of the seat valves	Volt	24 V DC	= G24
<input type="text" value="14"/>	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring		= D = M = O
<input type="text" value="26"/>	Seal	Seal material	FKM	= V
<input type="text" value="35"/>	Pressure rating of the proportional valve	Setting pressure up to max.	20 bar	= 20
		Setting pressure up to max.	100 bar	= 100
		Setting pressure up to max.	200 bar	= 200
		Setting pressure up to max.	315 bar	= 315

Seat valve module, type "S" (dimensions in mm)

Pressure reducing module, type "SDR" (min. secondary pressure which can be set $p_{max} = 15$ bar)



Pressure reducing module with P1 channel, type "SDRP1"



Material no.	Device designation	Type designation
	Pressure reducing module	IH15EA-1X/SDR- <input type="checkbox"/> ¹⁶ / <input type="checkbox"/> ¹⁷ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101712		IH15EA-1X/SDR-2/210/D/V
R904100719		IH15EA-1X/SDR-2/210/M/V
R904102202		IH15EA-1X/SDR-2/210/O/V

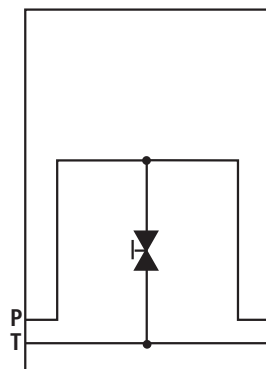
Material no.	Device designation	Type designation
	Pressure reducing module with P1 channel	IH15EA-1X/SDRP1- <input type="checkbox"/> ¹⁶ / <input type="checkbox"/> ¹⁷ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904100561		IH15EA-1X/SDRP1-2/210/D/V
R904100659		IH15EA-1X/SDRP1-2/210/M/V
R901099714		IH15EA-1X/SDRP1-2/210/O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> ¹⁶ Adjustment element	Setscrew with internal hexagon and protective cap	= 2
<input type="checkbox"/> ¹⁷ Secondary pressure	Max. secondary pressure	25 bar = 25
	Max. secondary pressure	75 bar = 75
	Max. secondary pressure	150 bar = 150
	Max. secondary pressure	210 bar = 210
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM = V

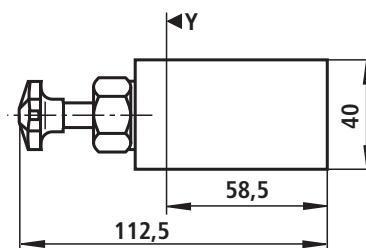
Seat valve module, type "S" (dimensions in mm)

Circulation module with stop valve, type "SUA"

Symbol



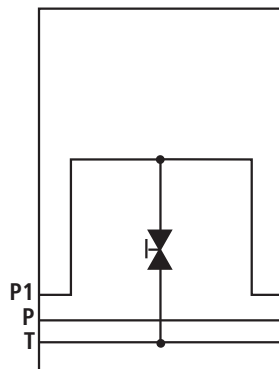
Dimensions



Dimension Z = 45 mm

Circulation module with stop valve and P1 channel, type "SUAP1"

Symbol



Material no.	Device designation	Type designation
	Circulation module with stop valve	IH15EA-1X/SUA- <input type="text" value="26"/>
R900992137		IH15EA-1X/SUA-V

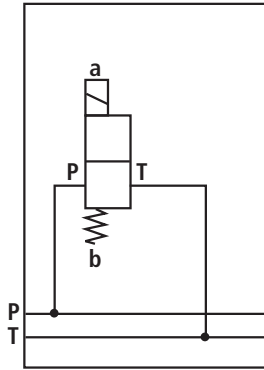
Material no.	Device designation	Type designation
	Circulation module with stop valve and P1 channel	IH15EA-1X/SUAP1- <input type="text" value="26"/>
R901099721		IH15EA-1X/SUAP1-V

<input type="text" value="26"/> Seal	Seal material	FKM	= V
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Seat valve module, type "S" (dimensions in mm)

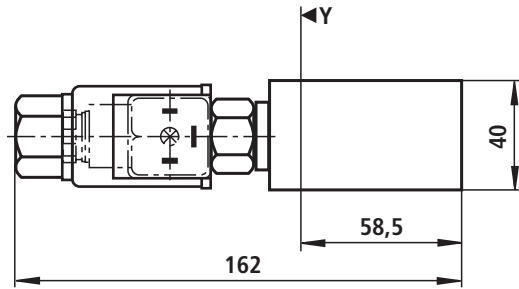
Circulation module, type "SU"

Symbol



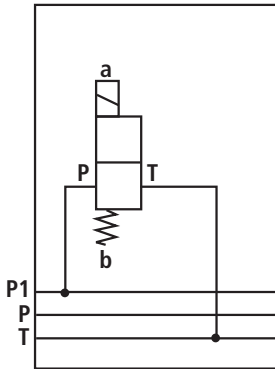
Dimensions

Dimension Z = 45 mm



Circulation module with P1 channel, type "SUP1"

Symbol



Material no.	Device designation	Type designation
	Circulation module	IH15EA-1X/SU- <input type="text" value="4"/> <input type="text" value="8"/> / <input type="text" value="7"/> / <input type="text" value="26"/>
R900337092		IH15EA-1X/SU-NG24/350/V
R900992143		IH15EA-1X/SU-PG24/350/V

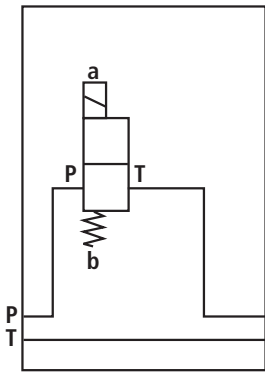
Material no.	Device designation	Type designation
	Circulation module with P1 channel	IH15EA-1X/SUP1- <input type="text" value="4"/> <input type="text" value="8"/> / <input type="text" value="7"/> / <input type="text" value="26"/>
R901099723		IH15EA-1X/SUP1-PG24/350/V

<input type="text" value="4"/>	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text" value="7"/>	Pressure rating of the seat valve	p_{max} p_{max}	= 350 bar = 500 bar = 350 = 500
<input type="text" value="8"/>	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text" value="26"/>	Seal	Seal material	FKM = V

Seat valve module, type "S" (dimensions in mm)

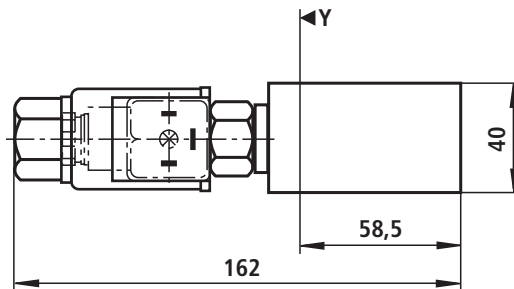
Module P, type "SP"

Symbol



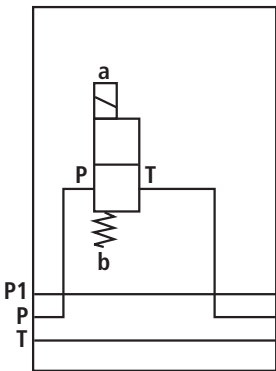
Dimensions

Dimension Z = 45 mm



Module P with P1 channel, type "SPP1"

Symbol



Material no.	Device designation	Type designation
	Module SP	IH15EA-1X/SP- <input type="text"/> ⁴ <input type="text"/> ⁸ / <input type="text"/> ⁷ / <input type="text"/> ²⁶
R900993536		IH15EA-1X/SP-NG24/350/V
R904101690		IH15EA-1X/SP-NG24/500/V
R904100795		IH15EA-1X/SP-PG24/350/V
R904101683		IH15EA-1X/SP-PG24/500/V

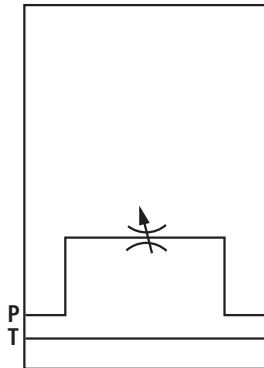
Material no.	Device designation	Type designation
	Module SP with P1 channel	IH15EA-1X/SPP1- <input type="text"/> ⁴ <input type="text"/> ⁸ / <input type="text"/> ⁷ / <input type="text"/> ²⁶
R904102280		IH15EA-1X/SPP1-PG24/350/V

<input type="text"/> ⁴	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text"/> ⁷	Pressure rating of the seat valve	p_{max} p_{max}	= 350 bar = 500 bar = 350 = 500
<input type="text"/> ⁸	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text"/> ²⁶	Seal	Seal material	FKM = V

Seat valve module, type "S" (dimensions in mm)

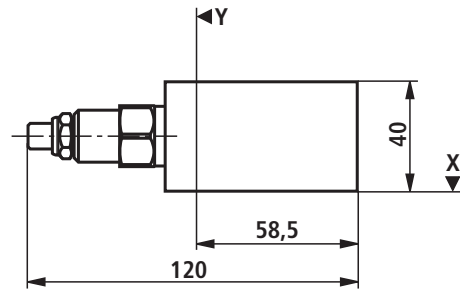
Module P with throttle valve, type "SPDV"
 ($p_{max} = 350 \text{ bar}$)

Symbol



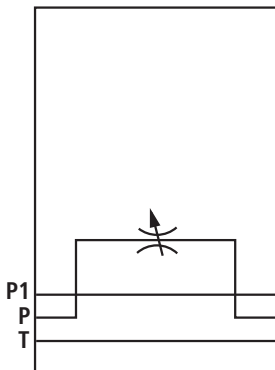
Dimensions

Dimension Z = 45 mm



Module P with throttle valve and P1 channel, type "SPDVP1"
 ($p_{max} = 350 \text{ bar}$)

Symbol



Material no.	Device designation	Type designation
	Module SPDV	IH15EA-1X/SPDV- ²⁶ <input type="text"/>
R901189446		IH15EA-1X/SPDV-V

Material no.	Device designation	Type designation
	Module SPDV with P1 channel	IH15EA-1X/SPDVP1- ²⁶ <input type="text"/>
R901266878		IH15EA-1X/SPDVP1-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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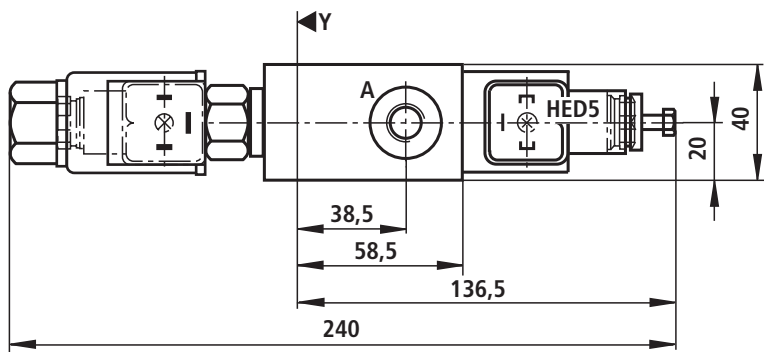
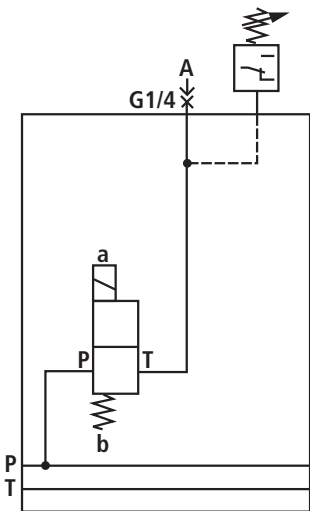
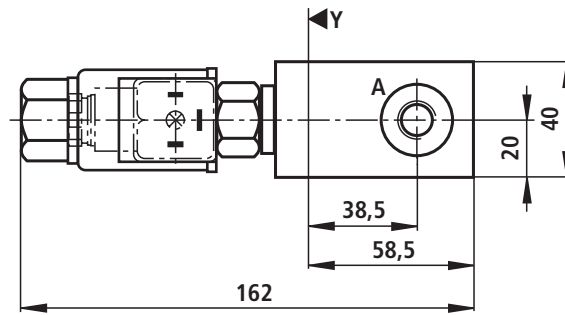
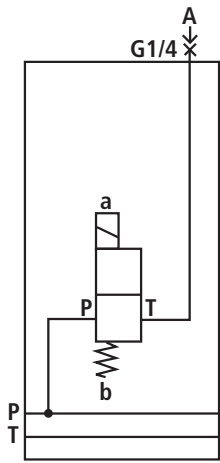
Seat valve module, type "S" (dimensions in mm)

Module SPA2, type "SPA2"

Symbol

Dimensions

Dimension Z = 45 mm



Seat valve module, type "S" (dimensions in mm)

Material no.	Device designation	Type designation
	Module SPA2	IH15EA-1X/SPA2- <input type="text"/> ⁴ <input type="text"/> ¹⁰ / <input type="text"/> ¹² <input type="text"/> ⁸ / <input type="text"/> ⁷ / <input type="text"/> ²⁶
R904101492		IH15EA-1X/SPA2-N/G24/350/V
R900242502		IH15EA-1X/SPA2-N/G24/500/V
R904101491		IH15EA-1X/SPA2-NHED5/100G24/V
R900992210		IH15EA-1X/SPA2-P/G24/350/V
R901063412		IH15EA-1X/SPA2-P/G24/500/V
R901231102		IH15EA-1X/SPA2-PHED5/200G24/V

<input type="text"/> ⁴	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text"/> ⁷	Pressure rating of the seat valve	p_{\max} p_{\max}	= 350 bar = 500 bar = 350 ¹⁾ = 500 ^{1, 2)}
<input type="text"/> ⁸	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text"/> ¹⁰	Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HEDE 10 A1-2X/...K41...2	= no code = HED 5 = HEDE 10
<input type="text"/> ¹²	Pressure rating of the pressure switch	Without pressure switch Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure	= no code = 50 = 100 = 200 = 350 = 630 ²⁾
<input type="text"/> ²⁶	Seal	Seal material	FKM = V

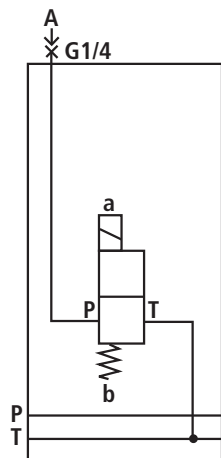
¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

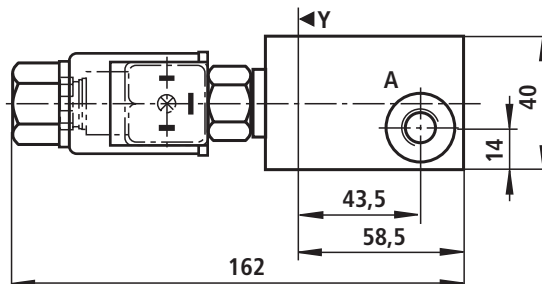
Module A – T, type "SAT2"

Symbol



Dimensions

Dimension Z = 45 mm



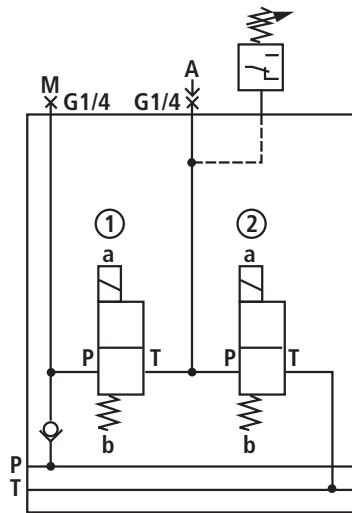
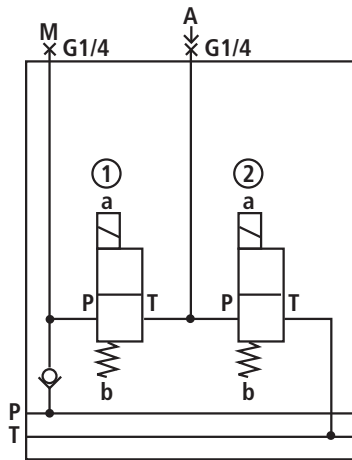
Material no.	Device designation	Type designation
	Module SAT2	IH15EA-1X/SAT2- <input type="text" value="4"/> <input type="text" value="8"/> / <input type="text" value="7"/> / <input type="text" value="26"/>
R904100867		IH15EA-1X/SAT2-NG24/350/V
R901063391		IH15EA-1X/SAT2-NG24/500/V
R901065613		IH15EA-1X/SAT2-PG24/350/V
R901063388		IH15EA-1X/SAT2-PG24/500/V

<input type="text" value="4"/>	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text" value="7"/>	Pressure rating of the seat valve	p_{\max} p_{\max}	= 350 bar = 500 bar = 350 = 500
<input type="text" value="8"/>	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text" value="26"/>	Seal	Seal material	FKM = V

Seat valve module, type "S" (dimensions in mm)

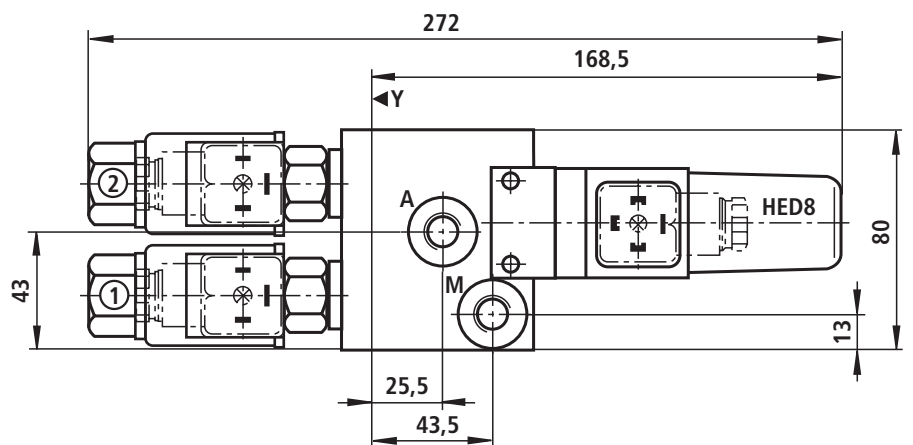
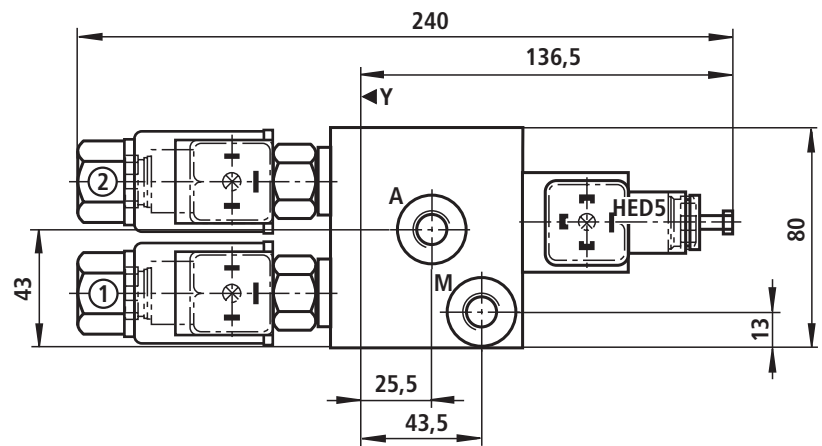
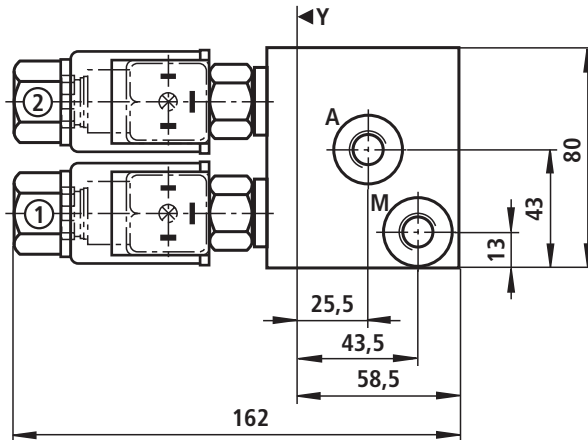
Module P – A – T, type "SPAT2"

Symbol



Dimensions

Dimension Z = 45 mm



Seat valve module, type "S" (dimensions in mm)

Material no.	Device designation	Type designation
	Module SPAT2	IH15EA-1X/SPAT2- <div style="display: flex; justify-content: space-around; font-size: small;"> 4 11 12 14 8 7 26 </div> <div style="display: flex; justify-content: space-around; font-size: x-small;"> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </div>
R900334895		IH15EA-1X/SPAT2-N/OG24/350/V
R900242500		IH15EA-1X/SPAT2-N/OG24/500/V
R901231122		IH15EA-1X/SPAT2-NHED5/200/MG24/V
R901231121		IH15EA-1X/SPAT2-NHED5/200/OG24/V
R901231125		IH15EA-1X/SPAT2-PHED5/200/OG24/V

4	Designation of the 2/2 seat valve	Normally closed	= N
<input type="text"/>		Normally open	= P
7	Pressure rating of the seat valve	p_{\max}	= 350 bar = 350 ¹⁾
<input type="text"/>		p_{\max}	= 500 bar = 500 ^{1, 2)}
8	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text"/>			
11	Pressure switch	Without pressure switch	= no code
<input type="text"/>		HED 5 OH-3X/...K14	= HED5
		HED 8 OP-2X/...K14	= HED8
		HEDE 10 A1-2X/...K41...2	= HEDE 10
12	Pressure rating of the pressure switch	Without pressure switch	= no code
<input type="text"/>		Max. setting pressure	50 bar = 50
		Max. setting pressure	100 bar = 100
		Max. setting pressure	200 bar = 200
		Max. setting pressure	350 bar = 350
	Max. setting pressure	630 bar = 630 ²⁾	
14	Pressure monitoring	With pressure gauge size 63	= D
<input type="text"/>		With measuring port	= M
		Without pressure monitoring	= O
26	Seal	Seal material	FKM = V
<input type="text"/>			

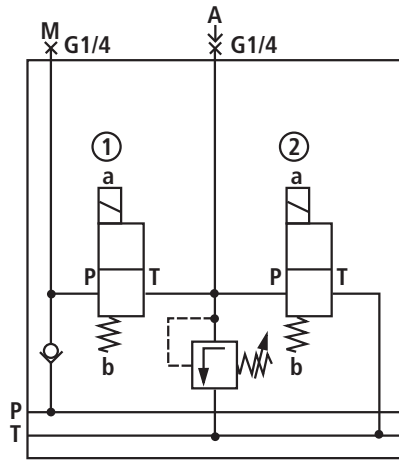
¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

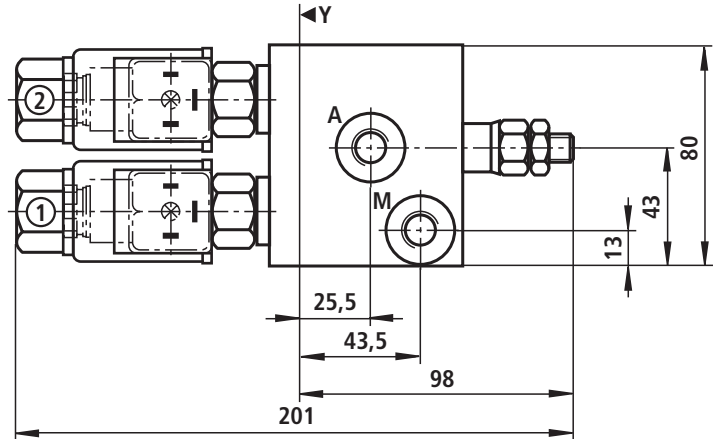
Module P – A – T with pressure relief valve, type "SPAT2DB"

Symbol



Dimensions

Dimension Z = 45 mm



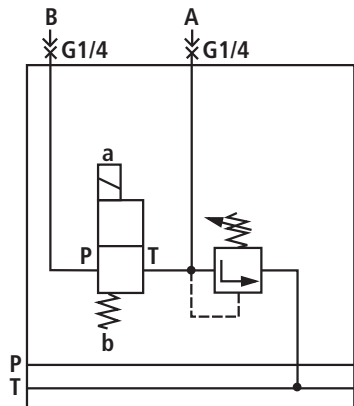
Material no.	Device designation	Type designation
	Module SPAT2DB	IH15EA-1X/SPAT2DB- <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> / <input type="text"/>
R900608552		IH15EA-1X/SPAT2DB-S 50/MPG24/V
R904100980		IH15EA-1X/SPAT2DB-S100/MNG24/V
R900992144		IH15EA-1X/SPAT2DB-S200/OPG24/V

<input type="text"/>	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="text"/>	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 500 bar = 500
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
			Setting pressure up to max. 210 bar = 210E Setting pressure up to max. 250 bar = 250E Setting pressure up to max. 400 bar = 400E Setting pressure up to max. 500 bar = 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="text"/>	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text"/>	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text"/>	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="text"/>	Seal	Seal material	FKM = V

Seat valve module, type "S" (dimensions in mm)

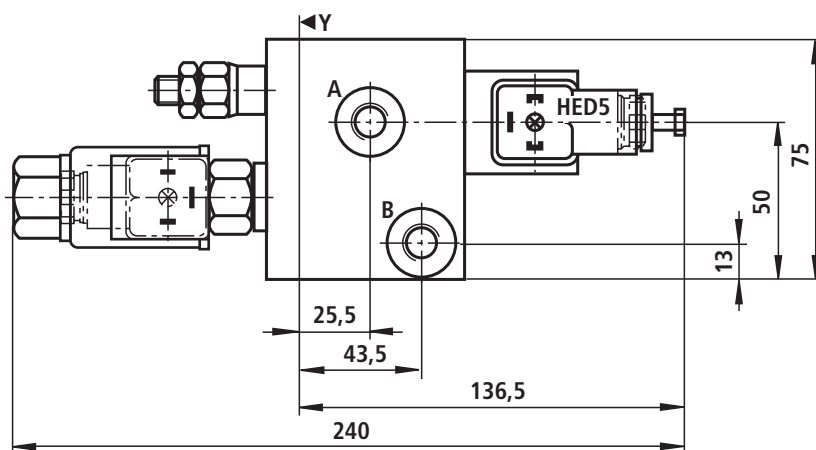
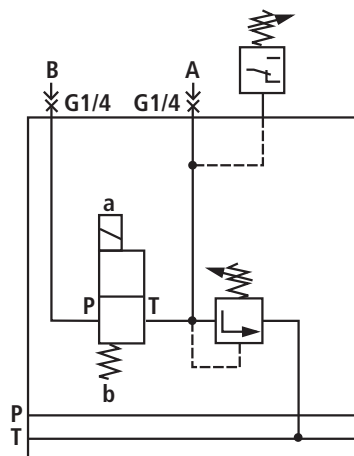
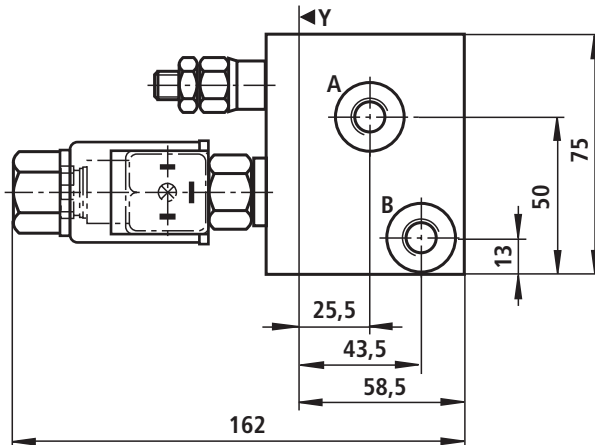
Module B – A – T with pressure relief valve, type "SBAT2DB"

Symbol



Dimensions

Dimension Z = 45 mm



Seat valve module, type "S"

Material no.	Device designation	Type designation
	Module SBAT2DB	IH15EA-1X/SBAT2DB- <input type="checkbox"/> ¹ <input type="checkbox"/> ² / <input type="checkbox"/> ⁴ / <input type="checkbox"/> ¹⁰ <input type="checkbox"/> ⁸ / <input type="checkbox"/> ²⁶
R900717193		IH15EA-1X/SBAT2DB-S100/N/G24/V
R900992145		IH15EA-1X/SBAT2DB-S200/P/HED5G24/V

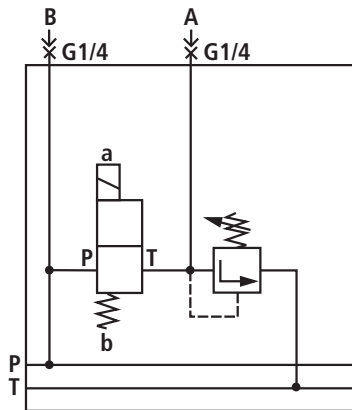
<input type="checkbox"/> ¹	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob		= S = H
<input type="checkbox"/> ²	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 200 bar 350 bar 500 bar	= 50 = 100 = 200 = 350 = 500 ¹⁾
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!				
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar 250 bar 400 bar 500 bar	= 210E = 250E = 400E ¹⁾ = 500E ¹⁾
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E Type testing according to Pressure Equipment Directive 97/23/EC				See page 85
<input type="checkbox"/> ⁴	Designation of the 2/2 seat valve	Normally closed Normally open		= N = P
<input type="checkbox"/> ⁸	Solenoid voltage of the seat valves	Volt	24 V DC	= G24
<input type="checkbox"/> ¹⁰	Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HEDE 10 A1-2X/...K41...2		= no code = HED 5 = HEDE 10
<input type="checkbox"/> ²⁶	Seal	Seal material	FKM	= V

¹⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

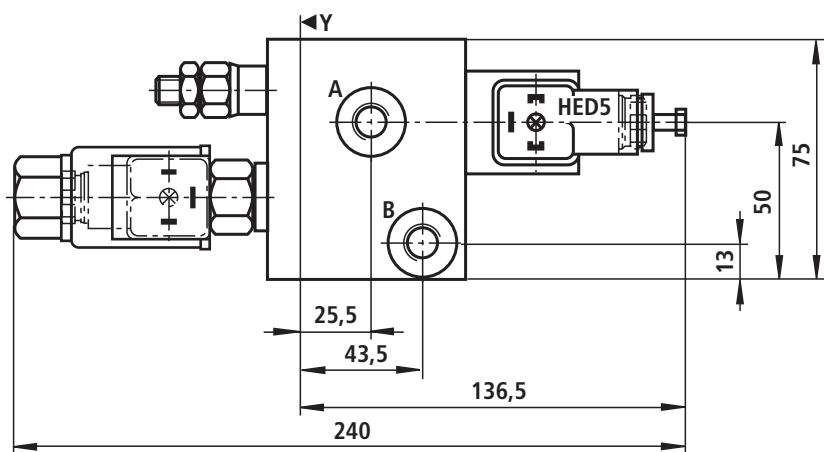
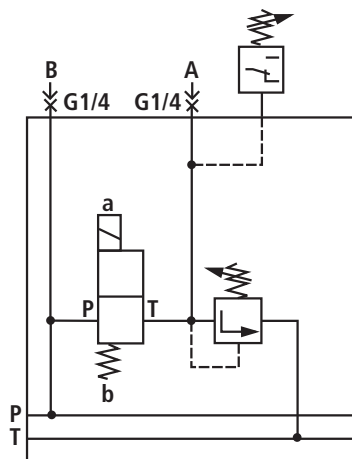
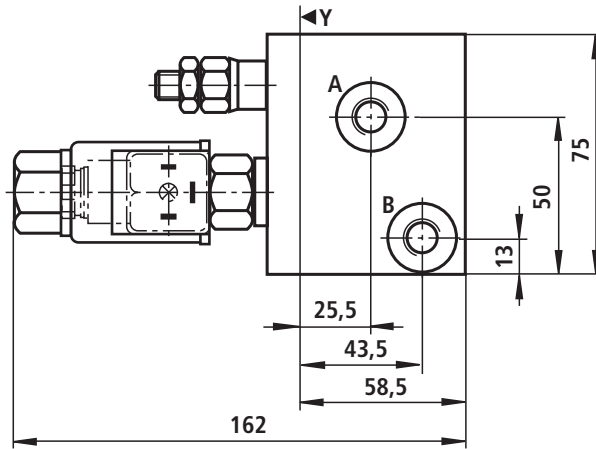
Module P – B – A – T with pressure relief valve, type "SPBAT2DB"

Symbol



Dimensions

Dimension Z = 45 mm



Seat valve module, type "S"

Material no.	Device designation	Type designation
	Module SPBAT2DB	IH15EA-1X/SPBAT2DB- <input type="checkbox"/> ¹ <input type="checkbox"/> ² / <input type="checkbox"/> ⁴ / <input type="checkbox"/> ¹⁰ <input type="checkbox"/> ⁸ / <input type="checkbox"/> ²⁶
R904100985		IH15EA-1X/SPBAT2DB-S100/N/G24/V
R901072232		IH15EA-1X/SPBAT2DB-S200/N/G24/V
R901072233		IH15EA-1X/SPBAT2DB-S350/N/G24/V
R904100172		IH15EA-1X/SPBAT2DB-S 50/N/HED5/G24/V

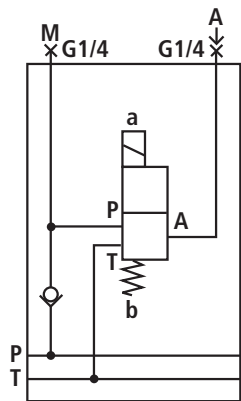
<input type="checkbox"/>	¹ Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/>	² Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 500 bar = 500 ¹⁾
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar = 210E 250 bar = 250E 400 bar = 400E ¹⁾ 500 bar = 500E ¹⁾
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="checkbox"/>	⁴ Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="checkbox"/>	⁸ Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/>	¹⁰ Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HEDE 10 A1-2X/...K41...2	= no code = HED 5 = HEDE 10
<input type="checkbox"/>	²⁶ Seal	Seal material	FKM = V

¹⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

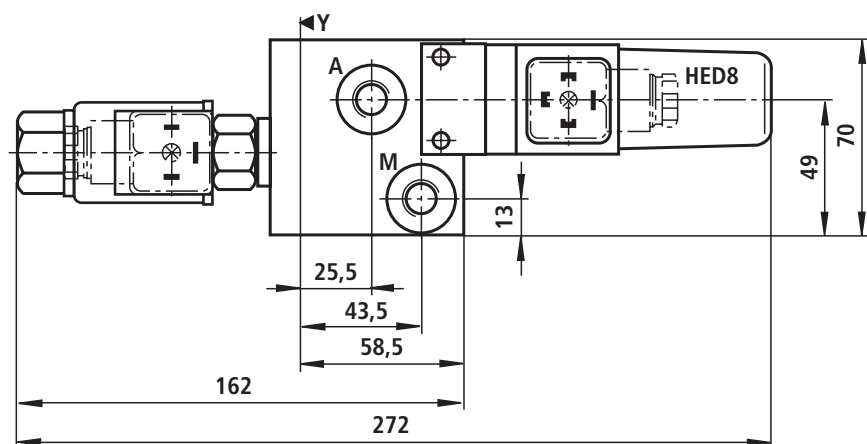
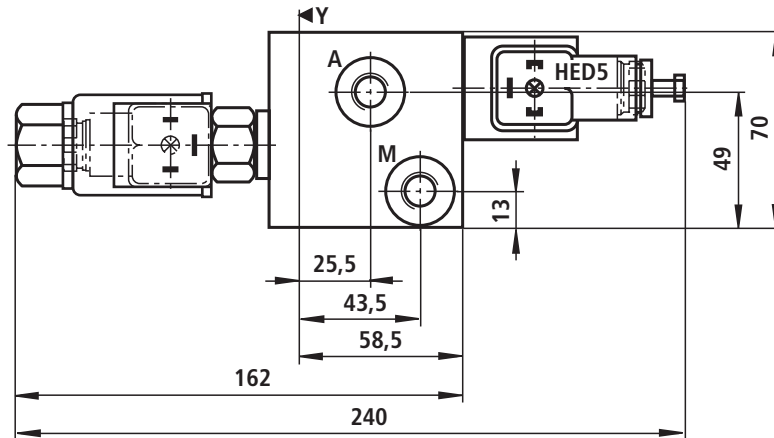
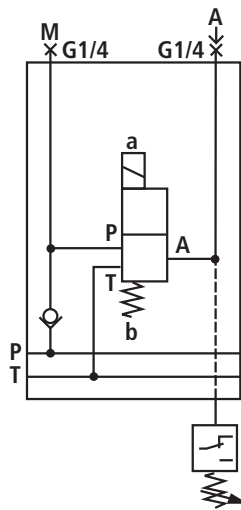
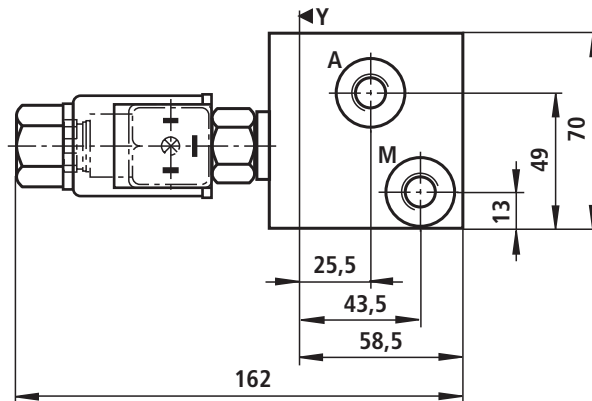
Module P – A, type "SPA3"

Symbol



Dimensions

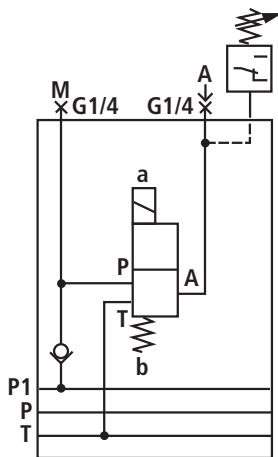
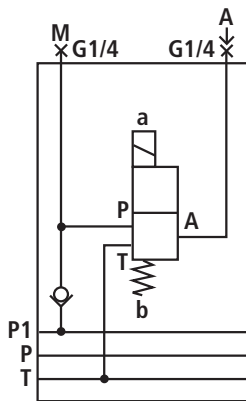
Dimension Z = 45 mm



Seat valve module, type "S"

Module P – A with P1 channel, type "SPA3P1"

Symbol



Seat valve module, type "S"

Material no.	Device designation	Type designation
	Module SPA3	IH15EA-1X/SPA3- <div style="display: flex; justify-content: space-around; width: 100%;"> 5 11 12 14 8 7 26 </div> <div style="display: flex; justify-content: space-around; width: 100%; border: 1px solid black; height: 20px; margin-top: 5px;"></div>
R900993540		IH15EA-1X/SPA3-C/MG24/350/V
R904100943		IH15EA-1X/SPA3-CHED5/350/MG24/V
R900993541		IH15EA-1X/SPA3-U/MG24/350/V
R900719081		IH15EA-1X/SPA3-UHED5/350/MG24/V

Material no.	Device designation	Type designation
	Module SPA3P1	IH15EA-1X/SPA3P1- <div style="display: flex; justify-content: space-around; width: 100%;"> 5 11 12 14 8 7 26 </div> <div style="display: flex; justify-content: space-around; width: 100%; border: 1px solid black; height: 20px; margin-top: 5px;"></div>
R904101002		IH15EA-1X/SPA3P1-C/MG24/350/V
R904100789		IH15EA-1X/SPA3P1-CHED5/100/OG24/V
R901100035		IH15EA-1X/SPA3P1-U/MG24/350/V
R904100879		IH15EA-1X/SPA3P1-UHED5/100/OG24/V

5	Designation of the 3/2 seat valve		
			= U
			= C
7	Pressure rating of the seat valve	p_{\max} p_{\max}	= 350 bar = 350 ¹⁾ = 500 bar = 500 ^{1, 2)}
8	Solenoid voltage of the seat valves	Volt	24 V DC = G24
11	Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2	= no code = HED 5 = HED 8 = HEDE 10
12	Pressure rating of the pressure switch	Without pressure switch Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 630 bar = 630 ²⁾
14	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
26	Seal	Seal material	FKM = V

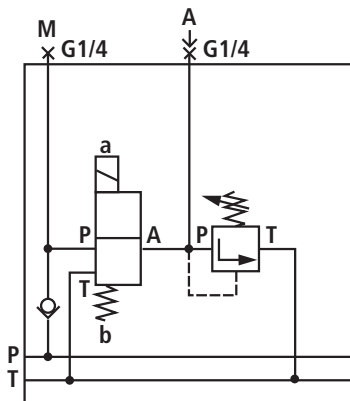
¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

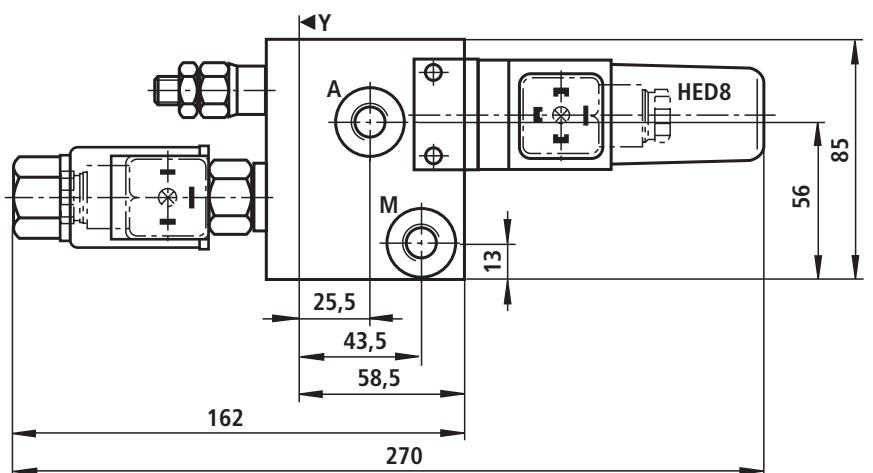
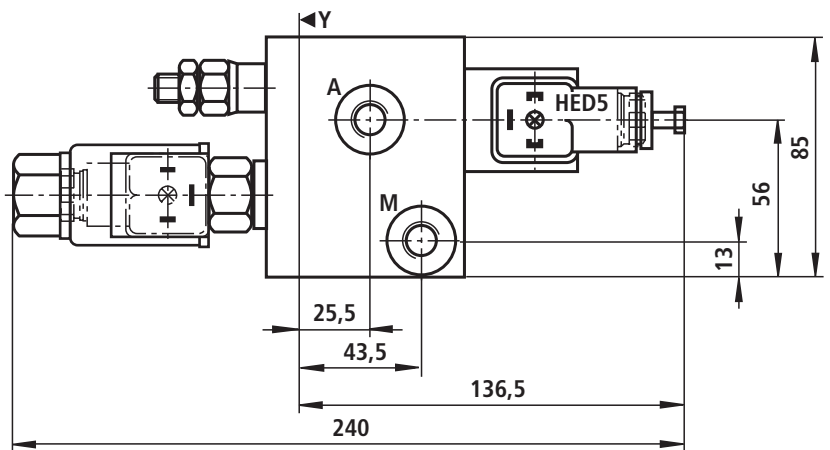
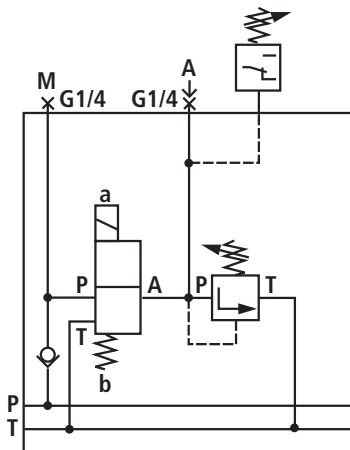
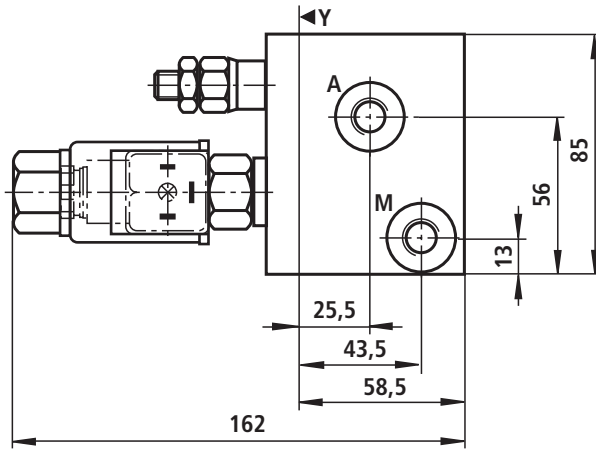
Module P – A – T with pressure relief valve, type "SPAT3DB"

Symbol



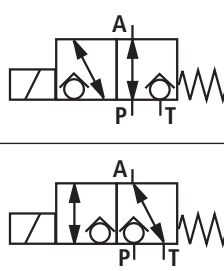
Dimensions

Dimension Z = 45 mm



Seat valve module, type "S"

Material no.	Device designation	Type designation
	Module SPAT3DB	IH15EA-1X/SPAT3DB- <div style="display: flex; justify-content: space-around; font-size: small;"> 1 2 5 11 14 8 26 </div> <div style="display: flex; justify-content: space-around; font-size: x-small;"> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> </div>
R904101659		IH15EA-1X/SPAT3DB-S200CHED5/DG24/V
R901063501		IH15EA-1X/SPAT3DB-S200CHED5/MG24/V
R901100755		IH15EA-1X/SPAT3DB-S200CHED5/OG24/V

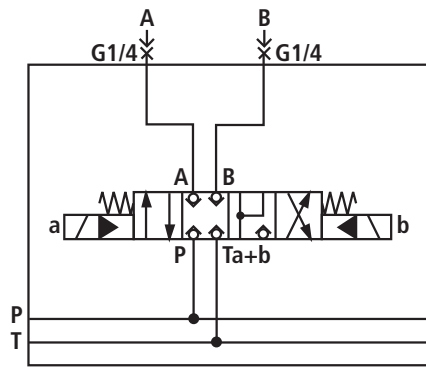
<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob		= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 200 bar 350 bar 500 bar	= 50 = 100 = 200 = 350 = 500 ¹⁾
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!				
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar 250 bar 400 bar 500 bar	= 210E = 250E = 400E ¹⁾ = 500E ¹⁾
Characteristic curve for type-examination tested pressure relief valves type: DBD 4.../..E Type testing according to Pressure Equipment Directive 97/23/EC				See page 85
<input type="checkbox"/> 5	Designation of the 3/2 seat valve			= U = C
<input type="checkbox"/> 8	Solenoid voltage of the seat valves	Volt	24 V DC	= G24
<input type="checkbox"/> 11	Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2		= no code = HED 5 = HED 8 = HEDE 10
<input type="checkbox"/> 14	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring		= D = M = O
<input type="checkbox"/> 26	Seal	Seal material	FKM	= V

1) Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

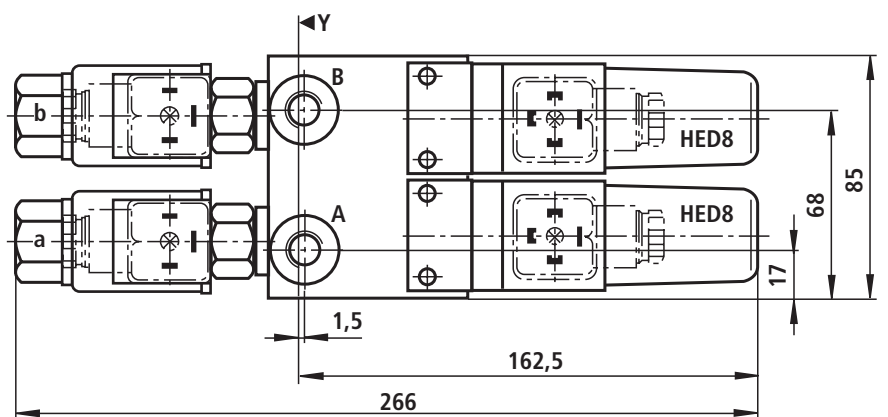
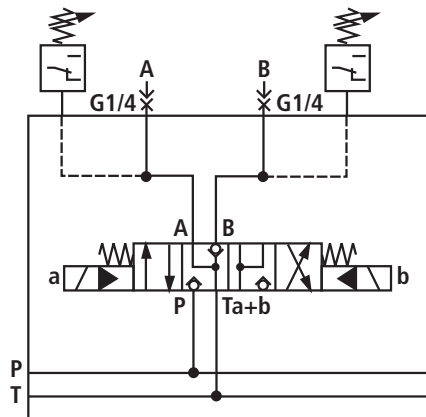
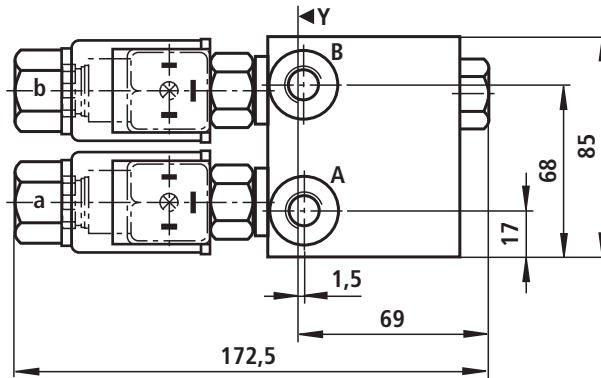
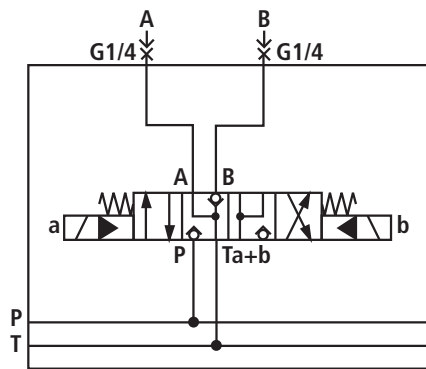
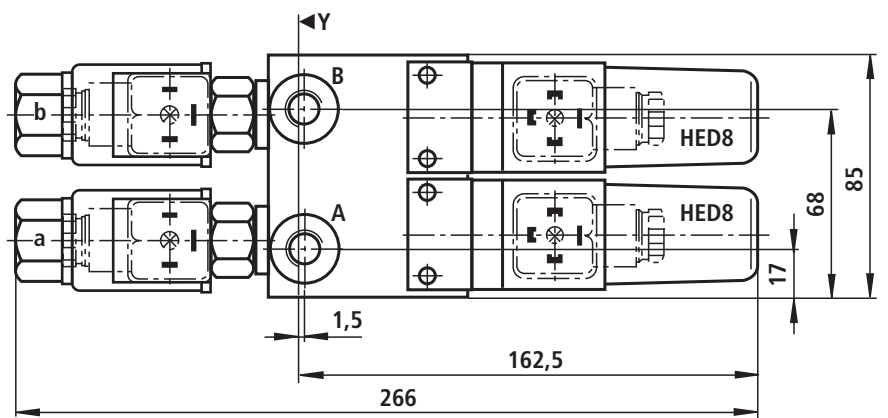
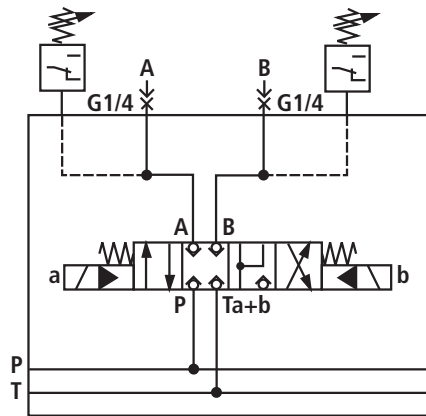
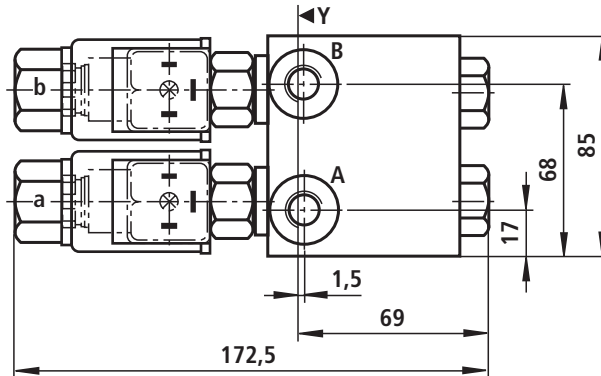
Module AB, type "SAB4"

Symbol



Dimensions

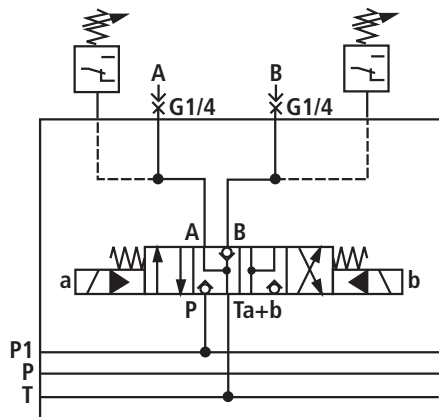
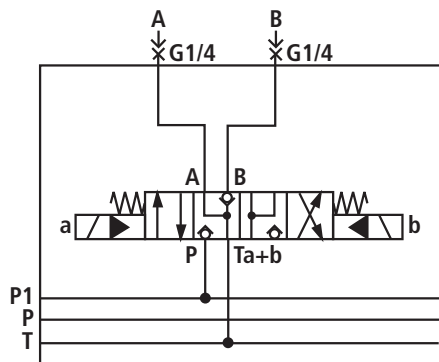
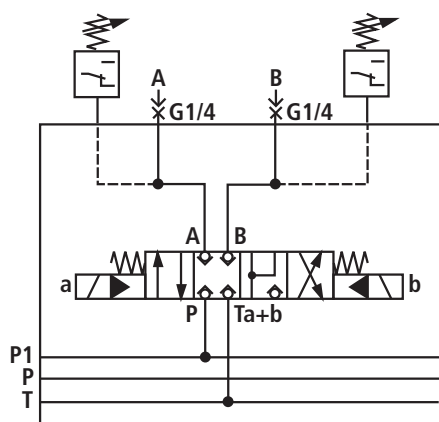
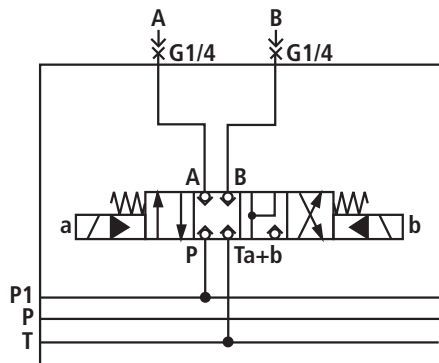
Dimension Z = 70 mm



Seat valve module, type "S"

Module AB with P1 channel, type "SAB4P1"

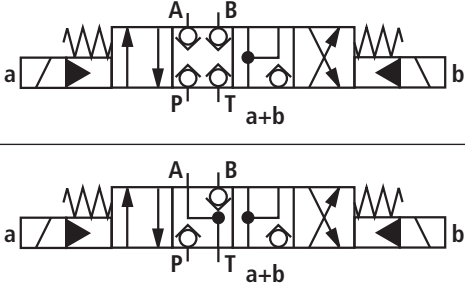
Symbol



Seat valve module, type "S"

Material no.	Device designation	Type designation
	Module SAB4	IH15EA-1X/SAB4- <input type="text"/> ⁶ <input type="text"/> ¹³ / <input type="text"/> ¹² / <input type="text"/> ⁸ / <input type="text"/> ⁷ / <input type="text"/> ²⁶
R900717196		IH15EA-1X/SAB4-KA/350/G24/V
R904100708		IH15EA-1X/SAB4-KAB/200/G24/V
R904101412		IH15EA-1X/SAB4-LG24/500/V
R901102715		IH15EA-1X/SAB4-LAB/200/G24/V

Material no.	Device designation	Type designation
	Module SAB4 with P1 channel	IH15EA-1X/SAB4P1- <input type="text"/> ⁶ <input type="text"/> ¹³ / <input type="text"/> ¹² / <input type="text"/> ⁸ / <input type="text"/> ⁷ / <input type="text"/> ²⁶
R900718647		IH15EA-1X/SAB4P1-KG24/350/V
R901102732		IH15EA-1X/SAB4P1-KAB/200/G24/V
R901102733		IH15EA-1X/SAB4P1-LG24/500/V
R901102734		IH15EA-1X/SAB4P1-LAB/200/G24/V

<input type="text"/> ⁶	Designation of the 4/4 seat valve		= K
<input type="text"/> ⁷	Pressure rating of the seat valve	p_{max} p_{max}	= 350 bar = 500 bar = 350 ¹⁾ = 500 ^{1, 2)}
<input type="text"/> ⁸	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text"/> ¹²	Pressure rating of the pressure switch	Without pressure switch Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure	 50 bar 100 bar 200 bar 350 bar 630 bar = no code = 50 = 100 = 200 = 350 = 630 ²⁾
<input type="text"/> ¹³	Pressure switch in the channel	Without pressure switch A B A and B	= no code = A = B = AB
<input type="text"/> ²⁶	Seal	Seal material	FKM = V

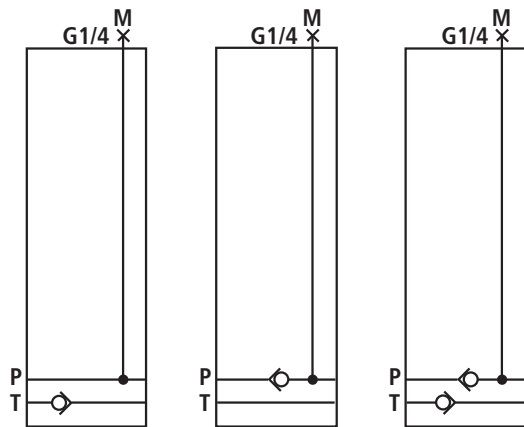
¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

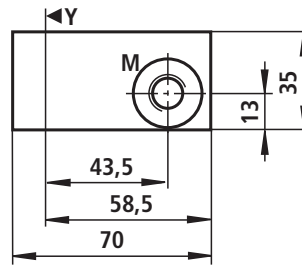
Seat valve module, type "S" (dimensions in mm)

Module with check valve, type "SR"

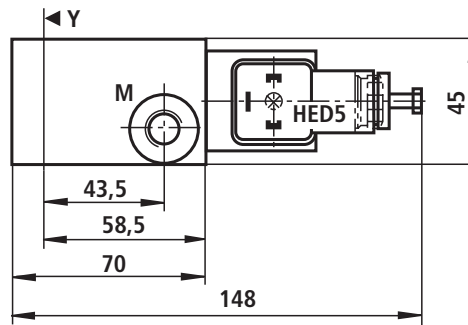
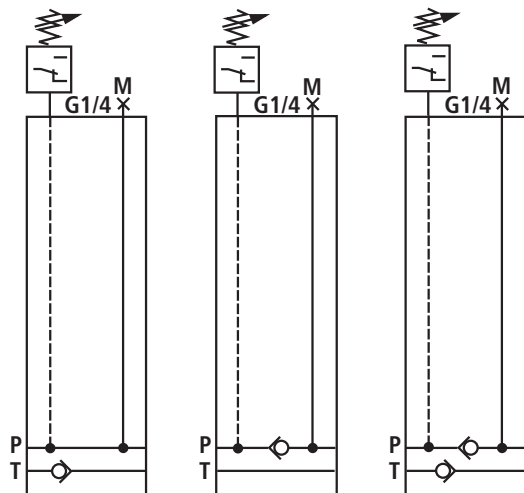
Symbol



Dimensions



Dimension Z = 45 mm



Seat valve module, type "S"

Material no.	Device designation	Type designation
	Module with check valve	IH15EA-1X/SR- <input type="checkbox"/> ²¹ / <input type="checkbox"/> ¹¹ / <input type="checkbox"/> ¹² / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ¹⁵ / <input type="checkbox"/> ²⁶
R904100056		IH15EA-1X/SR-PT/O/V
R901102735		IH15EA-1X/SR-PT/M/V
R901093516		IH15EA-1X/SR-P/M/V
R901231134		IH15EA-1X/SR-P/HED5/200/O/V
R900618480		IH15EA-1X/SR-P/O/V
R901091505		IH15EA-1X/SR-T/HED5/630/O/V
R904101786		IH15EA-1X/SR-T/M/V
R904100046		IH15EA-1X/SR-T/O/V

<input type="checkbox"/> ¹¹ Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2		= no code = HED 5 = HED 8 = HEDE 10
<input type="checkbox"/> ¹² Pressure rating of the pressure switch	Without pressure switch Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure	50 bar 100 bar 200 bar 350 bar 630 bar	= no code = 50 = 100 = 200 = 350 = 630 ²⁾
<input type="checkbox"/> ¹⁴ Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring		= D = M = O
<input type="checkbox"/> ¹⁵ Max. pressure range of the pressure gauge	Without pressure monitoring Display range Display range Display range Display range Display range	60 bar 100 bar 250 bar 400 bar 600 bar	= no code = 60 ¹⁾ = 100 ¹⁾ = 250 ¹⁾ = 400 ^{1,2)} = 600 ^{1,2)}
<input type="checkbox"/> ²¹ Check valve	In channel P In channel T In channel P and T		= P = T = PT
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM	= V

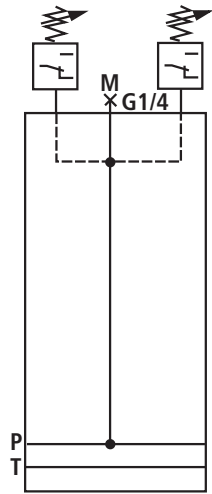
¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

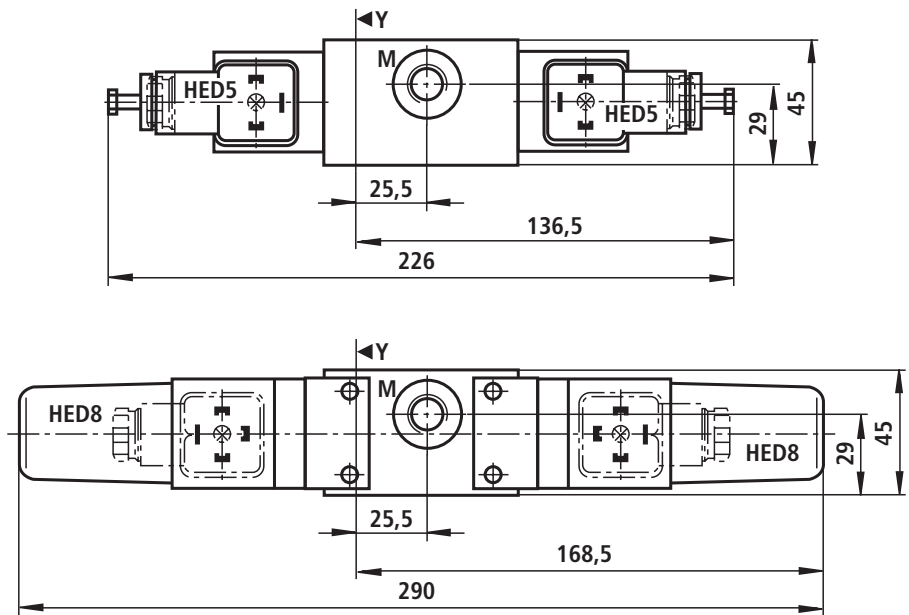
Module with pressure switch, type "SD"

Symbol



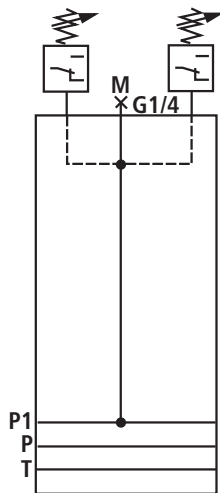
Dimensions

Dimension Z = 45 mm



Module with pressure switch, type "SDP1"

Symbol



Seat valve module, type "S"

Material no.	Device designation	Type designation
	Module with pressure switch	IH15MA-1X/SD- <input type="checkbox"/> ⁹ <input type="checkbox"/> ¹¹ / <input type="checkbox"/> ¹² / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ¹⁵ / <input type="checkbox"/> ²⁶
R900335708		IH15MA-1X/SD-0/D100/V
R904100532		IH15MA-1X/SD-1HED5/100/D/V
R901231137		IH15MA-1X/SD-1HED5/200/D/V
R901231136		IH15MA-1X/SD-1HED5/200/M/V
R901231135		IH15MA-1X/SD-1HED5/200/O/V
R904100082		IH15MA-1X/SD-1HED8/200/D/V
R901231143		IH15MA-1X/SD-2HED5/200/D/V
R901231142		IH15MA-1X/SD-2HED5/200/O/V
R904100536		IH15MA-1X/SD-2HED8/200/O/V

Material no.	Device designation	Type designation
	Module with pressure switch	IH15MA-1X/SDP1- <input type="checkbox"/> ⁹ <input type="checkbox"/> ¹¹ / <input type="checkbox"/> ¹² / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ¹⁵ / <input type="checkbox"/> ²⁶
R901103711		IH15MA-1X/SDP1-1HED5/100/D/V

<input type="checkbox"/> ⁹	Number of pressure switches	Without pressure switch One pressure switch Two pressure switches	= 0 = 1 = 2
<input type="checkbox"/> ¹¹	Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2	= no code = HED 5 = HED 8 = HEDE 10
<input type="checkbox"/> ¹²	Pressure rating of the pressure switch	Without pressure switch Max. setting pressure 50 bar Max. setting pressure 100 bar Max. setting pressure 200 bar Max. setting pressure 350 bar Max. setting pressure 630 bar	= no code = 50 = 100 = 200 = 350 = 630 ²⁾
<input type="checkbox"/> ¹⁴	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> ¹⁵	Max. pressure range of the pressure gauge	Without pressure monitoring Display range 60 bar Display range 100 bar Display range 250 bar Display range 400 bar Display range 600 bar	= no code = 60 ¹⁾ = 100 ¹⁾ = 250 ¹⁾ = 400 ^{1,2)} = 600 ^{1,2)}
<input type="checkbox"/> ²⁶	Seal	Seal material	FKM = V

¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

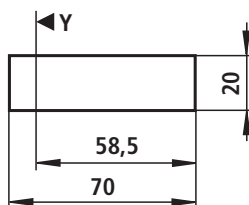
Seat valve module, type "S" (dimensions in mm)

Sandwich module with P1 channel, type "SZP1"

Symbol



Dimensions



Dimension Z = 45 mm

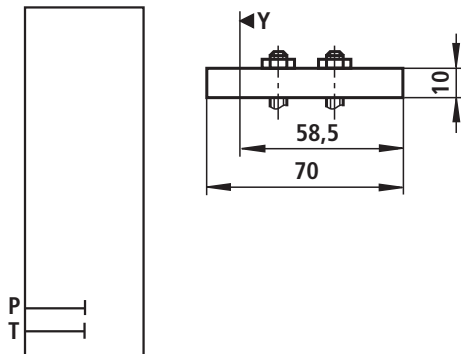
Material no.	Device designation	Type designation
	Sandwich module with P1 channel interruption	IH15MA-1X/SZP1- ²⁶ <input type="text"/>
R901103710		IH15MA-1X/SZP1-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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Seat valve module, type "S" (dimensions in mm)

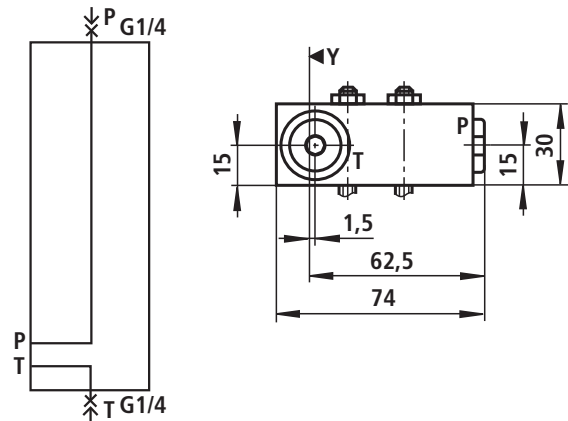
End module, type "WSE"

Symbol Dimensions Dimension Z = 45 mm



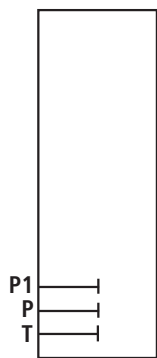
with port P and T, laterally

Symbol Dimensions Dimension Z = 45 mm



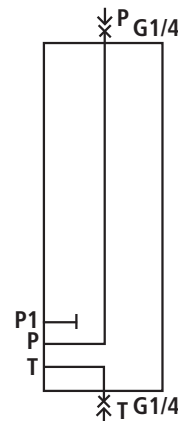
End module with P1 channel, type "WSEP1"

Symbol



with port P and T, laterally

Symbol



Material no.	Device designation	Type designation
	End module	IH15MA-1X/WSE- <input type="text" value="22"/> / <input type="text" value="26"/>
R900334850		IH15MA-1X/WSE-PT/V
R900992158		IH15MA-1X/WSE-V

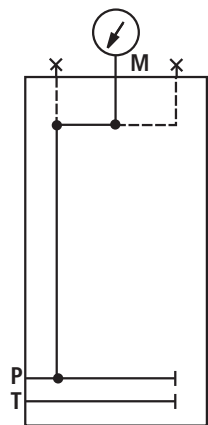
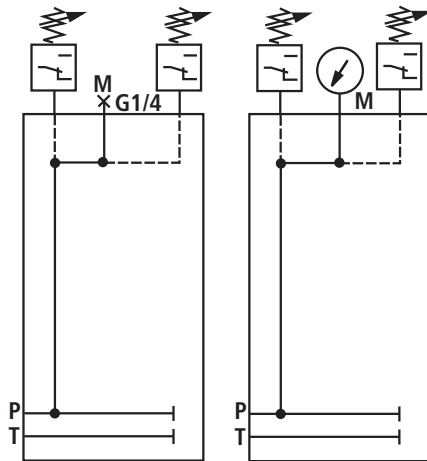
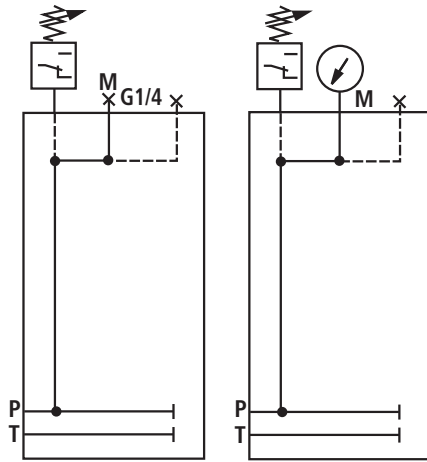
Material no.	Device designation	Type designation
	End module with P1 channel	IH15MA-1X/WSEP1- <input type="text" value="22"/> / <input type="text" value="26"/>
R904101255		IH15MA-1X/WSEP1-V

<input type="text" value="22"/> Ports	Without ports P and T	G 1/4	= no code = PT
<input type="text" value="26"/> Seal	Seal material	FKM	= V

Seat valve module, type "S" (dimensions in mm)

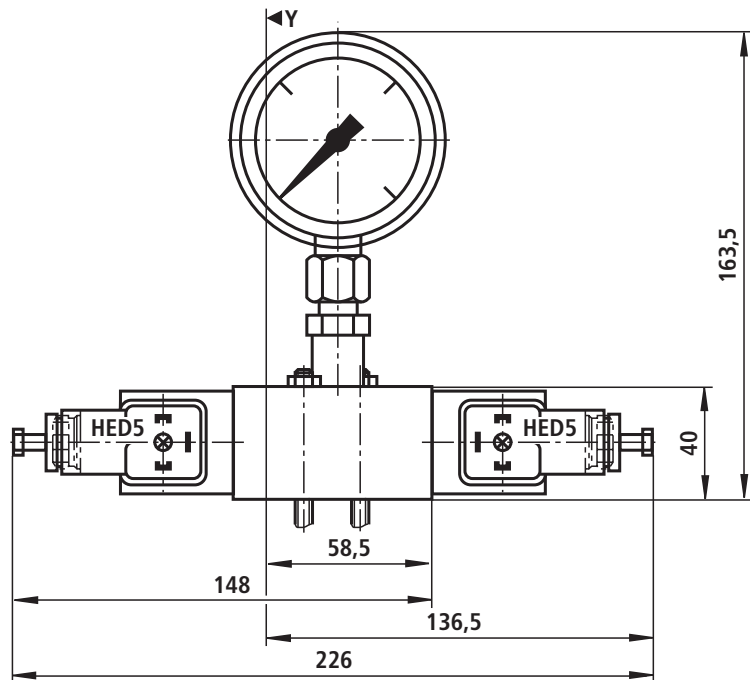
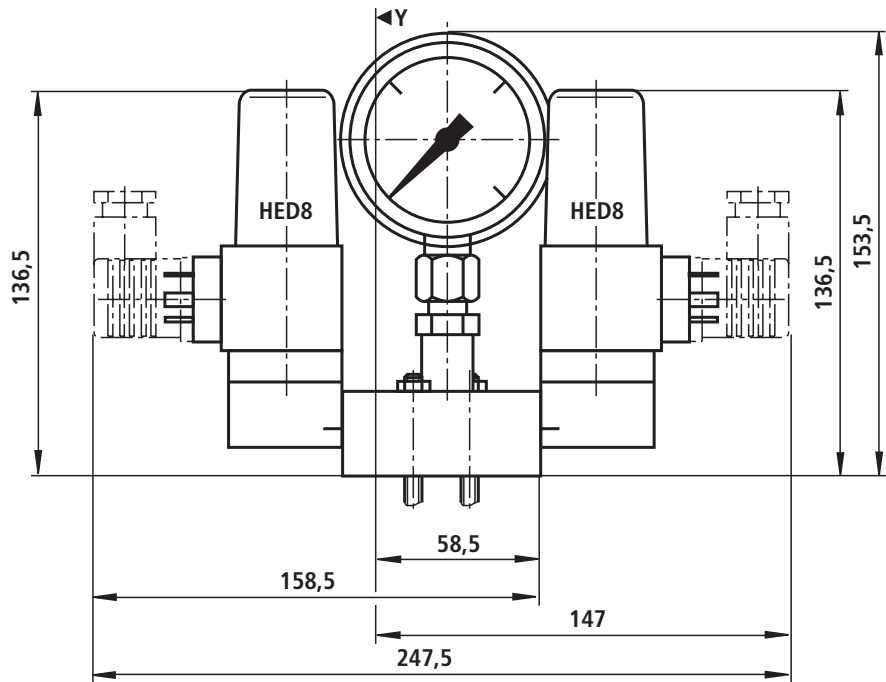
End module with pressure switch, type "WSED"

Symbol



Dimensions

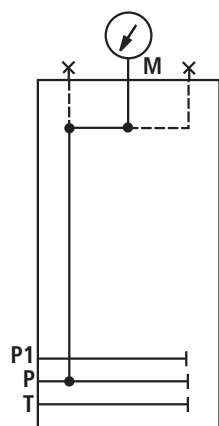
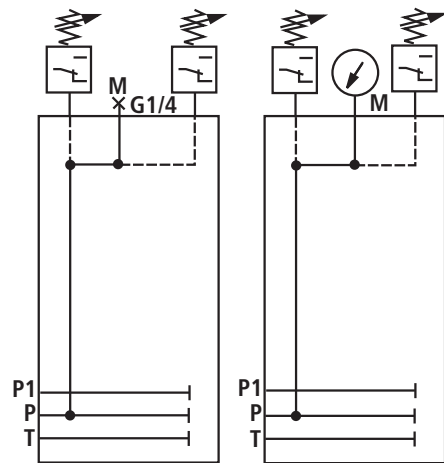
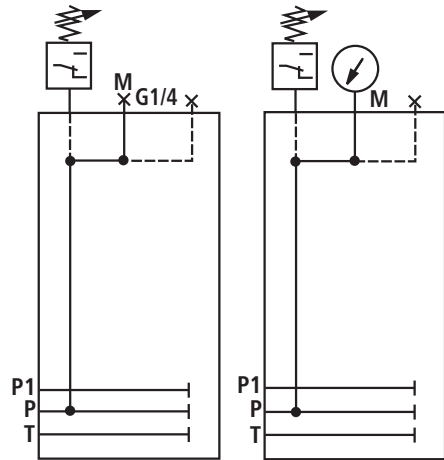
Dimension Z = 45 mm



Seat valve module, type "S"

End module with pressure switch and P1 channel, type "WSEDP1"

Symbol



Seat valve module, type "S"

Material no.	Device designation	Type designation
	End module with pressure switch	IH15MA-1X/WSED- <input type="checkbox"/> ⁹ <input type="checkbox"/> ¹¹ / <input type="checkbox"/> ¹² / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ¹⁵ / <input type="checkbox"/> ²⁶
R900260936		IH15MA-1X/WSED-0/D100/V
R900991530		IH15MA-1X/WSED-0/D250/V
R900260993		IH15MA-1X/WSED-0/D400/V
R904100142		IH15MA-1X/WSED-0/D600/V
R900334886		IH15MA-1X/WSED-1HED5/350/D/V
R904100035		IH15MA-1X/WSED-1HED5/350/O/V
R900701320		IH15MA-1X/WSED-1HED8/350/D/V
R900703207		IH15MA-1X/WSED-1HED8/350/O/V
R900706818		IH15MA-1X/WSED-2HED5/350/D/V
R900702052		IH15MA-1X/WSED-2HED8/350/D/V

Material no.	Device designation	Type designation
	End module with pressure switch and P1 channel	IH15MA-1X/WSEDP1- <input type="checkbox"/> ⁹ <input type="checkbox"/> ¹¹ / <input type="checkbox"/> ¹² / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ¹⁵ / <input type="checkbox"/> ²⁶
R904100559		IH15MA-1X/WSEDP1-0/D/400/V
R904100786		IH15MA-1X/WSEDP1-2HED5/210/D/V

<input type="checkbox"/> ⁹ Number of pressure switches	Without pressure switch One pressure switch Two pressure switches	= 0 = 1 = 2
<input type="checkbox"/> ¹¹ Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2	= no code = HED 5 = HED 8 = HEDE 10
<input type="checkbox"/> ¹² Pressure rating of the pressure switch	Without pressure switch Max. setting pressure 50 bar Max. setting pressure 100 bar Max. setting pressure 200 bar Max. setting pressure 350 bar Max. setting pressure 630 bar	= no code = 50 = 100 = 200 = 350 = 630 ²⁾
<input type="checkbox"/> ¹⁴ Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> ¹⁵ Max. pressure range of the pressure gauge	Without pressure monitoring Display range 60 bar Display range 100 bar Display range 250 bar Display range 400 bar Display range 600 bar	= no code = 60 ¹⁾ = 100 ¹⁾ = 250 ¹⁾ = 400 ^{1,2)} = 600 ^{1,2)}
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM = V

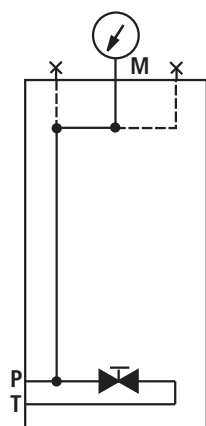
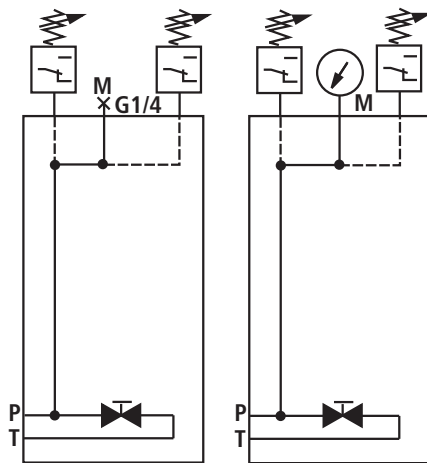
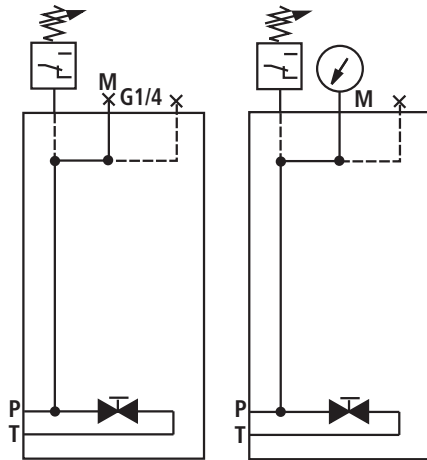
¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

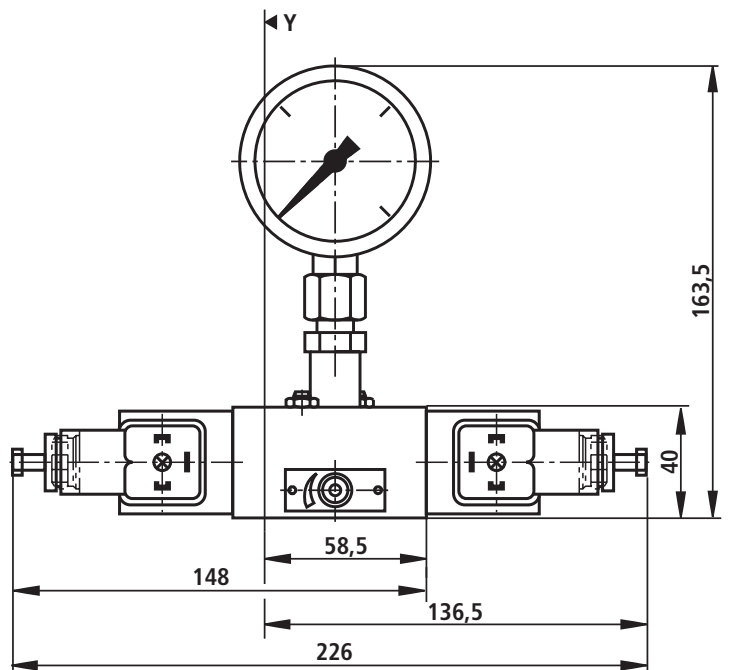
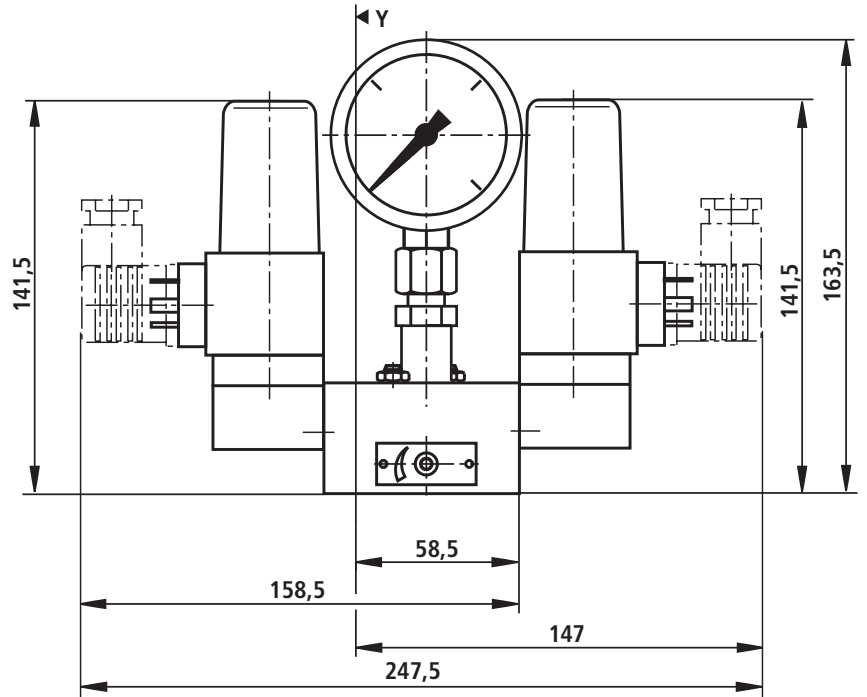
End module with pressure switch and stop valve, type "WSEDA"

Symbol



Dimensions

Dimension Z = 55 mm

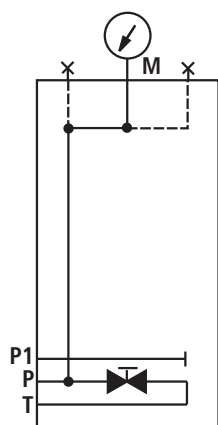
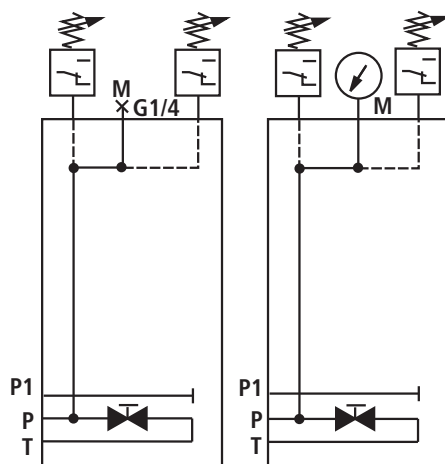
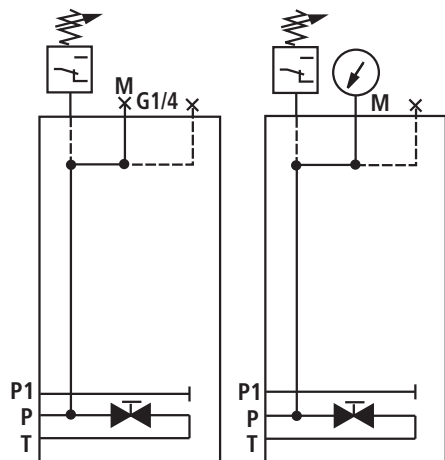


Operating information: Manual unloading must be closed in the operating condition.

Seat valve module, type "S"

End module with pressure switch, stop valve and P1 channel, type "WSEDAP1"

Symbol



Operating information: Manual unloading must be closed in the operating condition.

Seat valve module, type "S"

Material no.	Device designation	Type designation
	End module with pressure switch and stop valve	IH15EA-1X/WSEDA- <input type="text" value="9"/> <input type="text" value="11"/> / <input type="text" value="12"/> / <input type="text" value="14"/> / <input type="text" value="15"/> / <input type="text" value="26"/>
R904100815		IH15EA-1X/WSEDA-0/D/100/V
R901094566		IH15EA-1X/WSEDA-0/D/400/V
R904100208		IH15EA-1X/WSEDA-1HED5/100/D/V
R901231132		IH15EA-1X/WSEDA-1HED5/200/D/V
R904100040		IH15EA-1X/WSEDA-1HED5/200/O/V
R904100071		IH15EA-1X/WSEDA-1HED8/200/O/V
R904100675		IH15EA-1X/WSEDA-1HED8/350/D/V
R901231130		IH15EA-1X/WSEDA-2HED5/200/D/V
R901071162		IH15EA-1X/WSEDA-2HED8/200/D/V

Material no.	Device designation	Type designation
	End module with pressure switch, stop valve and P1 channel	IH15EA-1X/WSEDAP1- <input type="text" value="9"/> <input type="text" value="11"/> / <input type="text" value="12"/> / <input type="text" value="14"/> / <input type="text" value="15"/> / <input type="text" value="26"/>
R901102912		IH15EA-1X/WSEDAP1-0/D/400/V
R901102913		IH15EA-1X/WSEDAP1-2HED5/210/D/V

<input type="text" value="9"/>	Number of pressure switches	Without pressure switch One pressure switch Two pressure switches	= 0 = 1 = 2
<input type="text" value="11"/>	Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2	= no code = HED 5 = HED 8 = HEDE 10
<input type="text" value="12"/>	Pressure rating of the pressure switch	Without pressure switch Max. setting pressure 50 bar Max. setting pressure 100 bar Max. setting pressure 200 bar Max. setting pressure 350 bar Max. setting pressure 630 bar	= no code = 50 = 100 = 200 = 350 = 630 ²⁾
<input type="text" value="14"/>	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="text" value="15"/>	Max. pressure range of the pressure gauge	Without pressure monitoring Display range 60 bar Display range 100 bar Display range 250 bar Display range 400 bar Display range 600 bar	= no code = 60 ¹⁾ = 100 ¹⁾ = 250 ¹⁾ = 400 ^{1, 2)} = 600 ^{1, 2)}
<input type="text" value="26"/>	Seal	Seal material	FKM = V

¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks. The set pressure of the type-examination tested pressure relief valve must be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

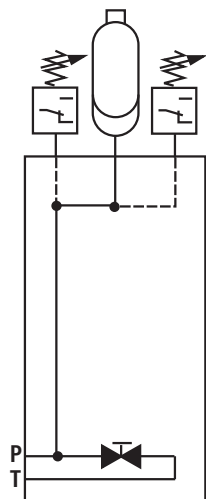
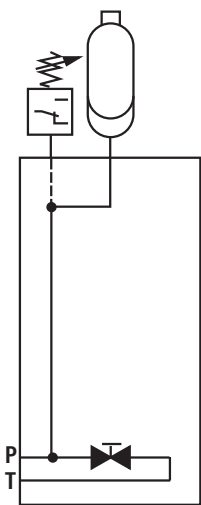
$$p_o = 0.9 \times p_{(\text{minimum operating pressure})}$$

Operating information

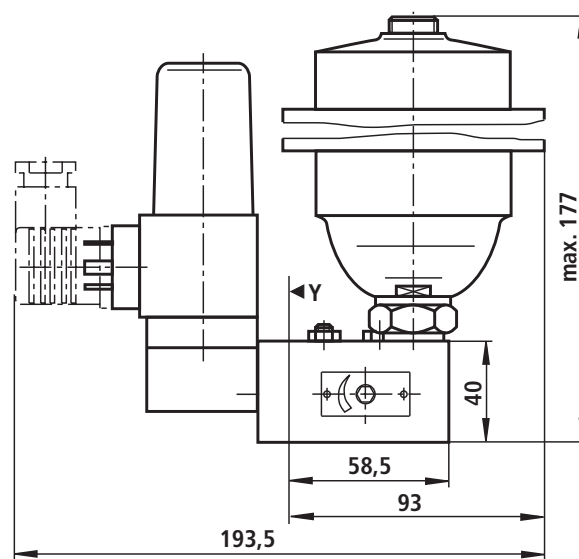
Manual unloading must be closed in the operating condition.

End module with accumulator and stop valve, type "SESA"

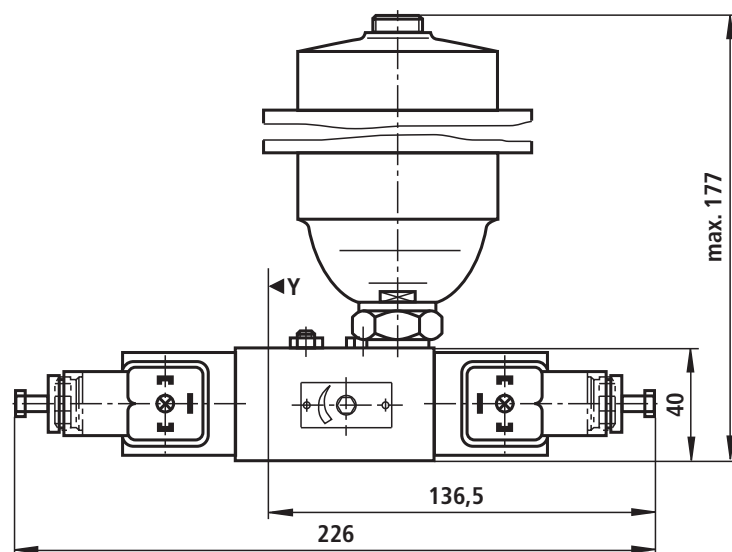
Symbol



Dimensions



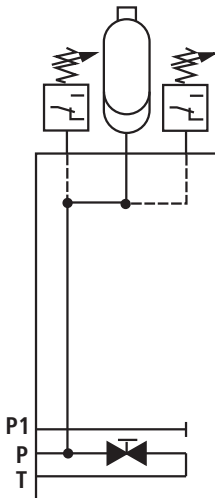
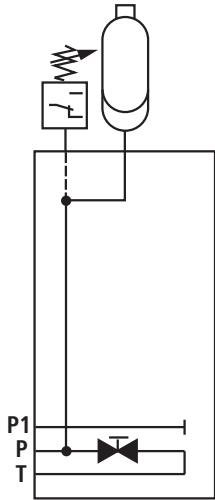
Dimension $Z_{\text{max}} = 98.5 \text{ mm}$



Seat valve module, type "S"

End module with accumulator, stop valve and P1 channel, type "SESAP1"

Symbol



Seat valve module, type "S"

Material no.	Device designation	Type designation
	End module with accumulator and stop valve	IH15EA-1X/SESA- <input type="text"/> ⁹ <input type="text"/> ¹¹ / <input type="text"/> ¹² / <input type="text"/> ¹⁸ / <input type="text"/> ²⁶
R904100869		IH15EA-1X/SESA-0/0,32/V
R901230854		IH15EA-1X/SESA-1HED5/200/0,32/V
R901231018		IH15EA-1X/SESA-2HED5/200/0,32/V

Material no.	Device designation	Type designation
	End module with accumulator, stop valve and P1 channel	IH15EA-1X/SESAP1- <input type="text"/> ⁹ <input type="text"/> ¹¹ / <input type="text"/> ¹² / <input type="text"/> ¹⁸ / <input type="text"/> ²⁶
R901098223		IH15EA-1X/SESAP1-1HED5/100/0,32/V
R904101711		IH15EA-1X/SESAP1-2HED5/350/0,50/V

<input type="text"/> ⁹	Number of pressure switches	Without pressure switch One pressure switch Two pressure switches	= 0 = 1 = 2	
<input type="text"/> ¹¹	Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2	= no code = HED 5 = HED 8 = HEDE 10	
<input type="text"/> ¹²	Pressure rating of the pressure switch	Without pressure switch Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure	50 bar 100 bar 200 bar 350 bar 630 bar	= no code = 50 = 100 = 200 = 350 = 630 ²⁾
<input type="text"/> ¹⁸	Diaphragm-type accumulator Bladder-type accumulator	Nominal volume in l Without accumulator 0.075 0.10 0.16 0.32 0.50	Max. pressure in bar 250 500 250 210 400	= no code = 0.075 = 0.10 = 0.16 = 0.32 = 0.50
<input type="text"/> ²⁶	Seal	Seal material	FKM	= V

²⁾ Not possible with HED 5

Seat valve module, type "S" (dimensions in mm)

Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks. The set pressure of the type-examination tested pressure relief valve must

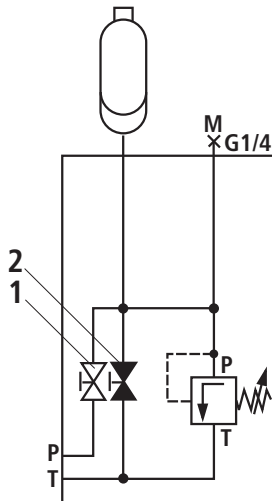
be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

$$p_o = 0.9 \times p_{(\text{minimum operating pressure})}$$

Accumulator safety block, type "SSB"

Symbol

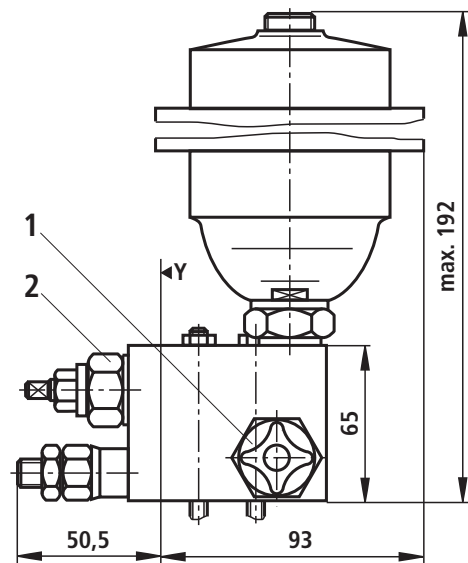


Operating information:

- 1 System stop valve must be open in the operating condition
- 2 Manual unloading must be closed in the operating condition

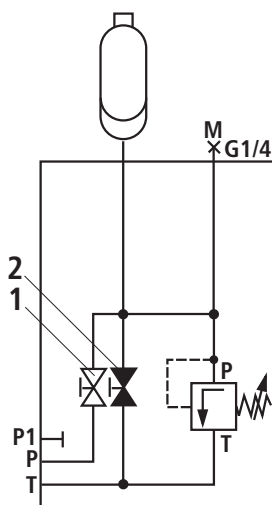
Dimensions

Dimension $Z_{\text{max}} = 88.5 \text{ mm}$



Accumulator safety block with P1 channel, type "SSBP1"

Symbol



Operating information:

- 1 System stop valve must be open in the operating condition
- 2 Manual unloading must be closed in the operating condition

Seat valve module, type "S"

Material no.	Device designation	Type designation
	Accumulator safety block	IH15EA-1X/SSB- <input type="checkbox"/> ¹ <input type="checkbox"/> ³ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ¹⁸ / <input type="checkbox"/> ²⁶
R904100486		IH15EA-1X/SSB-S210E/M/0,32/V
R900618898		IH15EA-1X/SSB-S210E/O/0,32/V
R900335037		IH15EA-1X/SSB-S210E/D/0,32/V

Material no.	Device designation	Type designation
	Accumulator safety block with P1 channel	IH15EA-1X/SSBP1- <input type="checkbox"/> ¹ <input type="checkbox"/> ³ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ¹⁸ / <input type="checkbox"/> ²⁶
R904101907		IH15EA-1X/SSBP1-S210E/O/0,32/V

<input type="checkbox"/>	¹ Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/>	³ Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar = 210E 250 bar = 250E 400 bar = 400E 500 bar = 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="checkbox"/>	¹⁴ Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/>	¹⁸ Diaphragm-type accumulator	Nominal volume in l Without accumulator	= no code = 0.075 = 0.10 = 0.16 = 0.35 = 0.50
	Bladder-type accumulator	Max. pressure in bar	
		0.075 250	
		0.10 500	
		0.16 250	
		0.35 210	
		0.50 400	
<input type="checkbox"/>	²⁶ Seal	Seal material	FKM = V

Module for external attachment: Attachment with application examples

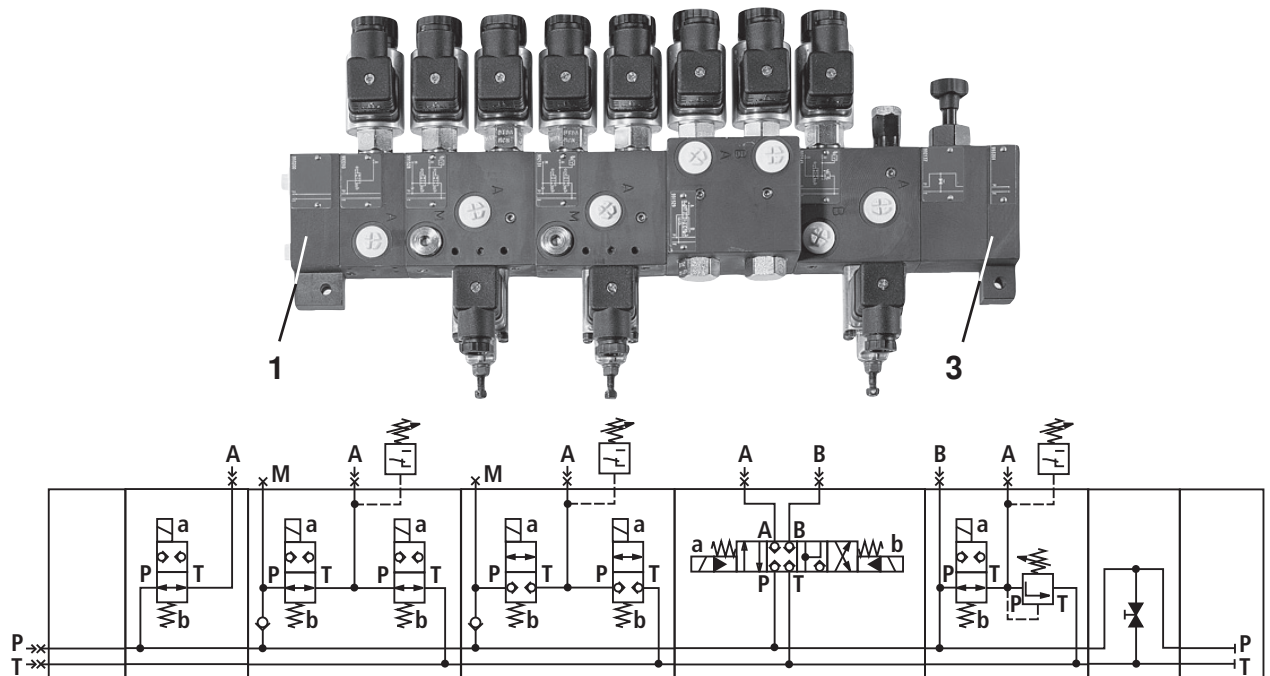
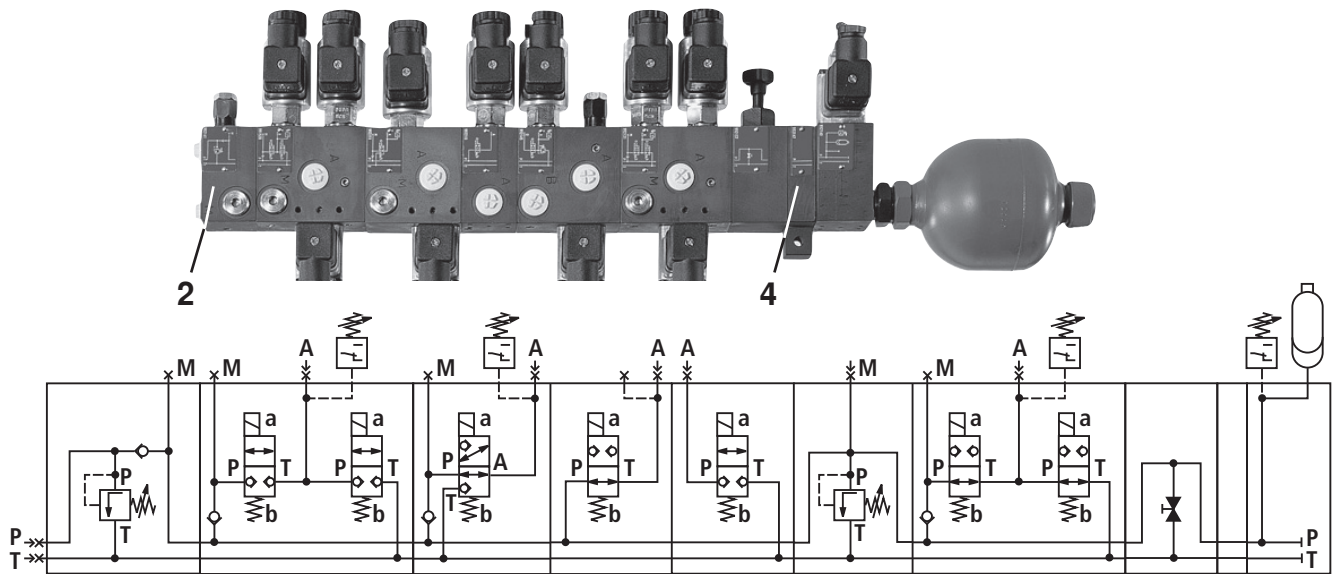
Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks. The set pressure of the type-examination tested pressure relief valve must

be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

$$p_o = 0.9 \times p_{(\text{minimum operating pressure})}$$



- 1 Connection module type A (see page 74)
- 2 Connection module with pressure relief valve type ADB (see page 75)
- 3 End module type E (see page 78)

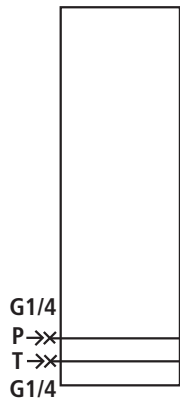
- 4 Sandwich module type Z (see page 76)
The sandwich module can also be combined with the connection module item 1 or with the end module item 3.

The length dimensions are calculated by adding dimension "X" of the directional valve module (see page 19 to 21) and the seat valve module (see page 31 to 72).

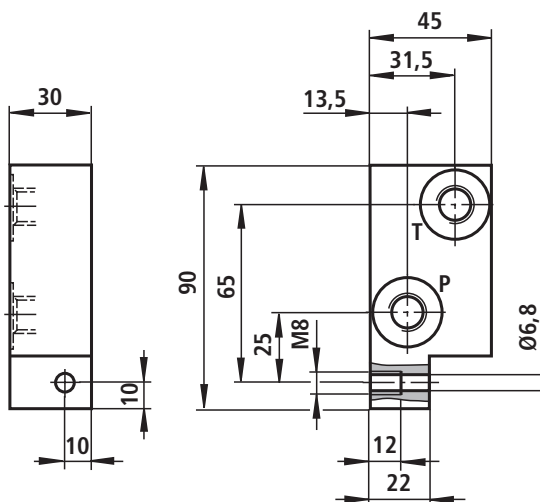
Modules for external attachment (dimensions in mm)

Connection module, type "A"

Symbol



Dimensions



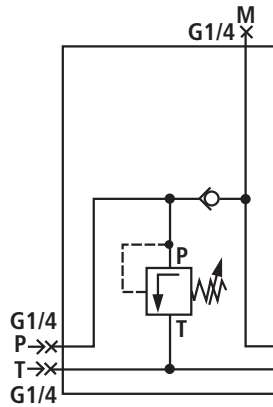
Material no.	Device designation	Type designation
	Connection module	IH15MA-1X/A- ²⁶ <input type="text"/>
R900993200		IH15MA-1X/A-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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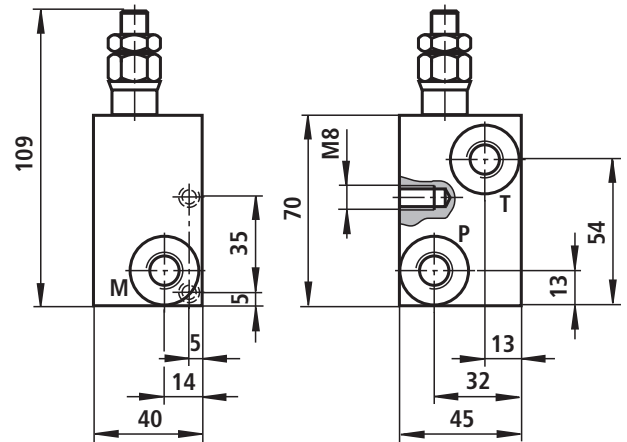
Modules for external attachment (dimensions in mm)

Connection module with pressure relief valve, type "ADB"

Symbol



Dimensions



Material no.	Device designation	Type designation
	Pressure relief module	IH15EA-1X/ADB- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 14 <input type="checkbox"/> 26
R900703591		IH15EA-1X/ADB-S350/D/V
R901103341		IH15EA-1X/ADB-S350/M/V
R904100621		IH15EA-1X/ADB-S350/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 500 bar = 500
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar = 210E 250 bar = 250E 400 bar = 400E 500 bar = 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../.E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="checkbox"/> 14	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> 26	Seal	Seal material	FKM = V

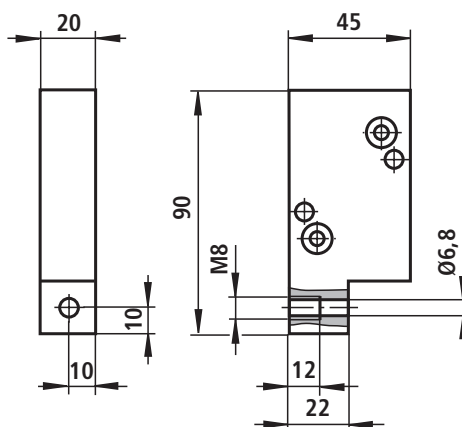
Modules for external attachment (dimensions in mm)

Sandwich module, type "Z"

Symbol

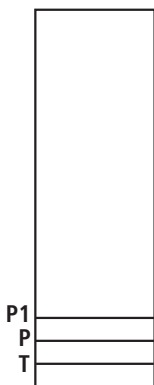


Dimensions



Sandwich module with P1 channel, type "ZP1"

Symbol



Material no.	Device designation	Type designation
	Sandwich module	IH15MA-1X/Z- ²⁶ <input type="text"/>
R900992147		IH15MA-1X/Z-V

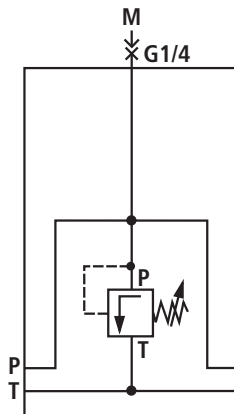
Material no.	Device designation	Type designation
	Sandwich module with P1 channel	IH15MA-1X/ZP1- ²⁶ <input type="text"/>
R904100358		IH15MA-1X/ZP1-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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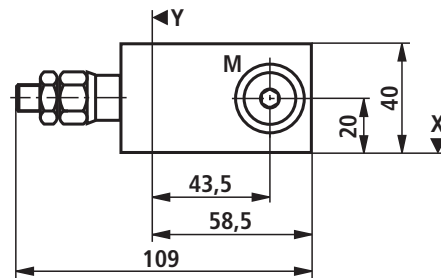
Modules for external attachment (dimensions in mm)

Sandwich module with pressure relief valve, type "ZDB"

Symbol



Dimensions



Material no.	Device designation	Type designation
	Sandwich module with pressure relief valve	IH15EA-1X/ZDB- <input type="checkbox"/> ¹ <input type="checkbox"/> ² / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901166973		IH15EA-1X/ZDB-S100/D/V
R901166946		IH15EA-1X/ZDB-S100/M/V
R901166972		IH15EA-1X/ZDB-S100/O/V

<input type="checkbox"/> ¹	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> ²	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50 100 bar = 100 200 bar = 200 350 bar = 350 500 bar = 500
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	210 bar = 210E 250 bar = 250E 400 bar = 400E 500 bar = 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../.E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85
<input type="checkbox"/> ¹⁴	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> ²⁶	Seal	Seal material	FKM = V

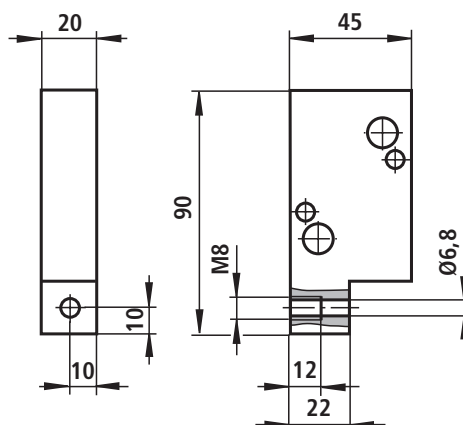
Modules for external attachment (dimensions in mm)

End module, type "E"

Symbol

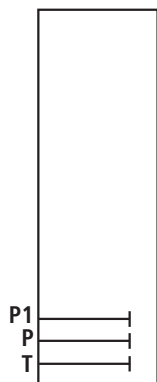


Dimensions



End module with P1 channel, type "EP1"

Symbol



Material no.	Device designation	Type designation
	End module	IH15MA-1X/E- <input type="text" value="26"/>
R900993201		IH15MA-1X/E-V

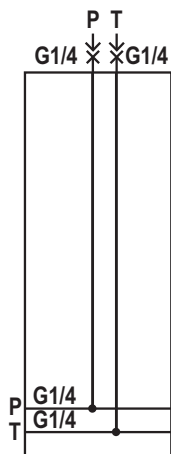
Material no.	Device designation	Type designation
	End module with P1 channel	IH15MA-1X/EP1- <input type="text" value="26"/>
R900262117		IH15MA-1X/EP1-V

<input type="text" value="26"/> Seal	Seal material	FKM	= V
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Reducing module, type R (dimensions in mm)

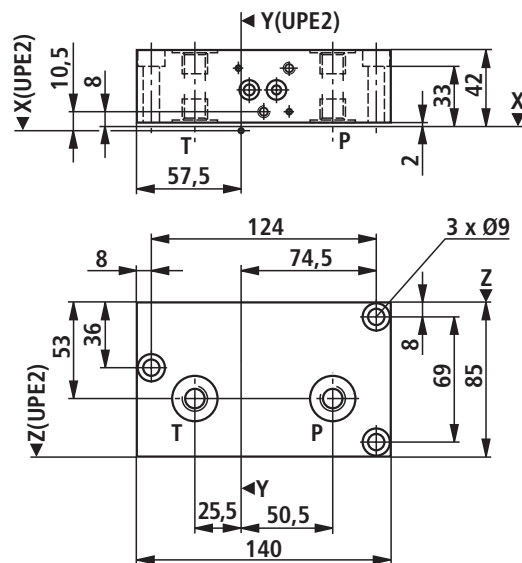
Tank connection module with reduction to IH15A, type "RBAIH15A"

Symbol



Dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Tank connection module with reduction to IH15A	IH15MB-1X/RBAIH15A- <input type="text" value="26"/>
R904101835		IH15MB-1X/RBAIH15A-V

<input type="text" value="26"/> Seal	Seal material	FKM	= V
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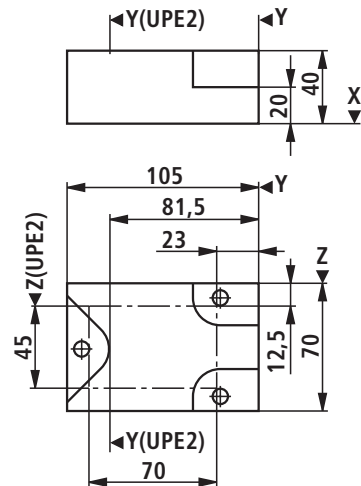
Reducing module IH15B to IH15A (right), type "RIH15AR"

Symbol



Dimensions

Dimension Z = 70 mm



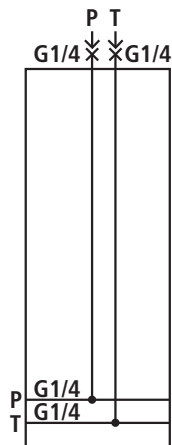
Material no.	Device designation	Type designation
	Reducing module IH15B to IH15A	IH15MA-1X/RIH15AR- <input type="text" value="27"/> / <input type="text" value="26"/>
R904101836		IH15MA-1X/RIH15AR-V

<input type="text" value="26"/> Seal	Seal material	FKM	= V
<input type="text" value="27"/> Throttle	Without throttle Throttle diameter	Ø 1.0 mm	= no code = B10
	Throttle diameter	Ø 2.5 mm	= B25

Module for external attachment (dimensions in mm)

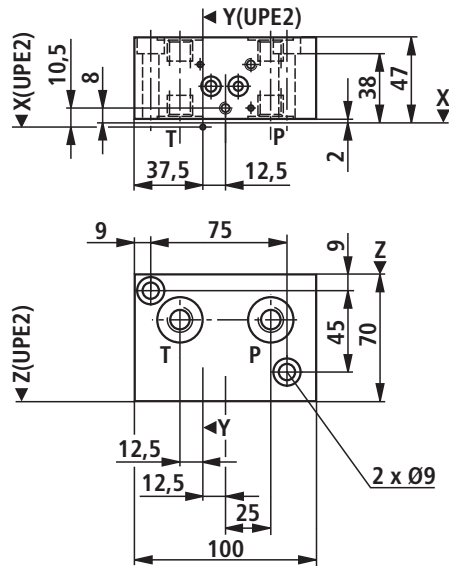
Tank connection module, type "BA"

Symbol



Dimensions

Dimension Z = 70 mm



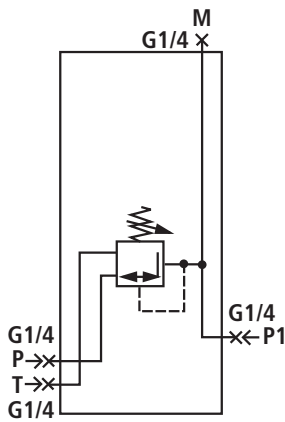
Material no.	Device designation	Type designation
	Tank connection module	IH15MA-1X/BA- ²⁶ <input type="text"/>
R901121784		IH15MA-1X/BA-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
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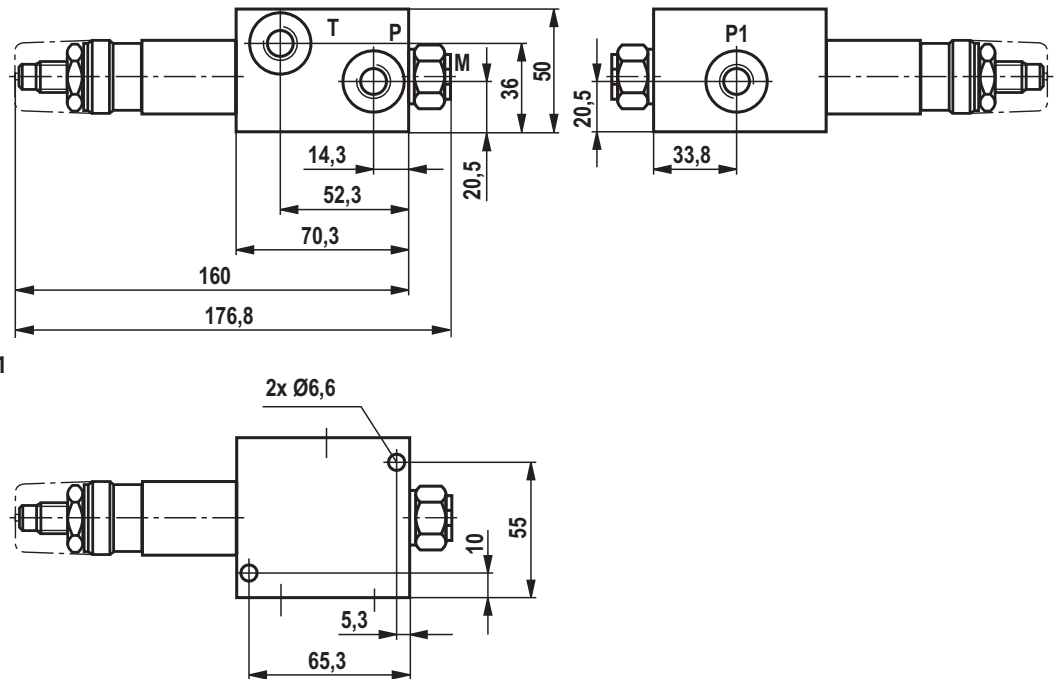
Module with threaded connection for pipeline installation (dimensions in mm)

Pressure reducing module with threaded connection, type "SDRG"

Symbol



Dimensions



Dimension Z = 65 mm

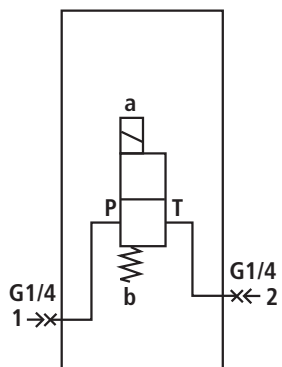
Material no.	Device designation	Type designation
	Pressure reducing module	IH15EA-1X/SDRG- <input type="checkbox"/> 16 / <input type="checkbox"/> 17 / <input type="checkbox"/> 14 / <input type="checkbox"/> 26
R901105958		IH15EA-1X/SDRG-2/210/D/V
R901105959		IH15EA-1X/SDRG-2/210/M/V
R901105960		IH15EA-1X/SDRG-2/210/O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	Pressure monitoring with pressure gauge size 63 With measuring port Without pressure monitoring	= D = M = O
<input type="checkbox"/> ¹⁶ Adjustment element	Setscrew with internal hexagon and protective cap	= 2
<input type="checkbox"/> ¹⁷ Secondary pressure	Max. secondary pressure 25 bar Max. secondary pressure 75 bar Max. secondary pressure 150 bar Max. secondary pressure 210 bar	= 25 = 75 = 150 = 210
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM = V

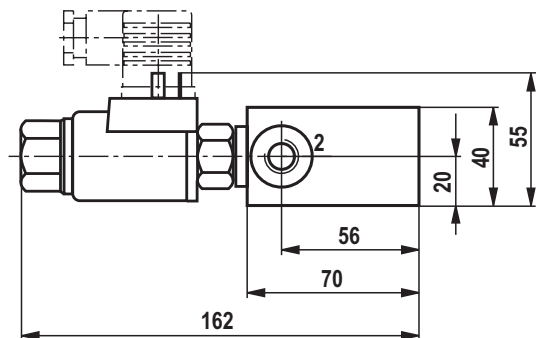
Modules with threaded connection for pipeline installation (dimensions in mm)

Module SPA2 with threaded connection, type "SPA2G"

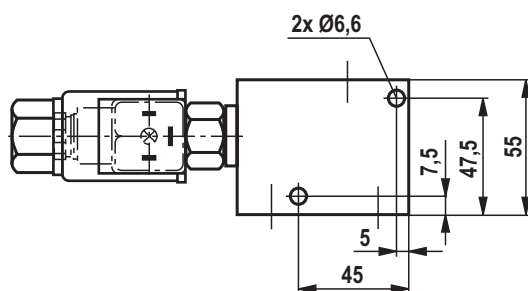
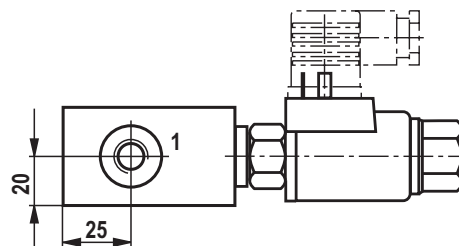
Symbol



Dimensions



Dimension Z = 55 mm



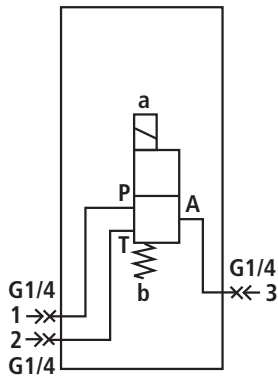
Material no.	Device designation	Type designation
	Module SPA2G	IH15EA-1X/SPA2G- <input type="text" value="4"/> <input type="text" value="8"/> / <input type="text" value="7"/> / <input type="text" value="26"/>
R904101293		IH15EA-1X/SPA2G-NG24/350/V

<input type="text" value="4"/>	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text" value="7"/>	Pressure rating of the seat valve	p_{\max} p_{\max}	= 350 bar = 500 bar = 350 = 500
<input type="text" value="8"/>	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text" value="26"/>	Seal	Seal material	FKM = V

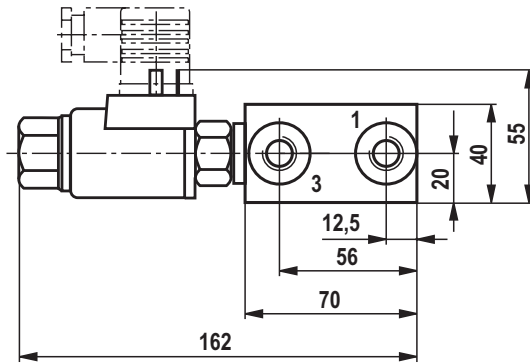
Modules with threaded connection for pipeline installation (dimensions in mm)

Module P – A with threaded connection, type "SPA3G"

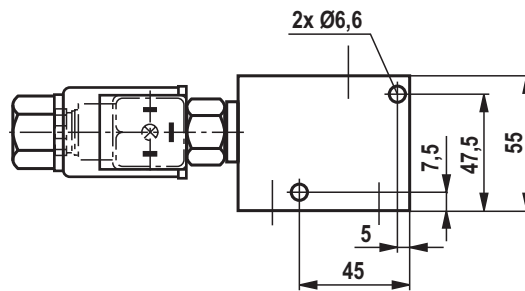
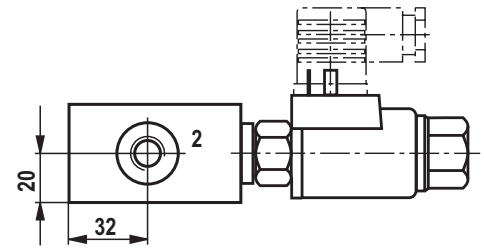
Symbol



Dimensions



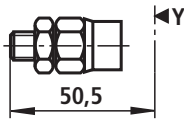
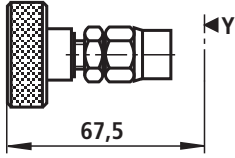
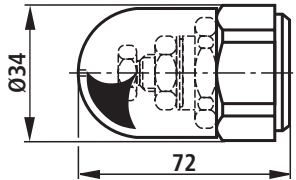
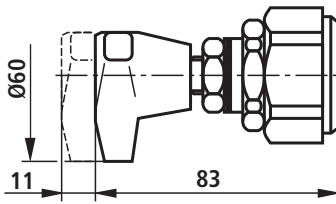
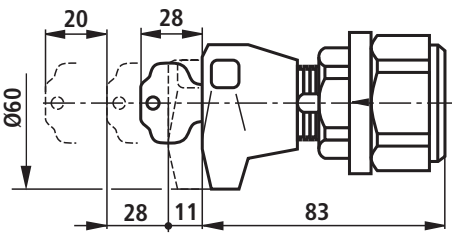
Dimension Z = 55 mm



Material no.	Device designation	Type designation
	Module SPA3G	IH15EA-1X/SPA3G- <input type="text"/> 5 <input type="text"/> 8 / <input type="text"/> 7 / <input type="text"/> 26
R901103342		IH15EA-1X/SPA3G-CG24/350/V

<input type="text"/> 5 Designation of the 3/2 seat valve			= U
			= C
<input type="text"/> 7 Pressure rating of the seat valve	p_{max} p_{max}	= 350 bar = 500 bar	= 350 = 500
<input type="text"/> 8 Solenoid voltage of the seat valves	Volt	24 V DC	= G24
<input type="text"/> 26 Seal	Seal material	FKM	= V

Information on the type key (dimensions in mm)

<input type="checkbox"/> ¹ Adjustment element at the pressure relief valve size 4	Setscrew with internal hexagon		= S
			
<input type="checkbox"/> ¹ Adjustment element at the pressure relief valve size 4	Rotary knob		= H
			
<input type="checkbox"/> ¹ Adjustment element at the pressure relief valve size 6	Setscrew with hexagon and protective cap		= S
			
	Rotary knob		
<input type="checkbox"/> ¹ Adjustment element at the pressure relief valve size 6			= H
	Lockable rotary knob		
			
<input type="checkbox"/> ² Pressure rating of the pressure relief valve size 4	Setting pressure up to max.	50 bar	= 50
	Setting pressure up to max.	100 bar	= 100
	Setting pressure up to max.	200 bar	= 200
	Setting pressure up to max.	350 bar	= 350
	Setting pressure up to max.	500 bar	= 500
	Pressure rating of the type-examination tested pressure relief valve size 4, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!		
	Setting pressure up to max.	140 bar	= 140E
	Setting pressure up to max.	210 bar	= 210E
	Setting pressure up to max.	250 bar	= 250E
	Setting pressure up to max.	330 bar	= 330E
	Setting pressure up to max.	400 bar	= 400E
	Setting pressure up to max.	500 bar	= 500E
Characteristic curve for type-examination tested pressure relief valves type: DBD 4../.E Type testing according to Pressure Equipment Directive 97/23/EC			See page 85

Information on the type key

² <input type="checkbox"/> Pressure rating of the pressure relief valve size 6	Setting pressure up to max.	25 bar	= 25
	Setting pressure up to max.	50 bar	= 50
	Setting pressure up to max.	100 bar	= 100
	Setting pressure up to max.	200 bar	= 200
	Setting pressure up to max.	315 bar	= 315
	Setting pressure up to max.	400 bar	= 400

Pressure rating of the type-examination tested pressure relief valve size 6, according to Directive 97/23/EC (Pressure Equipment Directive)
 More pressure ratings on request!

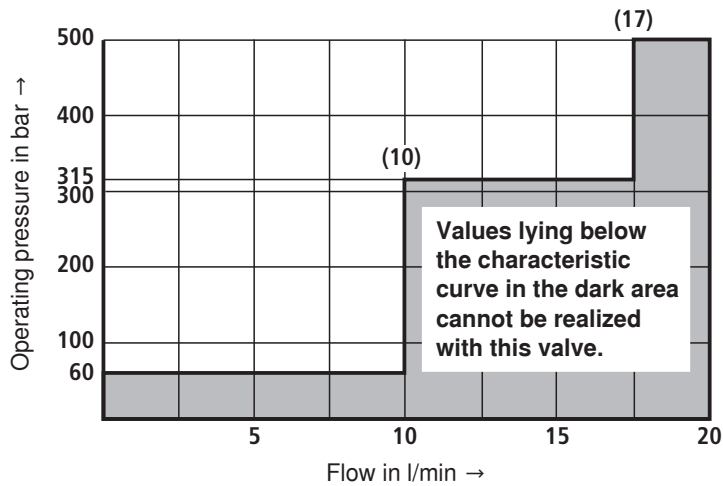
	Setting pressure up to max.	50 bar	= 50E
	Setting pressure up to max.	100 bar	= 100E
	Setting pressure up to max.	140 bar	= 140E
	Setting pressure up to max.	210 bar	= 210E
	Setting pressure up to max.	330 bar	= 330E

Characteristic curve for type-examination tested pressure relief valves type: DBD 6../..E
 Type testing according to Pressure Equipment Directive 97/23/EC See page 86

³ <input type="checkbox"/> Pressure rating of the type-examination tested pressure relief valve size 4, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!	Setting pressure up to max.	140 bar	= 140E
	Setting pressure up to max.	210 bar	= 210E
	Setting pressure up to max.	250 bar	= 250E
	Setting pressure up to max.	330 bar	= 330E
	Setting pressure up to max.	400 bar	= 400E
	Setting pressure up to max.	500 bar	= 500E

Characteristic curve for type-examination tested pressure relief valves type: DBD 4../..E
 Type testing according to Pressure Equipment Directive 97/23/EC

Size 4



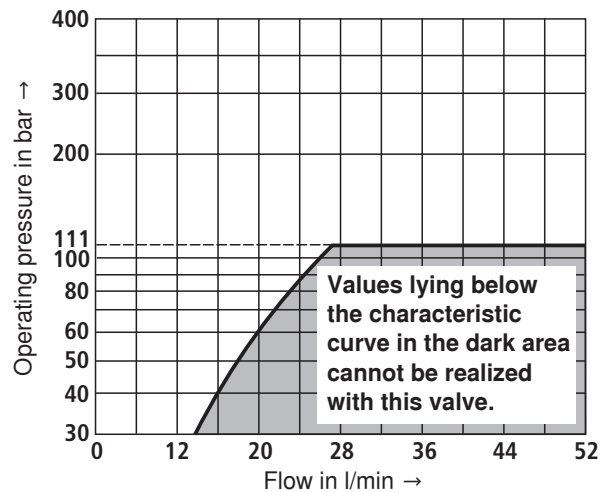
Information on the type key

³ Pressure rating of the type-examination tested pressure relief valve size 6, according to Directive 97/23/EC (Pressure Equipment Directive)
More pressure ratings on request!

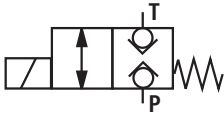
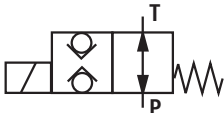
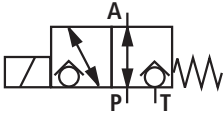
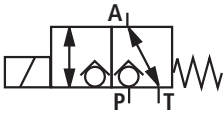
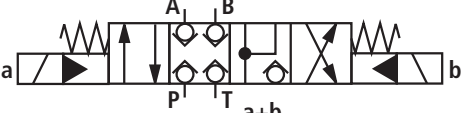
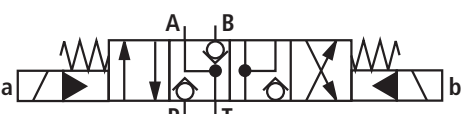
Setting pressure up to max.	50 bar	= 50E
Setting pressure up to max.	100 bar	= 100E
Setting pressure up to max.	140 bar	= 140E
Setting pressure up to max.	210 bar	= 210E
Setting pressure up to max.	330 bar	= 330E

Characteristic curve for type-examination tested pressure relief valves type: DBD 6../..E
Type testing according to Pressure Equipment Directive 97/23/EC

Size 6



Information on the type key

<p>4</p> <input type="checkbox"/> Designation of the 2/2 seat valve	Normally closed		= N
			
<p>5</p> <input type="checkbox"/> Designation of the 3/2 seat valve	Normally open		= P
			
<p>5</p> <input type="checkbox"/> Designation of the 3/2 seat valve			= U
			= C
<p>6</p> <input type="checkbox"/> Designation of the 4/4 seat valve			= K
			= L
<p>7</p> <input type="checkbox"/> Pressure rating of the seat valve	p_{max} p_{max}	= 350 bar = 500 bar	= 350 ¹⁾ = 500 ¹⁾
<p>8</p> <input type="checkbox"/> Solenoid voltage of the seat valves	Volt	24 V DC	= G24
<p>9</p> <input type="checkbox"/> Number of pressure switches	Without pressure switch One pressure switch Two pressure switches		= 0 = 1 = 2
<p>10</p> <input type="checkbox"/> Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HEDE 10 A1-2X/...K41...2		= no code = HED 5 = HEDE 10
<p>11</p> <input type="checkbox"/> Pressure switch	Without pressure switch HED 5 OH-3X/...K14 HED 8 OP-2X/...K14 HEDE 10 A1-2X/...K41...2		= no code = HED 5 = HED 8 = HEDE 10

¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

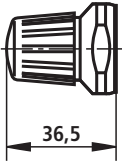
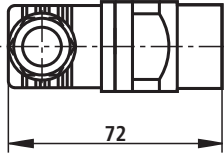
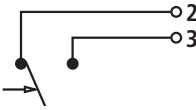
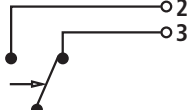
Information on the type key

12 <input type="checkbox"/>	Pressure rating of the pressure switch	Without pressure switch Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure Max. setting pressure	50 bar 100 bar 200 bar 350 bar 630 bar	= no code = 50 = 100 = 200 = 350 = 630 ²⁾
13 <input type="checkbox"/>	Pressure switch in the channel	Without pressure switch A B A and B		= no code = A = B = AB
14 <input type="checkbox"/>	Pressure monitoring	With pressure gauge size 63 With measuring port Without pressure monitoring		= D = M = O
15 <input type="checkbox"/>	Max. pressure range of the pressure gauge	Without pressure monitoring Display range Display range Display range Display range Display range	60 bar 100 bar 250 bar 400 bar 600 bar	= no code = 60 ¹⁾ = 100 ¹⁾ = 250 ¹⁾ = 400 ^{1, 2)} = 600 ^{1, 2)}
16 <input type="checkbox"/>	Adjustment element	Rotary knob Setscrew with hexagon and protective cap Lockable rotary knob with scale Rotary knob with scale		= 1 = 2 = 3 = 7
17 <input type="checkbox"/>	Secondary pressure	Max. secondary pressure Max. secondary pressure Max. secondary pressure Max. secondary pressure Max. secondary pressure	25 bar 75 bar 150 bar 210 bar 315 bar	= 25 = 75 = 150 = 210 = 315
18 <input type="checkbox"/>	Diaphragm-type accumulator	Nominal volume in l Without accumulator 0.075 0.10 0.16 0.35 Bladder-type accumulator	Max. pressure in bar 250 500 250 210 400	= no code = 0.075 = 0.10 = 0.16 = 0.35 = 0.50

¹⁾ Indication is only necessary if the module is not equipped with a pressure switch.

²⁾ Not possible with HED 5

Information on the type key (dimensions in mm)

19 <input type="checkbox"/> Filter rating		06 µm 10 µm	= 06 ¹⁾ = 10 ²⁾
20 <input type="checkbox"/> Clogging indicator	Without clogging indicator		= A
	Visual clogging indicator		= O
	Electric clogging indicator		= E
	Technical data of the electric clogging indicator		
	Maximum voltage	V	42
	Switching power	VA	100
	Protection class with protective cap		IP 65
	Contacts		Normally closed contact
	Terminal assignment		
			
	Filter element clean	Filter element contaminated	
21 <input type="checkbox"/> Check valve	In channel P In channel T In channel P and T		= P = T = PT
22 <input type="checkbox"/> Ports	Without ports P and T		= no code = PT
26 <input type="checkbox"/> Seal	Seal material	FKM	= V
27 <input type="checkbox"/> Throttle	Without throttle Throttle diameter Throttle diameter	Ø 1.0 mm Ø 2.5 mm	= no code = B10 = B25
35 <input type="checkbox"/> Pressure rating of the proportional valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	20 bar 100 bar 200 bar 315 bar	= 20 = 100 = 200 = 315

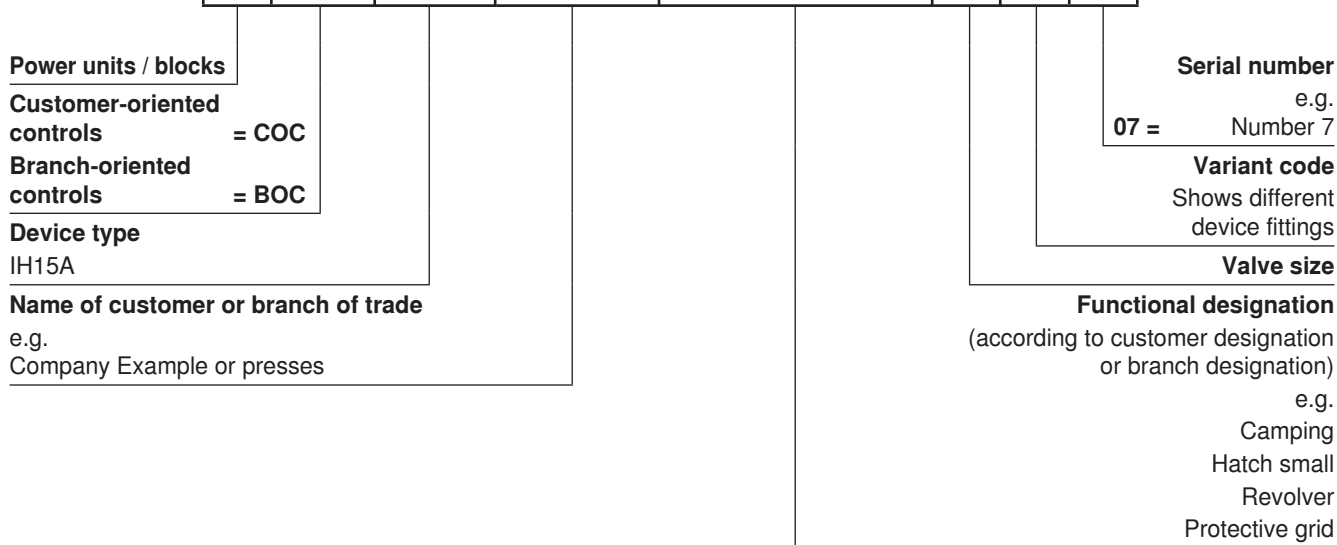
¹⁾ For degree of contamination class 18 / 16 / 13

²⁾ For degree of contamination class 20 / 18 / 15

Type keys for modules with vertical stacking

Type: ABCOC / ABBOC

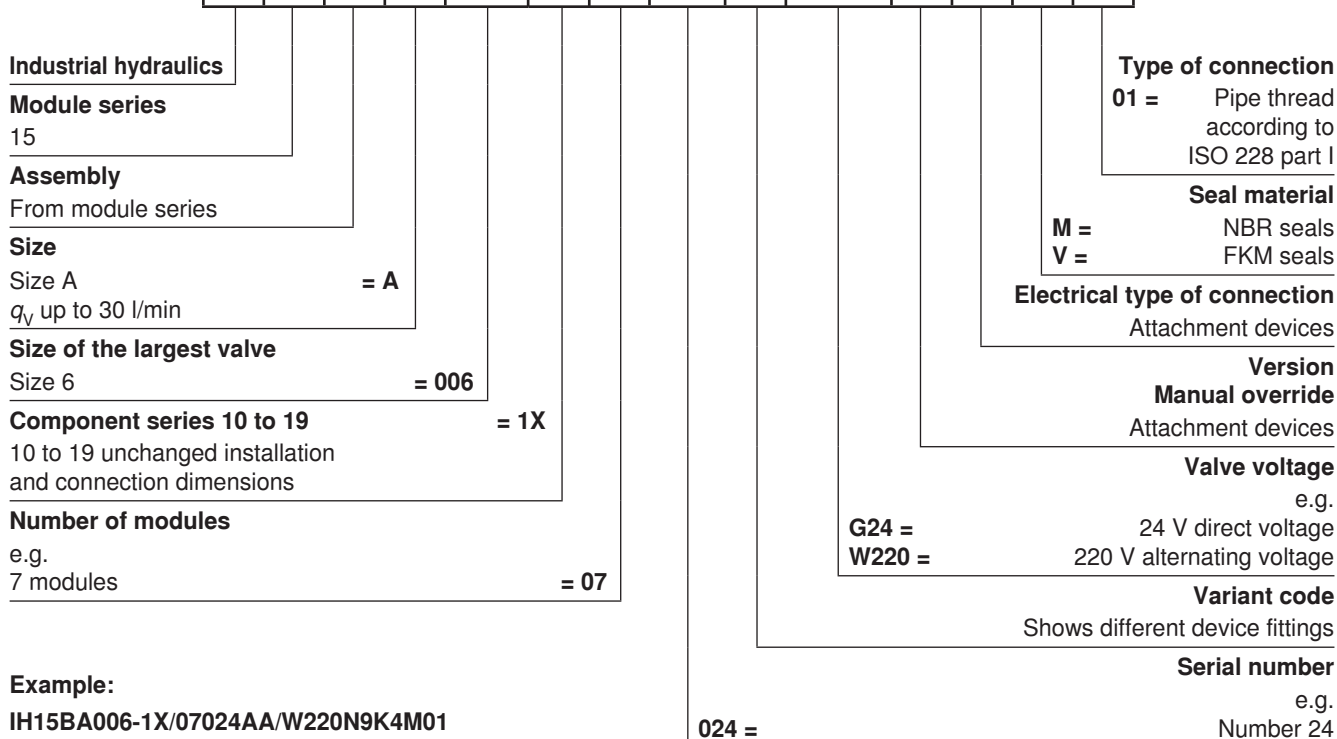
AB | **COC** | **IH15A** | **EXAMPLE** | **PROTECTIVE GRID** | **06** | **AA** | **07**



Type key for complete control system

Type: IH15BA

IH | **15** | **B** | **A** | **006** | **1X** | **07** | **024** | **AA** | **W220** | **N9** | **K4** | **M** | **01**



Example:

IH15BA006-1X/07024AA/W220N9K4M01

Assembly IH15B of size A up to 14 l/min with valves of size 6, 7 modules, serial number 24, variant AA, 220 V alternating voltage, N9 manual override, K4 type of connection, seal material Perbunan, type of connection with pipe thread according to ISO 228 part 1

Accessories

Filter element

Material no.	Module	Denomination	Size	Material	Filter rating
R928037974	F06	99.05929 H6XL-000-6-M	06	FKM	06 µm
R928037972	F06	99.05929 H10XL-000-6-M	06	FKM	10 µm
R928039389	F30	80.30/22 H6XL-S00-5-V	30	FKM	06 µm
R928039388	F30	80.30/22 H10XL-S00-5-V	30	FKM	10 µm
R928006080	DF30	2.0004 H10XL-A00-0-V	30	FKM	10 µm
R928006682	DF40	2.0040 H6XL-B00-0-V	40	FKM	06 µm
R928006683	DF40	2.0040 H10XL-B00-0-V	40	FKM	10 µm

Assembly tool for filter cartridge

- Strap wrench Material no.: R904001048

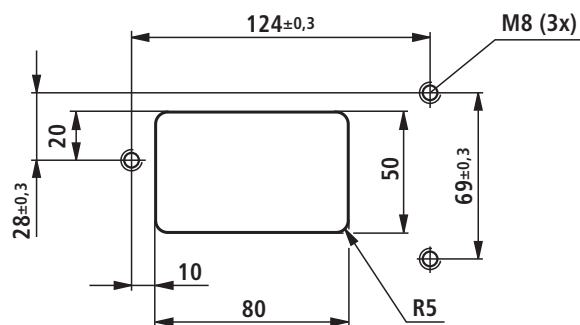
Installation information for F30:

- Wind the filter cartridge as tight as possible on the block.
Then, wind the filter cartridge further by further 1/3 of a rotation.

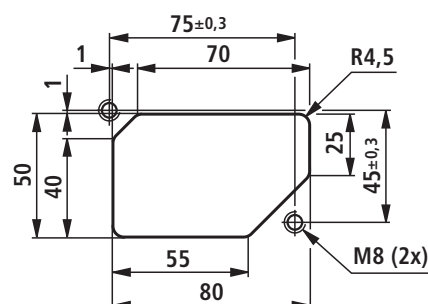
Installation information for DF30 and DF40:

- Wind the filter cartridge as tight as possible on the block.
Then, wind it back by 1/8 to 1/4 of a rotation.

Dimensions: Tank break-through for module RBAIH15A (dimensions in mm)



Dimensions: Tank break-through for module IH15BA (dimensions in mm)



Drive module

RE 51145/06.12
Replaces: 05.12

1/16

Type UPE 5

Component series 1X
 Maximum operating pressure 250 bar
 Drive power 2.2 to 4.0 kW



H7328

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• Temperature switch	14
• Oil tray	14
Commissioning information	15

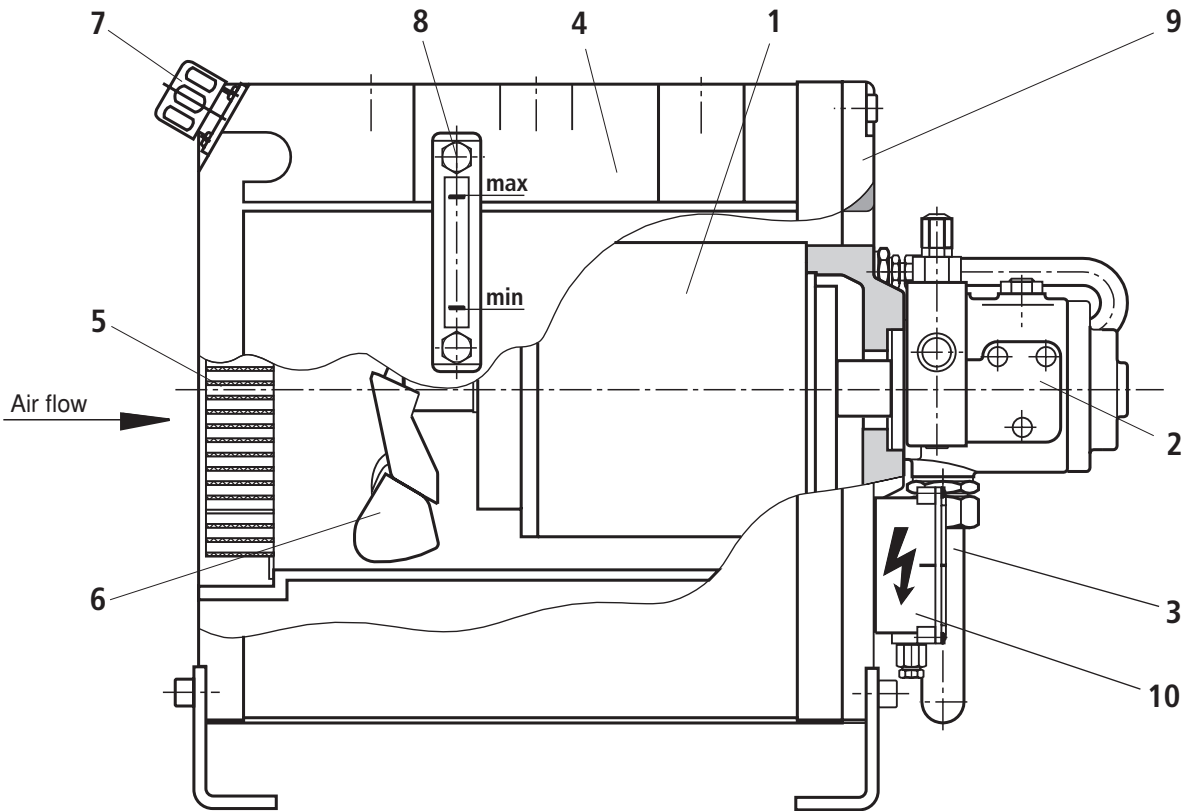
Features

- 100 % duty cycle
- Compact design
- Low-noise
- High cooling power
- Broad field of application
- Large number of variants
- Different mounting possibilities
- Complete hydraulic control possible
(in this connection see data sheet 51156)
- Ready for connection

Applications

- Machine tools
- Lifting platforms
- Conveyors
- Test stands
- Winding machines

Function, section, symbols



Due to its concept, the drive module type UPE 5 has a very compact design. The pump (2) is driven by means of the electric motor (1). Electric motor and pump are connected without coupling. The pump shaft is plugged into the hollow drilled shaft end of the electric motor. That keeps the pump-motor group very short. The pump (2) sucks in the hydraulic fluid from the tank (4) through the suction hose (3) and delivers it to the hydraulic control. The hydraulic fluid flowing back from the control can be led through the oil-air cooler (5) via the ports K1 and K2. Afterwards, the cooled hydraulic fluid is led back into the tank. By means of the axial fan wheel (6) mounted at the electric motor, cold fresh air is sucked in by the oil-air cooler (5). This cools the hydraulic fluid and the electric motor. The tank (4) can be filled through the filling

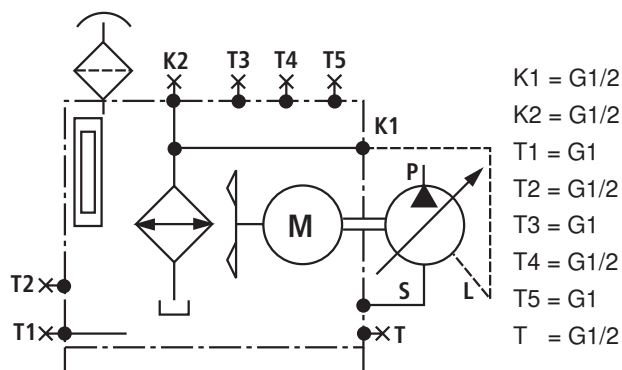
plug (7). The oil level can be monitored by means of the oil level display (8). The tank is closed by a tank cover (9). To it, the pump/motor group (1; 2) and the terminal box (10) are attached. The drive module is delivered ready for connection.

Optionally, the drive module can also be equipped with an electric monitoring of the oil level, the oil temperature and a complete hydraulic control (see 51156) e.g. filter, accumulator and valves.

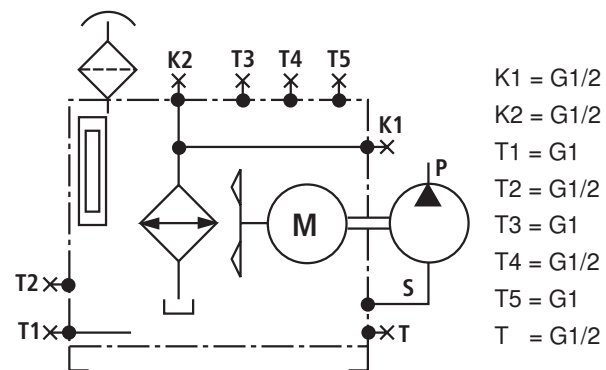
Upon request, oil-water cooling, oil tray according to the Water Resources Act (WHG), double pump as well as an additional tank are also possible.

⚠ Attention! The drive module may heat up during operation → **Risk of injury!**

Symbol for control pump (A10VSO, V7)



Symbol for fixed displacement pump (GF2, AZ)



Ordering code

UPE 5-1X/							*
Component series 10 to 19 (10 to 19: unchanged installation and connection dimensions)	= 1X						Further details in the plain text ¹⁾
Drive power							Set-up hydraulic control (in this connection see data sheet 51156)
2.20 kW	= 2,2					0 =	without set-up
3.00 kW	= 3,0					1 =	with set-up
4.00 kW	= 4,0						
Pumps							Installation variants
Axial piston variable displacement pumps						H =	Horizontal mounting
A10VSO10DFR1/52R-PPA14N00 (data sheet 92073) = A10VSO10						S =	Vertical mounting
A10VSO18DFR1/31R-PPA12N00 (data sheet 92712) = A10VSO18						W =	Wall mounting
Internal gear pumps (data sheet 10213)							Oil monitoring
PGF2-2X/006RE01VE4	= GF2/006					A =	Oil level display
PGF2-2X/008RE01VE4	= GF2/008					AN =	Oil level display with level switch
PGF2-2X/011RE01VE4	= GF2/011					AT =	Oil level display and temperature switch
PGF2-2X/013RE01VE4	= GF2/013					ANT =	Oil level display with level and temperature switch
PGF2-2X/016RE01VE4	= GF2/016						
External gear pumps (data sheet 10089)							
AZPF-1X-004RAB01MB	= AZ/004						
AZPF-1X-005RAB01MB	= AZ/005						
AZPF-1X-008RAB01MB	= AZ/008						
AZPF-1X-011RAB01MB	= AZ/011						
AZPF-1X-016RAB01MB	= AZ/016						
AZPF-1X-022RAB01MB	= AZ/022						
Vane pumps							
PV7-1X/10-14RE01MC0-16	= V7/10-14						
PV7-1X/10-20RE01MC0-10	= V7/10-20	Data sheet 10515					
PV7-1X/16-20RE01MC0-16	= V7/16-20						
PV7-1X/06-10RA01MA0-10	= V7/06-10						
PV7-1X/06-14RA01MA0-07	= V7/06-14	Data sheet 10522					
PV7-2X/20-20RA01MA0-10	= V7/20-20						
PV7-2X/20-25RA01MA0-10	= V7/20-25						

¹⁾ e.g. – Material no. of the attached control

– Special version

Standard types: Drive module

Type A10VSO	Material no.
UPE5-1X/4,00A10VSO10A-H-0	R904100332
UPE5-1X/4,00A10VSO18A-H-0	R901328541
Type PGF2	
UPE5-1X/4,00GF2/006A-H-0	R901077149
UPE5-1X/4,00GF2/008A-H-0	R901328588
UPE5-1X/4,00GF2/011A-H-0	R901328587
UPE5-1X/4,00GF2/013A-H-0	R901328586
UPE5-1X/4,00GF2/016A-H-0	R901328585
Type AZPF	
UPE5-1X/4,00AZ/004A-H-0	R901328589
UPE5-1X/4,00AZ/005A-H-0	R901328583
UPE5-1X/4,00AZ/008A-H-0	R901071582
UPE5-1X/4,00AZ/011A-H-0	R901328582
UPE5-1X/4,00AZ/016A-H-0	R901328581
UPE5-1X/4,00AZ/022A-H-0	R901073015

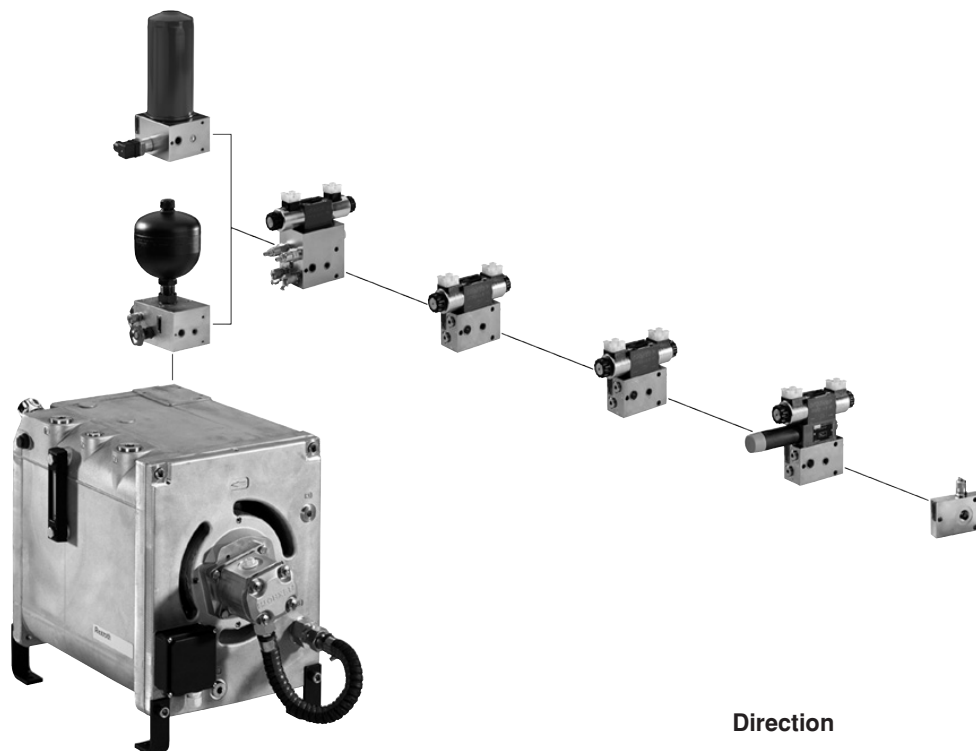
Type PV7	Material no.
UPE5-1X/4,00V7/06-14A-H-0	R900987596
UPE5-1X/4,00V7/10-14A-H-0	R900987572
UPE5-1X/4,00V7/10-20A-H-0	R901328957
UPE5-1X/4,00V7/16-20A-H-0	R901328956

Mounting IH15B control module

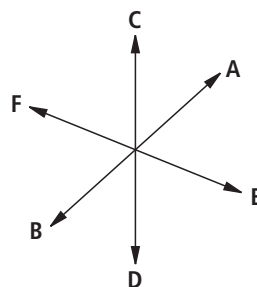
The control modules for the UPE5 drive module serves the realization of complete hydraulic controls. They can be fitted and mounted individually.

The filter **or** accumulator safety module establishes the connection of the hydraulic control to port K2 of the drive module.

The IH15B control modules (in this connection see data sheet 51156) with the connection modules can be attached to the filter **or** accumulator safety module.



Direction



Project planning information

The entire length of the IH15B control should not exceed the length of the UPE5 drive module. Maximum recommended total length $l = 500$ mm. Please consult us if the entire length of the necessary control is longer.

Technical Data (For applications outside these parameters, please consult us!)

general

Weight (without hydraulic fluid and pump ¹⁾)	kg	75
Direction of rotation		Clockwise

hydraulic

Hydraulic fluid		Mineral oil HLP according to DIN 51524 part 2 Please observe our regulations according to data sheet 07075!
Hydraulic fluid temperature range	°C	-10 to +70 (admissible viscosity range of the pump and the valves must be observed!)
Viscosity range	mm ² /s	See viscosity range of the pump and the valves
Max. admissible degree of contamination of the hydraulic fluid Cleanliness class according to ISO 4406 (c)		Class 20/18/15 ²⁾

¹⁾ For the pump weights see data sheets 10089, 10213, 10515, 10522, 92712 and 92713.

²⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration

prevents faults and at the same time increases the service life of the components.

For selecting the filters, see data sheet 51156.

Selection table for pump and electric motor with $n = 1450 \text{ min}^{-1}$

Axial piston variable displacement pump ³⁾	$q_{V\max}$ l/min	p_{\max} bar	P kW
A10VSO10DFR1/52R-PPA14N00 max. operating pressure $p_{\max} = 220 \text{ bar}$	15.0	70	2.20
		95	3.00
		125	4.00
	4.0	220	2.20
	5.5		3.00
7.5		4.00	
A10VSO18DFR1/31R-PPA12N00 max. operating pressure $p_{\max} = 250 \text{ bar}$	27.0	40	2.20
		50	3.00
		70	4.00
	4.0	250	2.20
	5.5		3.00
7.5		4.00	
Internal gear pump	$q_{V\max}$ l/min	p_{\max} bar	P kW
PGF2-2X/006RE01VE4	9.4	110	2.20
		150	3.00
		200	4.00
PGF2-2X/008RE01VE4	11.9	90	2.20
		120	3.00
		160	4.00
PGF2-2X/011RE01VE4	16.0	65	2.20
		90	3.00
		120	4.00
PGF2-2X/013RE01VE4	19.3	55	2.20
		75	3.00
		100	4.00
PGF2-2X/016RE01VE4	23.2	45	2.20
		60	3.00
		80	4.00

External gear pump	$q_{V\max}$ l/min	p_{\max} bar	P kW
AZPF-1X-004RAB20MB	5.8	180	2.20
		245	3.00
		250	4.00
AZPF-1X-005RAB20MB	7.9	130	2.20
		180	3.00
		250	4.00
AZPF-1X-008RAB01MB	11.8	90	2.20
		120	3.00
		200	4.00
AZPF-1X-011RAB01MB	16.0	65	2.20
		90	3.00
		140	4.00
AZPF-1X-016RAB01MB	23.2	45	2.20
		60	3.00
		100	4.00
AZPF-1X-022RAB01MB	31.9	40	2.20
		55	3.00
		75	4.00

³⁾ The axial piston variable displacement pumps can - within their maximum values (e.g. A10VSO10DFR1/52R-PPA14N00, $p_{\max} = 250 \text{ bar}$, $q_{V\max} = 15 \text{ l/min}$) - be operated with all values (e.g. A10VSO10DFR1/52R-PPA14N00, $p_{\max} = 180 \text{ bar}$, $q_{V\max} = 8 \text{ l/min}$ and $P_{\text{Motor}} = 3.0 \text{ kW}$) if the admissible power of the electric motor is not exceeded.

Selection table for pump and electric motor with $n = 1450 \text{ min}^{-1}$

Vane pump ¹⁾	$q_{V\max}$ l/min	p_{\max} bar	P kW
PV7-1X/10-14RE01MC0-16 max. operating pressure $p_{\max} = 160 \text{ bar}$	21.0	50	2.20
		65	3.00
		90	4.00
	6.5	160	2.20
	9.0		3.00
12.0		4.00	
PV7-1X/10-20RE01MC0-10 max. operating pressure $p_{\max} = 100 \text{ bar}$	29.0	35	2.20
		50	3.00
		65	4.00
	10.5	100	2.20
	14.5		3.00
19.0	4.00		
PV7-1X/16-20RE01MC0-16 max. operating pressure $p_{\max} = 160 \text{ bar}$	29.0	35	2.20
		50	3.00
		65	4.00
	6.5	160	2.20
	9.0		3.00
12.0		4.00	
PV7-1X/06-10RA01MA0-10 max. operating pressure $p_{\max} = 100 \text{ bar}$	14.5	70	2.20
		100	3.00
		100	4.00
	10.5	100	2.20
	14.5		3.00
14.5		4.00	
PV7-1X/06-14RA01MA0-07 max. operating pressure $p_{\max} = 70 \text{ bar}$	20.0	50	2.20
		70	3.00
		70	4.00
	15.0	70	2.20
	20.0		3.00
20.0		4.00	

Vane pump ¹⁾	$q_{V\max}$ l/min	p_{\max} bar	P kW
PV7-2X/20-20RA01MA0-10 max. operating pressure $p_{\max} = 100 \text{ bar}$	29	35	2.20
		50	3.00
		65	4.00
	10.5	100	2.20
	14.5		3.00
19.0		4.00	
PV7-2X/20-25RA01MA0-10 max. operating pressure $p_{\max} = 100 \text{ bar}$	36	30	2.20
		40	3.00
		55	4.00
	10.5	100	2.20
	14.5		3.00
19.0		4.00	

¹⁾ The vane pumps can - within their maximum values (e.g. PV7-1X/10-14RE01MC0-16, $p_{\max} = 160 \text{ bar}$, $q_{V\max} = 21 \text{ l/min}$) - be operated with all values (e.g. PV7-1X/10-14RE01MC0-16, $p_{\max} = 80 \text{ bar}$, $q_V = 13 \text{ l/min}$ and $P_{\text{Motor}} = 2.2 \text{ kW}$) if the admissible power of the electric motor is not exceeded.

Electric motor

The electric motor is designed for the mode of operation according to VDE 0530 part 1 (EN 60034) for continuous operation S1 within the rated power range. The electric motor complies with insulation class F and protection class IP 55.

The electric motor is to be connected so that it rotates in clockwise direction (clockwise direction of rotation). It can be used at power mains with the frequency 50 Hz or 60 Hz without modification.

Technical Data (For applications outside these parameters, please consult us!)

Voltage (other voltage values on request)	<i>U</i>	V	400 / 690 ±6 % Δ/Y
Frequency	<i>f</i>	Hz	50 / 60
Mode of operation	S1 continuous operation		
Insulation class	F (winding)		
Protection class according to VDE 0530 / EN 60034	IP 55		
Number of poles	4		

Frequency 50 Hz

Power kW	Speed min ⁻¹	Power factor cos φ	Rated current with 400 Volt
2.2	1440	0,77	5.2 A
3.0	1415	0.76	7.0 A
4.0	1390	0.73	9.8 A

Frequency 60 Hz

Power kW	Speed min ⁻¹	Power factor cos φ	Rated current with 400 Volt
2.2	1710	0.84	4.8 A
3.0	1700	0.83	6.4 A
4.0	1680	0.77	9.3A

Electromagnetic compatibility of devices (EMVG)

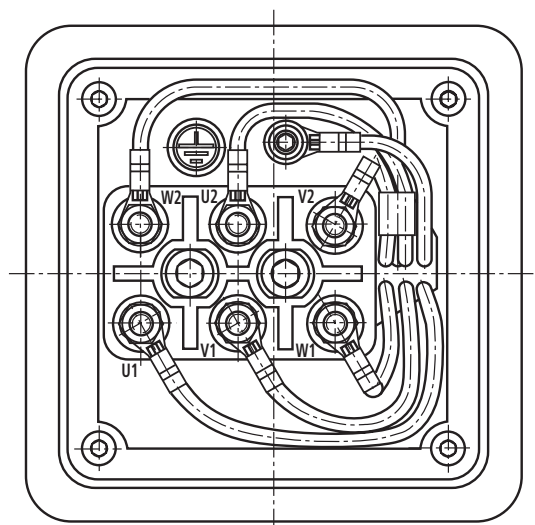
According to the "Act on the electromagnetic compatibility of devices" (§2, subsection 4) and the directive 89/336 EEC, the drive module is no device that is ready for operation.

In order to avoid electromagnetic interferences that might occur, an interference suppression element e.g. type 23 050, 3 x 400 VAC, 50 - 60 Hz by the company Murr-Elektronik (D-71570 Oppenweiler) is recommended.

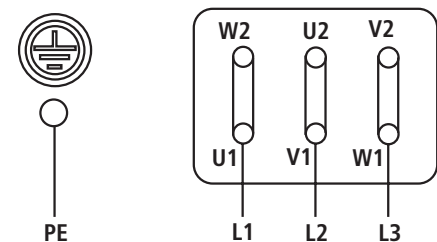
Terminal assignment

Terminal assignment in the terminal box at the drive module

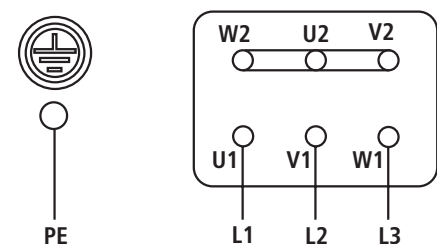
Factory-side:



Customer-side: Δ triangle U = 400 V

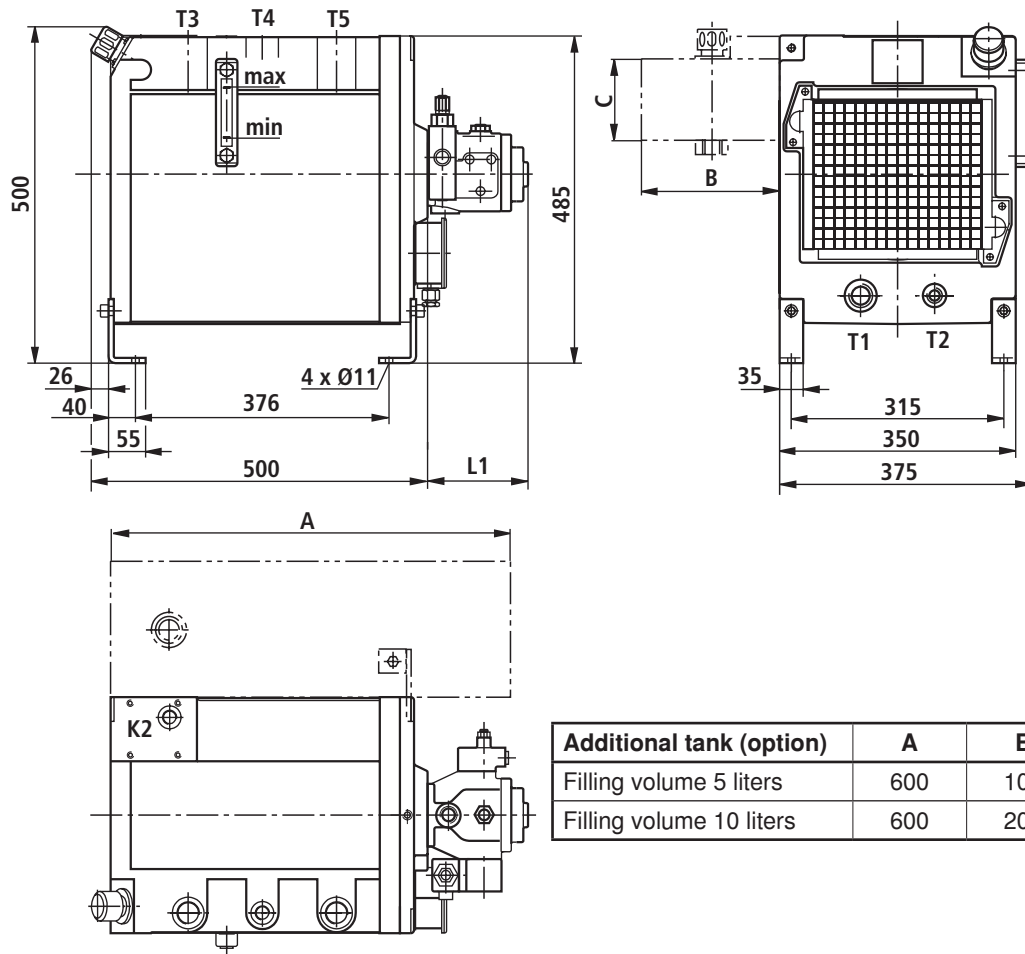


Customer-side: Y star U = 690 V



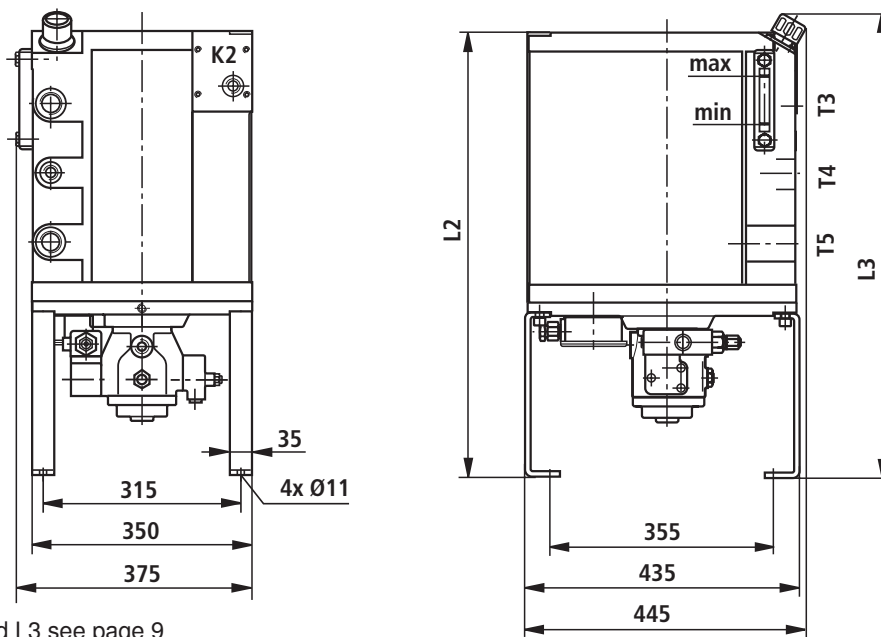
Unit dimensions: (dimensions in mm)

Installation variant: Horizontal mounting



Additional tank (option)	A	B	C
Filling volume 5 liters	600	105	122
Filling volume 10 liters	600	205	122

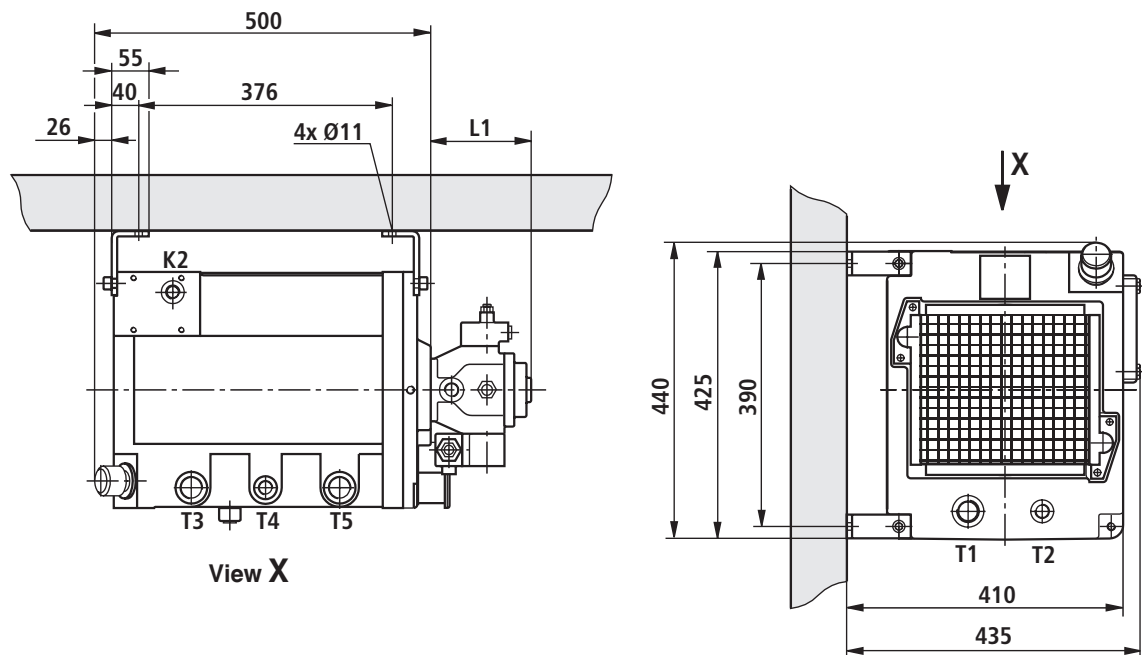
Installation variant: Vertical mounting



Dimensions L1, L2 and L3 see page 9

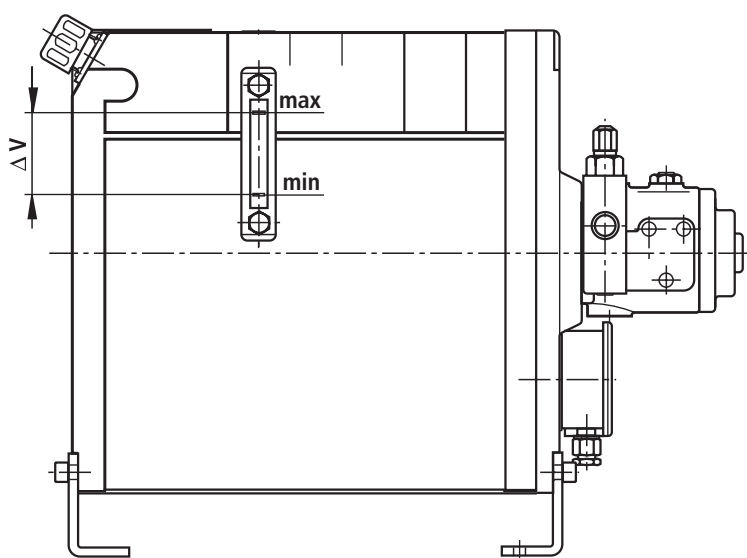
Unit dimensions (dimensions in mm)

Installation variant: Wall mounting

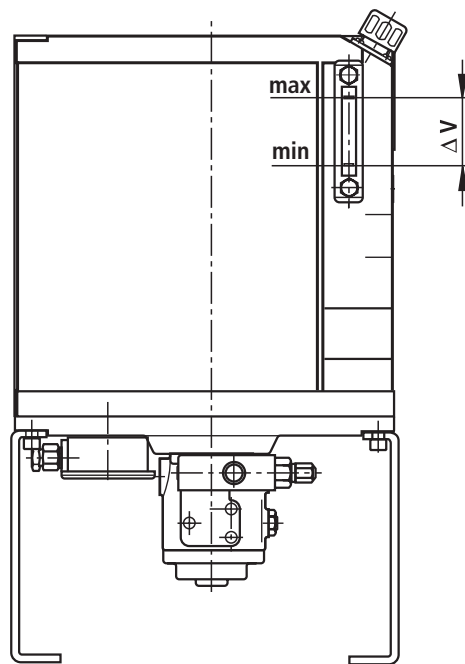


Pump type	Nominal dimension		
	L1	L2	L3
Axial piston variable displacement pump			
A10VSO10DFR1/52R-PPA14N00	164	725	755
A10VSO18DFR1/31R-PPA12N00	195	705	735
Internal gear pump			
PGF2-2X/006RE01VE4	114	630	660
PGF2-2X/008RE01VE4	117.5	705	735
PGF2-2X/011RE01VE4	123	705	735
PGF2-2X/013RE01VE4	128	705	735
PGF2-2X/016RE01VE4	133	705	735
External gear pump			
AZPF-1X-004RAB20MB	85	630	660
AZPF-1X-005RAB20MB	86	630	660
AZPF-1X-008RAB01MB	90	630	660
AZPF-1X-011RAB01MB	95	630	660
AZPF-1X-016RAB01MB	103	630	660
AZPF-1X-022RAB01MB	115	630	660
Vane pump			
PV7-1X/10-14RE01MC0-16	149	705	735
PV7-1X/10-20RE01MC0-10	149	705	735
PV7-1X/16-20RE01MC0-16	165	725	755
PV7-1X/06-10RA01MA0-10	101	630	660
PV7-1X/06-14RA01MA0-07	101	630	660
PV7-2X/20-20RA01MA0-10	135	705	735
PV7-2X/20-25RA01MA0-10	135	705	735

Filling and sampling volume (in liters)



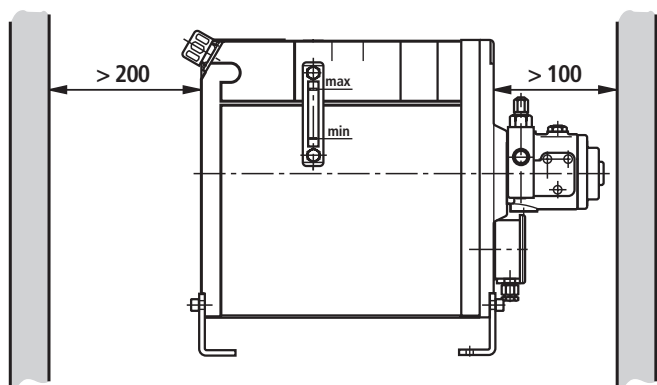
Installation variant: Horizontal mounting and wall mounting



Installation variant: Vertical mounting

	Installation variant: Horizontal mounting and wall mounting	Installation variant: Vertical mounting
Filling volume	23	26
Sampling volume	4.5	3.5
Sampling volume Switching point level switch	3.5	2.0

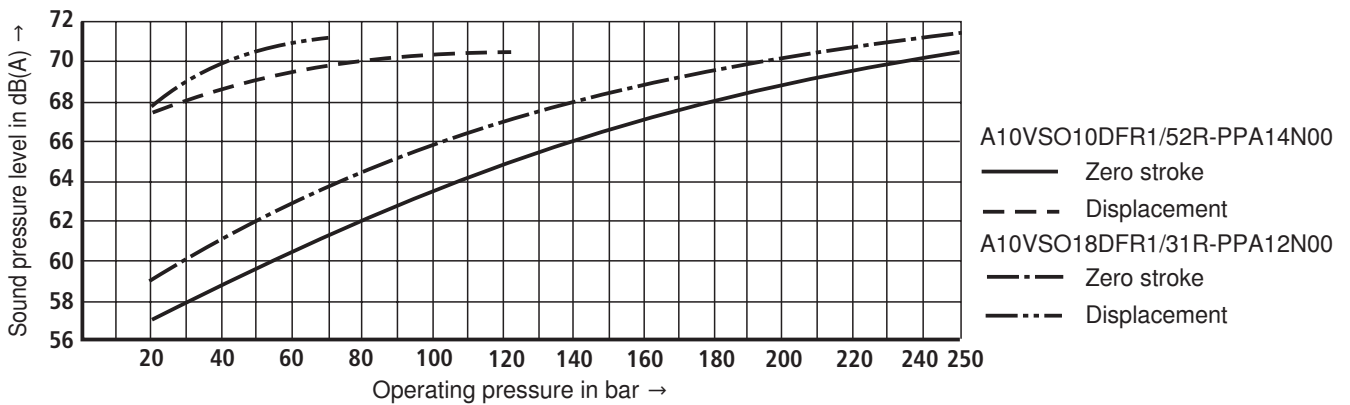
Installation information (in mm)



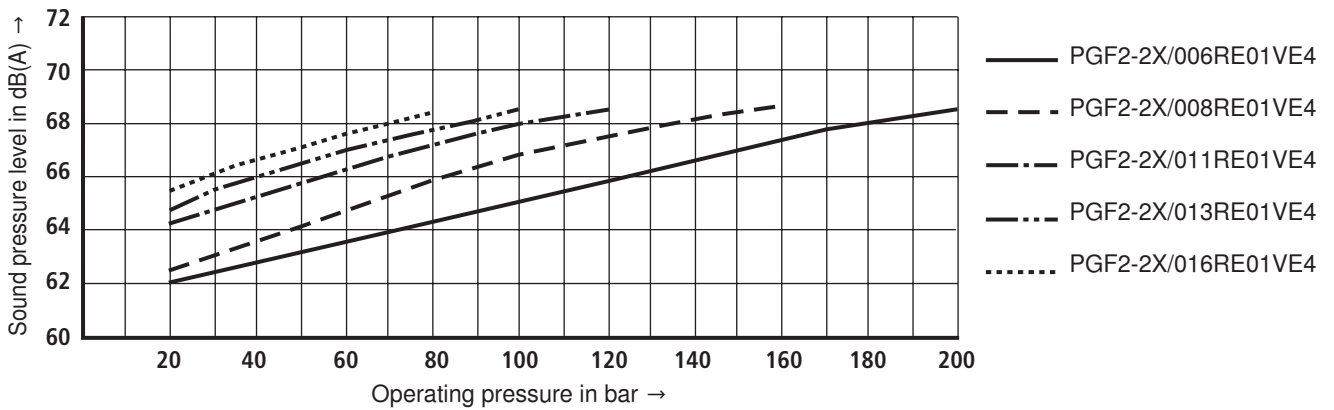
Necessary minimum distance to the wall for perfect cooling.

Sound pressure level (measured with $n = 1450 \text{ min}^{-1}$, $v = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50 \text{ }^\circ\text{C}$)

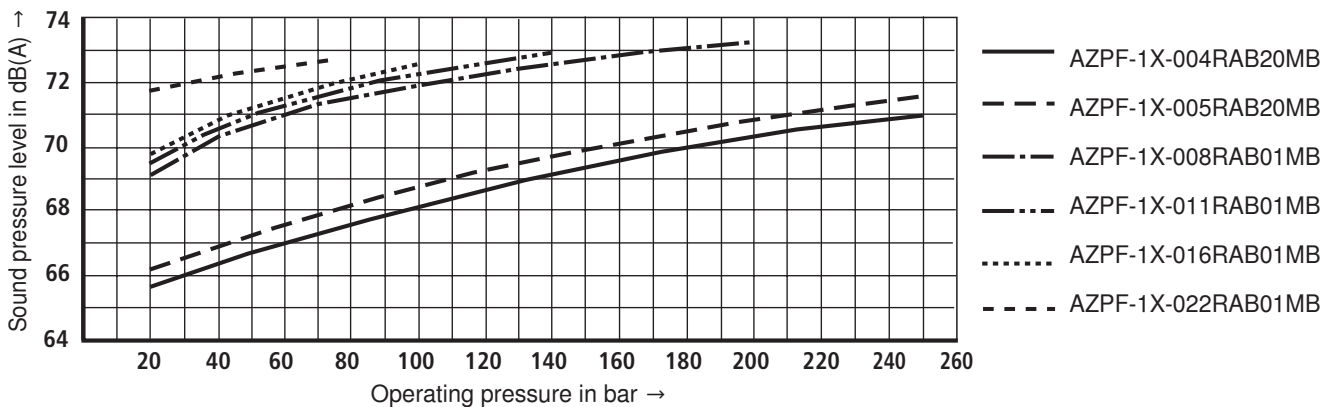
Sound pressure level for axial piston variable displacement pump A10VSO (in this connection see data sheet 92712, 92713)



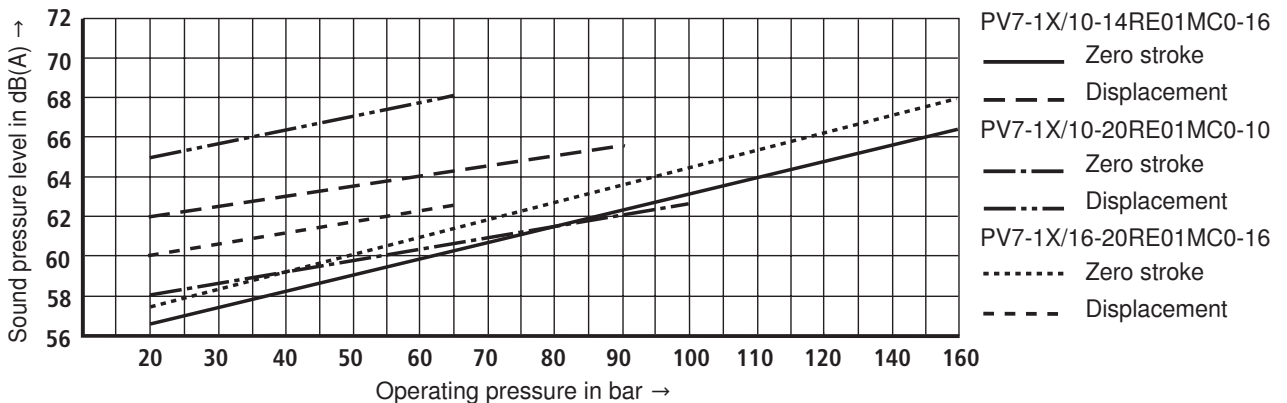
Sound pressure level for internal gear pump PGF2-2X (in this connection see data sheet 10213)



Sound pressure level for external gear pump AZPF-1X/ (in this connection see data sheet 10089)

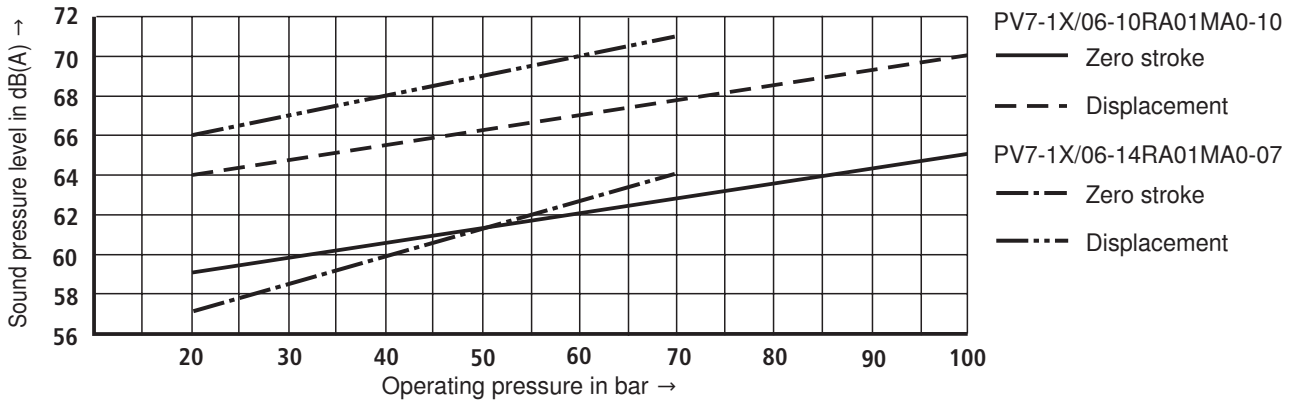


Sound pressure level for vane pump PV7-1X (in this connection see data sheet 10515)

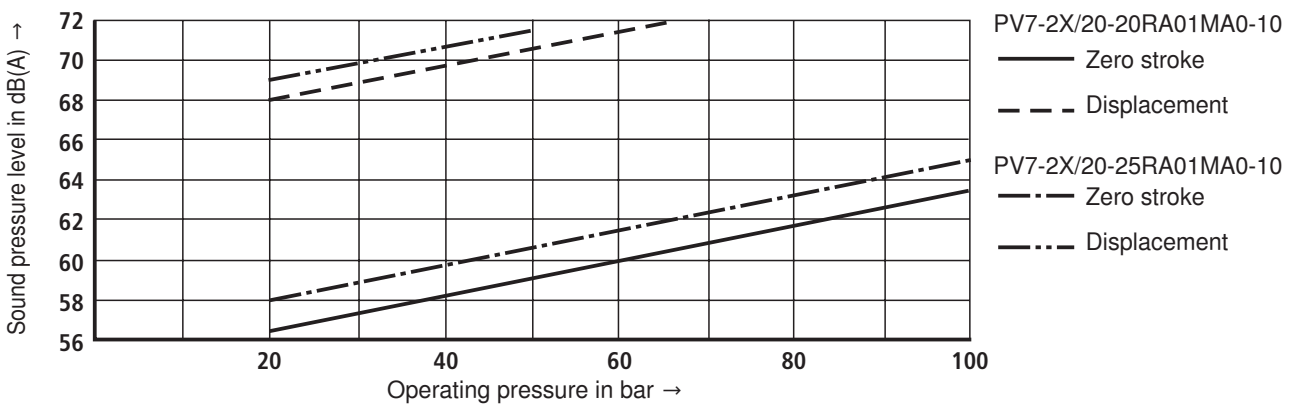


Sound pressure level (measured with $n = 1450 \text{ min}^{-1}$, $v = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50 \text{ }^\circ\text{C}$)

Sound pressure level for vane pump PV7-1X (in this connection see data sheet 10522)



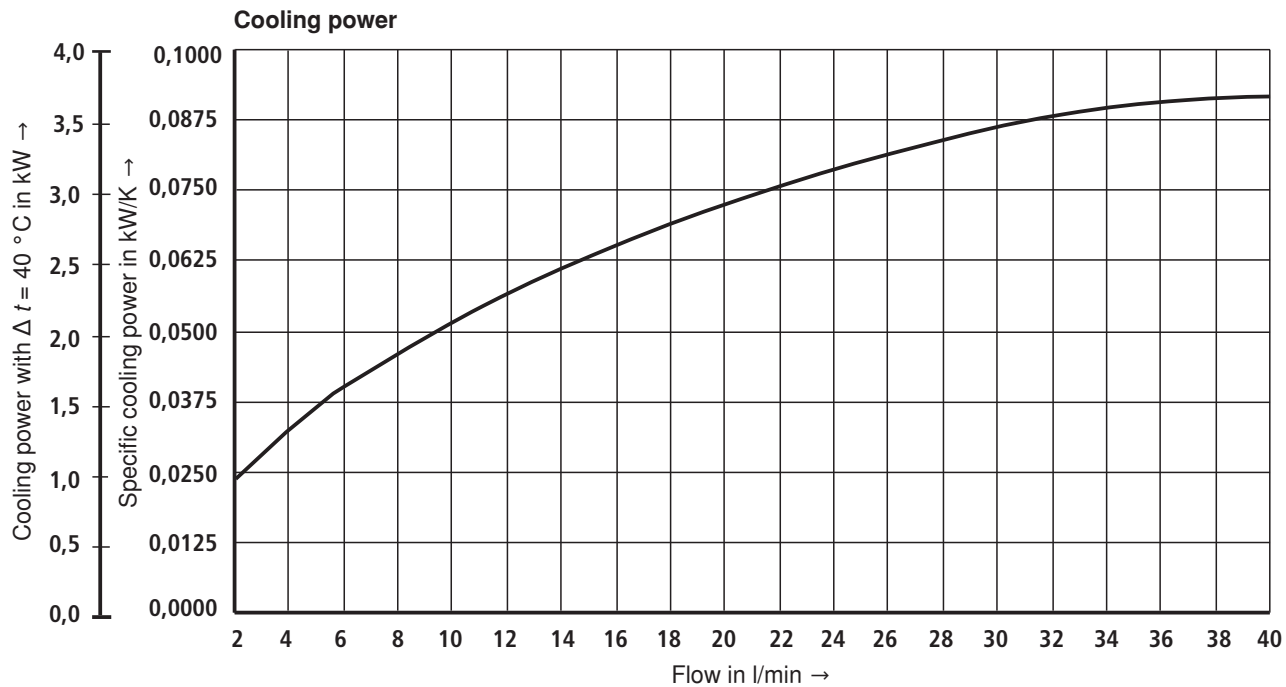
Sound pressure level for vane pump PV7-2X (in this connection see data sheet 10522)



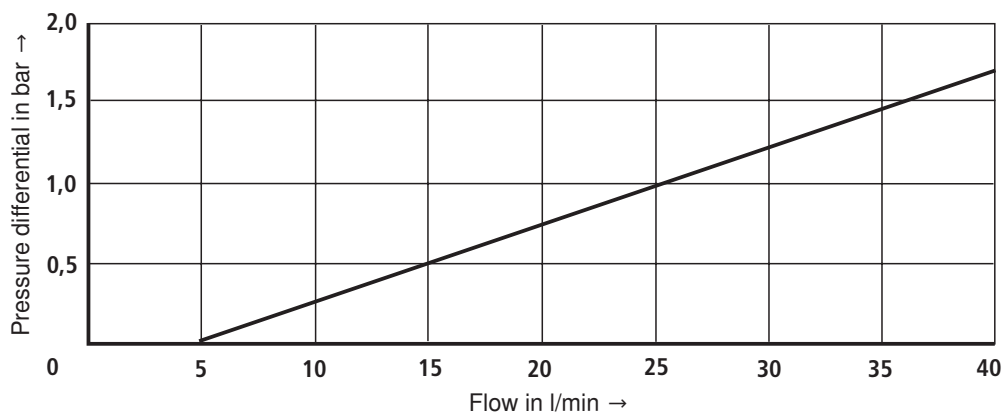
Oil-air cooler ¹⁾

By means of the oil-air cooler, high power density (ratio between drive power and tank size) of the UPE 5 drive module is achieved.

In this way, the drive module with the oil-air cooler can be used in continuous operation. The maximum operating pressure of the oil-air cooler is $p_{max} = 10 \text{ bar}$.



¹⁾ On request, oil-water coolers are also possible!

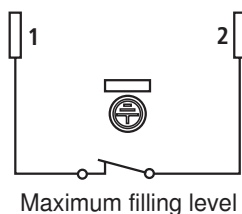
$\Delta p - q_v$ characteristic curve (measured with $\nu = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50 \text{ }^\circ\text{C}$)**Water cooler** (optional)

Water cooler on request

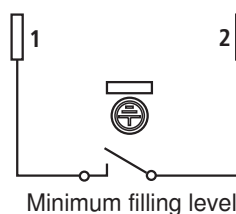
Level switch (option)**Function**

The level switch provides for electric monitoring of the hydraulic fluid filling level. If the minimum oil level is reached,

the contact opens and thus outputs a signal to the control.

Terminal assignment

Maximum filling level



Minimum filling level

Technical Data (For applications outside these parameters, please consult us!)

Maximum voltage	V	50 AC/DC
Maximum current consumption	A	0.25
Maximum power consumption	W	3.0
Protection class according to EN 60529		IP 65
Contact type		Normally closed contact

Temperature switch (option)

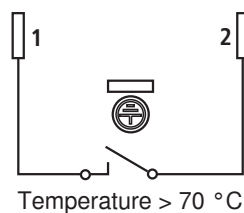
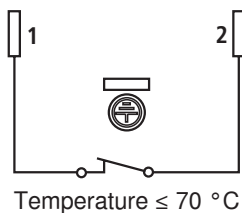
Function

By means of the temperature switch, the drive module is protected against operation with inadmissibly high hydraulic fluid temperatures. The temperature switch has a fixedly set switching point switching at a hydraulic fluid temperature of

70 °C. The switch-back hysteresis is ca. 15 K.

The temperature switch is screwed into port T2 in the tank.

Terminal assignment



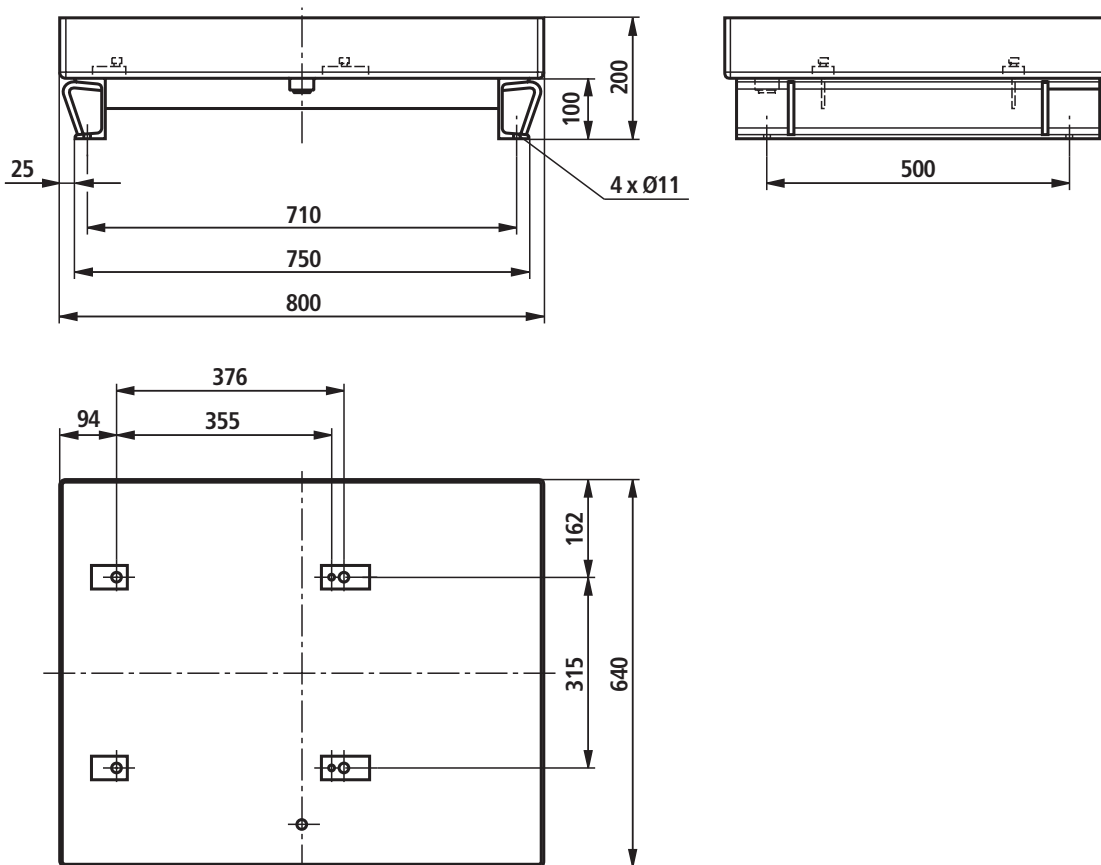
Technical Data (For applications outside these parameters, please consult us!)

Maximum voltage	V	230
Maximum current consumption	A	2
Protection class according to EN 60529		IP 65
Contact type		Normally closed contact

Oil tray (option) (dimensions in mm)

Material no. **R901271094**

Color: RAL 7035 "Light gray"



Commissioning information

- Check whether the drive module has been professionally connected to the machine to be operated (hydraulically and electrically).
- For the electrical connections of the motor, the washers and connection bridges included in the delivery must be used.
- The electric motor must be protected by equipment with overload relay.
The latter must be set to the rated current that is specified on the name / rating plate.
- When installing the drive module, the motor's direction of rotation must imperatively be observed, see arrow for direction of rotation. (Practical control: Hold a sheet of paper close to the cooler. It must be sucked in.)
- Only fill in the hydraulic fluid through a filter with the required minimum retention rate.
- Fill the drive module maximally to the upper edge of the inspection glass.
- The pump must in no case be operated without hydraulic fluid.
- Start up the pump without load and allow it to run at zero pressure for some seconds in order to provide for sufficient lubrication.
- The drive module may only be operated with the admissible data. It may moreover only be operated if it is in an unobjectionable condition.
- When carrying out works at the drive module, the system must be depressurized and de-energized.
- Unauthorized conversions or modifications which affect the safety and function are not permitted.
- Available protective devices must not be removed.
- The generally valid safety and accident prevention regulations must be observed and complied with.
- Keep the oil-air cooler clean and do not cover it as otherwise, the hydraulic fluid and the electric motor may overheat.
- The operating pressure of the oil-air cooler must not be exceeded.

Attention!

The drive module may heat up during operation

→ **Risk of injury!**

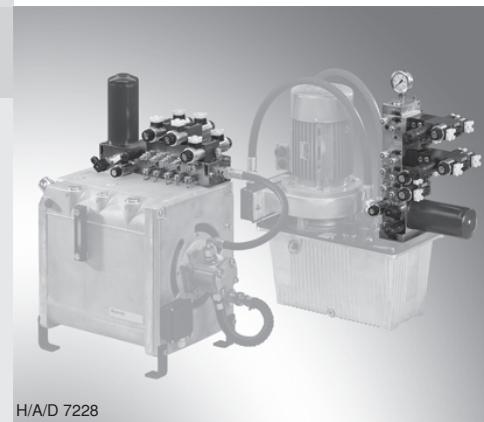
Settings, maintenance and service works at the drive module may only be carried out by authorized, trained and instructed personnel.

Control module

RE 51156/05.13
Replaces: 09.11

1/96

Type IH15B

Component series 1X
Maximum operating pressure 350 bar
Maximum flow 30 l/min

H/A/D 7228

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Features

- Compact design
- No piping of the control
- Few joints
- Variable set-up
- Can be combined individually
- Direct mounting on power unit tank cover; external set-up possible, as well
- Ready for connection

Description, general

The IH15B control modules serves the realization of complete hydraulic controls. They can be fitted and mounted individually. The directional valve modules and seat valve modules can be combined.

Using the tank connection modules, the control modules can be directly mounted to the tank cover of the oil tank. Using the modules for external attachment, the control modules can,

however, also be installed arbitrarily into every system. The reducing modules allow for attachment of the IH15B modules to IH15A and IH20B modules.

The modules have preferably been designed for hydraulic controls for low-flow actuators up to a flow of 30 l/min. They are connected by means of three tie rods.

Technical data (For applications outside these parameters, please consult us!)

hydraulic

Installation position	Any ¹⁾		
Hydraulic fluid	Mineral oil (HL, HLP) according to DIN 51524 part 2 ²⁾ ; fast biodegradable hydraulic fluids according to VDMA 24568 (see 90221); HETG (rape seed oil) ²⁾ ; HEPG (polyglycols); HEES (synthetic esters) ³⁾ ; other hydraulic fluids upon request		
Hydraulic fluid temperature range	°C	-30 to +80 (with NBR seals) -20 to +80 (with FKM seals) (observe the admissible viscosity range of the valves!)	
Ambient temperature range	°C	-30 to +50	
Viscosity range	mm ² /s	2.8 to 500 ¹⁾	
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)	Class 20/18/15 ¹⁾		
Valve pressure rating	Refer to the related data sheet		
Maximum flow of the directional seat valves type: KSER1...	q_v	l/min	20 (2/2 directional seat valve) 12 (3/2 directional seat valve)

electric

Voltage type	Direct voltage			
Available voltage ⁴⁾	U	V	24	
Voltage tolerance (nominal voltage)		%	±10	
Power consumption	P	W	19 and/or 30 ¹⁾	
Switching time according to ISO 6403	On	T	ms	25 to ≤ 80
	Off	T	ms	10 to 25
Switching frequency		cy/h	up to 15,000	
Protection class according to EN 60529 ⁵⁾ (VDE 0470-1) DIN 40050-9	IP 65			
Coil temperature ⁶⁾		°C	150	

¹⁾ Observe the valve details

²⁾ Suitable for NBR **and** FKM seals

³⁾ Suitable **only** for FKM seals

⁴⁾ Special voltage on request

⁵⁾ With mating connector mounted and locked

⁶⁾ Due to the temperatures occurring at the surfaces of the solenoid coils, the European standards EN563 and EN982 need to be adhered to!

Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not assume control tasks. The set pressure of the type-examination tested pressure relief valve must be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

$$p_0 = 0.9 \times p_{(\text{minimum operating pressure})}$$

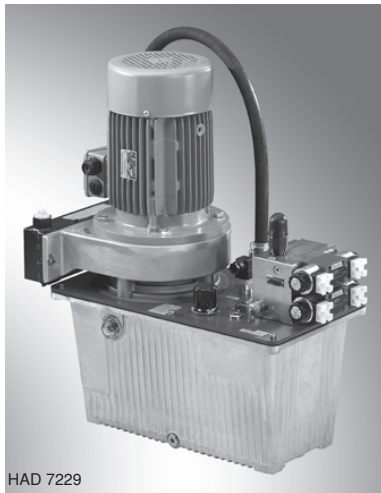
When attaching the IH15B control to a UPE5 drive module, the following has to be observed:

The total length of the IH15B control should not be longer than the UPE5 drive module.

Maximum recommended total length $l = 500$ mm.

Please consult us if the total length of the required control should be longer.

Overview of the modules

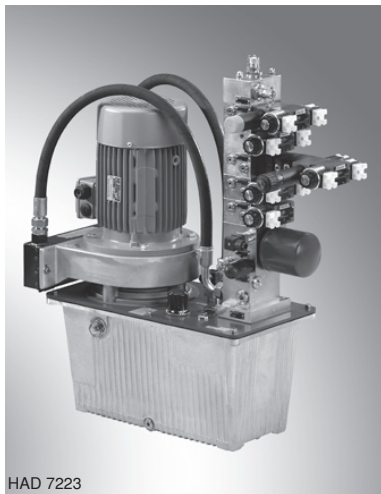


HAD 7229

Basic module "G"

Basic module "G"

- Basic module with integrated pressure relief valve for pressure setting
- Basic module with two valve stations and integrated pressure relief valve
- if the "G" basic modules are used, no further stacking is possible
- For more information see page 8

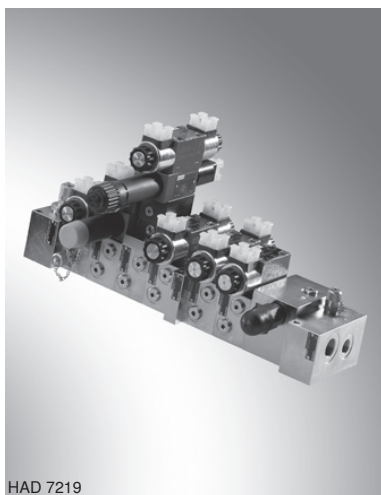


HAD 7223

Directional seat valve module "W", "S"

Directional seat valve module, "W", "S"

- Directional valve modules
 - Allow the design of controls using valves with porting pattern according to DIN 24340 form A
- Seat valve modules basically consist of:
 - A pressure relief module
 - One or several control modules
 - One end module
- The control is designed depending on the relevant application
- For more information see page 14



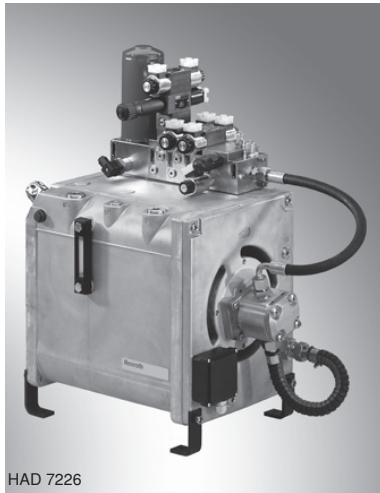
HAD 7219

Module for external attachment

Module for external attachment

- Allows for the attachment of the directional seat valve modules to any hydraulic system or any machine
- For more information see page 63

Overview of the modules



HAD 7226

Module for drive module UPE5

Module for drive module UPE5

- Allows for the attachment of the modules to the UPE5 drive module (catalog 51145)
- For more information see page 80

Short designation	Basic module, type "G"	Page
BA	Tank connection module	9
BAP	Tank connection module with external P connection at the front side	9
BAP-2PT	Tank connection module with two external 2x P and T connections at the front side	10
BAY	Tank connection module with Y channel	11
GDB	Pressure relief module	12
G2AABTDB	Module AA - B - T with pressure relief valve and 2 valve stations	13

Short designation	Directional seat valve module, type "W", "S"	Page
BA	Tank connection module	15
BAP	Tank connection module with external P connection at the front side	15
BAY	Tank connection module with Y channel	16
BAZG	Tank connection module for sandwich module with threaded connection	77
DF40	Pressure filter module (P line $p_{max} = 250$ bar)	20
DF40Y	Pressure filter module with Y channel (P line $p_{max} = 250$ bar)	20
DFS40	Pressure filter module filter bowl vertical (P line $p_{max} = 250$ bar)	21
F30DB	Filter module with pressure relief valve (T line $p_{max} = 7$ bar)	22
F30DBU	Filter module with pressure relief valve and circulation valve (T line $p_{max} = 7$ bar)	24
F60DB	Filter module with pressure relief valve (T line $p_{max} = 7$ bar)	22
F60DBU	Filter module with pressure relief valve and circulation valve (T line $p_{max} = 7$ bar)	24
SDA	Pressure cut-off module	28
SDB	Pressure relief module	26
SDBU	Pressure relief module with circulation valve	27
SEDBSA	End module with pressure relief valve, accumulator and stop valve	59
SEDBSAP1	End module with pressure relief valve, accumulator and stop valve with P1 channel	59
SP	Control module P	46
SPDV	Control module P with throttle valve	49
SPA3	Control module SPA3	51
SPA3P1	Control module SPA3 with P1 channel	51
SPBAT2DB	Control module SPBAT2DB	50
SPP1	Control module P with P1 channel	46
SPDVP1	Control module P with throttle valve and P1 channel	49

Overview of the modules

Short designation	Directional seat valve module, type "W", "S"	Page
SR	Control module with check valve	53
SR2	Control module with check valve	55
SRP1	Control module P with check valve with P1 channel	53
SR2P1	Control module P with check valve with P1 channel	55
ST	Control module T	48
STP1	Control module T with P1 channel	48
SSB	Accumulator shut-off module	61
SSBP1	Accumulator shut-off module with P1 channel	61
SU	Circulation module	45
SUP1	Circulation module with P1 channel	45
WDB	Pressure relief module with one valve station	17
WDR	Pressure reducing module	29
WDRP1	Pressure reducing module with P1 channel	29
WZDR-A	Sandwich module with pressure reducing valve in channel A	31
WZDR-A/A	Sandwich module with pressure reducing valve in channel A and drain cock	31
WZDR-AB	Sandwich module with pressure reducing valve in channel AB	31
WZDR-AB/A	Sandwich module with pressure reducing valve in channel AB and drain cock	31
WZDR-P	Sandwich module with pressure reducing valve in channel P	32
WSE	Directional seat valve module	58
WSEP1	Directional seat valve module with P1 channel	58
WSK	Directional valve seat valve cooler module	18
WSKB	Directional valve seat valve cooler module with bypass	19
WSKY	Directional valve seat valve cooler module with Y channel	18
WSKYB	Directional valve seat valve cooler module with Y channel and bypass	19
WZ	Sandwich module (for directional valve size 6)	35
WZ-008	Sandwich module in special design -008 (for directional valve size 6)	39
WZ2AABB	Sandwich module, 2 valve stations, AA and BB channel connected (for directional valve size 6)	41
WZ2AP	Sandwich module, 2 valve stations, AP channel connected (for directional valve size 6)	41
WZ3	Sandwich module with 3 valve stations (for directional valve size 6)	37
WZ4	Sandwich module with 4 valve stations (for directional valve size 6)	37
WZ4-008	Sandwich module with 4 valve stations in special design -008 (for directional valve size 6)	39
WZE	Sandwich module with cartridge valves (for directional valve size 6)	42
WZEP1	Sandwich module with cartridge valves with P1 channel (for directional valve size 6)	43
WZG	Sandwich module with threaded connection for pipeline installation	78
WZP1	Sandwich module with P1 channel (for directional valve size 6)	35
WZSB	Sandwich module with lowering brake valve	33
ZSSB	Sandwich module with accumulator shut-off block	56
ZSSBP1	Sandwich module with accumulator shut-off module with P1 channel	56

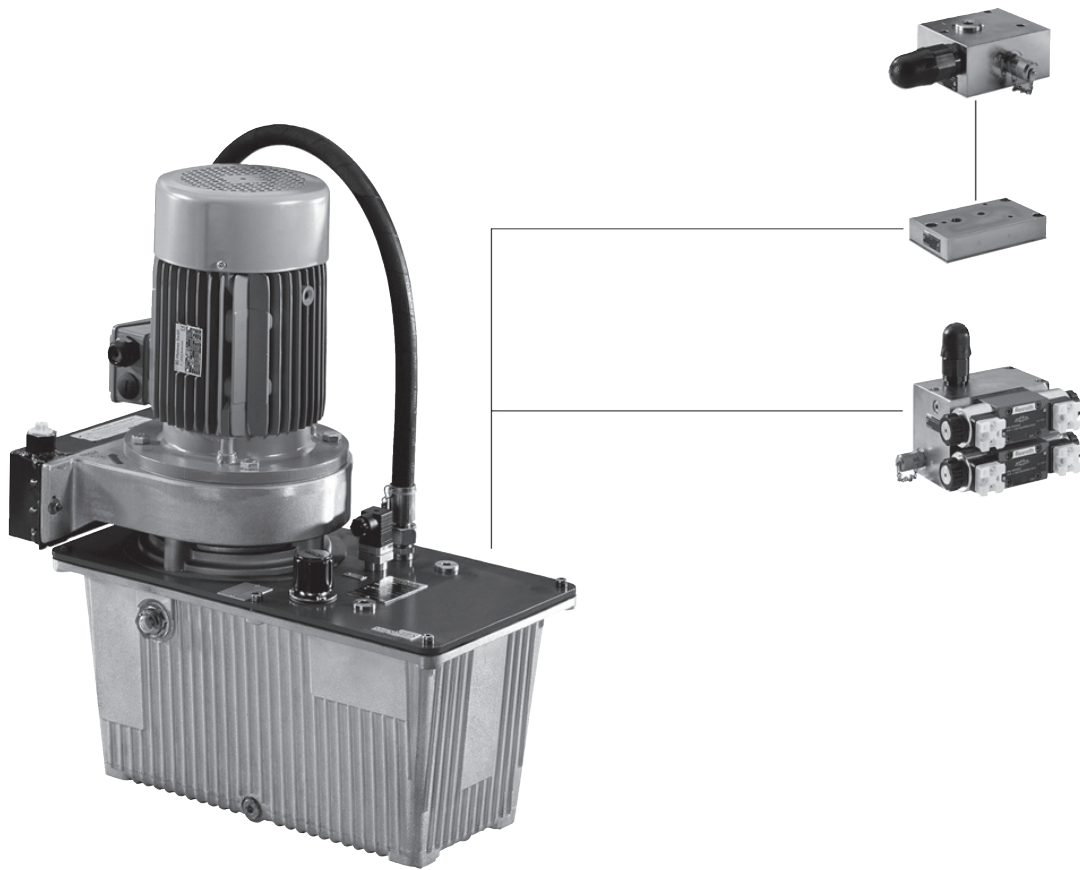
Overview of the modules

Short designation	Module for external attachment	Page
A	Connection module	65
AD	Connection module with through holes	66
ADB	Connection module with pressure relief valve	67
AY	Connection module with Y channel	65
E	End module	72
EP1	End module with P1 channel	72
Z	Sandwich module	68
ZG	Sandwich module with mounting thread for threaded bolt	70
ZGP1	Sandwich module with mounting thread for threaded bolt and P1 channel	70
ZGPT	Sandwich module with PT interruption and mounting thread for threaded bolt	71
ZGTP1	Sandwich module with PTP1 interruption and mounting thread for threaded bolt	71

Short designation	Reducing module, type "R"	Page
ZPT	Sandwich module with PT interruption	69
ZP1	Sandwich module with P1 channel	68
RBAIH15A	Tank connection module with reduction from IH15B to IH15A	73
RIH15AR	Reducing module IH15B to IH15A (right)	75
RIH20BL	Reducing module IH15B to IH20B (left)	74
RIH20BR	Reducing module IH15B to IH20B (right)	76

Short designation	Module for drive module UPE5, type "UPE5"	Page
UPE5A	Connection module	81
UPE5AR	Connection module with check valve	82
UPE5AY	Connection module with Y channel	81
UPE5AYR	Connection module with Y channel and check valve	82
UPE5BA	Tank connection module	83
UPE5BAP1	Tank connection module with P1 channel	83
UPE5F30	Filter module (T line $p_{\max} = 7$ bar)	84
UPE5F30P1	Filter module with P1 channel (T line $p_{\max} = 7$ bar)	84
UPE5F60	Filter module (T line $p_{\max} = 7$ bar)	84
UPE5F60P1	Filter module with P1 channel (T line $p_{\max} = 7$ bar)	84
UPE5SSB	Accumulator shut-off module	86
UPE5SSBP1	Accumulator shut-off module with P1 channel	86

Basic module, type "G": Attachment



Basic module, type "G" (dimensions in mm)

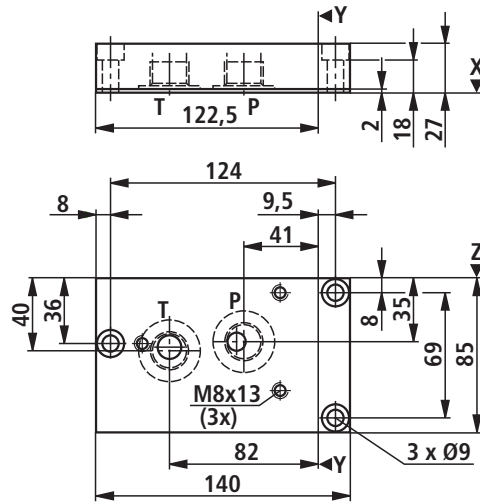
Tank connection module, type "BA"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
R904101347	Tank connection module	IH15MB-1X/BA

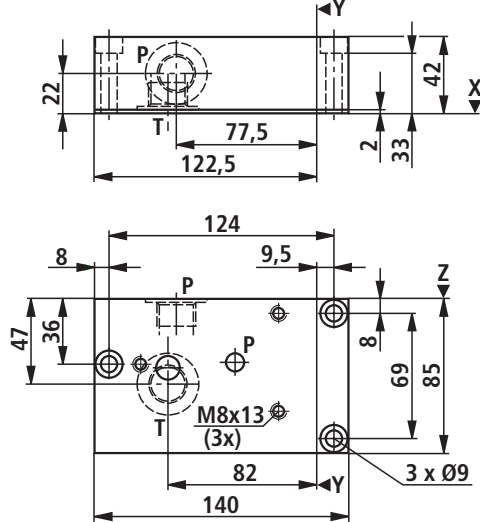
Tank connection module with P connection at the front side, type "BAP"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Tank connection module with external P connection at the front side	IH15MB-1X/BAP- ²⁶ <input type="text"/>
R904101844		IH15MB-1X/BAP-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Basic module, type "G" (dimensions in mm)

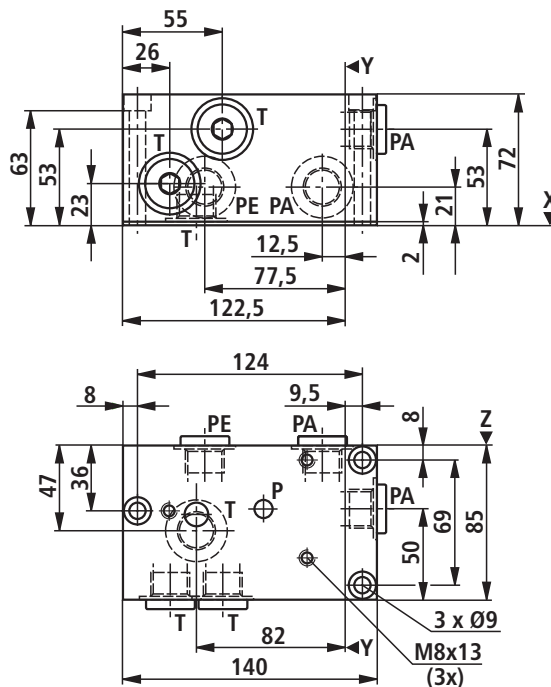
Tank connection module with 2x P and T connection at the front side, type "BAP-2PT"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Tank connection module with 2x external PT connections at the front side	IH15MB-1X/BAP-2PT- <input type="text" value="26"/>
R901134710		IH15MB-1X/BAP-2PT/V

<input type="text" value="26"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Basic module, type "G" (dimensions in mm)

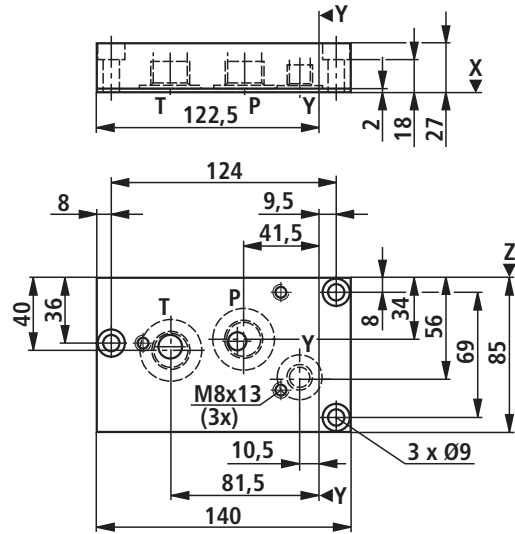
Tank connection module with Y channel, type "BAY"

Symbol



Unit dimensions

Dimension Z = 85 mm

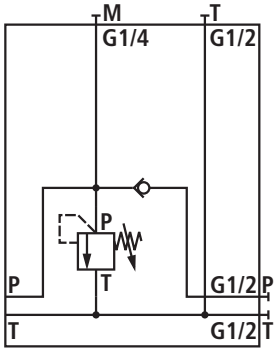


Material no.	Device designation	Type designation
	Tank connection module with Y channel	IH15MB-1X/BAY
R904101843		IH15MB-1X/BAY

Basic module, type "G" (dimensions in mm)

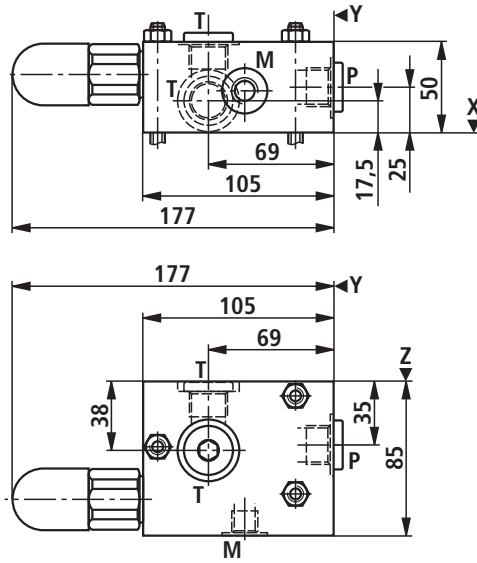
Pressure relief module, type "GDB"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Pressure relief module	IH15EB-1X/GDB- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 14 <input type="checkbox"/> 26
R904101893		IH15EB-1X/GDB-S100/M/V
R904101842		IH15EB-1X/GDB-S200/M/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	25 bar 50 bar 100 bar 200 bar 315 bar 400 bar = 25 = 50 = 100 = 200 = 315 = 400

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)

More pressure ratings on request!

	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 140 bar 210 bar 330 bar	= 50E = 100E = 140E = 210E = 330E
--	---	--	---

Characteristic curve for type-examination tested pressure relief valves type: DBD../..E
Type testing according to Pressure Equipment Directive 97/23/EC

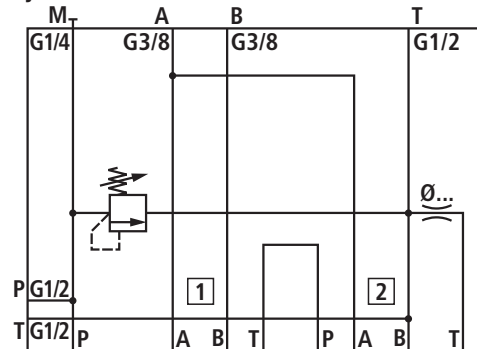
See page 88

<input type="checkbox"/> 14	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> 26	Seal	Seal material Seal material	FKM NBR = V = M

Basic module, type "G" (dimensions in mm)

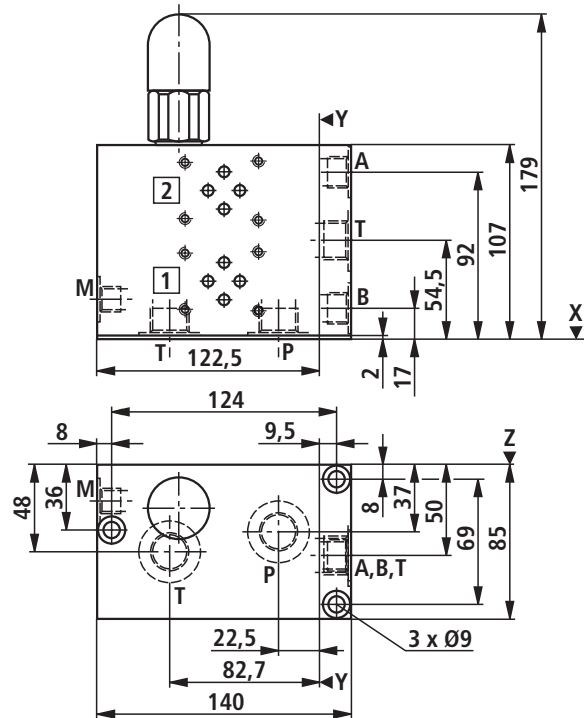
Module block AA - B - T, type "G2AABTDB"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Module block AA - B - T with pressure relief valve	IH15EB-1X/G2AABTDB- 1 2 14 27 26 <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
R904101796		IH15EB-1X/G2AABTDB-S200/M/B10/V

1	<input type="checkbox"/> Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
2	<input type="checkbox"/> Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	25 bar = 25 50 bar = 50 100 bar = 100 200 bar = 200 315 bar = 315 400 bar = 400

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)

More pressure ratings on request!

		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50E 100 bar = 100E 140 bar = 140E 210 bar = 210E 330 bar = 330E
--	--	---	--

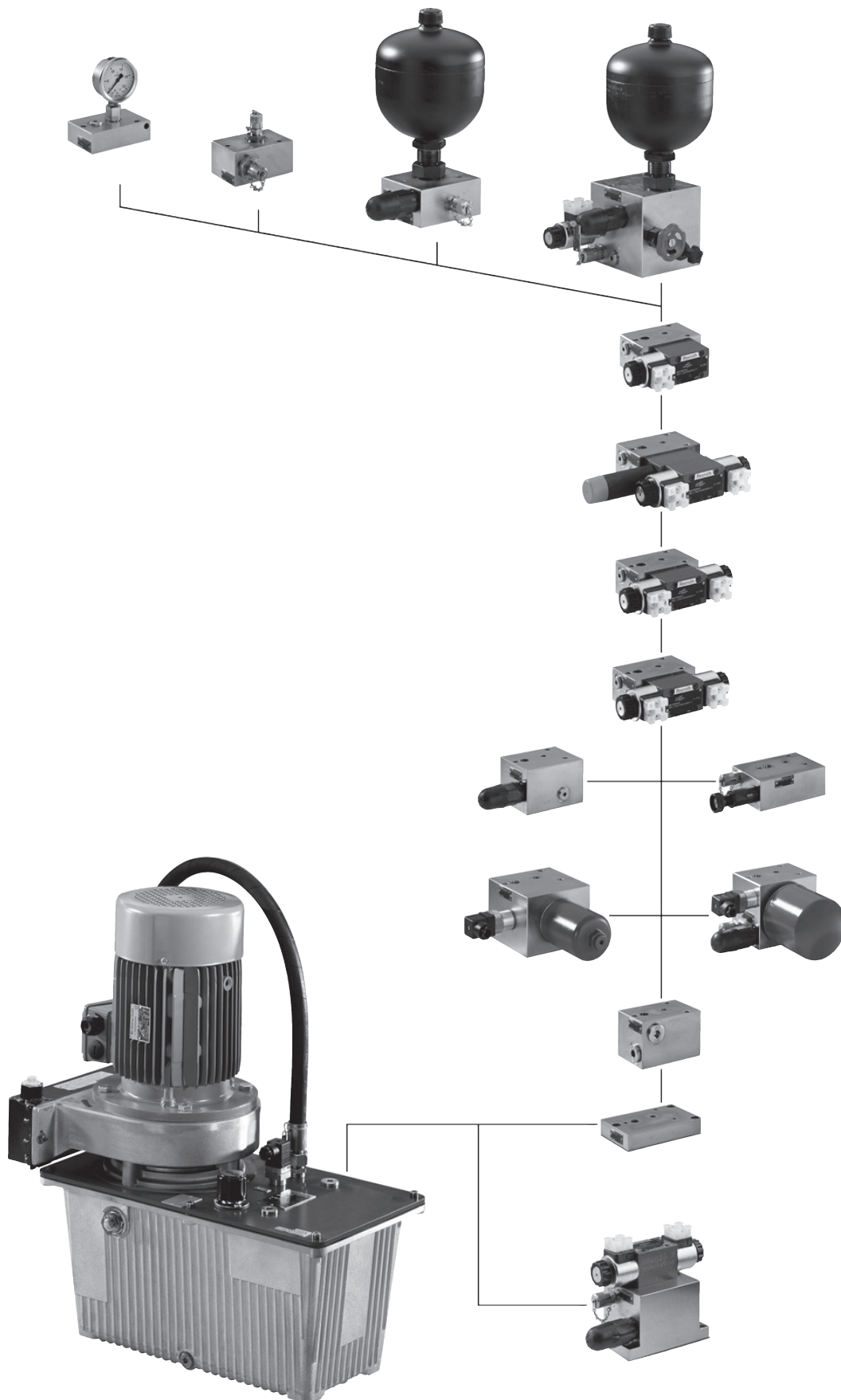
Characteristic curve for type-examination tested pressure relief valves type: DBD...E

Type testing according to Pressure Equipment Directive 97/23/EC

See page 88

14	<input type="checkbox"/> Pressure monitoring	With measuring port Without pressure monitoring	= M = O
26	<input type="checkbox"/> Seal	Seal material Seal material	FKM = V NBR = M
27	<input type="checkbox"/> Throttle	Without throttle Throttle diameter Throttle diameter	= no code = B10 = B25

Directional seat valve module, type "W", "S": Attachment



Directional seat valve module, type "W", "S" (dimensions in mm)

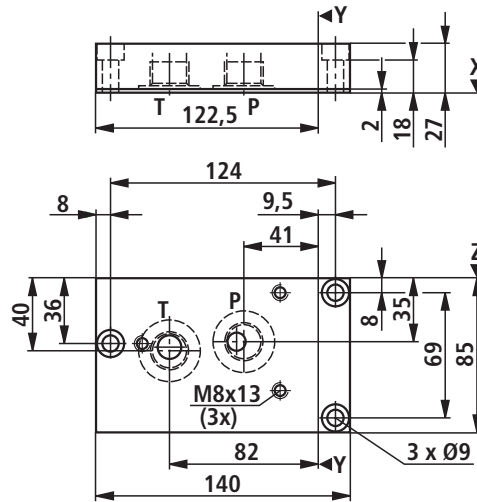
Tank connection module, type "BA"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
R904101347	Tank connection module	IH15MB-1X/BA

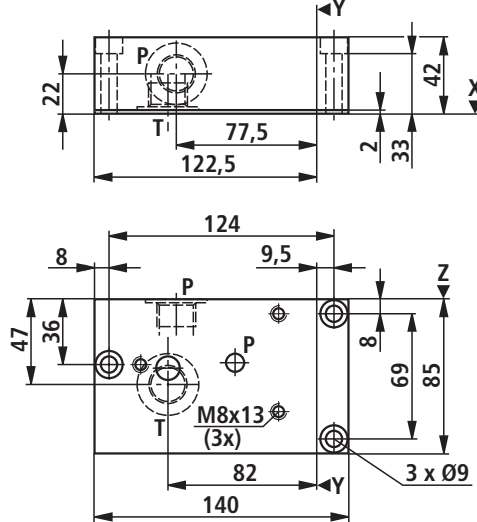
Tank connection module with P connection at the front side, type "BAP"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Tank connection module with external P connection at the front side	IH15MB-1X/BAP- ²⁶ <input type="text"/>
R904101844		IH15MB-1X/BAP-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Directional seat valve module, type "W", "S" (dimensions in mm)

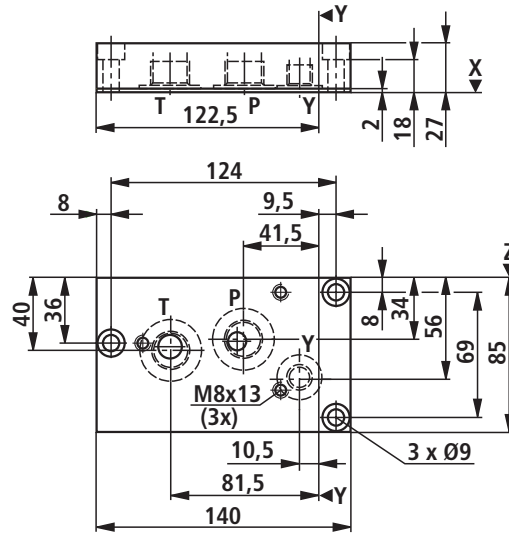
Tank connection module with Y channel, type "BAY"

Symbol



Unit dimensions

Dimension Z = 85 mm

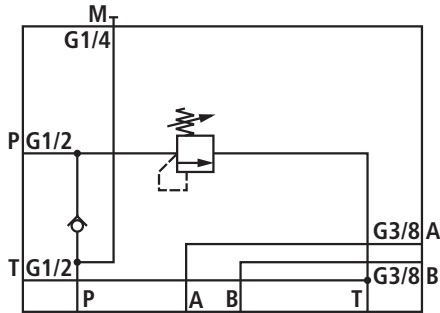


Material no.	Device designation	Type designation
	Tank connection module with Y channel	IH15MB-1X/BAY
R904101843		IH15MB-1X/BAY

Directional seat valve module, type "W", "S" (dimensions in mm)

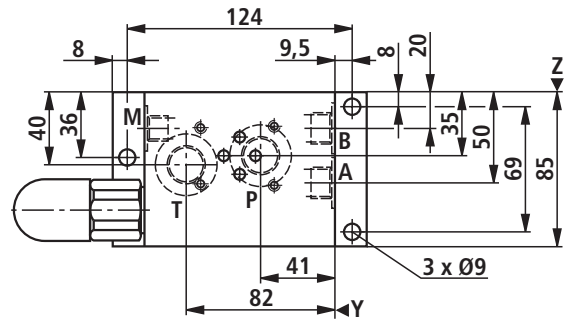
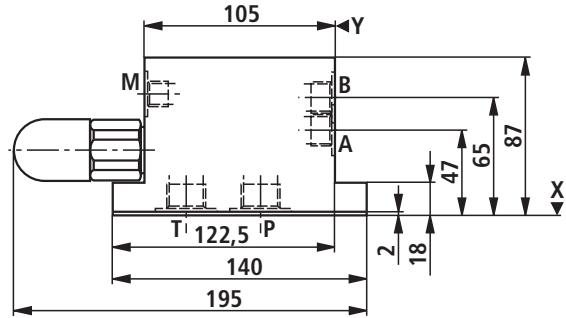
Pressure relief module, type "WDB"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Pressure relief module with one valve station	IH15EB-1X/WDB- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 14 <input type="checkbox"/> 26
R904101759		IH15EB-1X/WDB-S200/M/V
R901042115		IH15EB-1X/WDB-S200/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	25 bar 50 bar 100 bar 200 bar 315 bar 400 bar = 25 = 50 = 100 = 200 = 315 = 400

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)

More pressure ratings on request!

		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 140 bar 210 bar 330 bar	= 50E = 100E = 140E = 210E = 330E
--	--	---	--	---

Characteristic curve for type-examination tested pressure relief valves type: DBD...E
Type testing according to Pressure Equipment Directive 97/23/EC

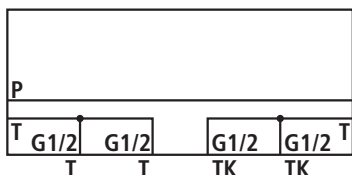
See page 88

<input type="checkbox"/> 14	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> 26	Seal	Seal material Seal material	FKM = V NBR = M

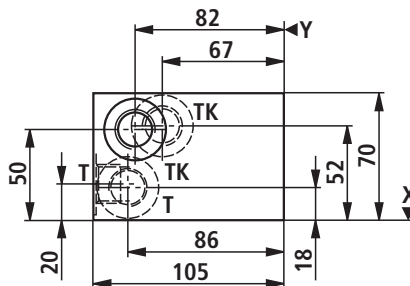
Directional seat valve module, type "W", "S" (dimensions in mm)

Cooler module, type "WSK"

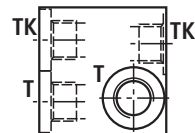
Symbol



Unit dimensions

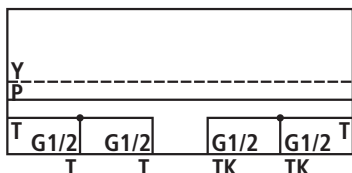


Dimension Z = 70 mm



Cooler module with Y channel, type "WSKY"

Symbol



Material no.	Device designation	Type designation
	Cooler module	IH15MB-1X/WSK- ²⁶ <input type="checkbox"/>
R904101577		IH15MB-1X/WSK-V

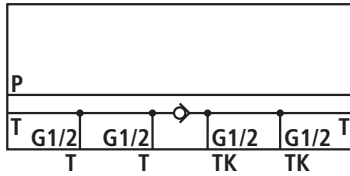
Material no.	Device designation	Type designation
	Cooler module with Y channel	IH15MB-1X/WSKY- ²⁶ <input type="checkbox"/>
R904101753		IH15MB-1X/WSKY-V

²⁶ <input type="checkbox"/>	Seal	Seal material	FKM	= V
		Seal material	NBR	= M

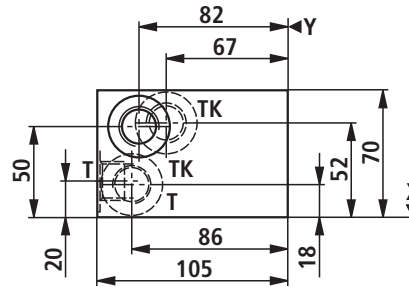
Directional seat valve module, type "W", "S" (dimensions in mm)

Cooler module with bypass, type "WSKB"
(cracking pressure 3 bar)

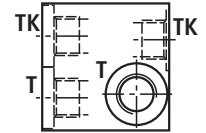
Symbol



Unit dimensions

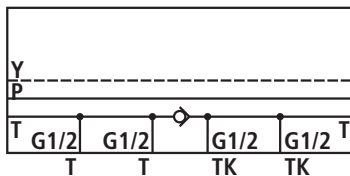


Dimension Z = 70 mm



Cooler module with Y channel and bypass,
type "WSKYB" (cracking pressure 3 bar)

Symbol



Material no.	Device designation	Type designation
	Cooler module with bypass	IH15MB-1X/WSKB- <input type="text" value="26"/>
R901165376		IH15MB-1X/WSKB-V

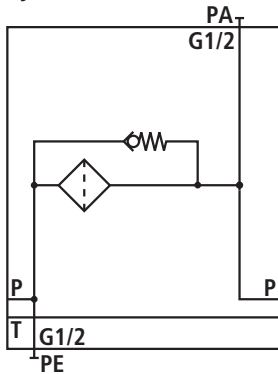
Material no.	Device designation	Type designation
	Cooler module with Y channel and bypass	IH15MB-1X/WSKYB- <input type="text" value="26"/>
R901165377		IH15MB-1X/WSKYB-V

<input type="text" value="26"/>	Seal	Seal material	FKM	= V
		Seal material	NBR	= M

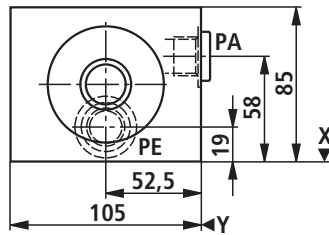
Directional seat valve module, type "W", "S" (dimensions in mm)

Pressure filter module, type "DF40" ($q_{Vmax} = 40 \text{ l/min}$, $p_{max} = 250 \text{ bar}$)

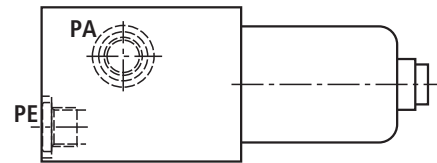
Symbol



Unit dimensions



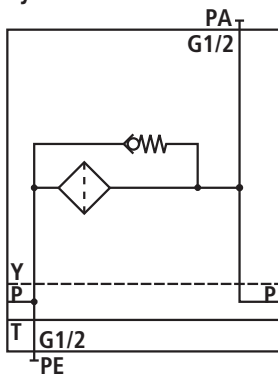
Dimension Z = 213 mm



Pressure filter module with Y channel, type "DF40Y"

($q_{Vmax} = 40 \text{ l/min}$, $p_{max} = 250 \text{ bar}$)

Symbol



Installation information:

Wind the filter cartridge as tight as possible on the block. Then, wind it back by 1/8 to 1/4 of a rotation.

Material no.	Device designation	Type designation
	Pressure filter module ($p_{max} = 250 \text{ bar}$)	IH15EB-1X/DF40- <input type="checkbox"/> ¹⁹ / <input type="checkbox"/> ²⁰ / <input type="checkbox"/> ²⁶
R901278451		IH15EB-1X/DF40-06/E/V
R901278454		IH15EB-1X/DF40-10/E/V

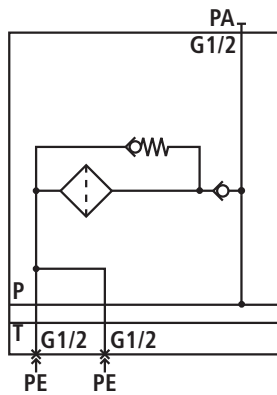
Material no.	Device designation	Type designation
	Pressure filter module with Y channel ($p_{max} = 250 \text{ bar}$)	IH15EB-1X/DF40Y- <input type="checkbox"/> ¹⁹ / <input type="checkbox"/> ²⁰ / <input type="checkbox"/> ²⁶
R901278455		IH15EB-1X/DF40Y-06/E/V

<input type="checkbox"/> ¹⁹ Filter rating	06 μm 10 μm	= 06 = 10
<input type="checkbox"/> ²⁰ Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator	= A = O = E
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM = V NBR = M

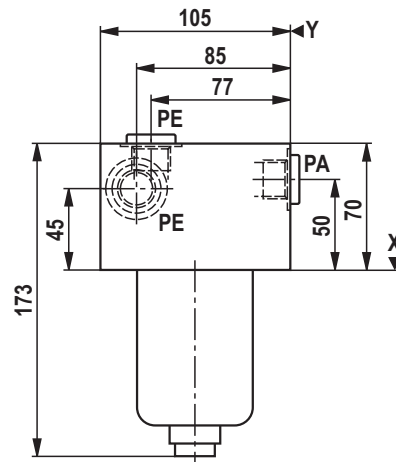
Directional seat valve module, type "W", "S" (dimensions in mm)

Pressure filter module for vertical installation position,
type "DFS40" ($q_{Vmax} = 40 \text{ l/min}$, $p_{max} = 250 \text{ bar}$)

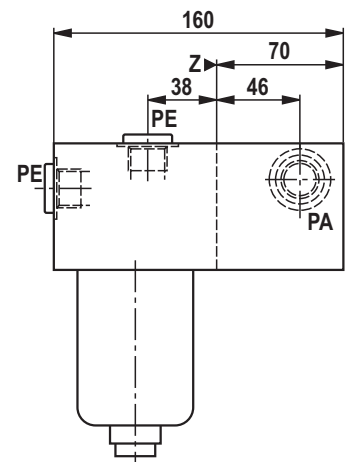
Symbol



Unit dimensions



Dimension Z = 70 mm



Installation information:

Wind the filter cartridge as tight as possible on the block.
Then, wind it back by 1/8 to 1/4 of a rotation.

Material no.	Device designation	Type designation
	Pressure filter module for vertical installation position ($p_{max} = 250 \text{ bar}$)	IH15EB-1X/DFS40- <input type="text" value="19"/> / <input type="text" value="20"/> / <input type="text" value="26"/>
R901278456		IH15EB-1X/DFS40-10/A/V
R901278457		IH15EB-1X/DFS40-10/E/V
R901278458		IH15EB-1X/DFS40-10/O/V
R901278459		IH15EB-1X/DFS40-06/E/V

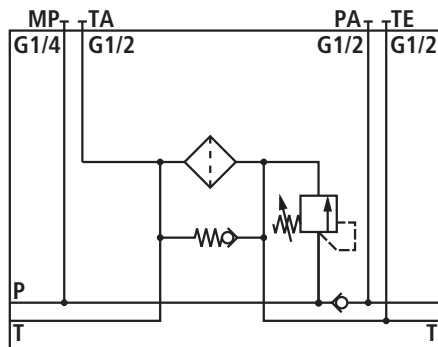
<input type="text" value="19"/>	Filter rating	06 μm 10 μm	= 06 = 10
<input type="text" value="20"/>	Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator	= A = O = E
<input type="text" value="26"/>	Seal	Seal material	FKM = V NBR = M

Directional seat valve module, type "W", "S" (dimensions in mm)

Filter module with pressure relief valve,
type "F30DB", "F60DB" ($p_{max} = 7 \text{ bar}$) –

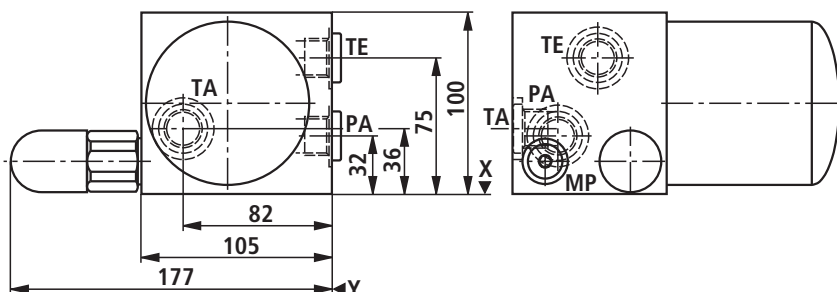
Filter module with pressure relief valve cannot be directly
attached to the UPE5 drive module.

Symbol



Unit dimensions

Dimension Z = 180 mm F30DB
Dimension Z = 290 mm F60DB



Installation information:

Wind the filter cartridge as tight as possible on the block.
Then, wind the filter cartridge by further 1/3 of a rotation.

Material no.	Device designation	Type designation
	Filter module with pressure relief valve	IH15EB-1X/F30DB- 1 2 14 19 20 26 <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
R901068157		IH15EB-1X/F30DB-S100/M/10/A/V
R904101858		IH15EB-1X/F30DB-S100/M/10/E/V
R904101859		IH15EB-1X/F30DB-S100/M/10/O/V
R901068229		IH15EB-1X/F30DB-S100/O/10/A/V
R901068227		IH15EB-1X/F30DB-S100/O/10/E/V
R901068228		IH15EB-1X/F30DB-S100/O/10/O/V

Material no.	Device designation	Type designation
	Filter module with pressure relief valve	IH15EB-1X/F60DB- 1 2 14 19 20 26 <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
R901068161		IH15EB-1X/F60DB-S100/M/10/A/V
R904101881		IH15EB-1X/F60DB-S100/M/10/E/V
R904101880		IH15EB-1X/F60DB-S100/M/10/O/V
R901068225		IH15EB-1X/F60DB-S100/O/10/A/V
R901068223		IH15EB-1X/F60DB-S100/O/10/E/V
R901068224		IH15EB-1X/F60DB-S100/O/10/O/V

Directional seat valve module, type "W", "S"

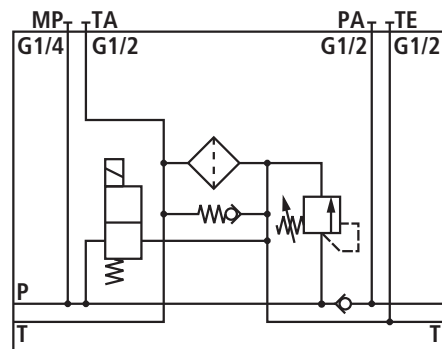
<input type="checkbox"/>	¹ Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob		= S = H = A
<input type="checkbox"/>	² Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	25 bar 50 bar 100 bar 200 bar 315 bar 400 bar	= 25 = 50 = 100 = 200 = 315 = 400
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!				
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 140 bar 210 bar 330 bar	= 50E = 100E = 140E = 210E = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD../..E Type testing according to Pressure Equipment Directive 97/23/EC				See page 88
<input type="checkbox"/>	¹⁴ Pressure monitoring	With measuring port Without pressure monitoring		= M = O
<input type="checkbox"/>	¹⁹ Filter rating	06 µm 10 µm		= 06 = 10
<input type="checkbox"/>	²⁰ Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator		= A = O = E
<input type="checkbox"/>	²⁶ Seal	Seal material Seal material	FKM NBR	= V = M

Directional seat valve module, type "W", "S" (dimensions in mm)

Filter module with pressure relief valve and circulation valve, type "F30DBU", "F60DBU" ($p_{\max} = 7 \text{ bar}$) –

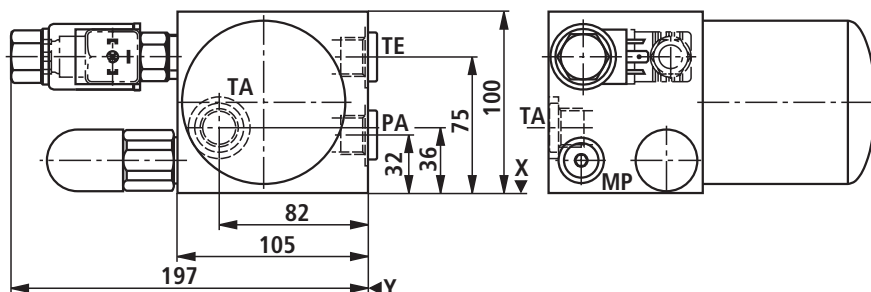
Filter module with pressure relief valve and circulation valve cannot be directly attached to the UPE5 drive module.

Symbol



Unit dimensions

Dimension Z = 180 mm F30DBU
Dimension Z = 290 mm F60DBU



Installation information:

Wind the filter cartridge as tight as possible on the block. Then, wind the filter cartridge by further 1/3 of a rotation.

Material no.	Device designation	Type designation
	Filter module with pressure relief valve and circulation valve	IH15EB-1X/F30DBU- <input type="text"/> ¹ <input type="text"/> ² / <input type="text"/> ₁₄ <input type="text"/> ₄ <input type="text"/> ₈ / <input type="text"/> ₁₉ / <input type="text"/> ₂₀ / <input type="text"/> ₂₆
R901070590		IH15EB-1X/F30DBU-S100/MPG24/10/A/V
R904101867		IH15EB-1X/F30DBU-S100/MPG24/10/E/V
R904101868		IH15EB-1X/F30DBU-S100/MPG24/10/O/V
R901070591		IH15EB-1X/F30DBU-S200/MPG24/10/A/V
R904101869		IH15EB-1X/F30DBU-S200/MPG24/10/E/V
R904101870		IH15EB-1X/F30DBU-S200/MPG24/10/O/V

Material no.	Device designation	Type designation
	Filter module with pressure relief valve and circulation valve	IH15EB-1X/F60DBU- <input type="text"/> ¹ <input type="text"/> ² / <input type="text"/> ₁₄ <input type="text"/> ₄ <input type="text"/> ₈ / <input type="text"/> ₁₉ / <input type="text"/> ₂₀ / <input type="text"/> ₂₆
R901070592		IH15EB-1X/F60DBU-S100/MPG24/10/A/V
R904101348		IH15EB-1X/F60DBU-S100/MPG24/10/E/V
R904101873		IH15EB-1X/F60DBU-S100/MPG24/10/O/V
R901070593		IH15EB-1X/F60DBU-S200/MPG24/10/A/V
R904101872		IH15EB-1X/F60DBU-S200/MPG24/10/E/V
R904101871		IH15EB-1X/F60DBU-S200/MPG24/10/O/V

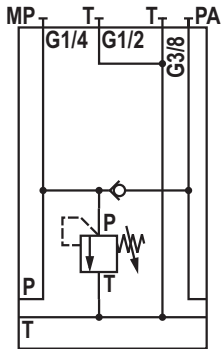
Directional seat valve module, type "W", "S"

<input type="checkbox"/>	1 Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob		= S = H = A
<input type="checkbox"/>	2 Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	25 bar 50 bar 100 bar 200 bar 315 bar 400 bar	= 25 = 50 = 100 = 200 = 315 = 400
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!				
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 140 bar 210 bar 330 bar	= 50E = 100E = 140E = 210E = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD../..E Type testing according to Pressure Equipment Directive 97/23/EC				See page 88
<input type="checkbox"/>	4 Designation of the 2/2 seat valve	Normally closed Normally open		= N = P
<input type="checkbox"/>	8 Solenoid voltage of the seat valves	Volt	24 V DC	= G24
<input type="checkbox"/>	14 Pressure monitoring	With measuring port Without pressure monitoring		= M = O
<input type="checkbox"/>	19 Filter rating	06 µm 10 µm		= 06 = 10
<input type="checkbox"/>	20 Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator		= A = O = E
<input type="checkbox"/>	26 Seal	Seal material Seal material	FKM NBR	= V = M

Directional seat valve module, type "W", "S" (dimensions in mm)

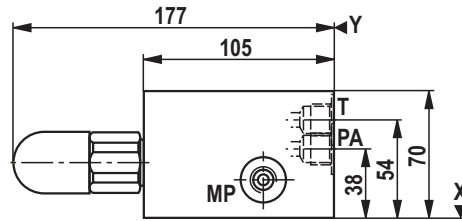
Pressure relief module, type "SDB"

Symbol



Unit dimensions

Dimension Z = 85 mm



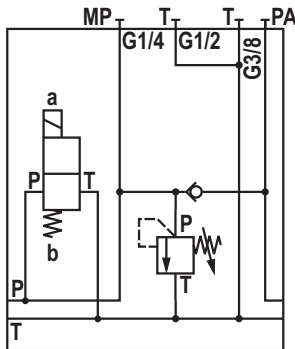
Material no.	Device designation	Type designation
	Pressure relief module	IH15EB-1X/SDB- <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> <input type="checkbox"/>
R901065894		IH15EB-1X/SDB-A100/M/V
R901065267		IH15EB-1X/SDB-A100/O/V
R901065895		IH15EB-1X/SDB-H100/M/V
R901065269		IH15EB-1X/SDB-H100/O/V
R901065896		IH15EB-1X/SDB-S100/M/V
R904101875		IH15EB-1X/SDB-S100/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. 25 bar Setting pressure up to max. 50 bar Setting pressure up to max. 100 bar Setting pressure up to max. 200 bar Setting pressure up to max. 315 bar Setting pressure up to max. 400 bar	= 25 = 50 = 100 = 200 = 315 = 400
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. 50 bar Setting pressure up to max. 100 bar Setting pressure up to max. 140 bar Setting pressure up to max. 210 bar Setting pressure up to max. 330 bar	= 50E = 100E = 140E = 210E = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 88
<input type="checkbox"/> 14	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> 26	Seal	Seal material FKM Seal material NBR	= V = M

Directional seat valve module, type "W", "S" (dimensions in mm)

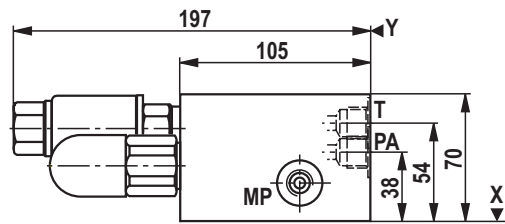
Pressure relief module with circulation valve, type "SDBU"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Pressure relief module with circulation valve	IH15EB-1X/SDBU- 1 2 14 4 8 26 <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/>
R901039998		IH15EB-1X/SDBU-A200/MPG24/V
R901040000		IH15EB-1X/SDBU-A200/OPG24/V
R901039996		IH15EB-1X/SDBU-H200/MPG24/V
R901089997		IH15EB-1X/SDBU-H200/OPG24/V
R904101825		IH15EB-1X/SDBU-S50/MPG24/V
R904101343		IH15EB-1X/SDBU-S100/MPG24/V
R904101833		IH15EB-1X/SDBU-S200/MPG24/V
R901039995		IH15EB-1X/SDBU-S200/OPG24/V
R904101882		IH15EB-1X/SDBU-S315/MPG24/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	25 bar 50 bar 100 bar 200 bar 315 bar 400 bar = 25 = 50 = 100 = 200 = 315 = 400

Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)
More pressure ratings on request!

		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 140 bar 210 bar 330 bar	= 50E = 100E = 140E = 210E = 330E
--	--	---	--	---

Characteristic curve for type-examination tested pressure relief valves type: DBD...E
Type testing according to Pressure Equipment Directive 97/23/EC

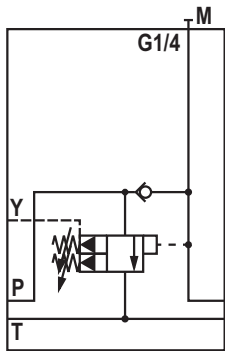
See page 88

<input type="checkbox"/> 4	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="checkbox"/> 8	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/> 14	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> 26	Seal	Seal material Seal material	FKM = V NBR = M

Directional seat valve module, type "W", "S" (dimensions in mm)

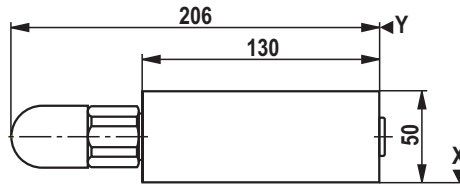
Pressure cut-off module, type "SDA"

Symbol



Unit dimensions

Dimension Z = 95 mm



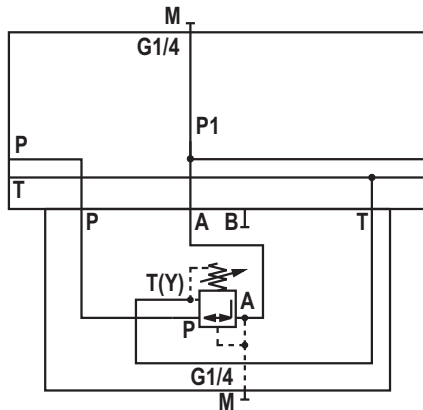
Material no.	Device designation	Type designation
	Pressure cut-off module	IH15EB-2X/SDA- <input type="checkbox"/> ²³ / <input type="checkbox"/> ²⁴ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901152738		IH15EB-2X/SDA-2/K/M/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> ²³ Adjustment type	Hexagon with protective cap	= 2
<input type="checkbox"/> ²⁴ Pressure rating of the pressure cut-off valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = C 100 bar = F 200 bar = K 350 bar = R
<input type="checkbox"/> ²⁶ Seal	Seal material Seal material	FKM = V NBR = M

Directional seat valve module, type "W", "S" (dimensions in mm)

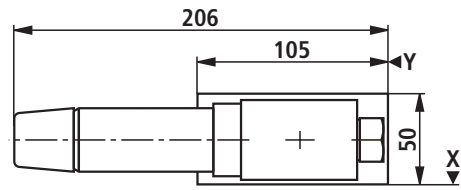
Pressure reducing module, type "WDR"

Symbol



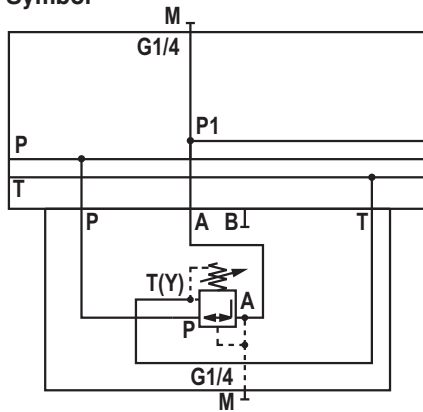
Unit dimensions

Dimension Z = 120 mm



Pressure reducing module with P1 channel, type "WDRP1"

Symbol



Material no.	Device designation	Type designation
	Pressure reducing module	IH15MB-1X/WDR- <input type="text" value="16"/> / <input type="text" value="17"/> / <input type="text" value="14"/> / <input type="text" value="26"/>
R901066169		IH15MB-1X/WDR-1/210/M/V
R901066168		IH15MB-1X/WDR-1/210/O/V
R904101852		IH15MB-1X/WDR-2/75/M/V
R904102085		IH15MB-1X/WDR-2/75/O/V
R904101559		IH15MB-1X/WDR-2/150/M/V
R904101853		IH15MB-1X/WDR-2/210/M/V
R904101854		IH15MB-1X/WDR-2/315/M/V
R901066167		IH15MB-1X/WDR-3/210/M/V
R901066166		IH15MB-1X/WDR-3/210/O/V
R901066165		IH15MB-1X/WDR-7/210/M/V
R901066164		IH15MB-1X/WDR-7/210/O/V

Directional seat valve module, type "W", "S"

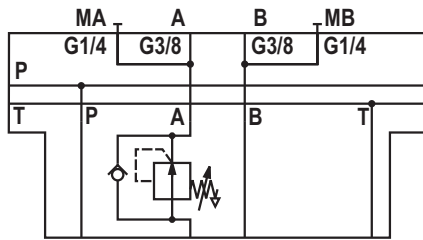
Material no.	Device designation	Type designation
	Pressure reducing module with P1 channel	IH15MB-1X/WDRP1- <input type="checkbox"/> ¹⁶ / <input type="checkbox"/> ¹⁷ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101755		IH15MB-1X/WDRP1-1/150/M/V
R901067481		IH15MB-1X/WDRP1-1/150/O/V
R904101636		IH15MB-1X/WDRP1-2/75/M/V
R901067480		IH15MB-1X/WDRP1-2/75/O/V
R904101855		IH15MB-1X/WDRP1-2/150/M/V
R901067478		IH15MB-1X/WDRP1-2/150/O/V
R901067482		IH15MB-1X/WDRP1-3/210/M/V
R901067483		IH15MB-1X/WDRP1-3/210/O/V
R901067485		IH15MB-1X/WDRP1-7/210/M/V
R901067486		IH15MB-1X/WDRP1-7/210/O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port Without pressure monitoring	= M = O	
<input type="checkbox"/> ¹⁶ Adjustment element at the pressure reducing valve	Rotary knob Setscrew with hexagon and protective cap Lockable rotary knob with scale Rotary knob with scale	= 1 = 2 = 3 = 7	
<input type="checkbox"/> ¹⁷ Secondary pressure	Max. secondary pressure Max. secondary pressure Max. secondary pressure Max. secondary pressure Max. secondary pressure	25 bar 75 bar 150 bar 210 bar 315 bar	= 25 = 75 = 150 = 210 = 315
<input type="checkbox"/> ²⁶ Seal	Seal material Seal material	FKM NBR	= V = M

Directional seat valve module, type "W", "S" (dimensions in mm)

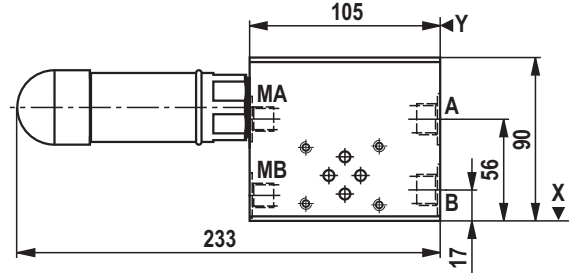
Sandwich module with pressure reducing valve in channel A, type "WZDR-A"

Symbol



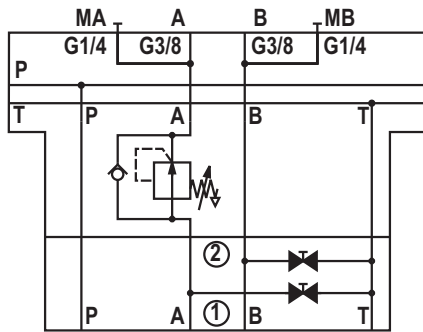
Unit dimensions

Dimension Z = 95 mm



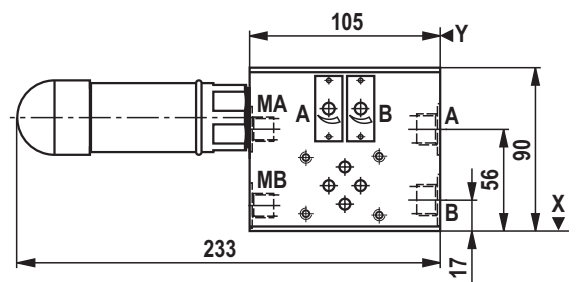
Sandwich module with pressure reducing valve in channel A and drain cock, type "WZDR-A/A"

Symbol



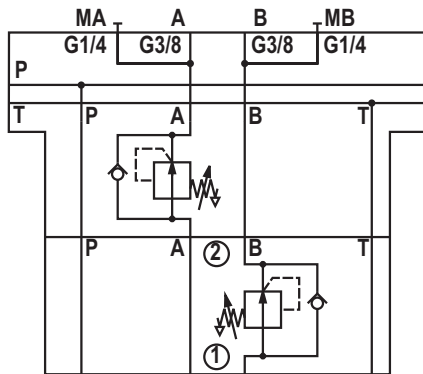
Unit dimensions

Dimension Z = 145 mm



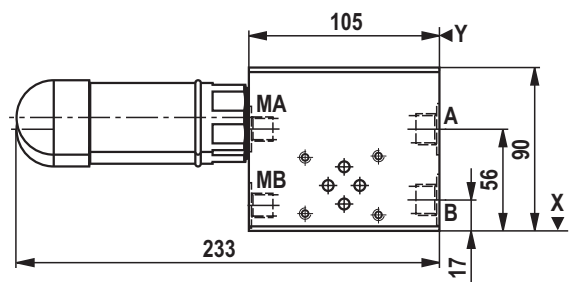
Sandwich module with pressure reducing valve in channel AB, type "WZDR-AB"

Symbol



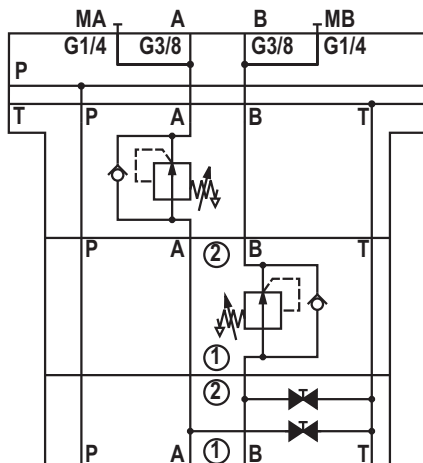
Unit dimensions

Dimension Z = 155 mm



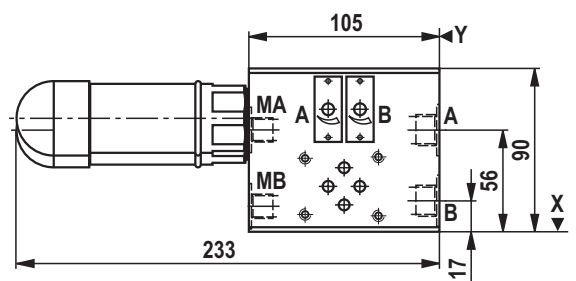
Sandwich module with pressure reducing valve in channel AB and drain cock, type "WZDR-AB/A"

Symbol



Unit dimensions

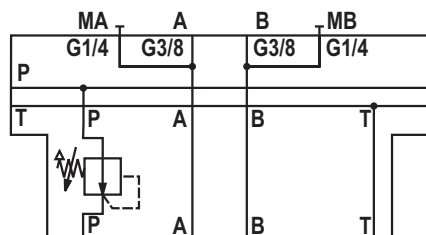
Dimension Z = 205 mm



Directional seat valve module, type "W", "S" (dimensions in mm)

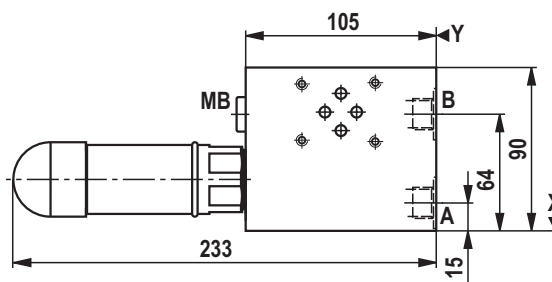
Sandwich module with pressure reducing valve in channel P, type "WZDR-P"

Symbol



Unit dimensions

Dimension Z = 95 mm



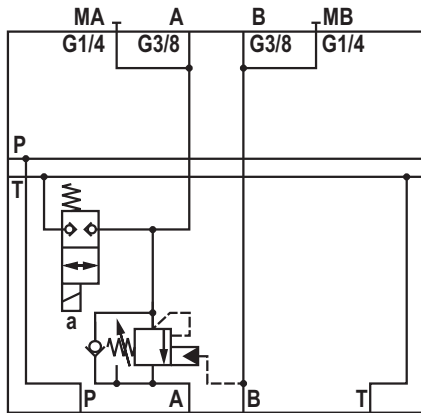
Material no.	Device designation	Type designation
	Sandwich module with pressure reducing valve	IH15EB-1X/WZDR- <input type="checkbox"/> ₂₉ / <input type="checkbox"/> ₃₂ <input type="checkbox"/> ₃₃ / <input type="checkbox"/> ₃₄ / <input type="checkbox"/> ₁₄ / <input type="checkbox"/> ₂₆
R904102218		IH15EB-1X/WZDR-AB/2/100/M/V
R904102219		IH15EB-1X/WZDR-AB/2/100D/M/V
R901040102		IH15EB-1X/WZDR-AB/2/210/M/V
R901063736		IH15EB-1X/WZDR-AB/2/210D/M/V
R904101639		IH15EB-1X/WZDR-A/2/100/M/V
R904102089		IH15EB-1X/WZDR-A/2/100D/M/V
R901024724		IH15EB-1X/WZDR-A/2/210D/M/V
R904101807		IH15EB-1X/WZDR-A/2/315/M/V
R901110142		IH15EB-1X/WZDR-P/2/210/M/V
R901110143		IH15EB-1X/WZDR-P/2/210D/M/V

<input type="checkbox"/> 14	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> 26	Seal	Seal material Seal material	FKM = V NBR = M
<input type="checkbox"/> 29	Cartridge valve	In channel A In channel A and B In channel P	= A = AB = P
<input type="checkbox"/> 32	Stop valve	Without stop valve With stop valve	= no code = A
<input type="checkbox"/> 33	Adjustment element at the pressure reducing valve	Setscrew with hexagon and protective cap Rotary knob with scale, lockable	= 2 = 3
<input type="checkbox"/> 34	Secondary pressure	Max. secondary pressure Max. secondary pressure Max. secondary pressure Max. secondary pressure with pressure switch Max. secondary pressure with pressure switch Max. secondary pressure with pressure switch	100 bar = 100 210 bar = 210 315 bar = 315 100 bar = 100D 210 bar = 210D 315 bar = 315D

Directional seat valve module, type "W", "S" (dimensions in mm)

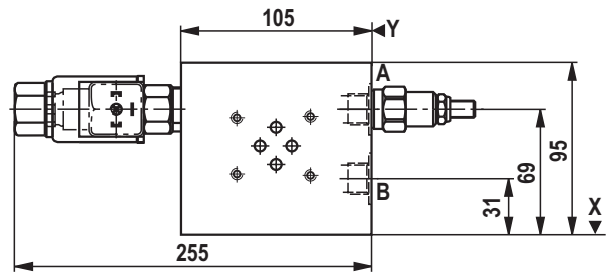
Sandwich module with lowering brake valve in channel A, type "WZSB-A"

Symbol



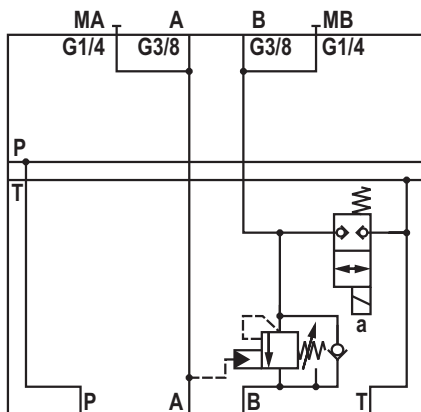
Unit dimensions

Dimension Z = 110 mm



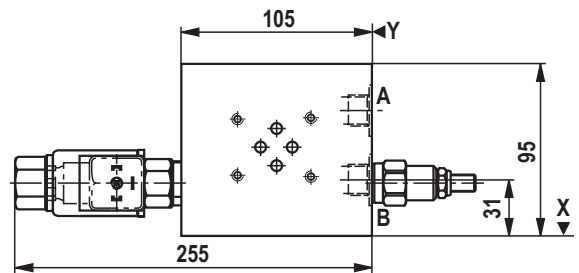
Sandwich module with lowering brake valve in channel B, type "WZSB-B"

Symbol



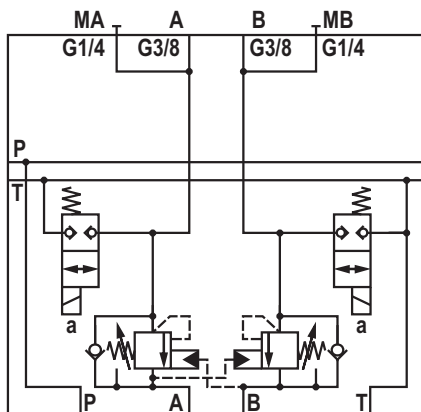
Unit dimensions

Dimension Z = 110 mm



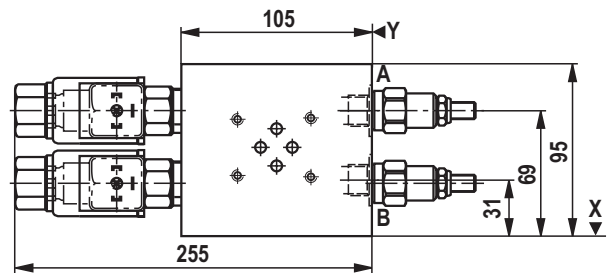
Sandwich module with lowering brake valve in channel A and B, type "WZSB-AB"

Symbol



Unit dimensions

Dimension Z = 110 mm



Directional seat valve module, type: "W", "S"

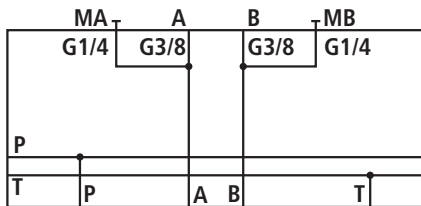
Material no.	Device designation	Type designation
	Sandwich module with lowering brake valve	IH15EB-1X/WZSB- <input type="checkbox"/> ²⁹ / <input type="checkbox"/> ¹⁴ <input type="checkbox"/> ⁴ <input type="checkbox"/> ⁸ / <input type="checkbox"/> ²⁶
R901160333		IH15EB-1X/WZSB-AB/MNG24/V

<input type="checkbox"/> ⁴	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="checkbox"/> ⁸	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/> ¹⁴	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> ²⁶	Seal	Seal material Seal material	FKM NBR = V = M
<input type="checkbox"/> ²⁹	Cartridge valve	In channel A In channel B In channel A and B	= A = B = AB

Directional seat valve module, type "W", "S" (dimensions in mm)

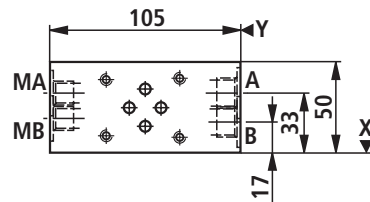
Sandwich module, type "WZ"

Symbol



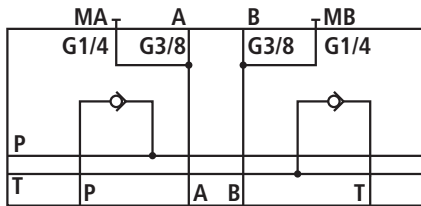
IH15MB-1X/WZ-...

Unit dimensions

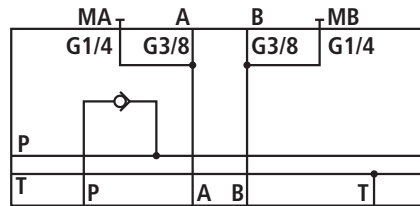


Dimension Z = 70 mm without check valve

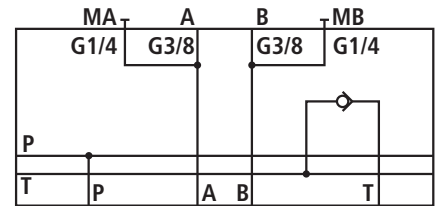
Dimension Z = 85 mm with check valve



IH15MB-1X/WZ-PT/...



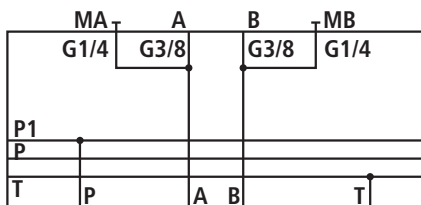
IH15MB-1X/WZ-P/...



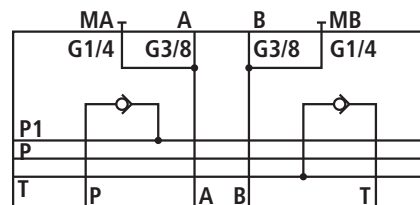
IH15MB-1X/WZ-T/...

Sandwich module with P1 channel, type "WZP1"

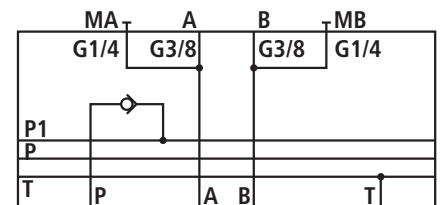
Symbol



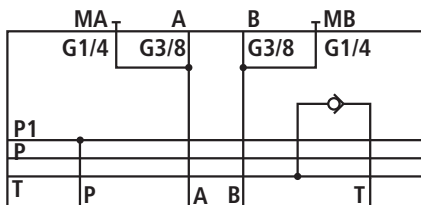
IH15MB-1X/WZP1-...



IH15MB-1X/WZP1-PT/...



IH15MB-1X/WZP1-P/...



IH15MB-1X/WZP1-T/...

Material no.	Device designation	Type designation
	Sandwich module	IH15MB-1X/WZ- <input type="text" value="21"/> / <input type="text" value="14"/> / <input type="text" value="26"/>
R904101345		IH15MB-1X/WZ-M/V
R904101410		IH15MB-1X/WZ-O/V
R901067488		IH15MB-1X/WZ-PT/M/V
R901067489		IH15MB-1X/WZ-PT/O/V
R901067490		IH15MB-1X/WZ-P/M/V
R901067491		IH15MB-1X/WZ-P/O/V
R901065897		IH15MB-1X/WZ-T/M/V
R904101455		IH15MB-1X/WZ-T/O/V

Directional seat valve module, type "W", "S"

Material no.	Device designation	Type designation
	Sandwich module with P1 channel	IH15MB-1X/WZP1- <input type="checkbox"/> ²¹ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101830		IH15MB-1X/WZP1-M/V
R904101598		IH15MB-1X/WZP1-O/V
R901067493		IH15MB-1X/WZP1-PT/M/V
R901067495		IH15MB-1X/WZP1-PT/O/V
R901067497		IH15MB-1X/WZP1-P/M/V
R904101756		IH15MB-1X/WZP1-P/O/V
R901067498		IH15MB-1X/WZP1-T/M/V
R901067499		IH15MB-1X/WZP1-T/O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> ²¹ Check valve	Without check valve In channel P In channel T In channel P and T	= no code = P = T = PT
<input type="checkbox"/> ²⁶ Seal	Seal material Seal material	FKM NBR = V = M

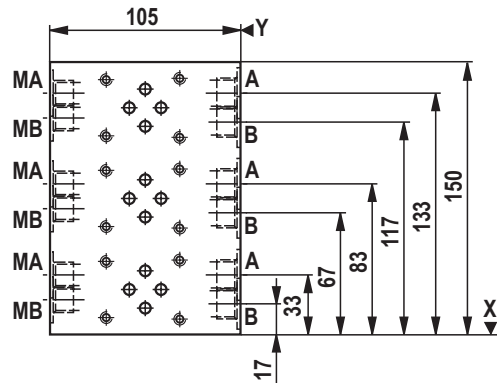
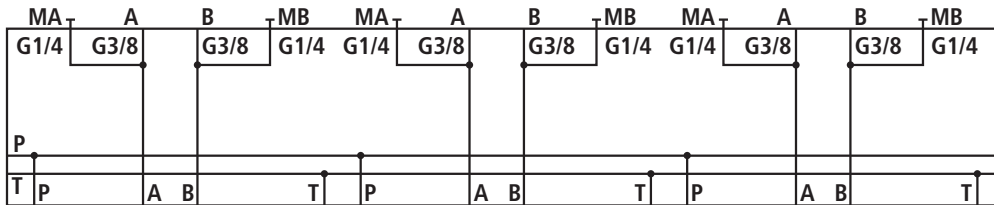
Directional seat valve module, type "W", "S" (dimensions in mm)

Sandwich module with 3 valve stations, type "WZ3"

Symbol

Unit dimensions

Dimension Z = 70 mm

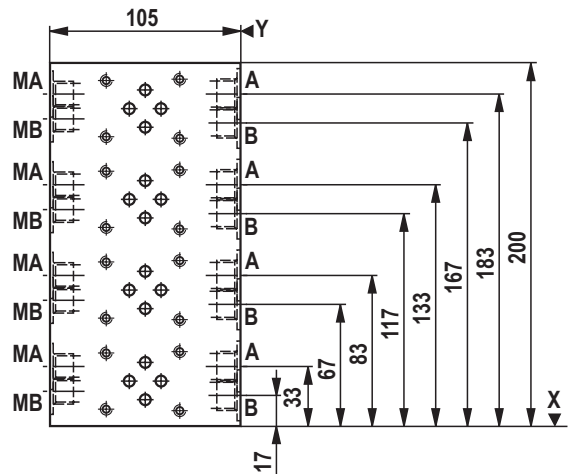
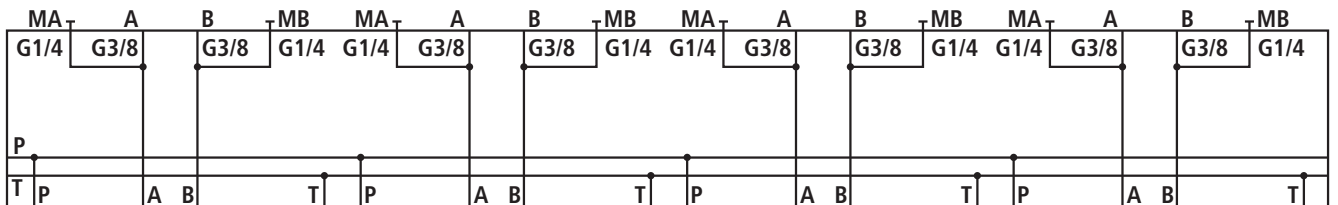


Sandwich module with 4 valve stations, type "WZ4"

Symbol

Unit dimensions

Dimension Z = 70 mm



Directional seat valve module, type "W", "S"

Material no.	Device designation	Type designation
	Sandwich module, 3 valve stations	IH15MB-1X/WZ3- ¹⁴ <input type="checkbox"/> / ²⁶ <input type="checkbox"/>
R901096707		IH15EB-1X/WZ3-M/V
R901096708		IH15EB-1X/WZ3-O/V

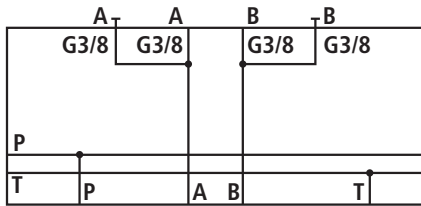
Material no.	Device designation	Type designation
	Sandwich module, 4 valve stations	IH15MB-1X/WZ4- ¹⁴ <input type="checkbox"/> / ²⁶ <input type="checkbox"/>
R901090430		IH15EB-1X/WZ4-M/V
R901096706		IH15EB-1X/WZ4-O/V

¹⁴ <input type="checkbox"/>	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
²⁶ <input type="checkbox"/>	Seal	Seal material Seal material	FKM = V NBR = M

Directional seat valve module, type "W", "S" (dimensions in mm)

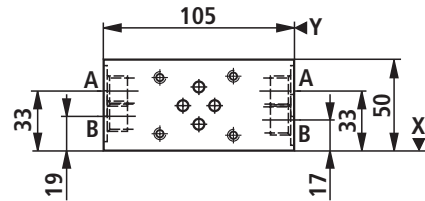
Sandwich module in special design -008
 (outlets A and B 2x G3/8 each), type "WZ-...-008"

Symbol



Unit dimensions

Dimension Z = 70 mm

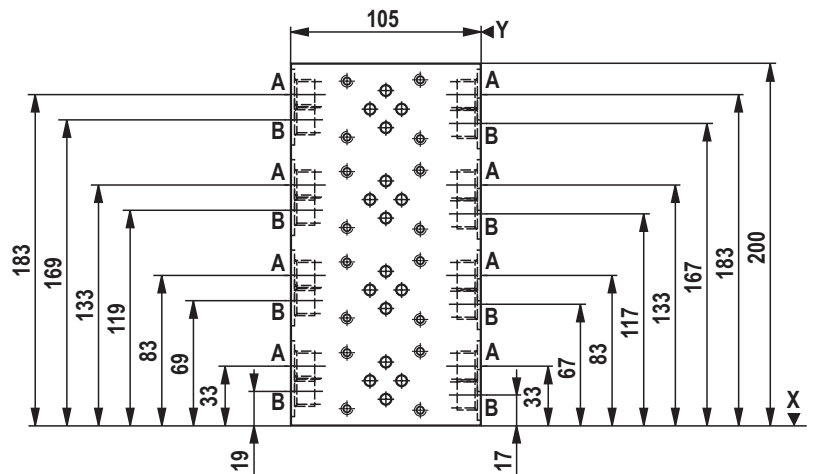
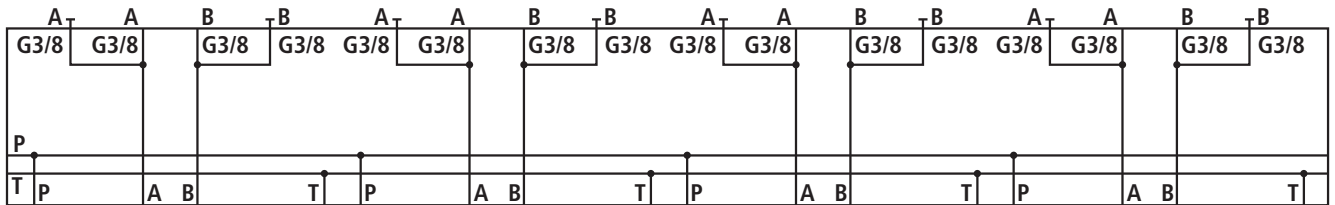


Sandwich module with 4 valve stations in special design -008
 (outlets A and B 2x G3/8 each), type "WZ4-...-008"

Symbol

Unit dimensions

Dimension Z = 70 mm



Directional seat valve module, type "W", "S"

Material no.	Device designation	Type designation
	Sandwich module in special design -008, 1 valve station	IH15MB-1X/WZ- ¹⁴ <input type="checkbox"/> / ²⁶ <input type="checkbox"/> -008
R901128760		IH15MB-1X/WZ-M/V-008
R901125893		IH15MB-1X/WZ-O/V-008

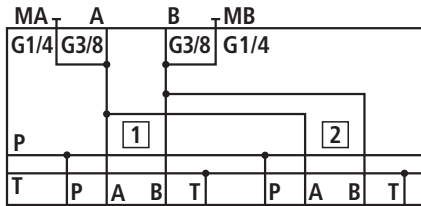
Material no.	Device designation	Type designation
	Sandwich module in special design -008, 4 valve stations	IH15MB-1X/WZ4- ¹⁴ <input type="checkbox"/> / ²⁶ <input type="checkbox"/> -008
R901128761		IH15MB-1X/WZ4-M/V-008
R901125863		IH15MB-1X/WZ4-O/V-008

¹⁴ <input type="checkbox"/>	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
²⁶ <input type="checkbox"/>	Seal	Seal material Seal material	FKM NBR = V = M

Directional seat valve module, type "W", "S" (dimensions in mm)

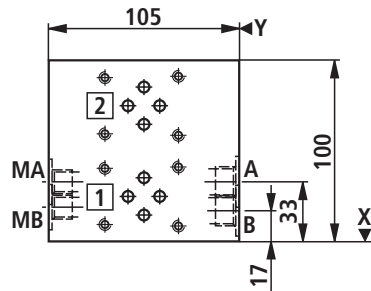
Sandwich module 2 - AA - BB, type "WZ2AABB"

Symbol



Unit dimensions

Dimension Z = 70 mm

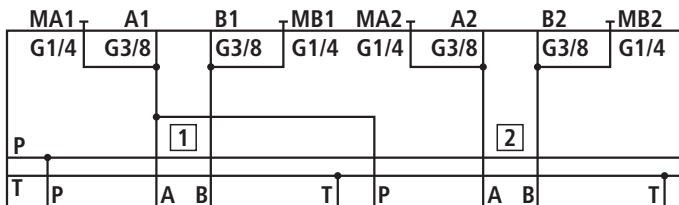


Material no.	Device designation	Type designation
	Sandwich module, 2 valve stations, AA-BB channel connected	IH15MB-1X/WZ2AABB- <input type="checkbox"/> 14 / <input type="checkbox"/> 26
R904101364		IH15MB-1X/WZ2AABB-M/V
R904101411		IH15MB-1X/WZ2AABB-O/V

<input type="checkbox"/> 14	Pressure monitoring	With measuring port	= M
		Without pressure monitoring	= O
<input type="checkbox"/> 26	Seal	Seal material	FKM = V
		Seal material	NBR = M

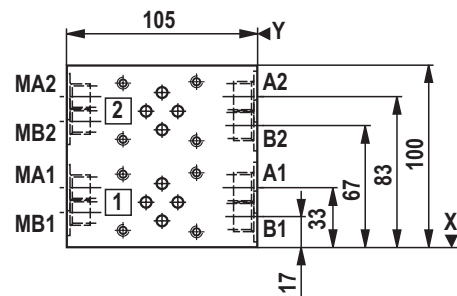
Sandwich module 2 - AP, type "WZ2AP"

Symbol



Unit dimensions

Dimension Z = 70 mm



Material no.	Device designation	Type designation
	Sandwich module, 2 valve stations, A-P channel connected	IH15MB-1X/WZ2AP- <input type="checkbox"/> 14 / <input type="checkbox"/> 26
R901094521		IH15MB-1X/WZ2AP-M/V
R901094520		IH15MB-1X/WZ2AP-O/V

<input type="checkbox"/> 14	Pressure monitoring	With measuring port	= M
		Without pressure monitoring	= O
<input type="checkbox"/> 26	Seal	Seal material	FKM = V
		Seal material	NBR = M

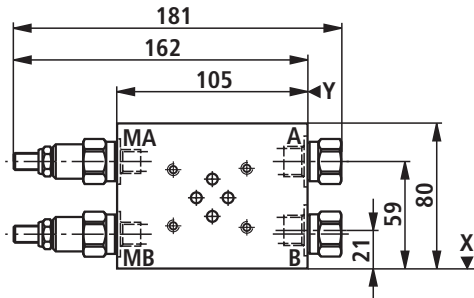
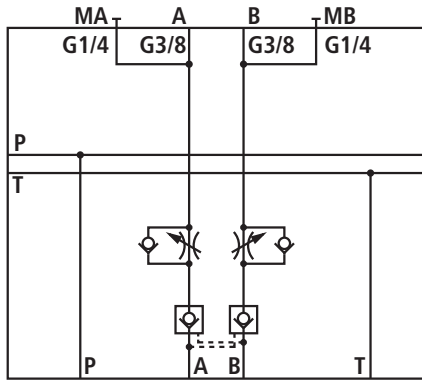
Directional seat valve module, type "W", "S" (dimensions in mm)

Sandwich module with cartridge valves, type "WZE"

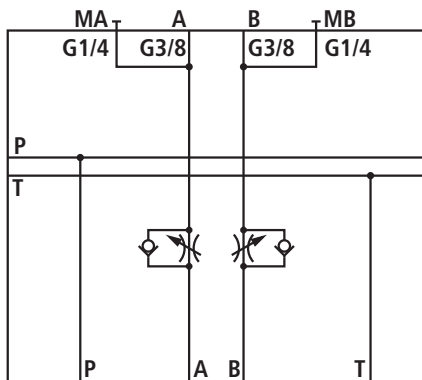
Symbol

Unit dimensions

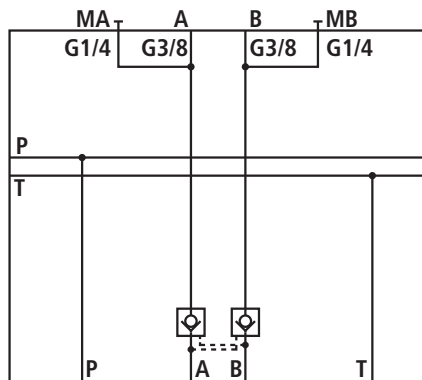
Dimension Z = 110 mm



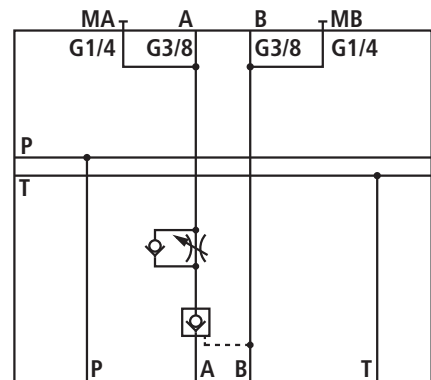
IH15EB-1X/WZE-FSR/AB...



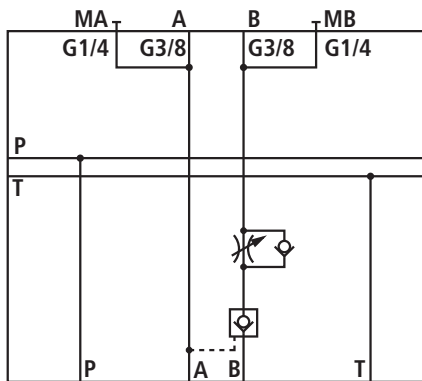
IH15EB-1X/WZE-FS/AB...



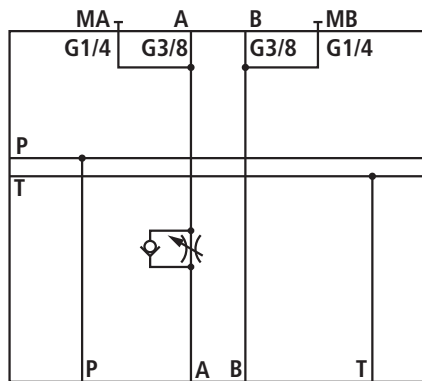
IH15EB-1X/WZE-R/AB...



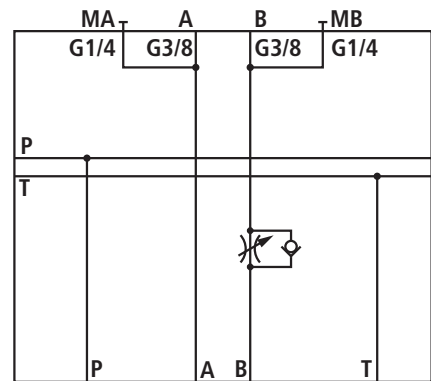
IH15EB-1X/WZE-FSR/A...



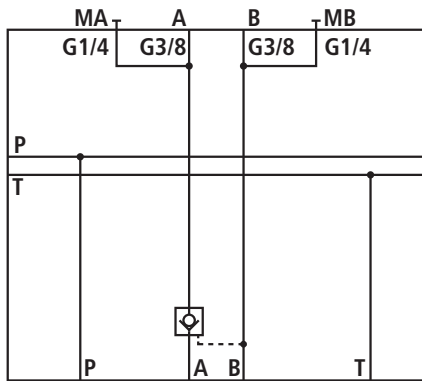
IH15EB-1X/WZE-FSR/B...



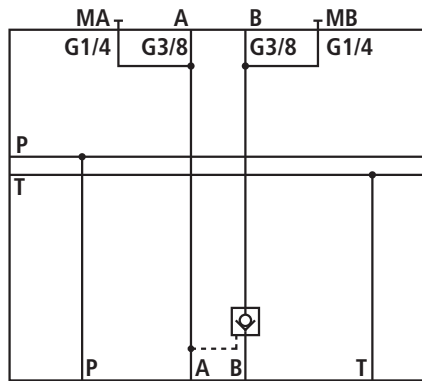
IH15EB-1X/WZE-FS/A...



IH15EB-1X/WZE-FS/B...



IH15EB-1X/WZE-R/A...

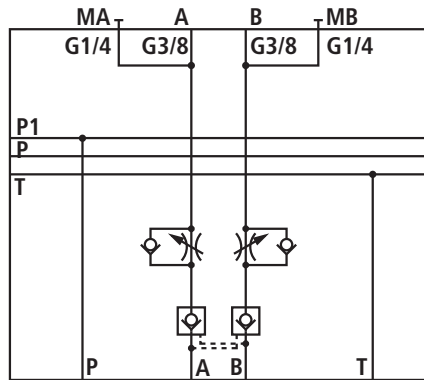


IH15EB-1X/WZE-R/B...

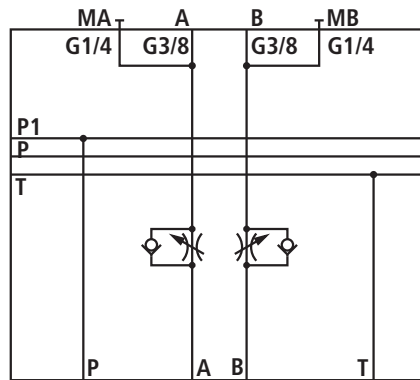
Directional seat valve module, type "W", "S" (dimensions in mm)

Sandwich module with cartridge valves, type "WZEP1"

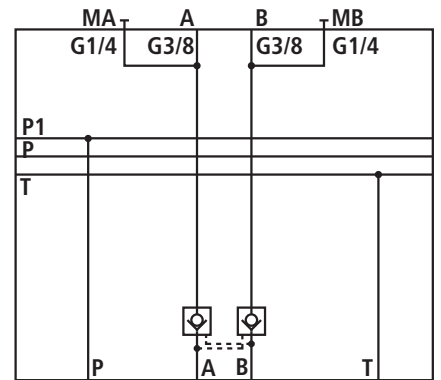
Symbol



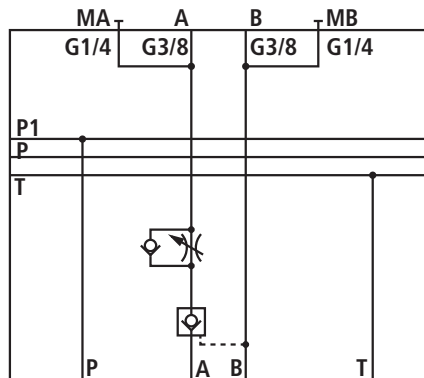
IH15EB-1X/WZEP1-FSR/AB...



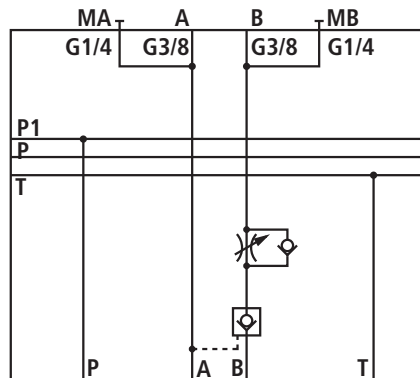
IH15EB-1X/WZEP1-FS/AB...



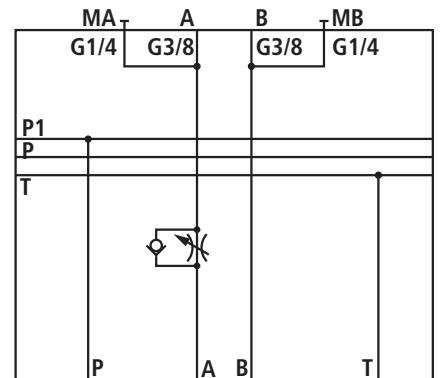
IH15EB-1X/WZEP1-R/AB...



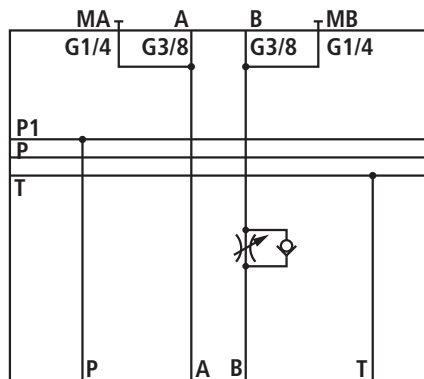
IH15EB-1X/WZEP1-FSR/A...



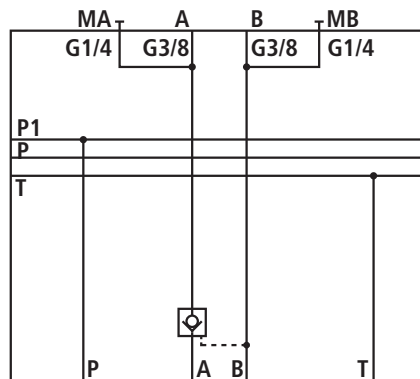
IH15EB-1X/WZEP1-FSR/B...



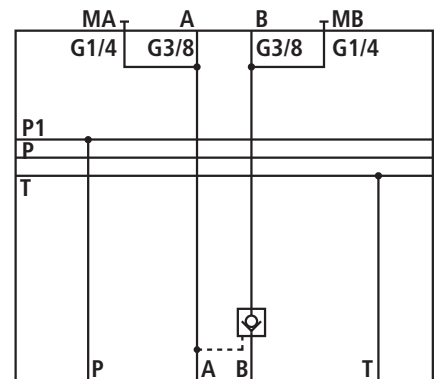
IH15EB-1X/WZEP1-FS/A...



IH15EB-1X/WZEP1-FS/B...



IH15EB-1X/WZEP1-R/A...



IH15EB-1X/WZEP1-R/B...

Material no.	Device designation	Type designation
	Sandwich module with cartridge valves	IH15EB-1X/WZE- <input type="checkbox"/> ²⁸ / <input type="checkbox"/> ²⁹ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101344		IH15EB-1X/WZE-FSR/AB/M/V
R901067578		IH15EB-1X/WZE-FSR/AB/O/V
R901067579		IH15EB-1X/WZE-FS/AB/M/V
R901067580		IH15EB-1X/WZE-FS/AB/O/V
R901067581		IH15EB-1X/WZE-R/AB/M/V
R901067582		IH15EB-1X/WZE-R/AB/O/V

Directional seat valve module, type "W", "S"

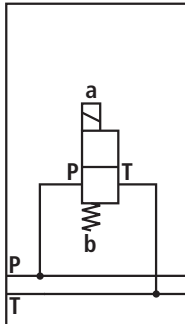
Material no.	Device designation	Type designation
	Sandwich module with cartridge valves and P1 channel	IH15EB-1X/WZEP1- <input type="checkbox"/> ²⁸ / <input type="checkbox"/> ²⁹ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901067583		IH15EB-1X/WZEP1-FSR/AB/M/V
R901067584		IH15EB-1X/WZEP1-FSR/AB/O/V
R901067585		IH15EB-1X/WZEP1-FS/AB/M/V
R901067586		IH15EB-1X/WZEP1-FS/AB/O/V
R901067587		IH15EB-1X/WZEP1-R/AB/M/V
R901067675		IH15EB-1X/WZEP1-R/AB/O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> ²⁶ Seal	Seal material Seal material	FKM = V NBR = M
<input type="checkbox"/> ²⁸ Cartridge valve	Adjustable throttle check valve Pilot operated check valve Adjustable throttle check valve and pilot operated check valve	= FS = R = FSR
<input type="checkbox"/> ²⁹ Cartridge valve	In channel A In channel B In channel A and B	= A = B = AB

Directional seat valve module, type "W", "S" (dimensions in mm)

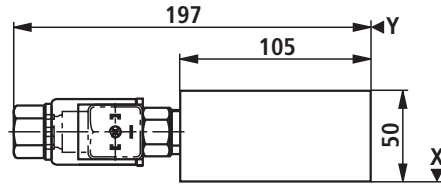
Circulation module, type "SU"

Symbol



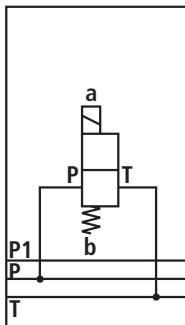
Unit dimensions

Dimension Z = 70 mm



Circulation module with P1 channel, type "SUP1"

Symbol



Material no.	Device designation	Type designation
	Circulation module	IH15EB-1X/SU- <input type="text" value="4"/> <input type="text" value="8"/> / <input type="text" value="26"/>
R904101894		IH15EB-1X/SU-NG24/V
R904101895		IH15EB-1X/SU-PG24/V

Material no.	Device designation	Type designation
	Circulation module with P1 channel	IH15EB-1X/SUP1- <input type="text" value="4"/> <input type="text" value="8"/> / <input type="text" value="26"/>
R904101896		IH15EB-1X/SUP1-NG24/V
R904101897		IH15EB-1X/SUP1-PG24/V

<input type="text" value="4"/>	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text" value="8"/>	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text" value="26"/>	Seal	Seal material Seal material	FKM NBR = V = M

Directional seat valve module, type "W", "S" (dimensions in mm)

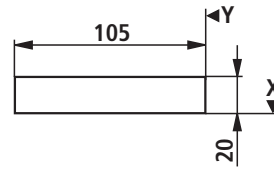
Module P, type "SP"

Symbol

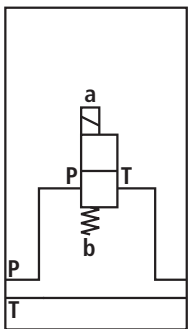


IH15EB-1X/SP -V
-M

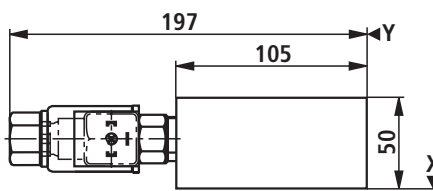
Unit dimensions



Dimension Z = 70 mm



IH15EB-1X/SP -N ...
-P ...



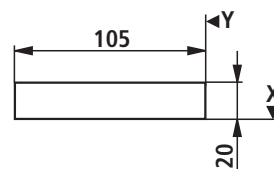
Module P with P1 channel, type "SPP1"

Symbol

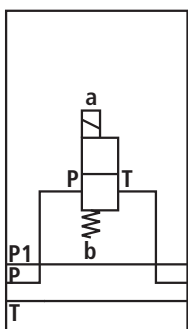


IH15EB-1X/SPP1 -V
-M

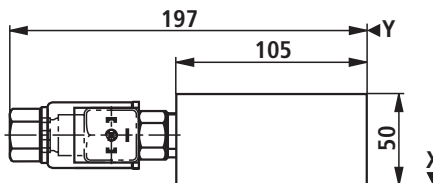
Unit dimensions



Dimension Z = 70 mm



IH15EB-1X/SPP1 -N ...
-P ...



Directional seat valve module, type "W", "S"

Material no.	Device designation	Type designation
	Control module P	IH15EB-1X/SP- <input type="text"/> ²⁶
R904101760		IH15EB-1X/SP/V

Material no.	Device designation	Type designation
	Control module P	IH15EB-1X/SP- <input type="text"/> ⁴ <input type="text"/> ⁸ / <input type="text"/> ²⁶
R904101795		IH15EB-1X/SP-NG24/V
R904101898		IH15EB-1X/SP-PG24/V

Material no.	Device designation	Type designation
	Control module P with P1 channel	IH15EB-1X/SPP1- <input type="text"/> ²⁶
R901070019		IH15EB-1X/SPP1/V

Material no.	Device designation	Type designation
	Control module P with P1 channel	IH15EB-1X/SPP1- <input type="text"/> ⁴ <input type="text"/> ⁸ / <input type="text"/> ²⁶
R904101899		IH15EB-1X/SPP1-NG24/V
R904101900		IH15EB-1X/SPP1-PG24/V

<input type="text"/> ⁴	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="text"/> ⁸	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="text"/> ²⁶	Seal	Seal material Seal material	FKM NBR = V = M

Directional seat valve module, type "W", "S" (dimensions in mm)

Module T, type "ST"

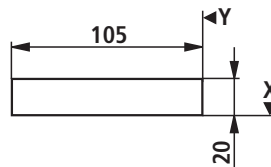
Symbol



IH15EB-1X/ST ^{-V}
_{-M}

Unit dimensions

Dimension Z = 70 mm



Module T with P1 channel, type "STP1"

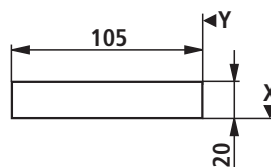
Symbol



IH15EB-1X/STP1 ^{-V}
_{-M}

Unit dimensions

Dimension Z = 70 mm



Material no.	Device designation	Type designation
	Control module T	IH15EB-1X/ST- ²⁶ <input type="text"/>
R901300263		IH15EB-1X/ST/V

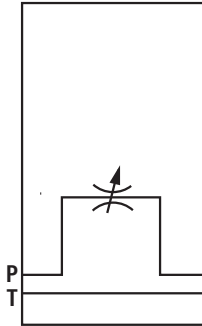
Material no.	Device designation	Type designation
	Control module T with P1 channel	IH15EB-1X/STP1- ²⁶ <input type="text"/>
R901300262		IH15EB-1X/STP1/V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Directional seat valve module, type "W", "S" (dimensions in mm)

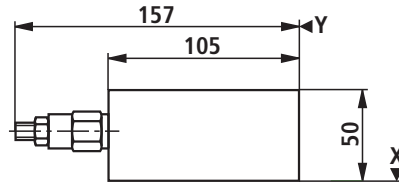
Module PDV, type "SPDV"

Symbol



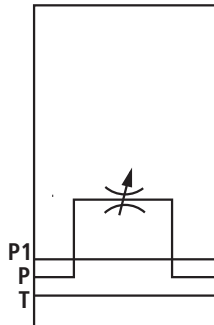
Unit dimensions

Dimension Z = 70 mm



Module PDV with P1 channel, type "SPDVP1"

Symbol



Material no.	Device designation	Type designation
	Control module P with throttle valve	IH15MB-1X/SPDV - ²⁶ <input type="text"/>
R901215052		IH15MB-1X/SPDV -V

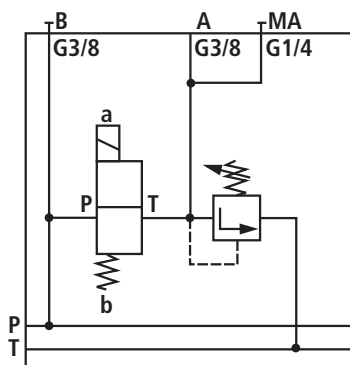
Material no.	Device designation	Type designation
	Control module P with throttle valve and P1 channel	IH15MB-1X/SPDVP1 - ²⁶ <input type="text"/>
R901300246		IH15MB-1X/SPDVP1 - V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Directional seat valve module, type "S" (dimensions in mm)

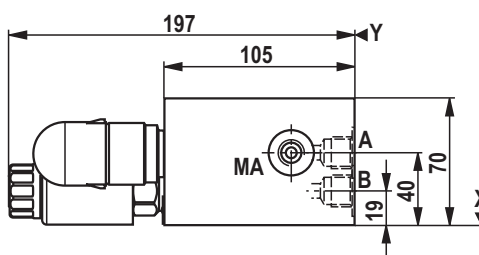
Module P - B - A - T with pressure relief valve,
type "SPBAT2DB"

Symbol



Unit dimensions

Dimension Z = 85 mm



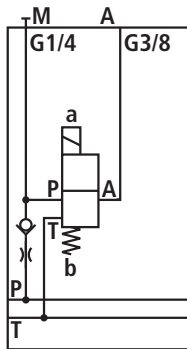
Material no.	Device designation	Type designation
	Module SPBAT2DB	IH15EB-1X/SPBAT2DB- <input type="checkbox"/> 1 <input type="checkbox"/> 2 / <input type="checkbox"/> 14 <input type="checkbox"/> 4 <input type="checkbox"/> 8 <input type="checkbox"/> 26
R901168798		IH15EB-1X/SPBAT2DB-S315/OPG24/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with internal hexagon Rotary knob	= S = H
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	25 bar 50 bar 100 bar 200 bar 350 bar 500 bar = 25 = 50 = 100 = 200 = 350 = 500
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar 100 bar 140 bar 210 bar 330 bar = 50E = 100E = 140E = 210E = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD 6../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 88
<input type="checkbox"/> 4	Designation of the 2/2 seat valve	Normally closed Normally open	= N = P
<input type="checkbox"/> 8	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/> 14	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> 26	Seal	Seal material	FKM = V

Directional seat valve module, type "W", "S" (dimensions in mm)

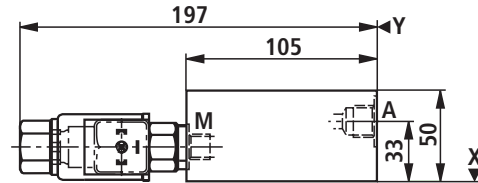
Module P - A, type "SPA3"

Symbol



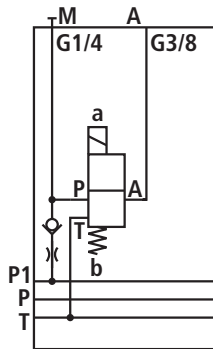
Unit dimensions

Dimension Z = 70 mm



Module P - A with P1 channel, type "SPA3P1"

Symbol



Material no.	Device designation	Type designation
	Control module P - A	IH15EB-1X/SPA3- 5 14 8 27 26 □ / □ □ / □ / □
R901019899		IH15EB-1X/SPA3-C/MG24/V
R904101901		IH15EB-1X/SPA3-C/OG24/V
R901070054		IH15EB-1X/SPA3-U/MG24/V
R904101902		IH15EB-1X/SPA3-U/OG24/V

Material no.	Device designation	Type designation
	Control module P - A with P1 channel	IH15EB-1X/SPA3P1- 5 14 8 27 26 □ / □ □ / □ / □
R901070056		IH15EB-1X/SPA3P1-C/MG24/V
R901070058		IH15EB-1X/SPA3P1-C/OG24/V
R901070059		IH15EB-1X/SPA3P1-U/MG24/V
R901070060		IH15EB-1X/SPA3P1-U/OG24/V

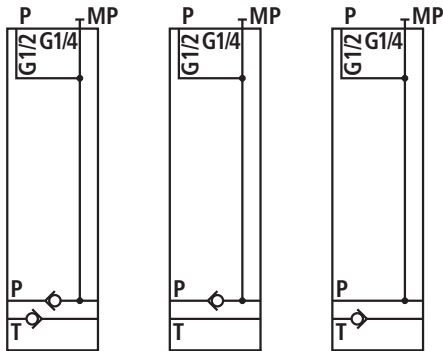
Directional seat valve module, type "W", "S"

5	Designation of the 3/2 seat valve			= U
				= C
8	Solenoid voltage of the seat valves	Volt	24 V DC	= G24
14	Pressure monitoring	With measuring port Without pressure monitoring		= M = O
26	Seal	Seal material Seal material	FKM NBR	= V = M
27	Throttle	Without throttle Throttle diameter Throttle diameter	Ø 1.0 mm Ø 2.5 mm	= no code = B10 = B25

Directional seat valve module, type "W", "S" (dimensions in mm)

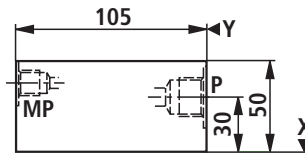
Module with check valve, type "SR"

Symbol



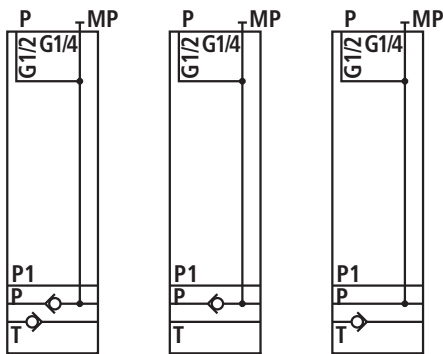
Unit dimensions

Dimension Z = 70 mm



Module with check valve and P1 channel, type "SRP1"

Symbol



Material no.	Device designation	Type designation
	Control module with check valve	IH15EB-1X/SR - <input type="text"/> ²¹ / <input type="text"/> ¹⁴ / <input type="text"/> ²⁶
R901070301		IH15EB-1X/SR-PT/M/V
R904101888		IH15EB-1X/SR-PT/O/V
R901065236		IH15EB-1X/SR-P/M/V
R904101558		IH15EB-1X/SR-P/O/V
R901070303		IH15EB-1X/SR-T/M/V
R904101596		IH15EB-1X/SR-T/O/V

Material no.	Device designation	Type designation
	Control module with check valve and P1 channel	IH15EB-1X/SRP1- <input type="text"/> ²¹ / <input type="text"/> ¹⁴ / <input type="text"/> ²⁶
R901070304		IH15EB-1X/SRP1-PT/M/V
R904101892		IH15EB-1X/SRP1-PT/O/V
R901070305		IH15EB-1X/SRP1-P/M/V
R904101889		IH15EB-1X/SRP1-P/O/V
R901070306		IH15EB-1X/SRP1-T/M/V
R904101890		IH15EB-1X/SRP1-T/O/V

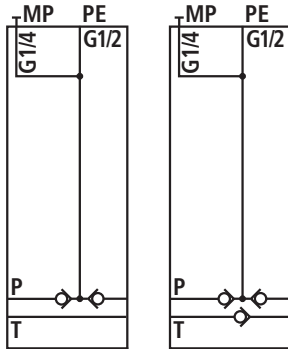
Directional seat valve module, type "W", "S"

14 <input type="checkbox"/>	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
21 <input type="checkbox"/>	Check valve	Without check valve In channel P In channel T In channel P and T	= no code = P = T = PT
26 <input type="checkbox"/>	Seal	Seal material Seal material	FKM = V NBR = M

Directional seat valve module, type "W", "S" (dimensions in mm)

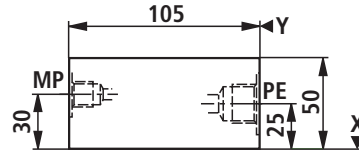
Module with check valve, type "SR2"

Symbol



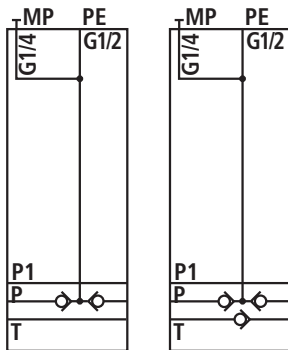
Unit dimensions

Dimension Z = 70 mm



Module with check valve and P1 channel, type "SR2P1"

Symbol



Material no.	Device designation	Type designation
	Control module with check valve	IH15EB-1X/SR2 - <input type="checkbox"/> ²¹ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901140077		IH15EB-1X/SR2-P/O/V

Material no.	Device designation	Type designation
	Control module with check valve and P1 channel	IH15EB-1X/SR2P1- <input type="checkbox"/> ²¹ / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901300658		IH15EB-1X/SR2P1-P/O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port Without measuring port	= M = O
<input type="checkbox"/> ²¹ Check valve	Without check valve In channel P In channel T In channel P and T	= no code = P = T = PT
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM = V NBR = M

Directional seat valve module, type "W", "S" (dimensions in mm)

Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks. The set pressure of the type-examination tested pressure relief valve must be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

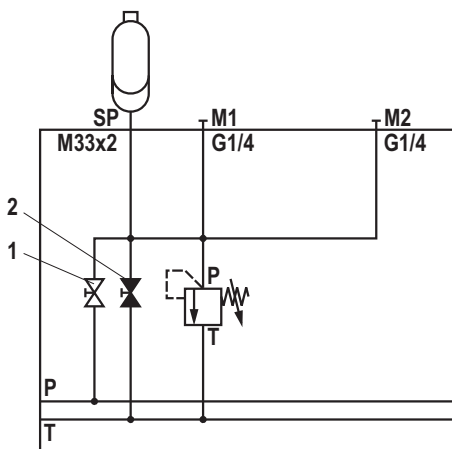
$$p_o = 0.9 \times p_{(\text{minimum operating pressure})}$$

Mounting information

The accumulators is to be fastened so that in case of operational vibrations, safe hold is guaranteed. No holding forces may be applied via the oil and gas connection.

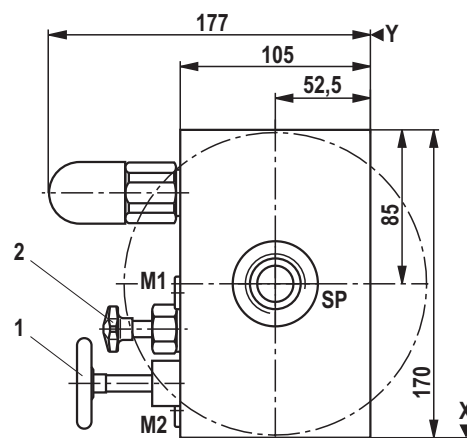
Sandwich module with accumulator shut-off module, type "ZSSB"

Symbol



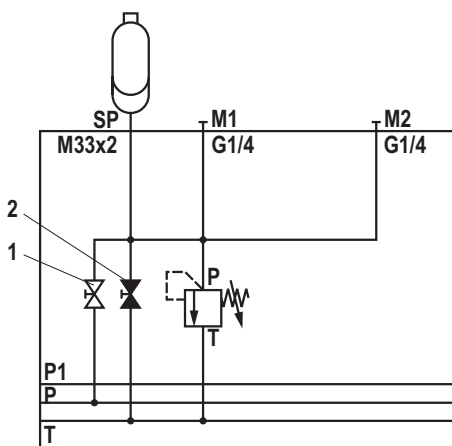
Unit dimensions

Dimension Z = max. 295 mm



Sandwich module with accumulator shut-off module and P1 channel, type "ZSSBP1"

Symbol



- Operating information:
- 1 System stop valve must be open in the operating condition
 - 2 Manual unloading must be closed in the operating condition

Directional seat valve module, type "W", "S"

Material no.	Device designation	Type designation
	Sandwich module with accumulator shut-off module	IH15EB-1X/ZSSB- <input type="checkbox"/> ¹ <input type="checkbox"/> ³ / <input type="checkbox"/> ³¹ / <input type="checkbox"/> ¹⁴ <input type="checkbox"/> ⁸ / <input type="checkbox"/> ¹⁸ / <input type="checkbox"/> ²⁶
R904101904		IH15EB-1X/ZSSB-S140E/E/MG24/1,40/V
R904101903		IH15EB-1X/ZSSB-S140E/M/M/1,40/V
R904102293		IH15EB-1X/ZSSB-S140E/M/M/2,00/V

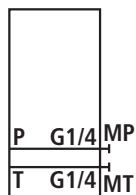
Material no.	Device designation	Type designation
	Sandwich module with accumulator shut-off module and P1 channel	IH15EB-1X/ZSSBP1- <input type="checkbox"/> ¹ <input type="checkbox"/> ³ / <input type="checkbox"/> ³¹ / <input type="checkbox"/> ¹⁴ <input type="checkbox"/> ⁸ / <input type="checkbox"/> ¹⁸ / <input type="checkbox"/> ²⁶
R904101906		IH15EB-1X/ZSSBP1-S140E/E/MG24/1,40/V
R904101905		IH15EB-1X/ZSSBP1-S140E/M/M/1,40/V

<input type="checkbox"/> ¹	Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="checkbox"/> ³	Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!	Setting pressure up to max. 50 bar Setting pressure up to max. 100 bar Setting pressure up to max. 140 bar Setting pressure up to max. 210 bar Setting pressure up to max. 330 bar	= 50E = 100E = 140E = 210E = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD...E Type testing according to Pressure Equipment Directive 97/23/EC			See page 89
<input type="checkbox"/> ⁸	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/> ¹⁴	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> ¹⁸	Diaphragm-type accumulator	Nominal volume in l	Max. pressure in bar
		0.35 0.50 0.70 0.70 1.40 1.40 2.00 2.80 3.50	210 210 210 350 140 350 350 350 350
	Bladder-type accumulator	0.50 4.00	400 330
<input type="checkbox"/> ²⁶	Seal	Seal material Seal material	FKM NBR = V = M
<input type="checkbox"/> ³¹	Unloading	Manual Manual and electromagnetic	= M = E

Directional seat valve module, type "W", "S" (dimensions in mm)

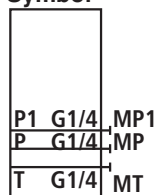
End module, type "WSE" End module with P1 channel, type "WSEP1"

Symbol



IH15MB-1X/WSE...

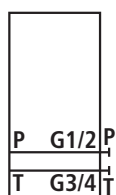
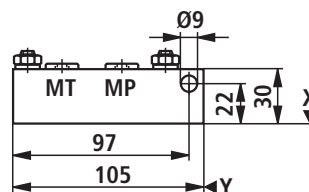
Symbol



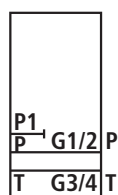
IH15MB-1X/WSEP1...

Unit dimensions

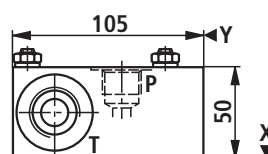
Dimension Z = 70 mm



IH15MB-1X/WSE-PT...



IH15MB-1X/WSEP1-PT...



Material no.	Device designation	Type designation
	End module	IH15MB-1X/WSE- <input type="text" value="22"/> / <input type="text" value="14"/> / <input type="text" value="26"/>
R904101349		IH15MB-1X/WSE-M/V
R904101555		IH15MB-1X/WSE-O/V
R904101793		IH15MB-1X/WSE-PT/M/V
R904101857		IH15MB-1X/WSE-PT/O/V

Material no.	Device designation	Type designation
	End module with P1 channel	IH15MB-1X/WSEP1- <input type="text" value="22"/> / <input type="text" value="14"/> / <input type="text" value="26"/>
R904101599		IH15MB-1X/WSEP1-M/V
R901067146		IH15MB-1X/WSEP1-O/V
R901070307		IH15MB-1X/WSEP1-PT/M/V
R901070308		IH15MB-1X/WSEP1-PT/O/V

<input type="text" value="14"/>	Pressure monitoring	With measuring port	= M
		Without pressure monitoring	= O
<input type="text" value="22"/>	Ports	Without ports	= no code
		P and T	= PT
<input type="text" value="26"/>	Seal	Seal material	FKM = V
		Seal material	NBR = M

Directional seat valve module, type "W", "S" (dimensions in mm)

Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks. The set pressure of the type-examination tested pressure relief valve must be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

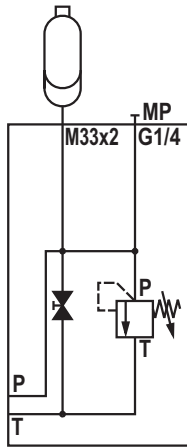
$$p_o = 0.9 \times p_{(\text{minimum operating pressure})}$$

Mounting information

The accumulators is to be fastened so that in case of operational vibrations, safe hold is guaranteed. No holding forces may be applied via the oil and gas connection.

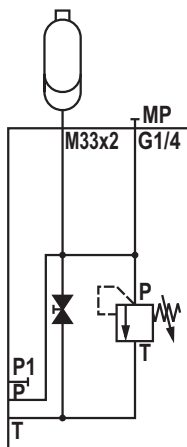
End module with pressure relief valve, accumulator and stop valve, type "SEDBSA"

Symbol



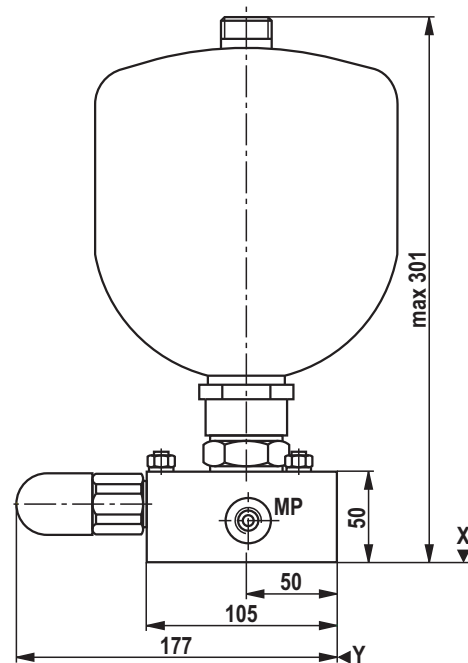
End module with pressure relief valve, accumulator, stop valve and P1 channel, type "SEDBSAP1"

Symbol



Unit dimensions

Dimension Z = max 120 mm



Directional seat valve module, type "W", "S"

Material no.	Device designation	Type designation
	End module with pressure relief valve, accumulator and stop valve	IH15EB-1X/SEDBSA- 1 3 14 18 26 <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
R904102091		IH15EB-1X/SEDBSA-S100/M/0,70/V
R904101415		IH15EB-1X/SEDBSA-S100/M/1,40/V

Material no.	Device designation	Type designation
	End module with pressure relief valve, accumulator, stop valve and P1 channel	IH15EB-1X/SEDBSAP1- 1 3 14 18 26 <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
R904101886		IH15EB-1X/SEDBSAP1-S100/M/1,40/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="checkbox"/> 3	Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = 50E 100 bar = 100E 140 bar = 140E 210 bar = 210E 330 bar = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 89
<input type="checkbox"/> 14	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> 18	Diaphragm-type accumulator	Nominal volume in l	Max. pressure in bar
		0.35	210 = 0.35
		0.50	210 = 0.50
		0.70	210 = 0.70
		0.70	350 = 0.70
		1.40	140 = 1.40
		1.40	350 = 1.40
		2.00	350 = 2.00
		2.80	350 = 2.80
		3.50	350 = 3.50
	Bladder-type accumulator	0.50	400 = 0.50
		4.00	330 = 4.00
<input type="checkbox"/> 26	Seal	Seal material Seal material	FKM = V NBR = M

Directional seat valve module, type "W", "S" (dimensions in mm)

Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks. The set pressure of the type-examination tested pressure relief valve must be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

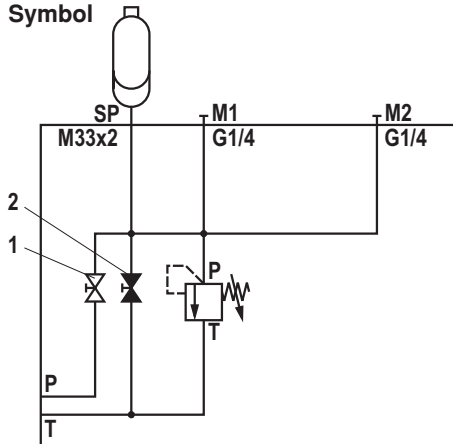
$$p_o = 0.9 \times p_{(\text{minimum operating pressure})}$$

Mounting information

The accumulators is to be fastened so that in case of operational vibrations, safe hold is guaranteed. No holding forces may be applied via the oil and gas connection.

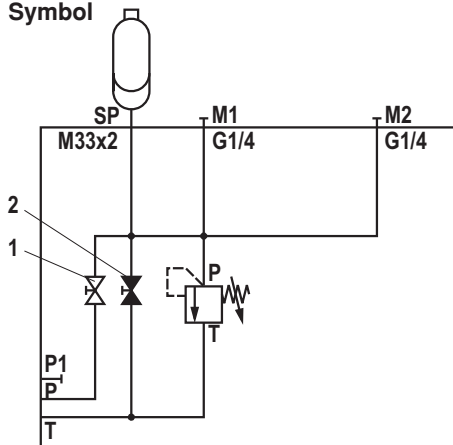
Accumulator shut-off module, type "SSB"

Symbol



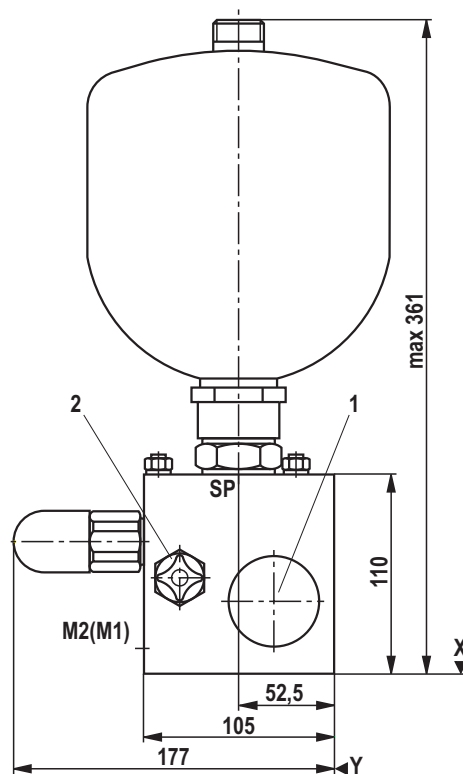
Accumulator shut-off module with P1 channel, type "SSBP1"

Symbol



Unit dimensions

Dimension Z = 172 mm



- Operating information:
- 1 System stop valve must be open in the operating condition
 - 2 Manual unloading must be closed in the operating condition

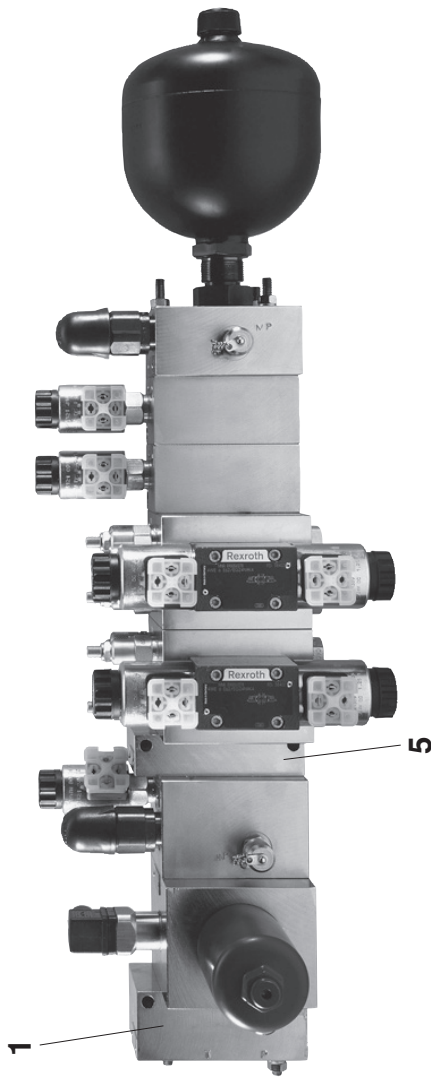
Material no.	Device designation	Type designation
	Accumulator shut-off module	IH15EB-1X/SSB- <div style="display: flex; justify-content: space-around; align-items: center;"> 1 3 31 14 8 18 26 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </div>
R904101840		IH15EB-1X/SSB-S140E/E/MG24/1,40/V
R901044115		IH15EB-1X/SSB-S140E/E/OG24/1,40/V
R904101848		IH15EB-1X/SSB-S140E/M/M/1,40/V
R901066444		IH15EB-1X/SSB-S140E/M/O/1,40/V
R901039971		IH15EB-1X/SSB-S330E/M/M/0,50/V
R901070594		IH15EB-1X/SSB-S330E/M/O/0,50/V

Directional seat valve module, type "W", "S"

Material no.	Device designation	Type designation
	Accumulator shut-off module with P1 channel	IH15EB-1X/SSBP1- <div style="display: flex; justify-content: space-around; font-size: small;"> 1 3 31 14 8 18 26 </div> <div style="display: flex; justify-content: space-around; border: 1px solid black; width: 100%; height: 20px; margin-top: 5px;"></div>
R904101846		IH15EB-1X/SSBP1-S140E/E/MG24/1,40/V
R901070596		IH15EB-1X/SSBP1-S140E/E/OG24/1,40/V
R904101845		IH15EB-1X/SSBP1-S140E/M/M/1,40/V
R901070597		IH15EB-1X/SSBP1-S140E/M/O/1,40/V

1	<input type="checkbox"/> Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
3	<input type="checkbox"/> Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!	Setting pressure up to max. 50 bar Setting pressure up to max. 100 bar Setting pressure up to max. 140 bar Setting pressure up to max. 210 bar Setting pressure up to max. 330 bar	= 50E = 100E = 140E = 210E = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD../..E Type testing according to Pressure Equipment Directive 97/23/EC			See page 89
8	<input type="checkbox"/> Solenoid voltage of the seat valves	Volt	24 V DC = G24
14	<input type="checkbox"/> Pressure monitoring	With measuring port Without pressure monitoring	= M = O
18	<input type="checkbox"/> Diaphragm-type accumulator	Nominal volume in l	Max. pressure in bar
		0.35	210 = 0.35
		0.50	210 = 0.50
		0.70	210 = 0.70
		0.70	350 = 0.70
		1.40	140 = 1.40
		1.40	350 = 1.40
		2.00	350 = 2.00
		2.80	350 = 2.80
		3.50	350 = 3.50
	Bladder-type accumulator	0.50	400 = 0.50
		4.00	330 = 4.00
26	<input type="checkbox"/> Seal	Seal material Seal material	FKM = V NBR = M
31	<input type="checkbox"/> Unloading	Manual Manual and electromagnetic	= M = E

Module for external attachment: Attachment with application examples



- 1 Connection module type A or connection module with through bore type AD (see page 65 and 66)
- 5 Sandwich module type ZG and ZGPT (see page 70 and 71) The sandwich module with mounting thread can be combined with the connection module item 1 type AD and with the end module item 3 type E. It can, however, not be combined with the connection module type A and ADB. The length dimensions are calculated by adding dimension "X" of the directional valve modules (see page 14 to 62)

Project planning information

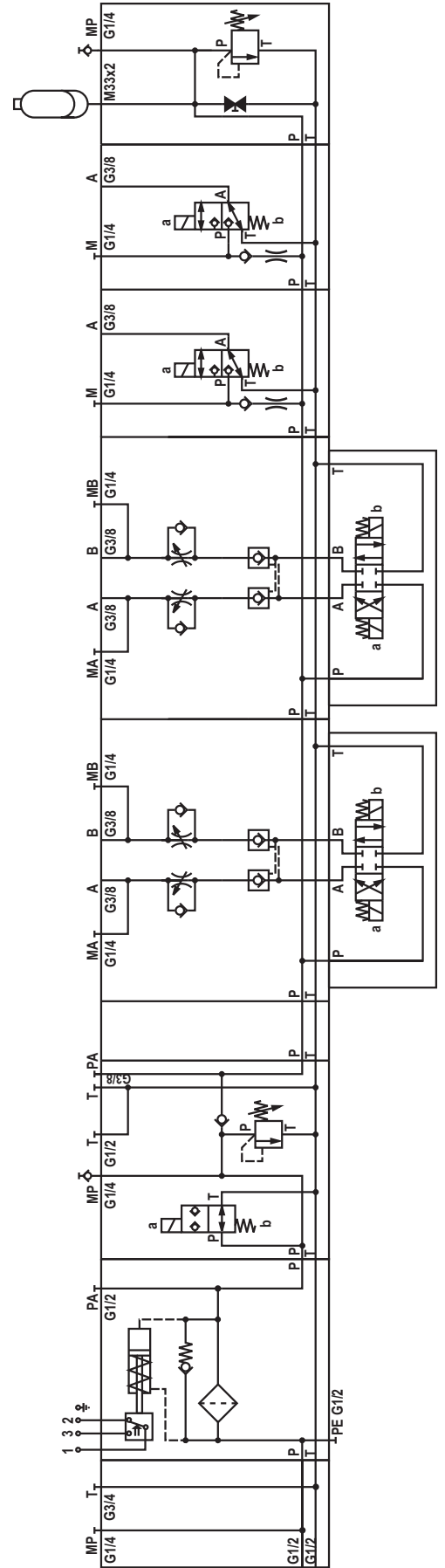
When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks. The set pressure of the type-examination tested pressure relief valve must be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

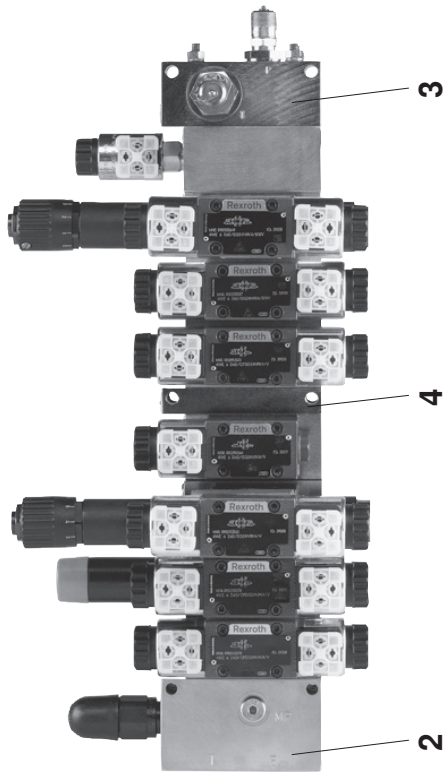
$$P_0 = 0.9 \times P_{(minimum\ operating\ pressure)}$$

Mounting information

The accumulators is to be fastened so that in case of operational vibrations, safe hold is guaranteed. No holding forces may be applied via the oil and gas connection.



Module for external attachment: Attachment with application examples

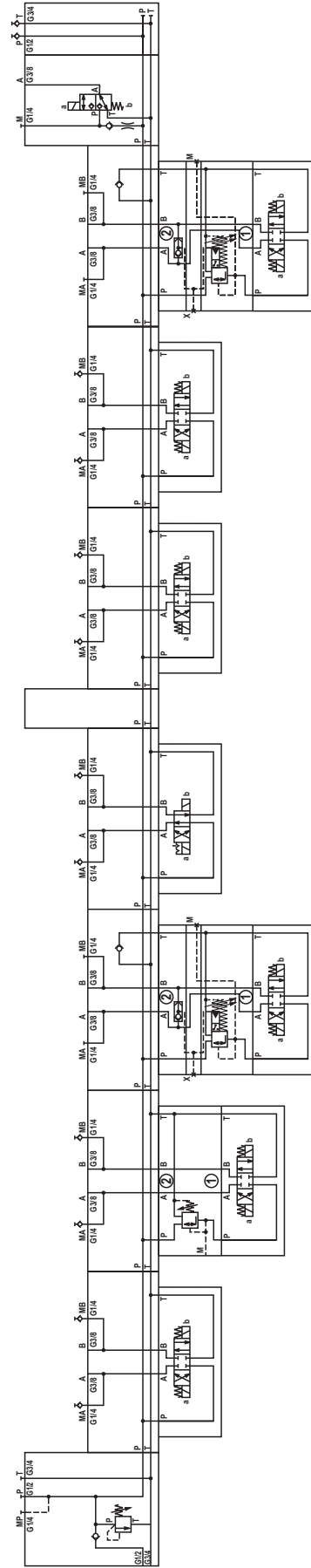


2 Connection module with pressure relief valve type ADB (see page 67)

3 End module type E (see page 72)

4 Sandwich module type Z or ZPT (see page 68 and 69)
The sandwich module can also be combined with the connection module item 1 type A or item 2 type ADB and with the end module item 3.

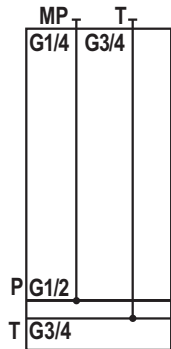
The length dimensions are calculated by adding dimension "X" of the directional valve modules (see page 14 to 62)



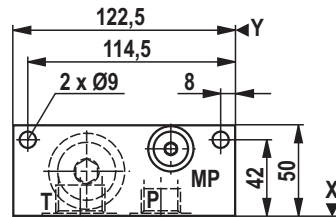
Module for external attachment (dimensions in mm)

Connection module, type "A"

Symbol



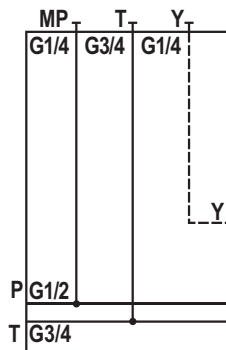
Unit dimensions



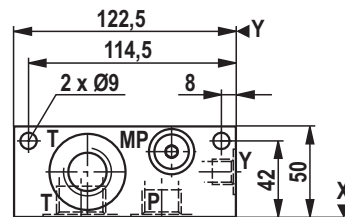
Dimension Z = 70 mm

Connection module with Y channel, type "AY"

Symbol



Unit dimensions



Dimension Z = 70 mm

Material no.	Device designation	Type designation
	Connection module	IH15MB-1X/A- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101350		IH15MB-1X/A-M/V
R904101514		IH15MB-1X/A-O/V

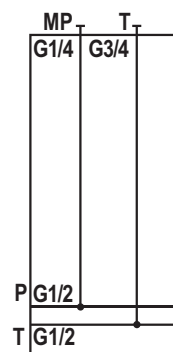
Material no.	Device designation	Type designation
	Connection module with Y channel	IH15MB-1X/AY- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901066327		IH15MB-1X/AY-M/V
R904101841		IH15MB-1X/AY-O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port		= M
	Without measuring port		= O
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Module for external attachment (dimensions in mm)

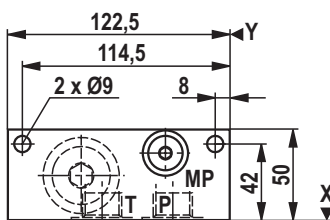
Connection module with through hole,
type "AD"

Symbol



Unit dimensions

Dimension Z = 70 mm



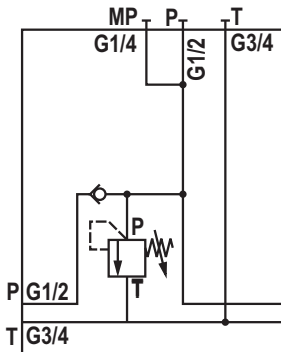
Material no.	Device designation	Type designation
	Connection module with through holes	IH15MB-1X/AD- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101797		IH15MB-1X/AD-M/V
R901066320		IH15MB-1X/AD-O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port		= M
	Without pressure monitoring		= O
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Module for external attachment (dimensions in mm)

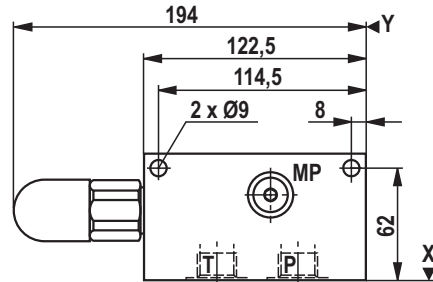
Connection module with pressure relief valve, type "ADB"

Symbol



Unit dimensions

Dimension Z = 85 mm



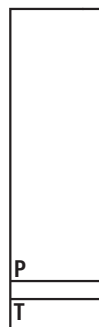
Material no.	Device designation	Type designation
	Connection module with pressure relief valve	IH15EB-1X/ADB- <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/> <input type="checkbox"/>
R901069495		IH15EB-1X/ADB-A200/M/V
R901069497		IH15EB-1X/ADB-A200/O/V
R901069494		IH15EB-1X/ADB-H200/M/V
R901069496		IH15EB-1X/ADB-H200/O/V
R901069238		IH15EB-1X/ADB-S200/M/V
R901069240		IH15EB-1X/ADB-S200/O/V

<input type="checkbox"/> 1	Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap Rotary knob Lockable rotary knob	= S = H = A
<input type="checkbox"/> 2	Pressure rating of the pressure relief valve	Setting pressure up to max. 25 bar Setting pressure up to max. 50 bar Setting pressure up to max. 100 bar Setting pressure up to max. 200 bar Setting pressure up to max. 315 bar Setting pressure up to max. 400 bar	= 25 = 50 = 100 = 200 = 315 = 400
Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!			
		Setting pressure up to max. 50 bar Setting pressure up to max. 100 bar Setting pressure up to max. 140 bar Setting pressure up to max. 210 bar Setting pressure up to max. 330 bar	= 50E = 100E = 140E = 210E = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD...E Type testing according to Pressure Equipment Directive 97/23/EC			See page 88
<input type="checkbox"/> 14	Pressure monitoring	With measuring port Without pressure monitoring	= M = O
<input type="checkbox"/> 26	Seal	Seal material FKM Seal material NBR	= V = M

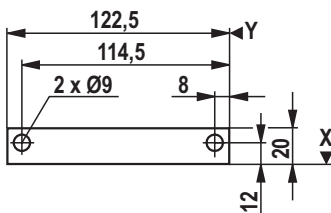
Module for external attachment (dimensions in mm)

Sandwich module, type "Z"

Symbol



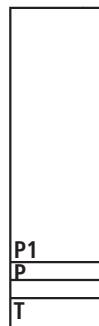
Unit dimensions



Dimension Z = 70 mm

Sandwich module with P1 channel, type "ZP1"

Symbol



Material no.	Device designation	Type designation
	Sandwich module	IH15MB-1X/Z- ²⁶ <input type="text"/>
R904101642		IH15MB-1X/Z-V

Material no.	Device designation	Type designation
	Sandwich module with P1 channel	IH15MB-1X/ZP1-V ²⁶ <input type="text"/>
R904101834		IH15MB-1X/ZP1-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Module for external attachment (dimensions in mm)

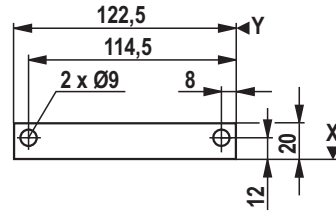
Sandwich module with PT interruption, type "ZPT"

Symbol



Unit dimensions

Dimension Z = 70 mm



Sandwich module with PTP1 interruption, type "ZPTP1"

Symbol



Material no.	Device designation	Type designation
	Sandwich module with PT interruption	IH15MB-1X/ZPT- ²⁶ <input type="text"/>
R901072044		IH15MB-1X/ZPT-V

Material no.	Device designation	Type designation
	Sandwich module with PTP1 interruption	IH15MB-1X/ZPTP1- ²⁶ <input type="text"/>
R901072043		IH15MB-1X/ZPTP1-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

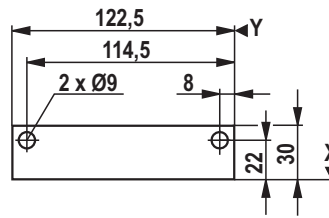
Module for external attachment (dimensions in mm)

Sandwich module with mounting thread for threaded bolt, type "ZG"

Symbol



Unit dimensions



Dimension Z = 70 mm

Sandwich module with mounting thread for threaded bolt and P1 channel, type "ZGP1"

Symbol



Material no.	Device designation	Type designation
	Sandwich module with mounting thread for threaded bolt	IH15MB-1X/ZG- ²⁶ <input type="text"/>
R904101503		IH15MB-1X/ZG-V

Material no.	Device designation	Type designation
	Sandwich module with mounting thread for threaded bolt and P1 channel	IH15MB-1X/ZGP1- ²⁶ <input type="text"/>
R904101831		IH15MB-1X/ZGP1-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

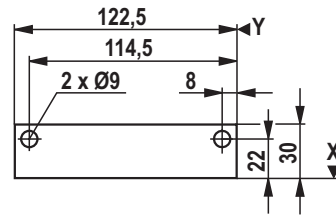
Module for external attachment (dimensions in mm)

Sandwich module with mounting thread for threaded bolt with PT interruption, type "ZGPT"

Symbol



Unit dimensions



Dimension Z = 70 mm

Sandwich module with mounting thread for threaded bolt with PTP1 interruption, type "ZGPTP1"

Symbol



Material no.	Device designation	Type designation
	Sandwich module with PT interruption and mounting thread for threaded bolt	IH15MB-1X/ZGPT- ²⁶ <input type="text"/>
R904101761		IH15MB-1X/ZGPT-V

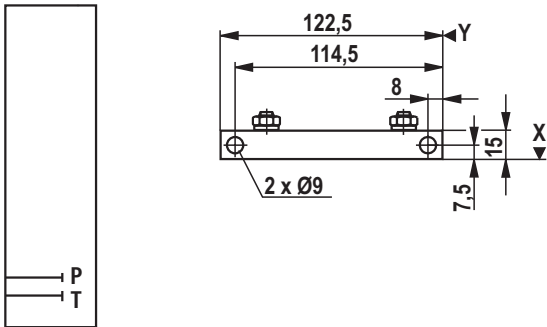
Material no.	Device designation	Type designation
	Sandwich module with PTP1 interruption and mounting thread for threaded bolt	IH15MB-1X/ZGPTP1- ²⁶ <input type="text"/>
R904101832		IH15MB-1X/ZGPTP1-V

²⁶ <input type="text"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Module for external attachment (dimensions in mm)

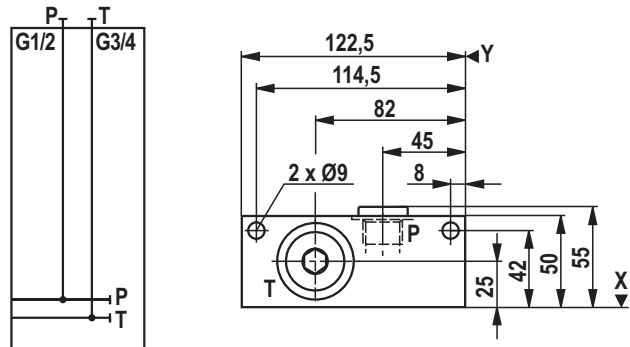
End module, type "E"

Symbol Unit dimensions Dimension Z = 70 mm



with port P and T

Symbol Unit dimensions Dimension Z = 70 mm

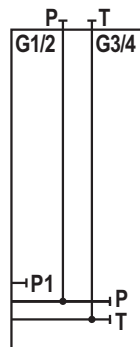


End module with P1 channel, type "EP1"

Symbol



Symbol



Material no.	Device designation	Type designation
	End module	IH15MB-1X/E- <input type="checkbox"/> ²² / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101351		IH15MB-1X/E-PT/M/V
R904101516		IH15MB-1X/E-PT/O/V
R901136829		IH15MB-1X/E-V

Material no.	Device designation	Type designation
	End module with P1 channel	IH15MB-1X/EP1- <input type="checkbox"/> ²² / <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101847		IH15MB-1X/EP1-PT/M/V
R904101849		IH15MB-1X/EP1-PT/O/V
R901137570		IH15MB-1X/EP1-V

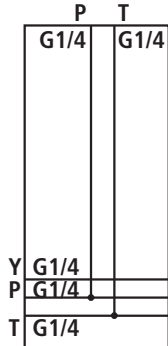
<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port		= M ¹⁾
	Without pressure monitoring		= O ¹⁾
<input type="checkbox"/> ²² Ports	Without ports		= no code
	With port P and T		= PT
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM	= V
	Seal material		NBR

¹⁾ Indication is only necessary if the module is equipped with port P and T.

Reducing module, type "R" (dimensions in mm)

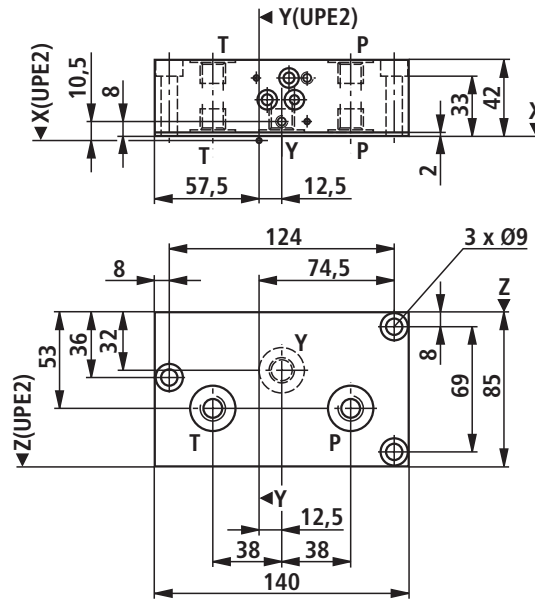
Tank connection module with reduction from IH15B to IH15A, type "RBAIH15A"

Symbol



Unit dimensions

Dimension Z = 85 mm



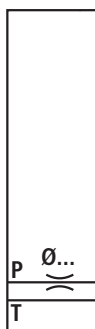
Material no.	Device designation	Type designation
	Tank connection module with reduction from IH15B to IH15A	IH15MB-1X/RBAIH15A- <input type="text" value="26"/>
R904101835		IH15MB-1X/RBAIH15A-V

<input type="text" value="26"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Reducing module, type "R" (dimensions in mm)

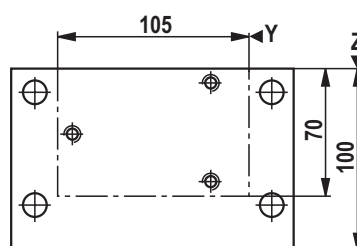
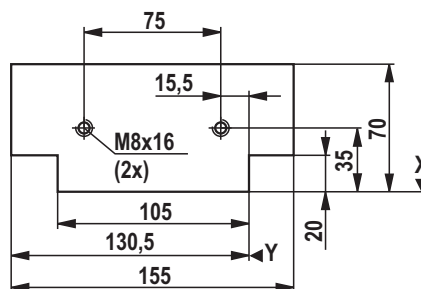
Reducing module IH15B to IH20B (left),
type "RIH20BL"

Symbol



Unit dimensions

Dimension Z = 100 mm



Material no.	Device designation	Type designation
	Reducing module IH15B to IH20B (left)	IH15MB-1X/RIH20BL- <input type="text"/> ²⁷ / <input type="text"/> ²⁶
R904101839		IH15MB-1X/RIH20BL-V

<input type="text"/> ²⁶ Seal	Seal material	FKM	= V
	Seal material	NBR	= M
<input type="text"/> ²⁷ Throttle	Without throttle		= no code
	Throttle diameter	Ø 1.0 mm	= B10
	Throttle diameter	Ø 2.5 mm	= B25

Reducing module, type "R" (dimensions in mm)

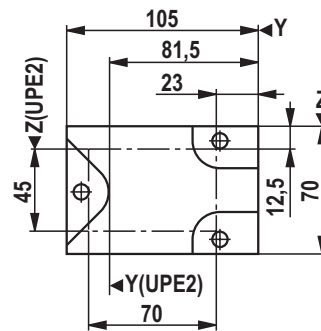
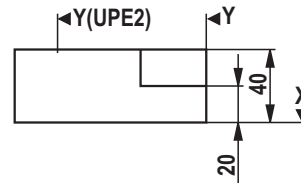
Reducing module IH15B to IH15A (right),
type "RIH15AR"

Symbol



Unit dimensions

Dimension Z = 70 mm



Material no.	Device designation	Type designation
	Reducing module IH15B to IH15A (right)	IH15MB-1X/RIH15AR- <input type="text" value="27"/> / <input type="text" value="26"/>
R904101836		IH15MB-1X/RIH15AR-V

<input type="text" value="26"/> Seal	Seal material Seal material	FKM NBR	= V = M
<input type="text" value="27"/> Throttle	Without throttle Throttle diameter Throttle diameter	Ø 1.0 mm Ø 2.5 mm	= no code = B10 = B25

Reducing module, type "R" (dimensions in mm)

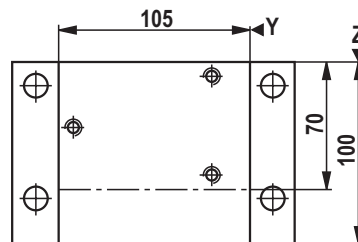
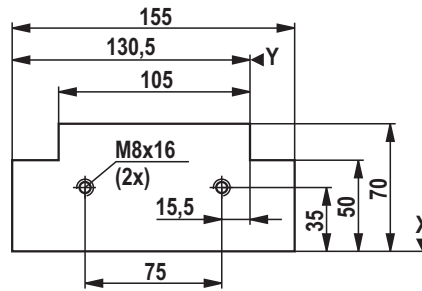
Reducing module IH15B to IH20B (right), type "RIH20BR"

Symbol



Unit dimensions

Dimension Z = 100 mm



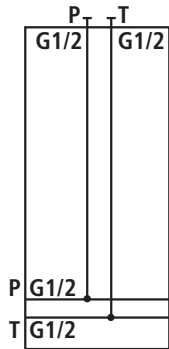
Material no.	Device designation	Type designation
	Reducing module IH15B to IH20B (right)	IH15MB-1X/RIH20BR- <input type="text" value="27"/> / <input type="text" value="26"/>
R904101837		IH15MB-1X/RIH20BR-V

<input type="text" value="26"/> Seal	Seal material	FKM	= V
	Seal material	NBR	= M
<input type="text" value="27"/> Throttle	Without throttle		= no code
	Throttle diameter	Ø 1.0 mm	= B10
	Throttle diameter	Ø 2.5 mm	= B25

Module with threaded connection for pipeline installation (dimensions in mm)

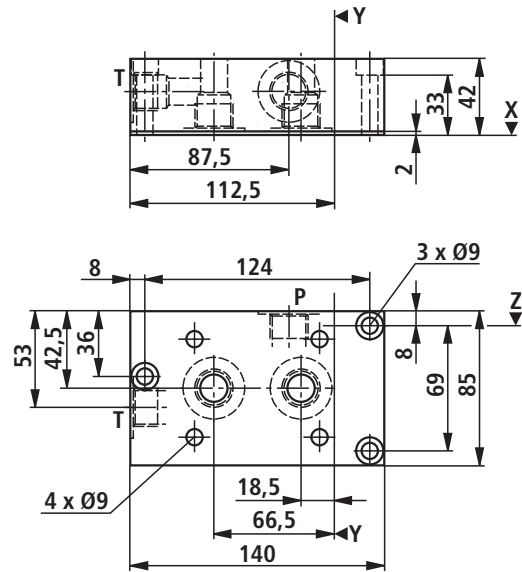
Tank connection module for sandwich module with threaded connection, type "BAZG"

Symbol



Unit dimensions

Dimension Z = 85 mm



Material no.	Device designation	Type designation
	Tank connection module for sandwich module for pipeline installation	IH15MB-1X/BAZG- <input type="checkbox"/> ²⁶
R901112004		IH15MB-1X/BAZG-V

<input type="checkbox"/> ²⁶ Seal	Seal material	FKM	= V
	Seal material	NBR	= M

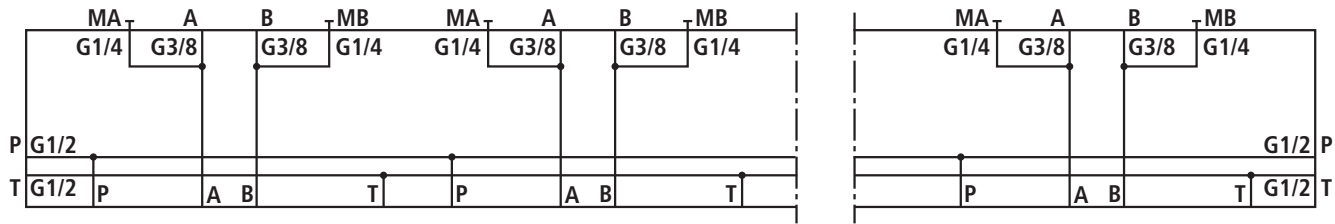
Module with threaded connection for pipeline installation (dimensions in mm)

Sandwich module with threaded connection, type "WZG..."

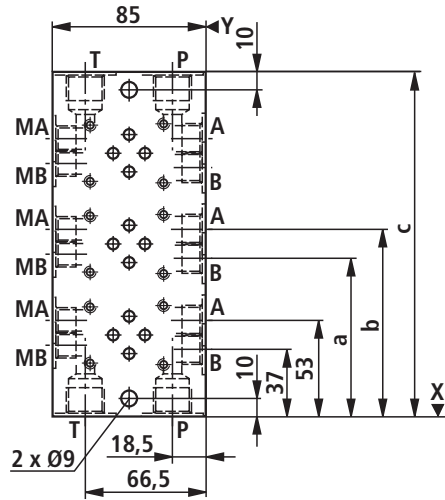
Symbol

Unit dimensions

Dimension Z = 70 mm



Number of valve stations	Dimension a	Dimension b	Dimension c
2-fold	87	103	140
3-fold	137	153	190
4-fold	187	203	240
5-fold	237	253	290
6-fold	287	303	340
7-fold	337	353	390
8-fold	387	403	440
9-fold	437	453	490
10-fold	487	503	540



Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 2 valve stations	IH15MB-1X/WZG2- <input type="text"/> ¹⁴ / <input type="text"/> ²⁶
R901300657		IH15MB-1X/WZG2-M/V
R901135266		IH15MB-1X/WZG2-O/V

Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 3 valve stations	IH15MB-1X/WZG3- <input type="text"/> ¹⁴ / <input type="text"/> ²⁶
R901300653		IH15MB-1X/WZG3-M/V
R901300656		IH15MB-1X/WZG3-O/V

Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 4 valve stations	IH15MB-1X/WZG4- <input type="text"/> ¹⁴ / <input type="text"/> ²⁶
R901300650		IH15MB-1X/WZG4-M/V
R901300652		IH15MB-1X/WZG4-O/V

Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 5 valve stations	IH15MB-1X/WZG5- <input type="text"/> ¹⁴ / <input type="text"/> ²⁶
R901300649		IH15MB-1X/WZG5-M/V
R901300648		IH15MB-1X/WZG5-O/V

Module with threaded connection for pipeline installation (dimensions in mm)

Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 6 valve stations	IH15MB-1X/WZG6- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901301740		IH15MB-1X/WZG6-M/V
R901301741		IH15MB-1X/WZG6-O/V

Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 7 valve stations	IH15MB-1X/WZG7- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901301738		IH15MB-1X/WZG7-M/V
R901301739		IH15MB-1X/WZG7-O/V

Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 8 valve stations	IH15MB-1X/WZG8- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901301736		IH15MB-1X/WZG8-M/V
R901301737		IH15MB-1X/WZG8-O/V

Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 9 valve stations	IH15MB-1X/WZG9- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901301734		IH15MB-1X/WZG9-M/V
R901301735		IH15MB-1X/WZG9-O/V

Material no.	Device designation	Type designation
	Sandwich module with threaded connection, 10 valve stations	IH15MB-1X/WZG10- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901301732		IH15MB-1X/WZG10-M/V
R901301733		IH15MB-1X/WZG10-O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port Without pressure monitoring		= M = O
<input type="checkbox"/> ²⁶ Seal	Seal material Seal material	FKM NBR	= V = M

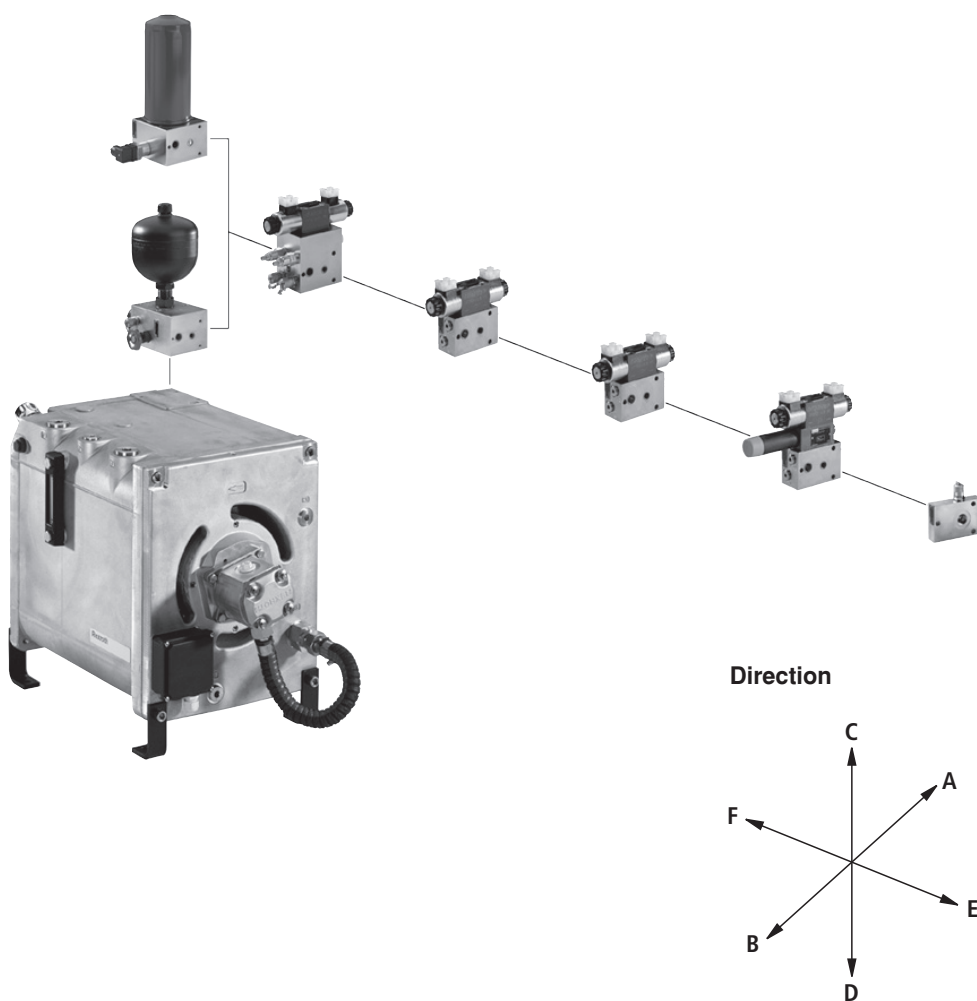
Module for drive module UPE5, type "UPE5": Description, general

The control modules for the UPE5 drive module serves the realization of complete hydraulic controls. They can be fitted and mounted individually.

The filter **or** accumulator shut-off module establishes the connection of the hydraulic control to the K2 connection of the drive module (see 51145).

Using the connection modules, the IH15B control modules can be attached to the filter **or** accumulator shut-off module.

Module for drive module UPE5, type "UPE5": Attachment



Project planning information

The total length of the IH15B control should not be longer than the UPE5 drive module.

Maximum recommended total length $l = 500$ mm.

Please consult us if the total length of the required control should be longer.

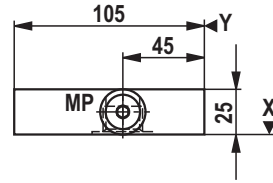
Module for drive module UPE5, type "UPE5" (dimensions in mm)

Connection module, type "UPE5A"

Symbol



Unit dimensions

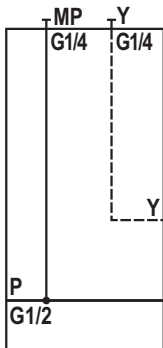


Dimension Z = 70 mm

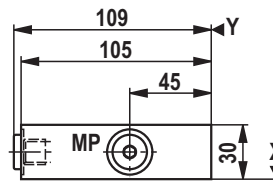
Material no.	Device designation	Type designation
	Connection module	IH15MB-1X/UPE5A- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101342		IH15MB-1X/UPE5A-M/V
R901070572		IH15MB-1X/UPE5A-O/V

Connection module with Y channel, type "UPE5AY"

Symbol



Unit dimensions



Dimension Z = 70 mm



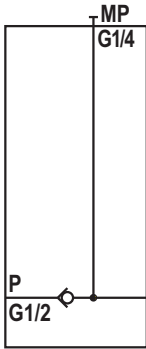
Material no.	Device designation	Type designation
	Connection module with Y channel	IH15MB-1X/UPE5AY- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R904101850		IH15MB-1X/UPE5AY-M/V
R901070573		IH15MB-1X/UPE5AY-O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port		= M
	Without measuring port		= O
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM	= V
	Seal material	NBR	= M

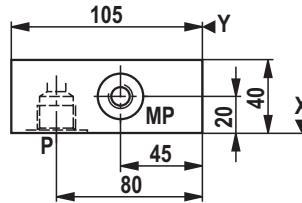
Module for drive module UPE5, type "UPE5" (dimensions in mm)

Connection module with check valve, type "UPE5AR"

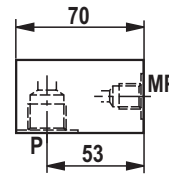
Symbol



Unit dimensions



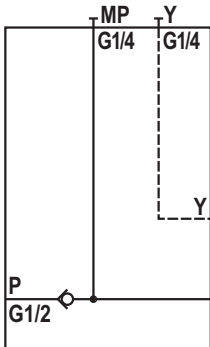
Dimension Z = 70 mm



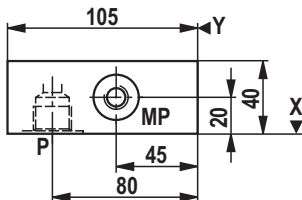
Material no.	Device designation	Type designation
	Connection module with check valve	IH15MB-1X/UPE5AR- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901184480		IH15MB-1X/UPE5AR-M/V
R901189885		IH15MB-1X/UPE5AR-O/V

Connection module with Y channel and check valve, type "UPE5AYR"

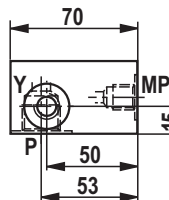
Symbol



Unit dimensions



Dimension Z = 70 mm



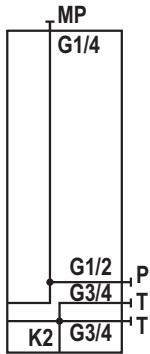
Material no.	Device designation	Type designation
	Connection module with Y channel and check valve	IH15MB-1X/UPE5AYR- <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901184481		IH15MB-1X/UPE5AYR-M/V
R901189886		IH15MB-1X/UPE5AYR-O/V

<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port		= M
	Without pressure monitoring		= O
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Module for drive module UPE5, type "UPE5" (dimensions in mm)

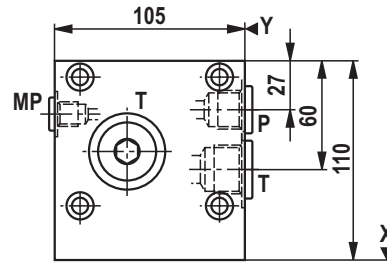
Tank connection module, type "UPE5BA"

Symbol



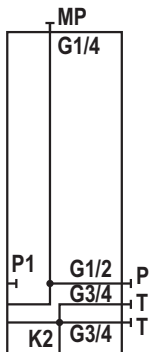
Unit dimensions

Dimension Z = 70 mm



Tank connection module with P1 channel, type "UPE5BAP1"

Symbol



Material no.	Device designation	Type designation
	Tank connection module, type "UPE5BAP1"	IH15MB-1X/UPE5BA-PT/ <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901125941		IH15MB-1X/UPE5BA-PT/M/V
R901124952		IH15MB-1X/UPE5BA-PT/O/V

Material no.	Device designation	Type designation
	Tank connection module with P1 channel, type "UPE5BAP1"	IH15MB-1X/UPE5BAP1-PT/ <input type="checkbox"/> ¹⁴ / <input type="checkbox"/> ²⁶
R901128499		IH15MB-1X/UPE5BAP1-PT/M/V
R901128498		IH15MB-1X/UPE5BAP1-PT/O/V

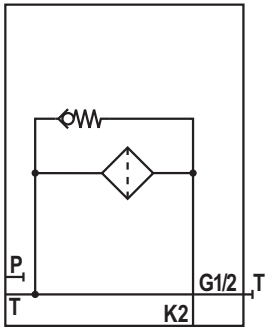
<input type="checkbox"/> ¹⁴ Pressure monitoring	With measuring port		= M
	Without measuring port		= O
<input type="checkbox"/> ²⁶ Seal	Seal material	FKM	= V
	Seal material	NBR	= M

Module for drive module UPE5, type "UPE5" (dimensions in mm)

Filter module, type "UPE5F30", "UPE5F60"

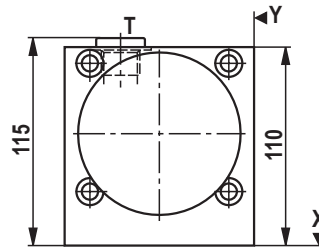
($p_{\max} = 7 \text{ bar}$)

Symbol

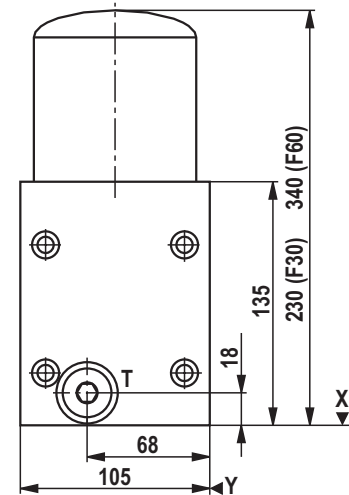


Unit dimensions

Dimension Z = 165 mm UPE5F30 position
Dimension Z = 275 mm UPE5F60 position
Dimension Z = 70 mm position "F"



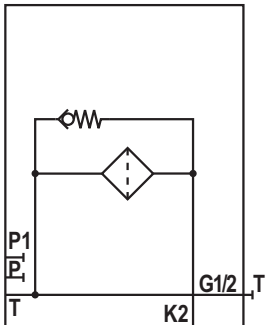
Position of the filter
Version "C"



Position of the filter
Version "F"

Filter module with P1 channel, type "UPE5F30P1", "UPE5F60P1" ($p_{\max} = 7 \text{ bar}$)

Symbol



Installation information:

Wind the filter cartridge as tight as possible on the block.
Then, wind the filter cartridge by further 1/3 of a rotation.

Material no.	Device designation	Type designation
	Filter module	IH15EB-1X/UPE5F30- <input type="text" value="30"/> <input type="text" value="19"/> / <input type="text" value="20"/> / <input type="text" value="26"/>
R901070574		IH15EB-1X/UPE5F30-C/10/A/V
R904101860		IH15EB-1X/UPE5F30-C/10/E/V
R901070575		IH15EB-1X/UPE5F30-C/10/O/V

Material no.	Device designation	Type designation
	Filter module	IH15EB-1X/UPE5F60- <input type="text" value="30"/> <input type="text" value="19"/> / <input type="text" value="20"/> / <input type="text" value="26"/>
R901070576		IH15EB-1X/UPE5F60-C/10/A/V
R904101346		IH15EB-1X/UPE5F60-C/10/E/V
R901070577		IH15EB-1X/UPE5F60-C/10/O/V

Module for drive module UPE5, type "UPE5"

Material no.	Device designation	Type designation
	Filter module with P1 channel	IH15EB-1X/UPE5F30P1- <input type="text"/> ³⁰ <input type="text"/> ¹⁹ / <input type="text"/> ²⁰ / <input type="text"/> ²⁶
R901070579		IH15EB-1X/UPE5F30P1-C/10/A/V
R904101863		IH15EB-1X/UPE5F30P1-C/10/E/V
R901070580		IH15EB-1X/UPE5F30P1-C/10/O/V

Material no.	Device designation	Type designation
	Filter module with P1 channel	IH15EB-1X/UPE5F60P1- <input type="text"/> ³⁰ <input type="text"/> ¹⁹ / <input type="text"/> ²⁰ / <input type="text"/> ²⁶
R901070581		IH15EB-1X/UPE5F60P1-C/10/A/V
R904101862		IH15EB-1X/UPE5F60P1-C/10/E/V
R901070582		IH15EB-1X/UPE5F60P1-C/10/O/V

<input type="text"/> ¹⁹	Filter rating	06 µm 10 µm	= 06 = 10
<input type="text"/> ²⁰	Clogging indicator	Without clogging indicator Visual clogging indicator Electric clogging indicator	= A = O = E
<input type="text"/> ²⁶	Seal	Seal material Seal material	FKM = V NBR = M
<input type="text"/> ³⁰	Position of the filter	Direction C Direction F	= C = F

Module for drive module UPE5, type "UPE5" (dimensions in mm)

Project planning information

When designing the control with accumulator you have to make sure that the accumulator is protected against inadmissible overpressure by means of a type examination-tested pressure relief valve. The type-examination tested pressure relief valve must not accept any control tasks. The set pressure of the type-examination tested pressure relief valve must be less than or equal to the maximum admissible operating pressure of the accumulator.

In order to achieve the best utilization of the accumulator volume possible as well as long service life, compliance with the following nitrogen filling pressure value is recommended:

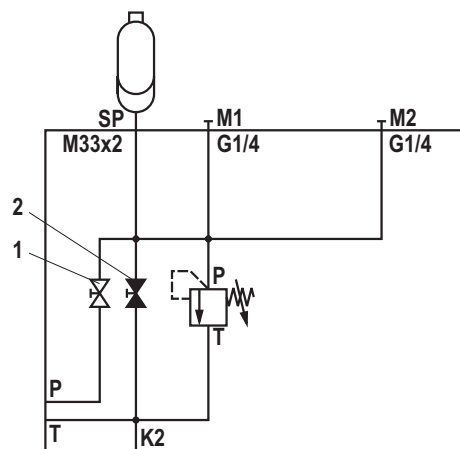
$$p_o = 0.9 \times p_{(\text{minimum operating pressure})}$$

Mounting information

The accumulators is to be fastened so that in case of operational vibrations, safe hold is guaranteed. No holding forces may be applied via the oil and gas connection.

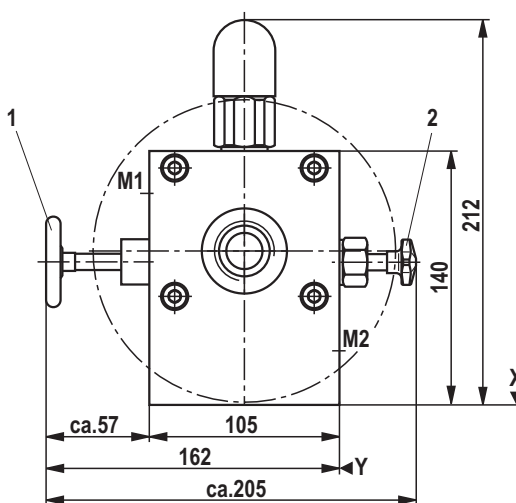
Accumulator shut-off module, type "UPE5SSB"

Symbol



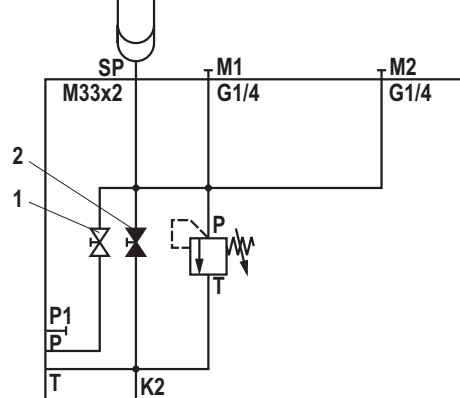
Unit dimensions

Dimension Z = max 336 mm



Accumulator shut-off module with P1 channel, type "UPE5SSBP1"

Symbol



- Operating information:
- 1 System stop valve must be open in the operating condition
 - 2 Manual unloading must be closed in the operating condition

Material no.	Device designation	Type designation
	Accumulator shut-off module	IH15EB-1X/UPE5SSB- <div style="display: flex; justify-content: space-around; align-items: center;"> 1 2 31 14 8 18 26 </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 5px;"> </div>
R904101864		IH15EB-1X/UPE5SSB-S140E/E/MG24/1,40/V
R901070583		IH15EB-1X/UPE5SSB-S140E/E/OG24/1,40/V
R904101791		IH15EB-1X/UPE5SSB-S140E/M/M/1,40/V
R901070584		IH15EB-1X/UPE5SSB-S140E/M/O/1,40/V

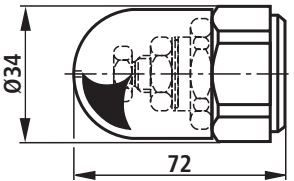
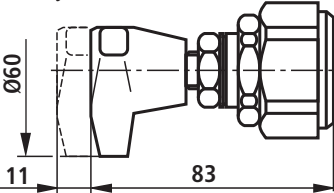
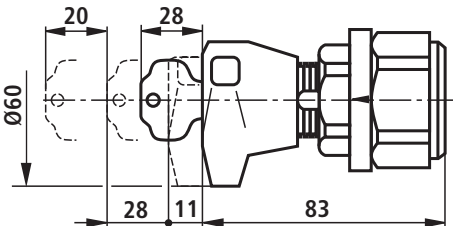
Module for drive module UPE5, type "UPE5"

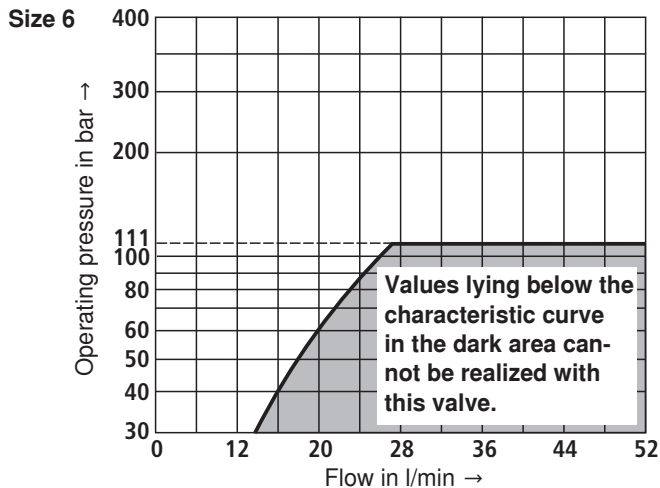
Material no.	Device designation	Type designation
	Accumulator shut-off module with P1 channel	IH15EB-1X/UPE5SSBP1- <div style="display: flex; justify-content: space-around; font-size: small;"> 1 3 31 14 8 18 26 </div> <div style="display: flex; justify-content: space-around; border: 1px solid black; width: fit-content; margin: 0 auto;"> / / / / </div>
R904101866		IH15EB-1X/UPE5SSBP1-S140E/E/MG24/1,40/V
R901070586		IH15EB-1X/UPE5SSBP1-S140E/E/OG24/1,40/V
R904101865		IH15EB-1X/UPE5SSBP1-S140E/M/M/1,40/V
R901070587		IH15EB-1X/UPE5SSBP1-S140E/M/O/1,40/V

1	Adjustment element at the pressure relief valve	Setscrew with hexagon and protective cap	= S
<input type="checkbox"/>		Rotary knob	= H
<input type="checkbox"/>		Lockable rotary knob	= A
3	Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!		
<input type="checkbox"/>		Setting pressure up to max.	50 bar = 50E
<input type="checkbox"/>		Setting pressure up to max.	100 bar = 100E
<input type="checkbox"/>		Setting pressure up to max.	140 bar = 140E
<input type="checkbox"/>		Setting pressure up to max.	210 bar = 210E
<input type="checkbox"/>		Setting pressure up to max.	330 bar = 330E
Characteristic curve for type-examination tested pressure relief valves type: DBD...E Type testing according to Pressure Equipment Directive 97/23/EC			See page 89
8	Solenoid voltage of the seat valves	Volt	24 V DC = G24
<input type="checkbox"/>			
14	Pressure monitoring	With measuring port	= M
<input type="checkbox"/>		Without pressure monitoring	= O
18	Diaphragm-type accumulator	Nominal volume in l	Max. pressure in bar
<input type="checkbox"/>		0.35	210 = 0.35
<input type="checkbox"/>		0.50	210 = 0.50
<input type="checkbox"/>		0.70	210 = 0.70
<input type="checkbox"/>		0.70	350 = 0.70
<input type="checkbox"/>		1.40	140 = 1.40
<input type="checkbox"/>		1.40	350 = 1.40
<input type="checkbox"/>		2.00	350 = 2.00
<input type="checkbox"/>		2.80	350 = 2.80
<input type="checkbox"/>		3.50	350 = 3.50
	Bladder-type accumulator	0.50	400 = 0.50
		4.00	330 = 4.00
26	Seal	Seal material	FKM = V
<input type="checkbox"/>		Seal material	NBR = M
31	Unloading	Manual	= M
<input type="checkbox"/>		Manual and electromagnetic	= E

Type key

Information on the type key

<p>1 <input type="checkbox"/> Adjustment element at the pressure relief valve</p>	<p>Setscrew with hexagon and protective cap</p> 	<p>= S</p>	
	<p>Rotary knob</p> 	<p>= H</p>	
	<p>Lockable rotary knob</p> 	<p>= A</p>	
<p>2 <input type="checkbox"/> Pressure rating of the pressure relief valve</p>	<p>Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.</p>	<p>25 bar 50 bar 100 bar 200 bar 315 bar 400 bar</p>	<p>= 25 = 50 = 100 = 200 = 315 = 400</p>
<p>Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive) More pressure ratings on request!</p>			
	<p>Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.</p>	<p>50 bar 100 bar 140 bar 210 bar 330 bar</p>	<p>= 50E = 100E = 140E = 210E = 330E</p>
<p>Characteristic curve for type-examination tested pressure relief valves type: DBD../..E Type testing according to Pressure Equipment Directive 97/23/EC</p>			



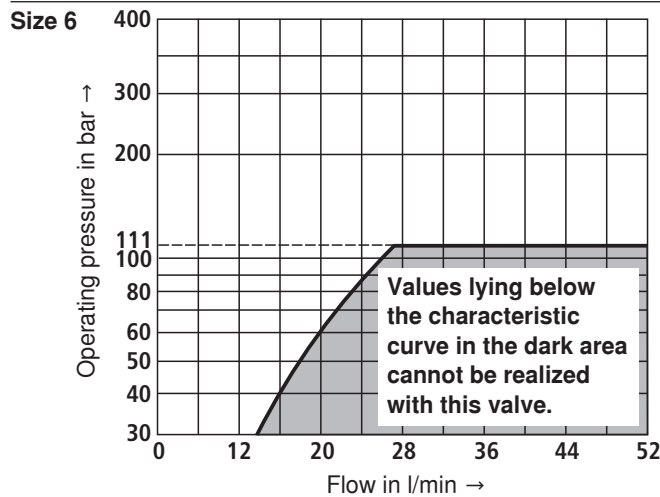
Type key

Information on the type key

³ Pressure rating of the type-examination tested pressure relief valve, according to Directive 97/23/EC (Pressure Equipment Directive)
More pressure ratings on request!

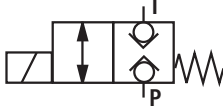
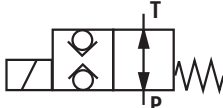
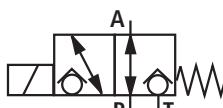
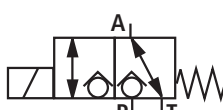
Setting pressure up to max.	50 bar	= 50E
Setting pressure up to max.	100 bar	= 100E
Setting pressure up to max.	140 bar	= 140E
Setting pressure up to max.	210 bar	= 210E
Setting pressure up to max.	330 bar	= 330E

Characteristic curve for type-examination tested pressure relief valves type: DBD../..E
Type testing according to Pressure Equipment Directive 97/23/EC



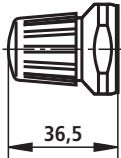
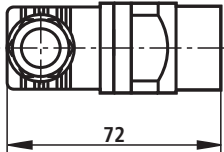
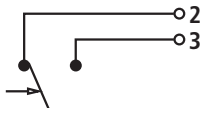
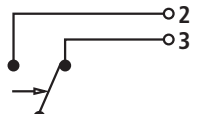
Type key

Information on the type key

4 <input type="checkbox"/> Designation of the 2/2 seat valve			= N
			= P
5 <input type="checkbox"/> Designation of the 3/2 seat valve			= U
			= C
8 <input type="checkbox"/> Solenoid voltage of the seat valves	Volt	24 V DC	= G24
14 <input type="checkbox"/> Pressure monitoring	With measuring port Without pressure monitoring		= M = O
15 <input type="checkbox"/> Max. pressure range of the pressure gauge	Without pressure monitoring Display range 60 bar Display range 100 bar Display range 250 bar Display range 400 bar		= no code = 60 = 100 = 250 = 400
16 <input type="checkbox"/> Adjustment element at the pressure reducing valve	Rotary knob Setscrew with hexagon and protective cap Lockable rotary knob with scale Rotary knob with scale		= 1 = 2 = 3 = 7
17 <input type="checkbox"/> Secondary pressure	Max. secondary pressure Max. secondary pressure Max. secondary pressure Max. secondary pressure Max. secondary pressure	25 bar 75 bar 150 bar 210 bar 315 bar	= 25 = 75 = 150 = 210 = 315
18 <input type="checkbox"/> Diaphragm-type accumulator	Nominal volume in l	Max. pressure in bar	
	0.35	210	= 0.35
	0.50	210	= 0.50
	0.70	210	= 0.70
	0.70	350	= 0.70
	1.40	140	= 1.40
	1.40	350	= 1.40
	2.00	350	= 2.00
	2.80	350	= 2.80
	3.50	350	= 3.50
Bladder-type accumulator	0.50	400	= 0.50
	4.00	330	= 4.00

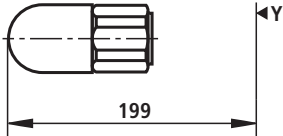
Type key

Information on the type key

¹⁹ <input type="checkbox"/> Filter rating	06 μm 10 μm	= 06 = 10
²⁰ <input type="checkbox"/> Clogging indicator	Without clogging indicator	= A
	Visual clogging indicator 	= O
	Electric clogging indicator 	= E
Technical data of the electric clogging indicator		
Maximum voltage	V	42
Switching power	VA	100
Protection class with protective cap	IP 65	
Contacts	Normally closed contact	
Terminal assignment		
		
Filter element clean	Filter element contaminated	
²¹ <input type="checkbox"/> Check valve	Without check valve In channel P In channel T In channel P and T	= no code = P = T = PT
²² <input type="checkbox"/> Ports	Without ports P and T	= no code = PT

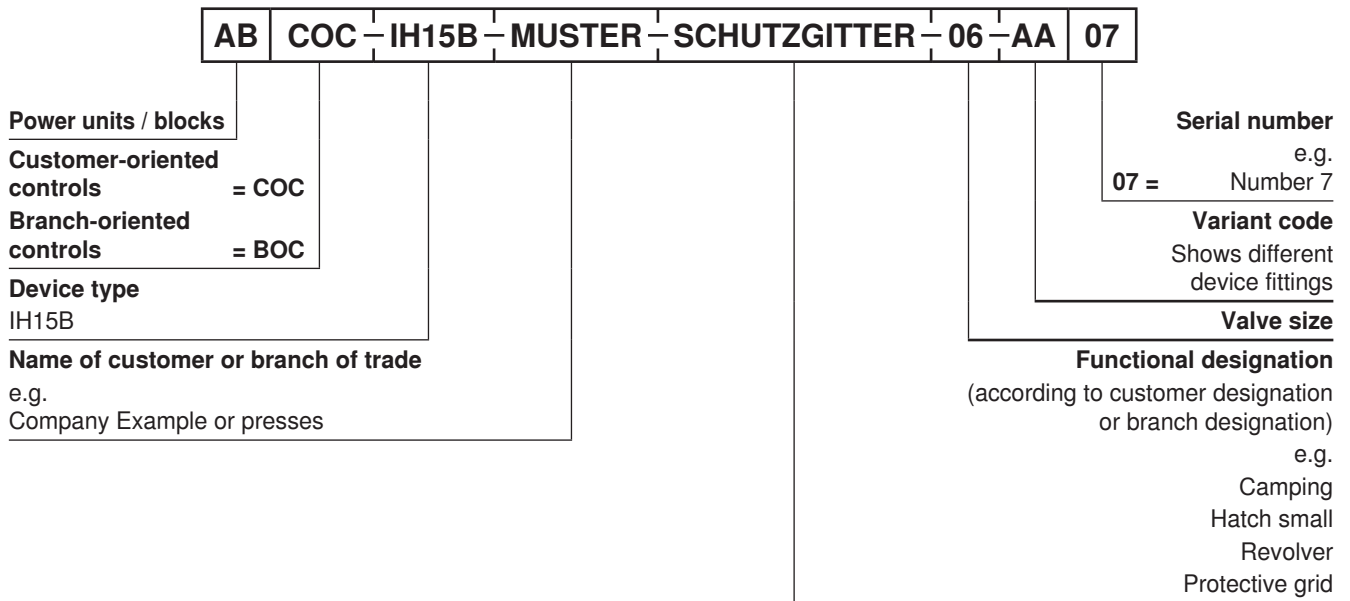
Type key

Information on the type key

23	Adjustment type	Hexagon with protective cap	= 2
			
24	Pressure rating of the pressure cut-off valve	Setting pressure up to max. Setting pressure up to max. Setting pressure up to max. Setting pressure up to max.	50 bar = C 100 bar = F 200 bar = K 350 bar = R
26	Seal	Seal material Seal material	FKM = V NBR = M
27	Throttle	Without throttle Throttle diameter Throttle diameter	= no code = B10 = B25
28	Cartridge valve	Adjustable throttle check valve Pilot operated check valve Adjustable throttle check valve and pilot operated check valve	= FS = R = FSR
29	Cartridge valve	In channel A In channel B In channel A and B	= A = B = AB
30	Position of the filter	Direction C Direction F	= C = F
31	Unloading	Manual Manual and electromagnetic	= M = E
32	Stop valve	Without stop valve With stop valve	= no code = A
33	Adjustment element at the pressure reducing valve	Setscrew with hexagon and protective cap Rotary knob with scale, lockable	= 2 = 3
34	Secondary pressure	Max. secondary pressure Max. secondary pressure Max. secondary pressure Max. secondary pressure with pressure switch Max. secondary pressure with pressure switch Max. secondary pressure with pressure switch	100 bar = 100 210 bar = 210 315 bar = 315 100 bar = 100D 210 bar = 210D 315 bar = 315D

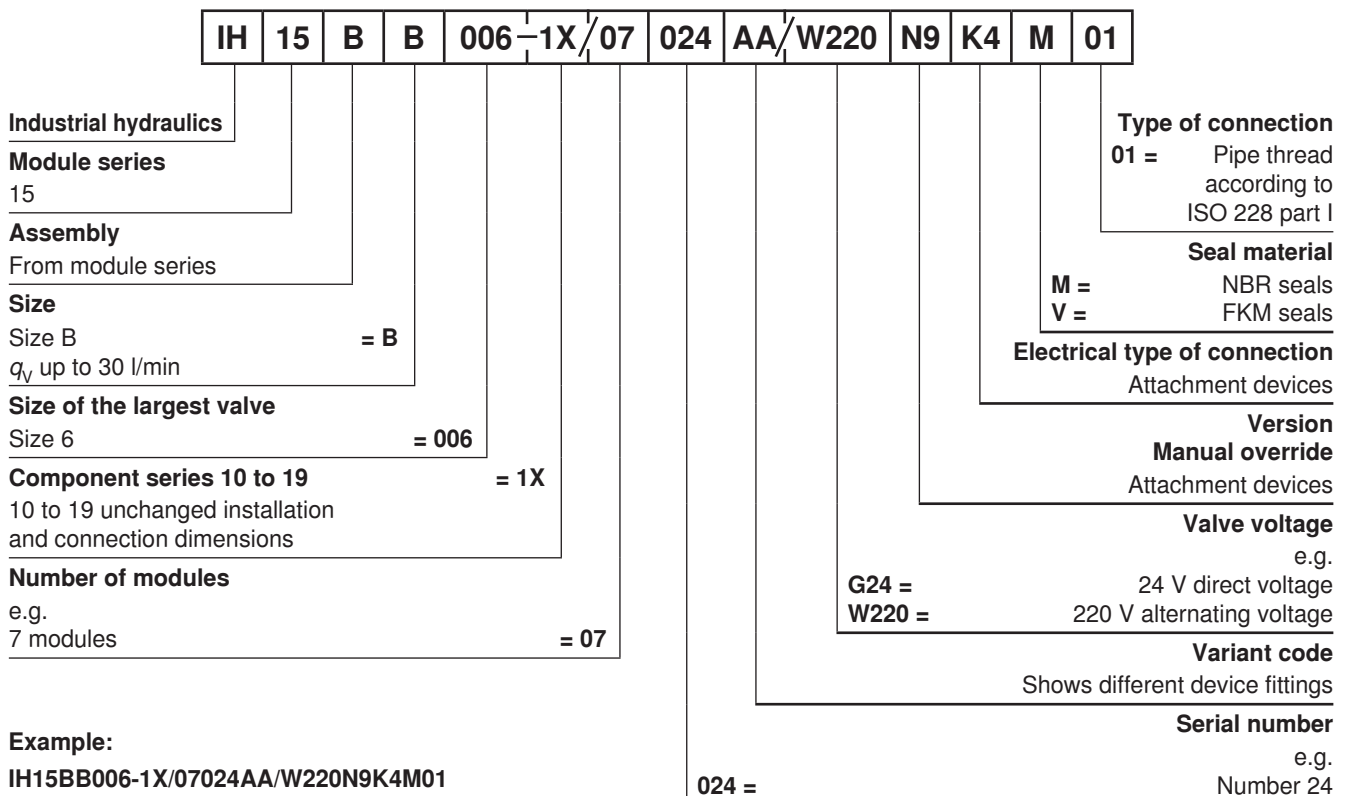
Type keys for module with vertical stacking

Type: ABCOC / ABBOC



Type key for complete control system

Type: IH15BB



Example:

IH15BB006-1X/07024AA/W220N9K4M01

Assembly IH15B of size B up to 30 l/min with valves of size 6, 7 modules, serial number 24, variant AA, 220 V alternating voltage, N9 manual override, K4 type of connection, seal material Perbunan, type of connection with pipe thread according to ISO 228 part 1

Accessories

Filter element

Material no.	Module	Denomination	Size	Material	Filter rating
R928037999	F30 / UPE5F30	80.30/22 H6XL-S00-5-M	30	NBR	06 µm
R928039389	F30 / UPE5F30	80.30/22 H6XL-S00-5-V	30	FKM	06 µm
R928037978	F30 / UPE5F30	80.30/22 H10XL-S00-5-M	30	NBR	10 µm
R928039388	F30 / UPE5F30	80.30/22 H10XL-S00-5-V	30	FKM	10 µm
R928038331	F60 / UPE5F60	84.60 H10XL-S00-5-M	60	NBR	10 µm
R928038332	F60 / UPE5F60	84.60 H10XL-S00-5-V	60	FKM	10 µm
R928037988	F60 / UPE5F60	84.60 H6XL-S00-5-M	60	NBR	06 µm
R928037989	F60 / UPE5F60	84.60 H6XL-S00-5-V	60	FKM	06 µm
R928006053	DF30 / DFS30	2.0004 H10XL-A00-0-M	30	NBR	10 µm
R928006080	DF30 / DFS30	2.0004 H10XL-A00-0-V	30	FKM	10 µm
R928006655	DF40 / DFS40	2.0040 H6XL-B00-0-M	40	NBR	06 µm
R928006682	DF40 / DFS40	2.0040 H6XL-B00-0-V	40	FKM	06 µm
R928006656	DF40 / DFS40	2.0040 H10XL-B00-0-M	40	NBR	10 µm
R928006683	DF40 / DFS40	2.0040 H10XL-B00-0-V	40	FKM	10 µm
R928006124	DF50 / DFS50	2.0005 H6XL-C00-0-M	50	NBR	06 µm
R928006151	DF50 / DFS50	2.0005 H6XL-C00-0-V	50	FKM	06 µm
R928006125	DF50 / DFS50	2.0005 H10XL-C00-0-M	50	NBR	10 µm
R928006152	DF50 / DFS50	2.0005 H10XL-C00-0-V	50	FKM	10 µm

Assembly tool for filter cartridge

- Strap wrench Material no.: R904001048

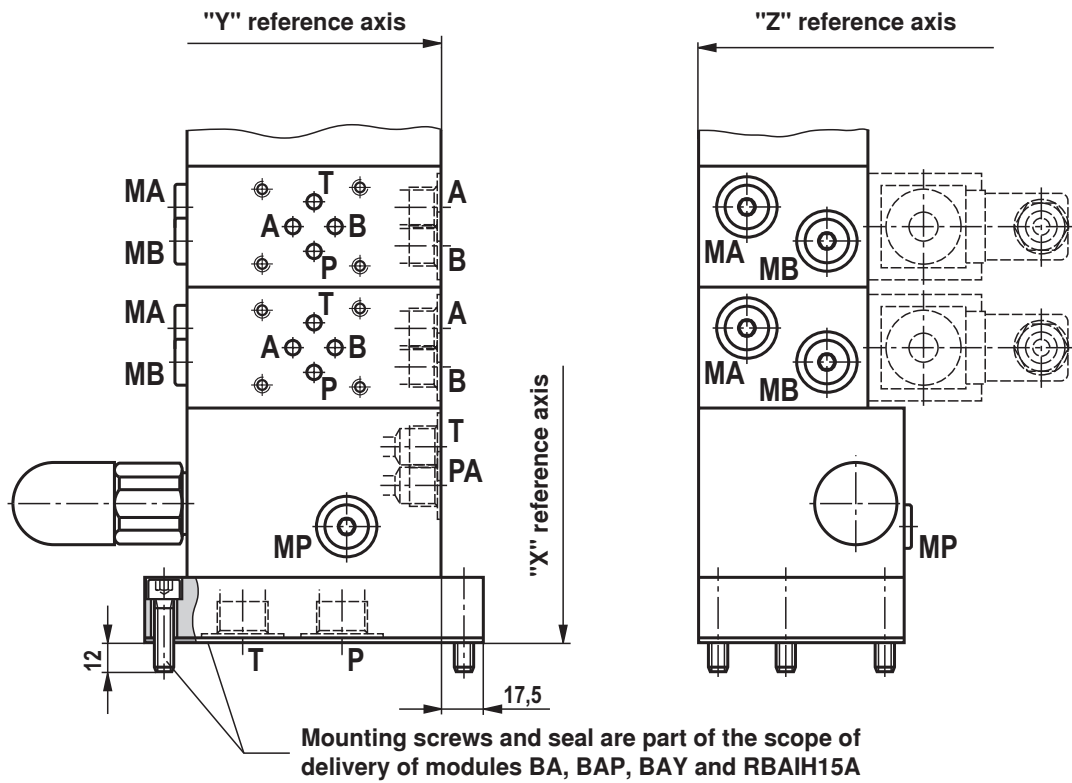
Installation information for F30, F60, UPE5F30 and UPE5F60:

- Wind the filter cartridge as tight as possible on the block.
Then, wind the filter cartridge further by further 1/3 of a rotation.

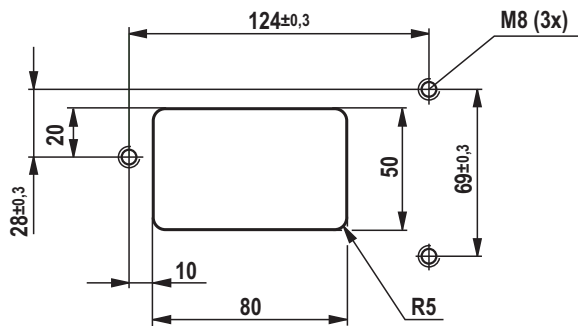
Installation information for DF30, DF40, DF50, DFS30, DFS40 and DFS50:

- Wind the filter cartridge as tight as possible on the block.
Then, wind it back by 1/8 to 1/4 of a rotation.

Dimensions: Unit dimensions (dimensions in mm)



Dimensions: Tank break-through (dimensions in mm)



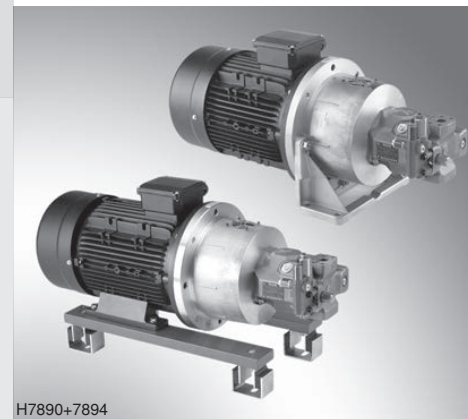
Motor/pump group

RE 51170/01.15

1/18

Type ABAPG and ABHPG

with pump type: A10VSO
 Series 52: Size 10
 Series 31: Sizes 18 to 140
 Electric motor frame size 100L to 315S



H7890+7894

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Pressure line connections	16
Optional accessories	16, 17
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**Note:**

As stipulated in EC Regulation no. 640/2009 of the Commission dated July 22, 2009 for the execution of Directive 2005/32/EC of the European Parliament and Council with regard to the specification of requirements for environmentally friendly design of electric motors, IE2 motors with a nominal output power of 7.5 - 375 kW may only be operated with speed control as of January 1, 2015

Features

- In the motor/pump groups, electric energy is converted into hydraulic energy.
- They have been designed for hydrostatic drives in the open circuit.
- Electric motor design IM B5 (ABHPG) or IM B3/B5 (ABAPG)
 - Pump fastened at the electric motor with rigid pump carrier and coupling
 - Low operating noise
 - Versatile possible applications on tank, base frame or separate installation
 - Clear, maintenance-friendly set-up
 - With axial piston pump A10VSO (variable displacement pump)
 - Adjustment DFR1 (pressure flow controller) and DFLR (pressure flow power controller)

Ordering code

-A10VSO V P / CB 4 5 2 3/S E HOY

Assembly

with motor design...
 B35 = ABAPG
 B5 = ABHPG

Pump type

Axial piston pump
 A10VSO = A10VSO
 according to data sheet
 92703 with size 10 and
 92711 size 18-140

Displacement

10 ... 140 cm³ per rotation = 10 ... 140

Control and adjustment device

e. g.
 Pressure/flow controller = DFR1
 Pressure/flow power controller = DFLR

Seal material (according to DIN ISO 1629)

FKM = V

Shaft end version

Cylindrical with key DIN 6885 = P

Connection flange

ISO 2-hole = A
 ISO 4-hole = B

Motor supplier

HOY = Hoyer Motors (preferred)
 SIE = Siemens
 VEM = VEM

Version damping bearing

E = elastic damping bearing

Pump carrier design

S = rigid pump carrier AB 03337

Motor protection

3 = PTC resistor with 3 temperature sensors

Efficiency class

2 = IE 2

Rated frequency

5 = 50 Hz

Number of pole pairs

4 =

Rated voltage

CB = 400 / 690 at 50 Hz

Motor power

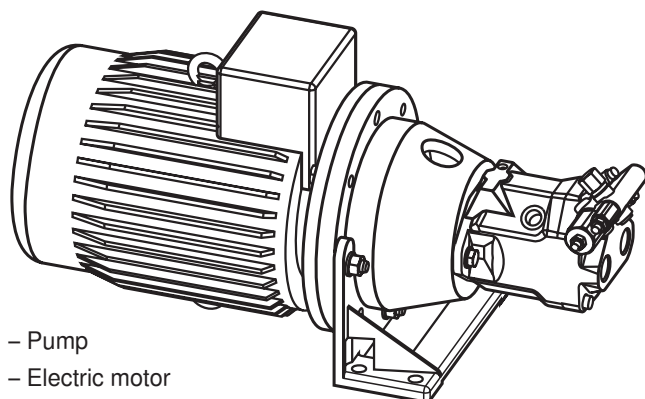
3 ... 110 = 3 kW ... 110 kW

Order example:

ABAPG-A10VSO 28DFR1VPA/18,5CB4523/SE HOY

Set-up of the motor/pump group

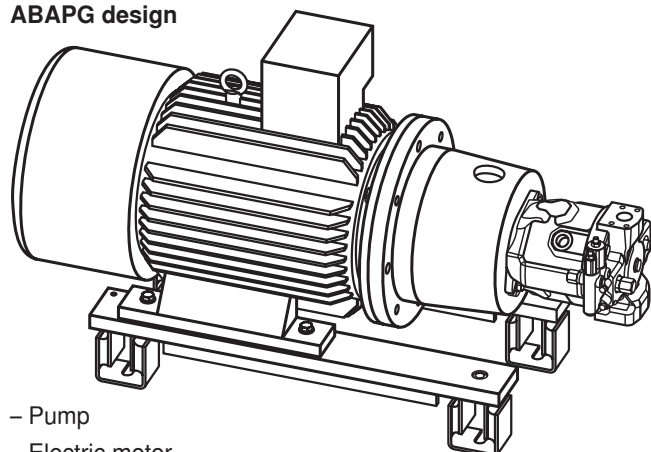
ABHPG design



- Pump
- Electric motor
- Pump carrier
- Coupling
- Pump base

Use of this design is recommended for restricted installation conditions (e. g. on oil tanks)
 Max. power range 7.5 kW

ABAPG design



- Pump
- Electric motor
- Pump carrier
- Coupling
- Strips
- Damping bearing

Use of this design is particularly recommended for requirements on low noise levels
 Min. power range 5.5 kW

STEP files of the relevant assemblies on request

Technical data (For applications outside these parameters, please consult us!)

Line connections	See table Line connections on page 16		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e. g. with operating temperature 50 °C ISO VG46 DIN 3448 (other hydraulic fluids upon request!) <ul style="list-style-type: none"> • Please observe our specifications according to data sheet 90220, 90221, 90223. • Different oil types must not be mixed as this may result in degradation and deterioration of the lubricity. • According to the operating conditions, the fluid must be renewed at certain intervals. 		
Pump type	A10VS010 series 52 according to data sheet 92703 A10VSO18-140 series 31 according to data sheet 92711 R = clockwise		
Operating pressure, absolute			
– Input	$p_{\min\text{-max}}$	bar	0.8 to 10
– Output	p_{nom}	bar	280 and/or 250 for A10VS010
– Peak pressure	p_{max}	bar	350 and/or 315 for A10VSO18-140
– Leakage port	p_{max}	bar	2
Hydraulic fluid temperature range, observe viscosity range	ϑ		–25 to +90
– T_{optimal} with HLP 46 (DIN 51524)	ϑ	°C	+45 to +55
– T_{max} in continuous operation	ϑ	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50126 (ABUKG) and 50111 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406 (c) according to the pump type used ¹⁾ . At least cleanliness class 20/18/15 must be achieved.		
Viscosity range	ϑ	mm ² /s	16 to 36 optimal 10 to 1000 shortly (see data sheets 92703, 92711)
Electric motor	– Motor type	Three-phase asynchronous motor	
	– Efficiency class	IE2	
	– Number of pole pairs	4	
	– Voltage according to IEC 38 U	V	400 / 690 at 50 Hz (CB)
	– Speed	$n \text{ min}^{-1}$	1450 at 50 Hz
	– Protection class	IP	55
	– Installation position	horizontal	
Surface treatment	By default, all steel parts and components are at least provided with a temporary corrosion protection (e.g. for transport)		

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.

For selecting the filters, see data sheet 51501.

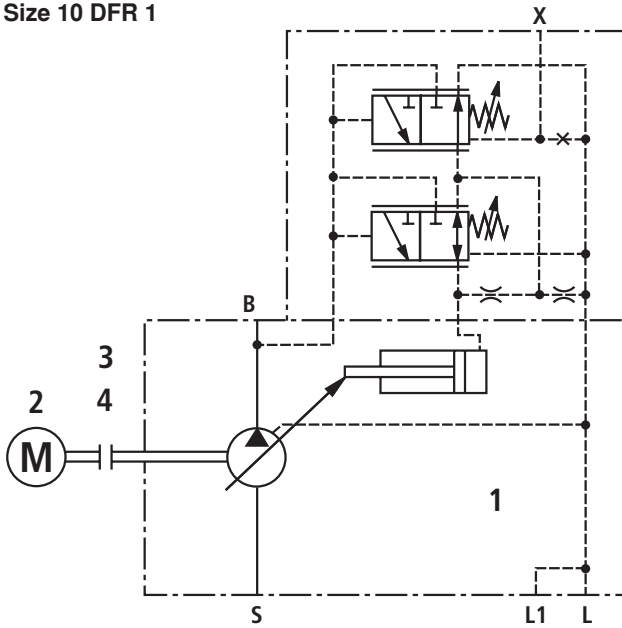


Notice: For assembly, commissioning and maintenance of hydraulic systems please observe the data sheet 07900. The motor/pump group is constructed and produced in compliance with the harmonized EN standards/specifications.

Circuit diagrams

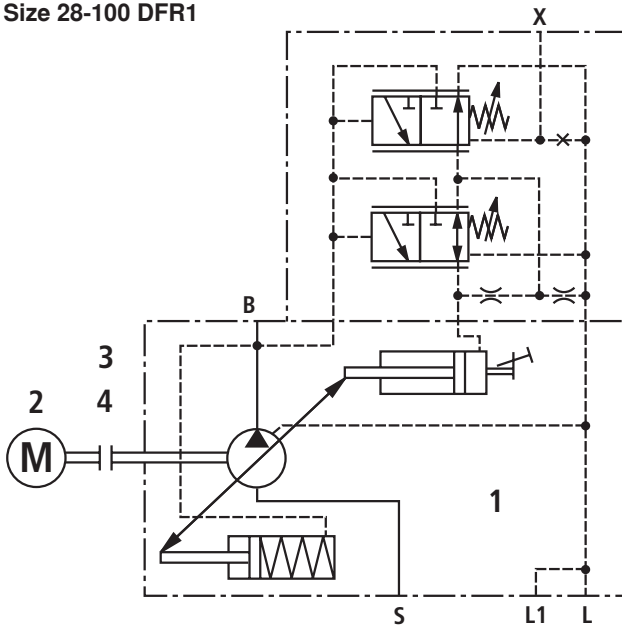
Axial piston pump (basic design)

Size 10 DFR 1

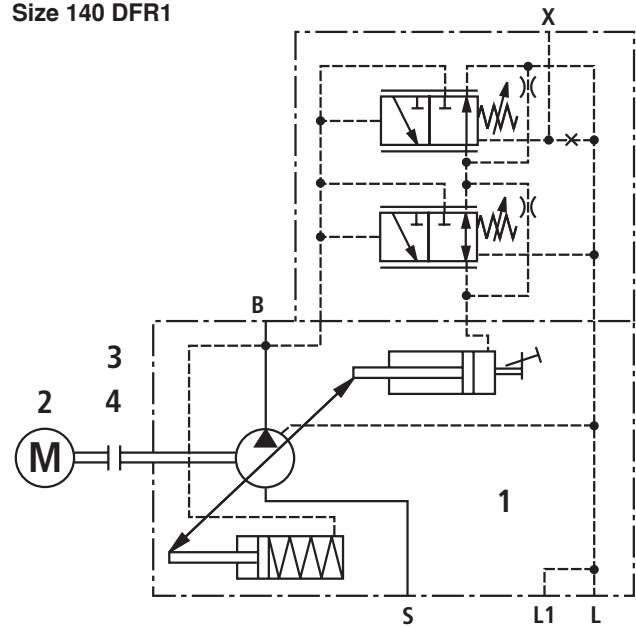


- 1 Axial piston pump A10VSO
- 2 Electric motor
- 3 Pump carrier
- 4 Coupling

Size 28-100 DFR1



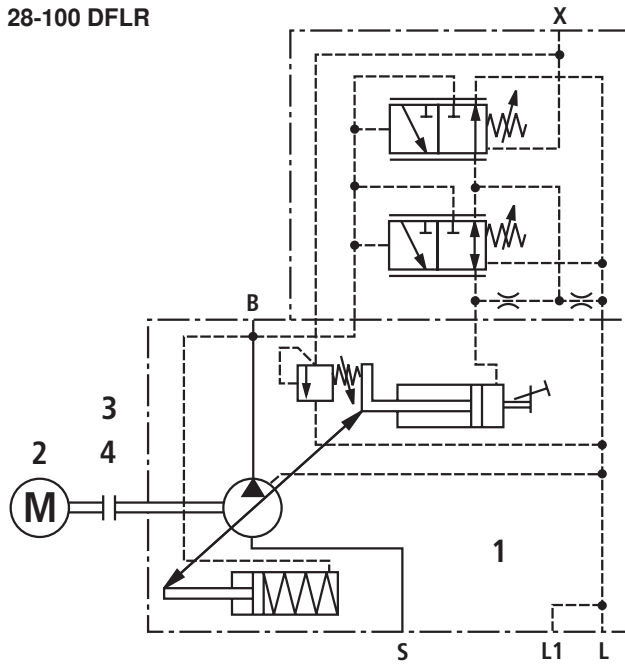
Size 140 DFR1



Circuit diagrams

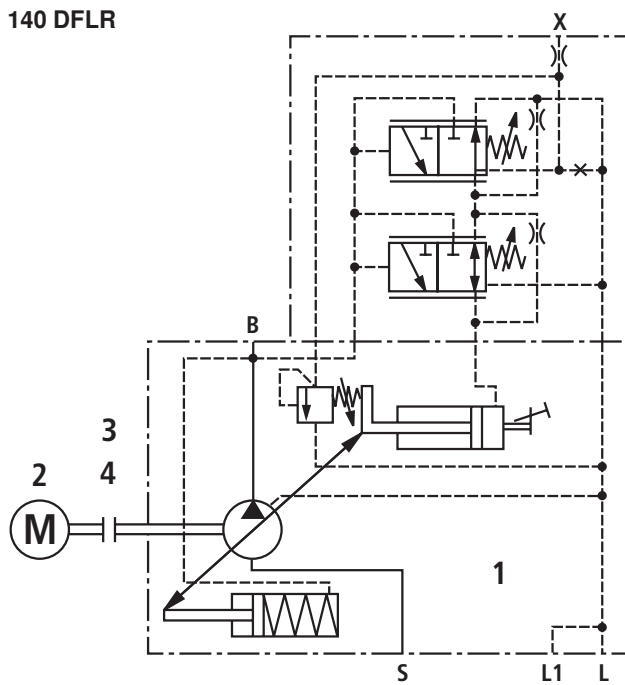
Axial piston pump with pressure/flow power controller (basic design)

28-100 DFLR



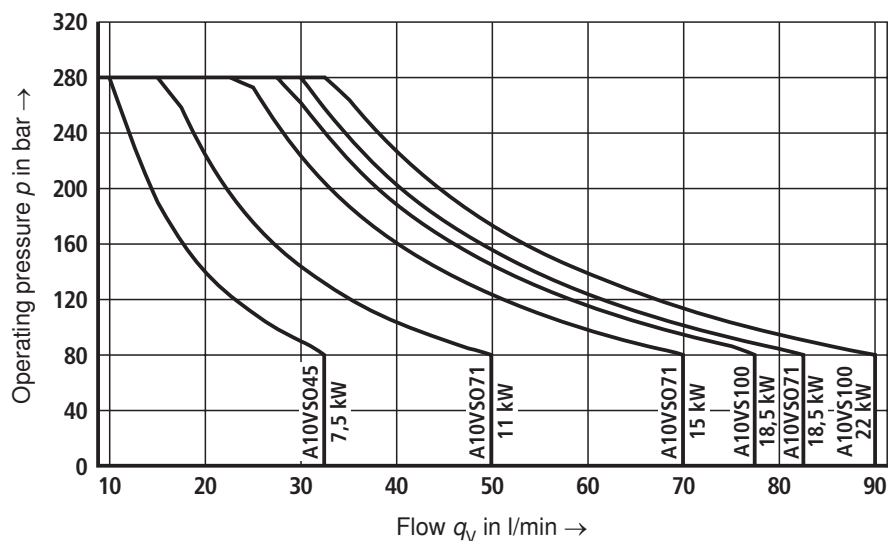
- 1 Axial piston pump A10VSO
- 2 Electric motor
- 3 Pump carrier
- 4 Coupling

140 DFLR



Performance characteristic

Axial piston pump with power controller measured at $n = 1450 \text{ min}^{-1}$
(factory setting)



☞ For the project planning, please use the performance characteristic from data sheet 92711.

Standard program incl. preferred types ABHPG-A10VSO ¹⁾

Frequency	50 Hz		Electric motor frame size	ABHPG material no. (motor B5)						
	1450 min ⁻¹			1450 min ⁻¹	HOYER-MOTORS	MKZ ²⁾	VEM	MKZ ²⁾	SIEMENS	MKZ ²⁾
Pump	$q_{v \max}$ in l/min	p_{\max} in bar	Power in kW							
A10VSO10DFR1	14	60	3.00	100L	R901305003	A3	R901304991	A3	R901305015	A3
		92	4.00	112M	R901305004	A3	R901304992	A3	R901305016	A3
		139	5.50	132S	R901305006	A3	R901304993	A3	R901305018	A3
		203	7.50	132M	R901305007	A3	R901304994	A3	R901305019	A3
A10VSO18DFR1	25	41	3.00	100L	R901305008	A3	R901304995	A3	R901305020	A3
		58	4.00	112M	R901305009	A2	R901304996	A3	R901305021	A3
		98	5.50	132S	R901305010	A3	R901304997	A3	R901305022	A3
		137	7.50	132M	R901305011	A3	R901304998	A3	R901305023	A3
A10VSO28DFR1	38	66	5.50	132S	R901305012	A3	R901304999	A3	R901305024	A3
		93	7.50	132M	R901305013	A3	R901305000	A3	R901305025	A3
A10VSO45DFR1	62	48	7.50	132M	R901305014	A3	R901305002	A3	R901305026	A3
A10VSO45DFLR	62	48	7.50	132M	R901305911	A3	R901305913	A3	R901305912	A3

¹⁾ Pump manifold possible without special design.

²⁾ MKZ = Material mark

A2 = Preferred delivery range

A3 = Standard delivery range unit dimensions see page 9-15

Standard program incl. preferred types ABAPG-A10VSO

Frequency	50 Hz 1450 min ⁻¹	$P_{max.}$ in bar	50 Hz 1450 min ⁻¹	Electric motor frame size	ABAPG material no. (motor B35)					
					Pump	$q_{v max}$ in l/min	Power in kW	HOYER- MOTORS	MKZ 1)	VEM
A10VSO10DFR1	14	139	5.50	132S	R901305071	A3	R901305027	A3	R901305115	A3
		203	7.50	132M	R901305072	A3	R901305028	A3	R901305116	A3
A10VSO18DFR1	25	98	5.50	132S	R901305073	A3	R901305029	A3	R901305117	A3
		137	7.50	132M	R901305074	A2	R901305030	A3	R901305118	A3
		229	11.00	160M	R901305075	A2	R901305031	A3	R901305119	A3
		280	15.00	160L	R901305076	A3	R901305032	A3	R901305120	A3
A10VSO28DFR1	39	66	5.50	132S	R901305077	A3	R901305033	A3	R901305121	A3
		93	7.50	132M	R901305079	A3	R901305034	A3	R901305122	A3
		150	11.00	160M	R901305080	A2	R901305035	A3	R901305123	A3
		212	15.00	160L	R901305081	A2	R901305037	A3	R901305124	A3
		263	18.50	180M	R901305082	A3	R901305038	A3	R901305125	A3
		280	22.00	180L	R901305083	A3	R901305039	A3	R901305126	A3
A10VSO45DFR1	62	48	7.50	132M	R901305084	A3	R901305040	A3	R901305127	A3
		79	11.00	160M	R901305085	A3	R901305041	A3	R901305128	A3
		117	15.00	160L	R901305086	A2	R901305042	A3	R901305129	A3
		147	18.50	180M	R901305087	A3	R901305043	A3	R901305130	A3
		182	22.00	180L	R901305088	A3	R901305044	A3	R901305131	A3
		262	30.00	200L	R901305089	A3	R901305045	A3	R901305132	A3
		280	37.00	225S	R901305090	A3	R901305046	A3	R901305133	A3
A10VSO71DFR1	98	48	11.00	160M	R901305091	A3	R901305047	A3	R901305134	A3
		72	15.00	160L	R901305092	A3	R901305048	A3	R901305135	A3
		91	18.50	180M	R901305093	A3	R901305049	A3	R901305136	A3
		109	22.00	180L	R901305094	A2	R901305050	A3	R901305137	A3
		156	30.00	200L	R901305095	A3	R901305051	A3	R901305138	A3
		197	37.00	225S	R901305096	A3	R901305052	A3	R901305139	A3
		244	45.00	225M	R901305097	A3	R901305053	A3	R901305140	A3
		280	55.00	250M	R901305098	A3	R901305054	A3	R901305141	A3
A10VSO100DFR1	138	61	18.50	180M	R901305099	A3	R901305055	A3	R901305142	A3
		73	22.00	180L	R901305100	A3	R901305056	A3	R901305143	A3
		107	30.00	200L	R901305101	A3	R901305057	A3	R901305144	A3
		136	37.00	225S	R901305102	A3	R901305058	A3	R901305145	A3
		170	45.00	225M	R901305103	A2	R901305059	A3	R901305146	A3
		208	55.00	250M	R901305104	A3	R901305060	A3	R901305147	A3
		280	75.00	280S	R901305105	A3	R901305061	A3	R901305148	A3
		280	90.00	280M	R901305106	A3	R901305062	A3	R901305150	A3
A10VSO140DFR1	193	53	22.00	180L	R901305107	A3	R901305063	A3	R901305152	A3
		74	30.00	200L	R901305108	A3	R901305064	A3	R901305153	A3
		94	37.00	225S	R901305109	A3	R901305065	A3	R901305154	A3
		119	45.00	225M	R901305110	A3	R901305066	A3	R901305155	A3
		146	55.00	250M	R901305111	A3	R901305067	A3	R901305156	A3
		205	75.00	280S	R901305112	A3	R901305068	A3	R901305157	A3
		246	90.00	280M	R901305113	A3	R901305069	A3	R901305158	A3
		280	110.00	315S	R901305114	A3	R901305070	A3	R901305159	A3
A10VSO45DFLR	62	48	7.50	132M	R901305869	A3	R901305863	A3	R901305875	A3
A10VSO71DFLR	98	48	11.00	160M	R901305870	A3	R901305864	A3	R901305876	A3
		72	15.00	160L	R901305871	A3	R901305865	A3	R901305878	A3
		91	18.50	180M	R901305872	A3	R901305866	A3	R901305879	A3
A10VSO100DFLR	138	61	18.50	180M	R901305873	A3	R901305867	A3	R901305880	A3
		73	22.00	180L	R901305874	A3	R901305868	A3	R901305881	A3

1) MKZ = Material mark

A2 = Preferred delivery range;

A3 = Standard delivery range unit dimensions see page 9-15

Standard program incl. preferred types ABAPG-A10VSO designed for pump manifold block ¹⁾

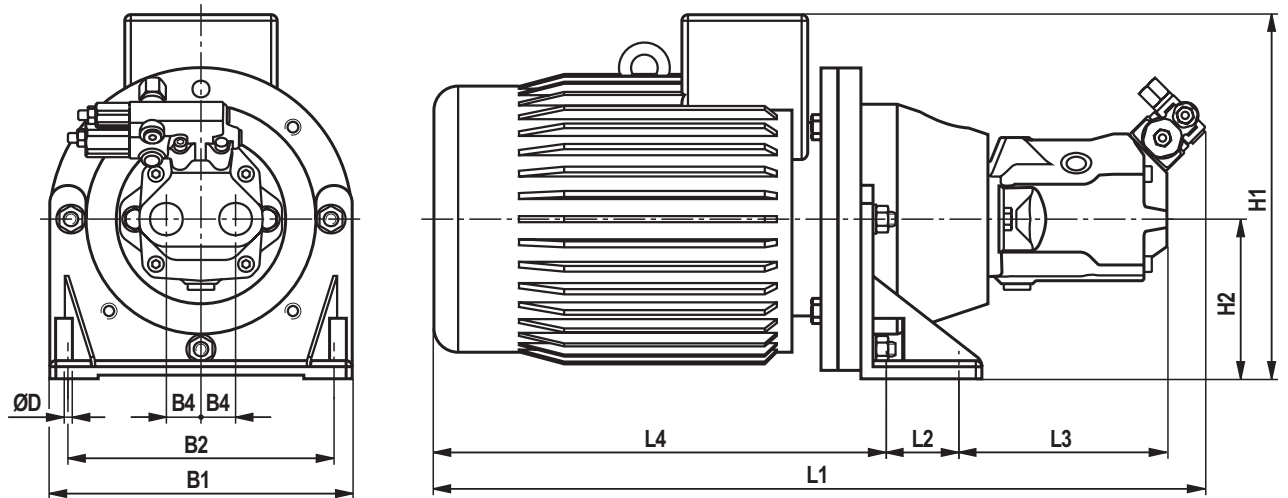
Frequency	50 Hz 1450 min ⁻¹		50 Hz 1450 min ⁻¹	Electric motor frame size	ABAPG material no. (motor B35) for PSBD					
	Pump	$q_{v \max}$ in l/min			p_{\max} in bar	Power in kW	HOYER- MOTORS	MKZ 2)	VEM	MKZ 2)
A10VSO18DFR1	25	98	5.50	132S	R901305222	A3	R901305167	A3	R901305264	A3
		137	7.50	132M	R901305223	A3	R901305169	A3	R901305265	A3
		229	11.00	160M	R901305224	A3	R901305170	A3	R901305266	A3
		280	15.00	160L	R901305225	A3	R901305171	A3	R901305267	A3
A10VSO28DFR1	39	66	5.50	132S	R901305226	A3	R901305172	A3	R901305268	A3
		93	7.50	132M	R901305227	A3	R901305174	A3	R901305269	A3
		150	11.00	160M	R901305228	A3	R901305175	A3	R901305270	A3
		212	15.00	160L	R901305229	A3	R901305176	A3	R901305271	A3
		263	18.50	180M	R901305230	A3	R901305178	A3	R901305272	A3
		280	22.00	180L	R901305231	A3	R901305180	A3	R901305273	A3
A10VSO45DFR1	62	48	7.50	132M	R901305232	A3	R901305181	A3	R901305274	A3
		79	11.00	160M	R901305233	A3	R901305182	A3	R901305275	A3
		117	15.00	160L	R901305234	A3	R901305184	A3	R901305277	A3
		147	18.50	180M	R901305235	A3	R901305185	A3	R901305278	A3
		182	22.00	180L	R901305236	A3	R901305186	A3	R901305279	A3
		262	30.00	200L	R901305237	A3	R901305187	A3	R901305280	A3
		280	37.00	225S	R901305239	A3	R901305189	A3	R901305281	A3
A10VSO71DFR1	98	48	11.00	160M	R901305240	A3	R901305190	A3	R901305282	A3
		72	15.00	160L	R901305241	A3	R901305192	A3	R901305283	A3
		91	18.50	180M	R901305242	A3	R901305193	A3	R901305284	A3
		109	22.00	180L	R901305243	A3	R901305194	A3	R901305285	A3
		156	30.00	200L	R901305244	A3	R901305196	A3	R901305286	A3
		197	37.00	225S	R901305245	A3	R901305199	A3	R901305287	A3
		244	45.00	225M	R901305246	A3	R901305200	A3	R901305288	A3
280	55.00	250M	R901305247	A3	R901305202	A3	R901305289	A3		
A10VSO100DFR1	138	61	18.50	180M	R901305248	A3	R901305203	A3	R901305290	A3
		73	22.00	180L	R901305249	A3	R901305204	A3	R901305291	A3
		107	30.00	200L	R901305250	A3	R901305205	A3	R901305292	A3
		136	37.00	225S	R901305251	A3	R901305206	A3	R901305294	A3
		170	45.00	225M	R901305252	A3	R901305207	A3	R901305295	A3
		208	55.00	250M	R901305253	A3	R901305208	A3	R901305296	A3
		280	75.00	280S	R901305254	A3	R901305209	A3	R901305298	A3
A10VSO140DFR1	193	53	22.00	180L	R901305256	A3	R901305212	A3	R901305300	A3
		74	30.00	200L	R901305257	A3	R901305213	A3	R901305301	A3
		94	37.00	225S	R901305258	A3	R901305214	A3	R901305302	A3
		119	45.00	225M	R901305259	A3	R901305215	A3	R901305303	A3
		146	55.00	250M	R901305260	A3	R901305216	A3	R901305304	A3
		205	75.00	280S	R901305261	A3	R901305217	A3	R901305305	A3
		246	90.00	280M	R901305262	A3	R901305218	A3	R901305306	A3
		280	110.00	315S	R901305263	A3	R901305219	A3	R901305307	A3
A10VSO45DFLR	62	48	7.50	132M	R901305888	A3	R901305882	A3	R901305894	A3
A10VSO71DFLR	98	48	11.00	160M	R901305889	A3	R901305883	A3	R901305895	A3
		72	15.00	160L	R901305890	A3	R901305884	A3	R901305896	A3
		91	18.50	180M	R901305891	A3	R901305885	A3	R901305897	A3
A10VSO100DFLR	138	61	18.50	180M	R901305892	A3	R901305886	A3	R901305898	A3
		73	22.00	180L	R901305893	A3	R901305887	A3	R901305899	A3

¹⁾ Pump manifold block must be ordered separately.²⁾ MKZ = Material mark

A2 = Preferred delivery range

A3 = Standard delivery range unit dimensions see page 9-15

Unit dimensions: Type ABHPG A10VSO 10 HOYER-MOTORS, VEM, SIEMENS (nominal dimensions in mm)



ABHPG with motor supplier HOYER-MOTORS

Pump	Electric motor	Dimensions									
	kW / frame size	B1	B2	B4	ØD	H1	H2	L1	L2	L3	L4
A10VSO 10	3.0 / 100L	250	220	28.6	14.0	279	132	644	60	172	380
	4.0 / 112M	250	220	28.6	14.0	301	132	638	60	172	374
	5.5 / 132S	300	260	28.6	14.0	348	160	706	80	172	422
	7.5 / 132M	300	260	28.6	14.0	348	160	769	80	172	505

ABHPG with motor supplier VEM

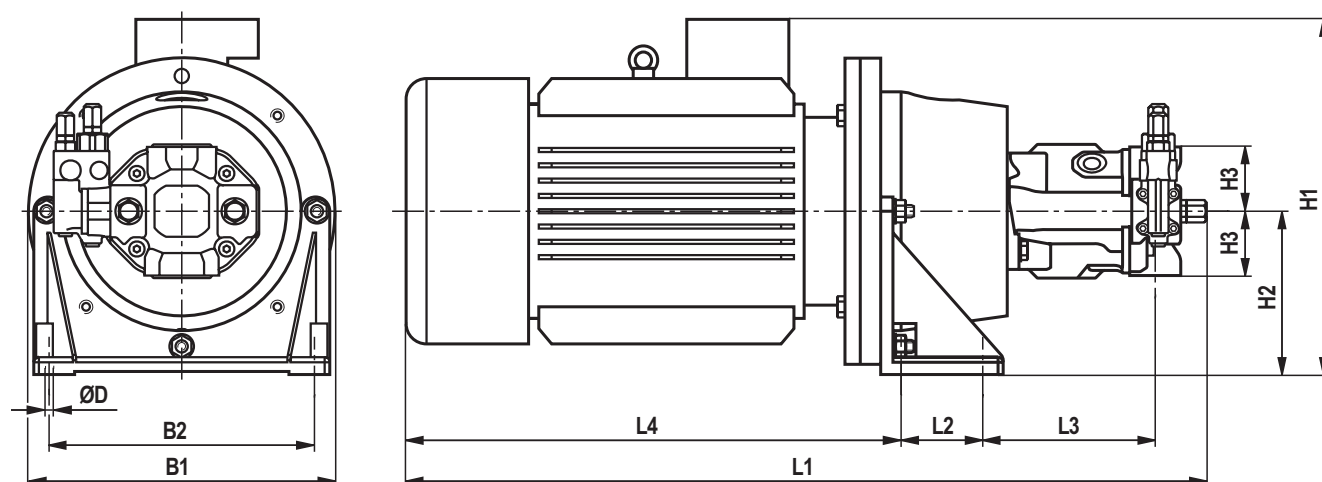
Pump	Electric motor	Dimensions									
	kW / frame size	B1	B2	B4	ØD	H1	H2	L1	L2	L3	L4
A10VSO 10	3.0 / 100L	250	220	28.6	14.0	256	132	665	60	172	401
	4.0 / 112M	250	220	28.6	14.0	310	132	703	60	172	419
	5.5 / 132S	300	260	28.6	14.0	359	160	773	80	172	509
	7.5 / 132M	300	260	28.6	14.0	359	160	773	80	172	509

ABHPG with motor supplier SIEMENS

Pump	Electric motor	Dimensions									
	kW / frame size	B1	B2	B4	ØD	H1	H2	L1	L2	L3	L4
A10VSO 10	3.0 / 100L	250	220	28.6	14.0	298	132	640	60	172	376
	4.0 / 112M	250	220	28.6	14.0	309	132	633	60	172	369
	5.5 / 132S	300	260	28.6	14.0	362	160	709	80	172	445
	7.5 / 132M	300	260	28.6	14.0	362	160	709	80	172	445

Unit dimensions: Type ABHPG A10VSO 18 – 45 HOYER-MOTORS, VEM, SIEMENS

(nominal dimensions in mm)

**ABHPG with motor supplier HOYER-MOTORS**

Pump	Electric motor	Dimensions									
	kW / frame size	B1	B2	ØD	H1	H2	H3	L1	L2	L3	L4
A10VSO 18	3.0 / 100L	250	220	14.0	279	132	63	659	60	169	380
	4.0 / 112M	250	220	14.0	301	132	63	653	60	169	374
	5.5 / 132S	300	260	14.0	348	160	63	721	80	169	422
	7.5 / 132M	300	260	14.0	348	160	63	784	80	169	485
A10VSO 28	5.5 / 132S	300	260	14.0	348	160	80	743	80	199	422
	7.5 / 132M	300	260	14.0	348	160	80	806	80	199	485
A10VSO 45	7.5 / 132M	300	260	14.0	348	160	90	824	80	219	485

ABHPG with motor supplier VEM

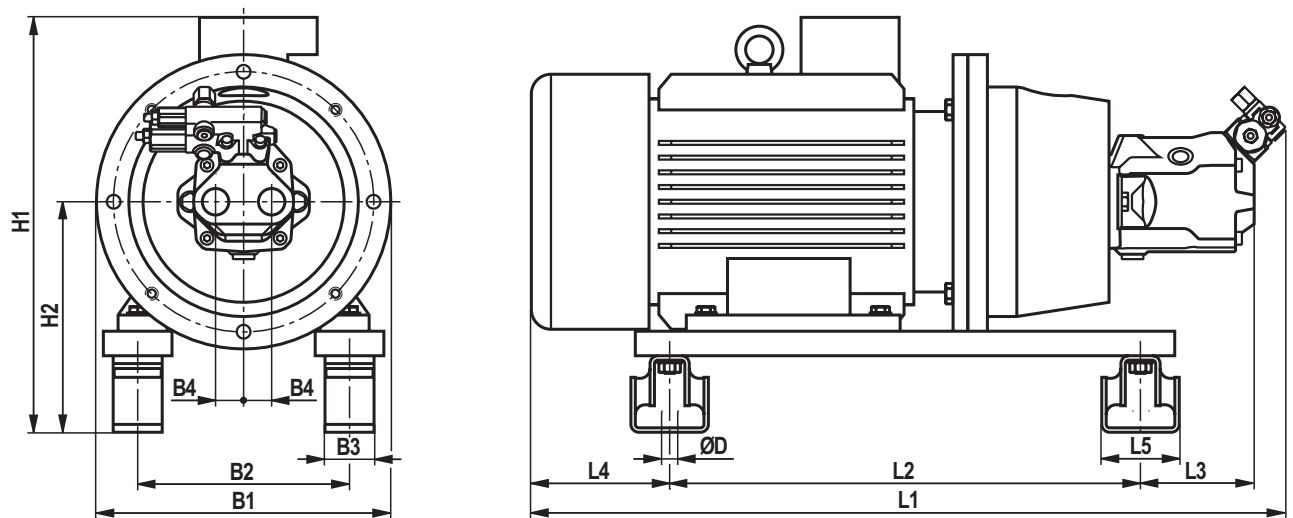
Pump	Electric motor	Dimensions									
	kW / frame size	B1	B2	ØD	H1	H2	H3	L1	L2	L3	L4
A10VSO 18	3.0 / 100L	250	220	14.0	256	132	63	680	60	169	401
	4.0 / 112M	250	220	14.0	310	132	63	718	60	169	439
	5.5 / 132S	300	260	14.0	359	160	63	788	80	169	489
	7.5 / 132M	300	260	14.0	359	160	63	788	80	169	489
A10VSO 28	5.5 / 132S	300	260	14.0	359	160	80	810	80	199	489
	7.5 / 132M	300	260	14.0	359	160	80	810	80	199	489
A10VSO 45	7.5 / 132M	300	260	14.0	359	160	90	828	80	219	489

ABHPG with motor supplier SIEMENS

Pump	Electric motor	Dimensions									
	kW / frame size	B1	B2	ØD	H1	H2	H3	L1	L2	L3	L4
A10VSO 18	3.0 / 100L	250	220	14.0	298	132	63	655	60	169	376
	4.0 / 112M	250	220	14.0	309	132	63	648	60	169	369
	5.5 / 132S	300	260	14.0	362	160	63	724	80	169	425
	7.5 / 132M	300	260	14.0	362	160	63	724	80	169	425
A10VSO 28	5.5 / 132S	300	260	14.0	362	160	80	746	80	199	425
	7.5 / 132M	300	260	14.0	362	160	80	746	80	199	425
A10VSO 45	7.5 / 132M	300	260	14.0	362	160	90	764	80	219	425

Unit dimensions: Type ABAPG A10VSO 10 HOYER-MOTORS, VEM, SIEMENS

(nominal dimensions in mm)



ABAPG with motor supplier HOYER-MOTORS

Pump	Electric motor	Dimensions											
	kW / frame size	B1	B2	B3	B4	ØD	H1	H2	L1	L2	L3	L4	L5
A10VSO 10	5.5 / 132S	300	216	50	28.6	13.5	423	235	706	480	116	78	79
	7.5 / 132M	300	216	50	28.6	13.5	423	235	769	480	116	141	79

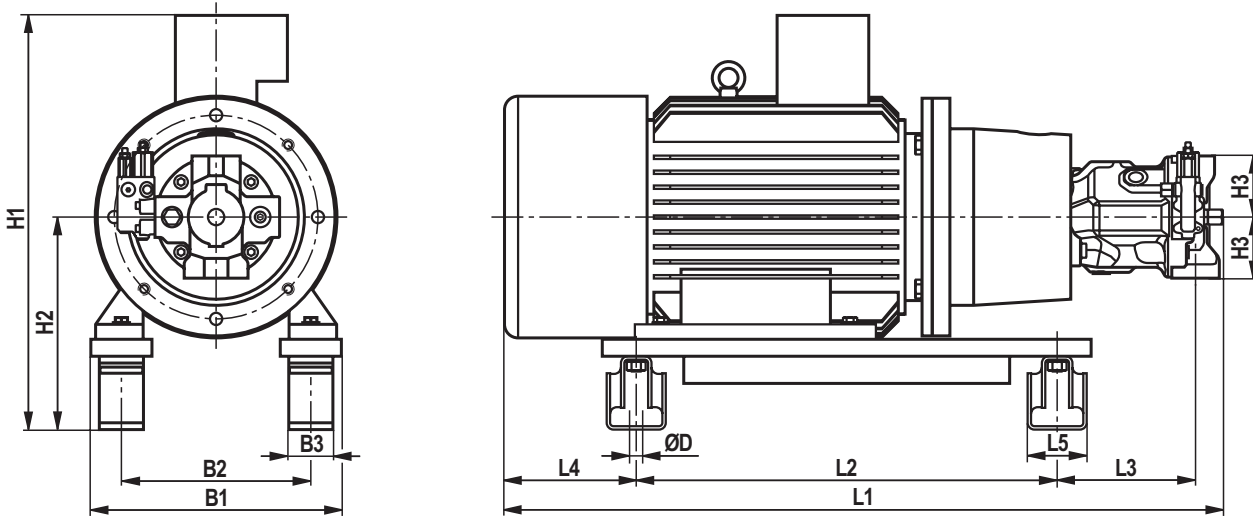
ABAPG with motor supplier VEM

Pump	Electric motor	Dimensions											
	kW / frame size	B1	B2	B3	B4	ØD	H1	H2	L1	L2	L3	L4	L5
A10VSO 10	5.5 / 132S	300	216	50	28.6	13.5	434	235	773	480	116	145	79
	7.5 / 132M	300	216	50	28.6	13.5	434	235	773	480	116	145	79

ABAPG with motor supplier SIEMENS

Pump	Electric motor	Dimensions											
	kW / frame size	B1	B2	B3	B4	ØD	H1	H2	L1	L2	L3	L4	L5
A10VSO 10	5.5 / 132S	300	216	50	28.6	13.5	437	235	709	480	116	81	79
	7.5 / 132M	300	216	50	28.6	13.5	437	235	709	480	116	81	79

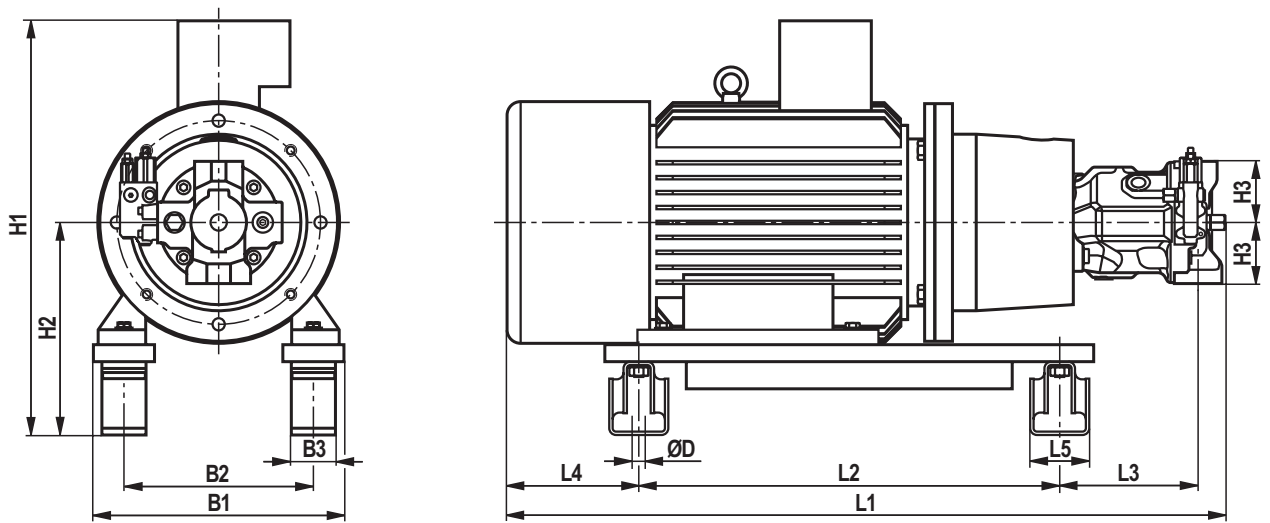
Unit dimensions: Type ABAPG A10VSO 18 – 140 HOYER-MOTORS up to 55 kW
(nominal dimensions in mm)



ABAPG with motor supplier HOYER-MOTORS

Pump	Electric motor kW / frame size	Dimensions											
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5
A10VSO 18	5.5 / 132S	300	216	50	13.5	423	235	63	721	480	113	78	79
	7.5 / 132M	300	216	50	13.5	423	235	63	784	480	113	141	79
	11.0 / 160M	350	254	50	13.5	523	263	63	888	580	151	107	79
	15.0 / 160L	350	254	50	13.5	523	263	63	943	580	151	162	79
A10VSO 28	5.5 / 132S	300	216	50	13.5	423	235	80	743	480	143	78	79
	7.5 / 132M	300	216	50	13.5	423	235	80	806	480	143	141	79
	11.0 / 160M	350	254	50	13.5	523	263	80	899	580	170	107	79
	15.0 / 160L	350	254	50	13.5	523	263	80	954	580	170	162	79
	18.5 / 180M	269	279	65	17.5	588	313	80	1000	620	184	154	87
	22.0 / 180L	369	279	65	17.5	588	313	80	1040	620	184	194	87
A10VSO 45	7.5 / 132M	300	216	50	13.5	423	235	90	824	480	163	141	79
	11.0 / 160M	350	254	50	13.5	523	263	90	917	580	190	107	79
	15.0 / 160L	350	254	50	13.5	523	263	90	972	580	190	162	79
	18.5 / 180M	369	279	65	17.5	588	313	90	1018	620	204	154	87
	22.0 / 180L	369	279	65	17.5	588	313	90	1058	620	204	194	87
	30.0 / 200L	418	318	65	17.5	643	338	90	1088	700	171	177	87
	37.0 / 225S	456	356	80	17.5	720	385	90	1133	800	127	166	100
A10VSO 71	11.0 / 160M	350	254	50	13.5	523	263	104	966	580	239	107	79
	15.0 / 160L	350	254	65	13.5	553	293	104	1021	580	239	162	87
	18.5 / 180M	369	279	65	17.5	588	313	104	1051	620	237	154	87
	22.0 / 180L	369	279	65	17.5	588	313	104	1091	620	237	194	87
	30.0 / 200L	418	318	80	17.5	665	360	104	1121	700	204	177	100
	37.0 / 225S	456	356	80	17.5	720	385	104	1166	800	160	166	100
	45.0 / 225M	456	356	80	17.5	720	385	104	1196	800	160	196	100
	55.0 / 250M	550	406	80	17.5	785	420	104	1280	850	192	198	100
A10VSO100	18.5 / 180M	369	279	65	17.5	588	313	100	1123	620	295	154	87
	22.0 / 180L	369	279	65	17.5	588	313	100	1163	620	295	194	87
	30.0 / 200L	418	318	80	17.5	665	360	100	1217	700	286	177	100
	37.0 / 225S	456	356	80	17.5	720	385	100	1238	800	218	166	100
	45.0 / 225M	456	356	80	17.5	720	385	100	1268	800	218	196	100
	55.0 / 250M	550	406	80	17.5	785	420	100	1352	850	250	198	100
A10VSO140	22.0 / 180L	369	279	65	17.5	588	313	110	1195	620	319	194	87
	30.0 / 200L	418	318	80	17.5	665	360	110	1225	700	286	177	100
	37.0 / 225S	456	356	80	17.5	720	385	110	1274	800	246	166	100
	45.0 / 225M	456	356	80	17.5	720	385	110	1304	800	246	196	100
	55.0 / 250M	550	406	80	17.5	785	420	110	1377	850	267	198	100

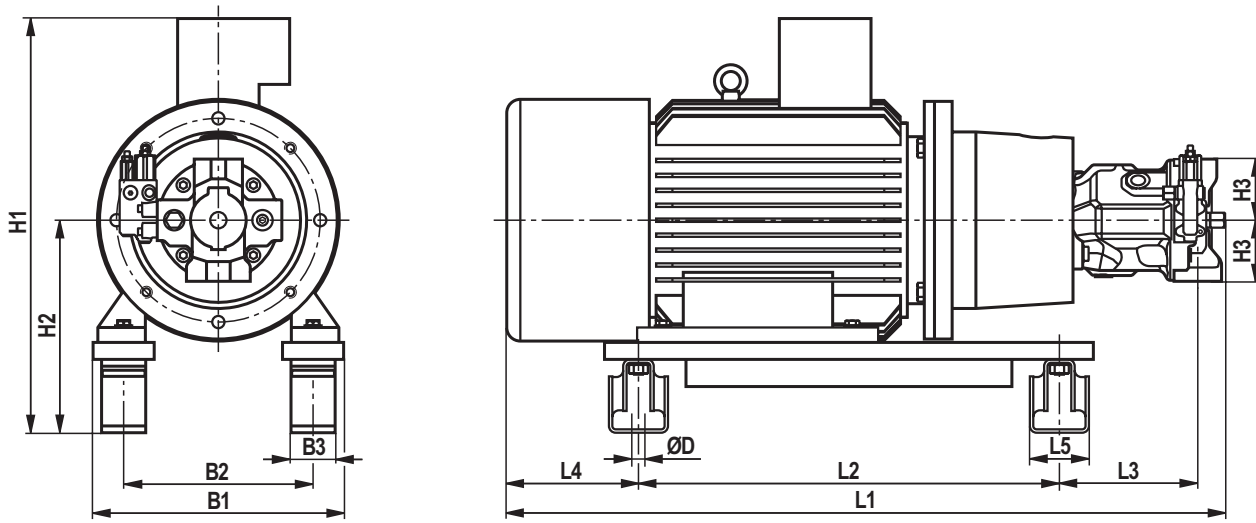
Unit dimensions: Type ABAPG A10VSO 18 – 140 VEM up to 55 kW (nominal dimensions in mm)



ABAPG with motor supplier VEM

Pump	Electric motor	Dimensions											
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5
A10VSO 18	5.5 / 132S	300	216	50	13.5	434	235	63	788	480	113	145	79
	7.5 / 132M	300	216	50	13.5	434	235	63	788	480	113	145	79
	11.0 / 160M	350	254	50	13.5	505	263	63	844	580	151	63	79
	15.0 / 160L	350	254	50	13.5	505	263	63	940	580	151	159	79
A10VSO 28	5.5 / 132S	300	216	50	13.5	434	235	80	810	480	143	145	79
	7.5 / 132M	300	216	50	13.5	434	235	80	810	480	143	145	79
	11.0 / 160M	350	254	50	13.5	505	263	80	855	580	170	63	79
	15.0 / 160L	350	254	50	13.5	505	263	80	951	580	170	159	79
	18.5 / 180M	269	279	67	17.5	574	313	80	980	620	184	134	87
	22.0 / 180L	369	279	67	17.5	574	313	80	980	620	184	134	87
A10VSO 45	7.5 / 132M	300	216	50	13.5	434	235	90	928	480	163	145	79
	11.0 / 160M	350	254	50	13.5	505	263	90	973	580	190	63	79
	15.0 / 160L	350	254	50	13.5	505	263	90	969	580	190	159	79
	18.5 / 180M	369	279	67	17.5	574	313	90	998	620	204	134	87
	22.0 / 180L	369	279	67	17.5	574	313	90	998	620	204	134	87
	30.0 / 200L	418	318	67	17.5	638	338	90	1.045	700	171	134	87
	37.0 / 225S	456	356	80	17.5	685	385	90	1.075	800	127	108	100
A10VSO 71	11.0 / 160M	350	254	50	13.5	505	263	104	922	580	239	63	79
	15.0 / 160L	350	254	67	13.5	535	293	104	1018	580	239	159	87
	18.5 / 180M	369	279	67	17.5	574	313	104	1031	620	237	134	87
	22.0 / 180L	369	279	67	17.5	574	313	104	1031	620	237	134	87
	30.0 / 200L	418	318	80	17.5	660	360	104	1078	700	204	134	100
	37.0 / 225S	456	356	80	17.5	685	385	104	1108	800	160	108	100
	45.0 / 225M	456	356	80	17.5	709	385	104	1213	800	160	213	100
	55.0 / 250M	550	406	80	17.5	806	420	104	1289	850	192	207	100
A10VSO100	18.5 / 180M	369	279	65	17.5	574	313	100	1103	620	295	134	87
	22.0 / 180L	369	279	65	17.5	574	313	100	1103	620	295	134	87
	30.0 / 200L	418	318	80	17.5	660	360	100	1174	700	286	134	100
	37.0 / 225S	456	356	80	17.5	685	385	100	1180	800	218	108	100
	45.0 / 225M	456	356	80	17.5	709	385	100	1285	800	218	213	100
	55.0 / 250M	550	406	80	17.5	806	420	100	1361	850	250	207	100
A10VSO140	22.0 / 180L	369	279	65	17.5	574	313	110	1135	620	319	134	87
	30.0 / 200L	418	318	80	17.5	660	360	110	1182	700	286	134	100
	37.0 / 225S	456	356	80	17.5	685	385	110	1216	800	246	108	100
	45.0 / 225M	456	356	80	17.5	709	385	110	1321	800	246	213	100
	55.0 / 250M	550	406	80	17.5	806	420	110	1386	850	267	207	100

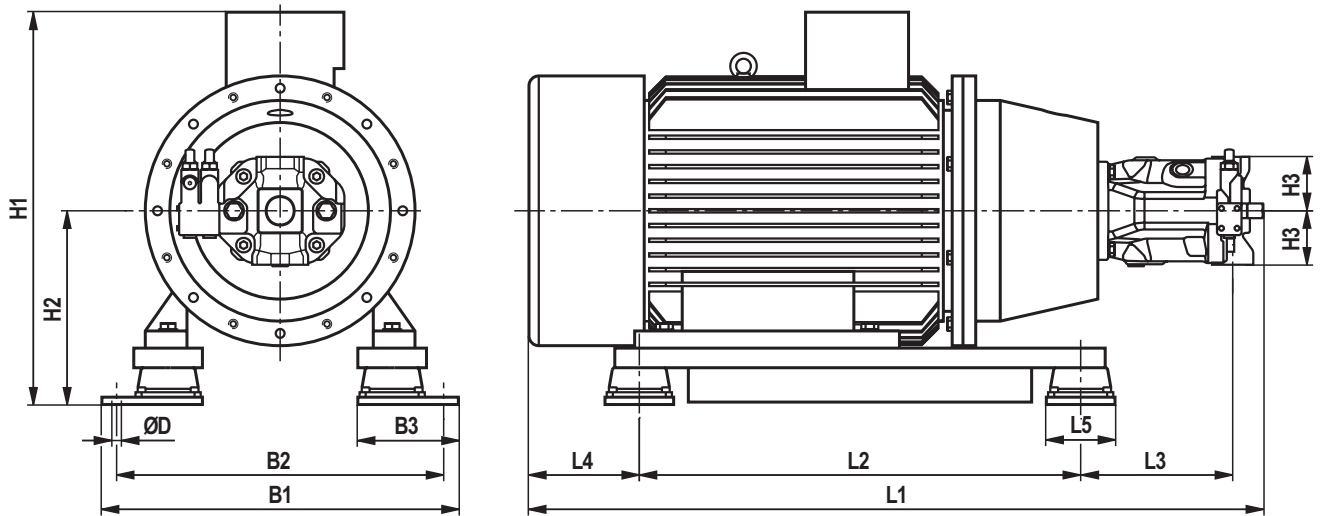
Unit dimensions: Type ABAPG A10VSO 18 – 140 SIEMENS up to 55 kW
(nominal dimensions in mm)



ABAPG with motor supplier SIEMENS

Pump	Electric motor	Dimensions											
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5
A10VSO 18	5.5 / 132S	300	216	50	13.5	437	235	63	724	480	113	81	79
	7.5 / 132M	300	216	50	13.5	437	235	63	724	480	113	81	79
	11.0 / 160M	350	254	50	13.5	500	263	63	877	580	151	106	79
	15.0 / 160L	350	254	50	13.5	500	263	63	877	580	151	96	79
A10VSO 28	5.5 / 132S	300	216	50	13.5	437	235	80	746	480	143	81	79
	7.5 / 132M	300	216	50	13.5	437	235	80	746	480	143	81	79
	11.0 / 160M	350	254	50	13.5	500	263	80	888	580	170	106	79
	15.0 / 160L	350	254	50	13.5	500	263	80	888	580	170	96	79
	18.5 / 180M	269	279	65	17.5	575	313	80	969	620	184	123	87
	22.0 / 180L	369	279	65	17.5	575	313	80	1020	620	184	174	87
A10VSO 45	7.5 / 132M	300	216	50	13.5	437	235	90	764	480	163	81	79
	11.0 / 160M	350	254	50	13.5	500	263	90	906	580	190	106	79
	15.0 / 160L	350	254	50	13.5	500	263	90	906	580	190	96	79
	18.5 / 180M	369	279	65	17.5	575	313	90	987	620	204	123	87
	22.0 / 180L	369	279	65	17.5	575	313	90	1038	620	204	174	87
	30.0 / 200L	418	318	65	17.5	638	338	90	1038	700	171	127	87
	37.0 / 225S	456	356	80	17.5	713	385	90	1107	800	127	140	100
A10VSO 71	11.0 / 160M	350	254	50	13.5	500	263	104	955	580	239	106	79
	15.0 / 160L	350	254	65	13.5	530	293	104	955	580	239	96	87
	18.5 / 180M	369	279	65	17.5	575	313	104	1020	620	237	123	87
	22.0 / 180L	369	279	65	17.5	575	313	104	1071	620	237	174	87
	30.0 / 200L	418	318	80	17.5	660	360	104	1071	700	204	127	100
	37.0 / 225S	456	356	80	17.5	713	385	104	1140	800	160	140	100
	45.0 / 225M	456	356	80	17.5	713	385	104	1200	800	160	200	100
	55.0 / 250M	550	406	80	17.5	812	420	104	1316	850	192	234	100
A10VSO100	18.5 / 180M	369	279	65	17.5	575	313	100	1092	620	295	123	87
	22.0 / 180L	369	279	65	17.5	575	313	100	1143	620	295	174	87
	30.0 / 200L	418	318	80	17.5	660	360	100	1167	700	286	127	100
	37.0 / 225S	456	356	80	17.5	713	385	100	1212	800	218	140	100
	45.0 / 225M	456	356	80	17.5	713	385	100	1272	800	218	200	100
A10VSO140	55.0 / 250M	550	406	80	17.5	812	420	100	1388	850	250	234	100
	22.0 / 180L	369	279	65	17.5	575	313	110	1175	620	319	174	87
	30.0 / 200L	418	318	80	17.5	660	360	110	1175	700	286	127	100
	37.0 / 225S	456	356	80	17.5	713	385	110	1248	800	246	140	100
	45.0 / 225M	456	356	80	17.5	713	385	110	1308	800	246	200	100
55.0 / 250M	550	406	80	17.5	812	420	110	1413	850	267	234	100	

Unit dimensions: Type ABAPG A10VSO 100 – 140 HOYER-MOTORS, VEM, SIEMENS from 75 kW (nominal dimensions in mm)



ABAPG with motor supplier HOYER-MOTORS

Pump	Electric motor	Dimensions											
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5
A10VSO100	75.0 / 280S	727	667	205	23.0	795	395	100	1429	900	300	175	140
	75.0 / 280S	727	667	205	23.0	795	395	110	1447	900	310	175	140
A10VSO140	90.0 / 280M	727	667	205	23.0	795	395	110	1497	900	310	225	140
	110.0 / 315S	828	768	250	23.0	992	462	110	1722	1100	216	344	180

ABAPG with motor supplier VEM

Pump	Electric motor	Dimensions											
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5
A10VSO100	75.0 / 280S	727	667	205	23.0	781	392	100	1378	900	300	124	140
	75.0 / 280S	727	667	205	23.0	781	395	110	1396	900	310	124	140
A10VSO140	90.0 / 280M	727	667	205	23.0	781	395	110	1442	900	310	170	140
	110.0 / 315S	828	768	250	23.0	878	462	110	1557	1100	216	179	180

ABAPG with motor supplier SIEMENS

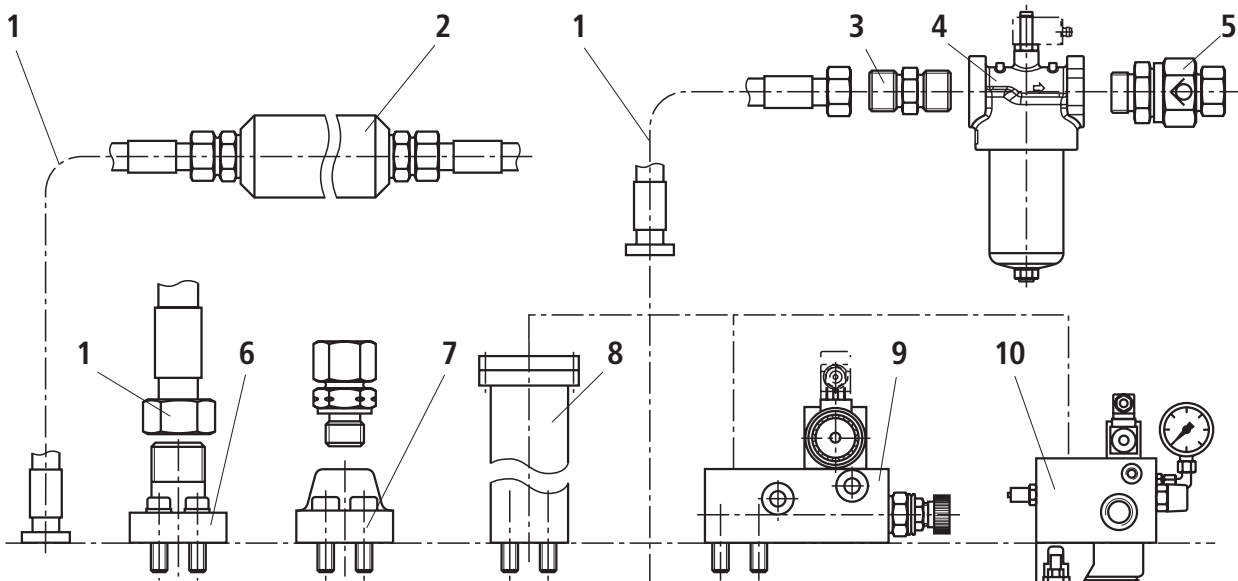
Pump	Electric motor	Dimensions											
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5
A10VSO100	75.0 / 280S	727	667	205	23.0	827	395	100	1414	900	300	160	140
	75.0 / 280S	727	667	205	23.0	827	395	110	1432	900	310	160	140
A10VSO140	90.0 / 280M	727	667	205	23.0	827	395	110	1542	900	310	270	140
	110.0 / 315S	828	768	250	23.0	962	462	110	1579	1100	216	201	180

Pressure line connections

Pump type	Line connections			
	Pressure port P(B)	Suction port S	Leakage oil connection L / L1	Pilot oil connection X
A10VSO 10	DIN 3852 – M27x2	DIN 3852 – M27x2	DIN 3852 – M16x1.5	DIN 3852 – M14x1.5
A10VSO 18	DIN/ISO 6162-1 3/4"	DIN/ISO 6162-1 1"	DIN 3852 – M16x1.5	DIN 3852 – M14x1.5
A10VSO 28	DIN/ISO 6162-1 3/4"	DIN/ISO 6162-1 1 1/4"	DIN 3852 – M18x1.5	DIN 3852 – M14x1.5
A10VSO 45	DIN/ISO 6162-1 1"	DIN/ISO 6162-1 1 1/2"	DIN 3852 – M22x1.5	DIN 3852 – M14x1.5
A10VSO 71	DIN/ISO 6162-1 1"	DIN/ISO 6162-1 2"	DIN 3852 – M22x1.5	DIN 3852 – M14x1.5
A10VSO100	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M27x2	DIN 3852 – M14x1.5
A10VSO140	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M27x2	DIN 3852 – M14x1.5

Standard pressure SAE flange figure with metric mounting screws
 High pressure SAE flange figure with metric mounting screws

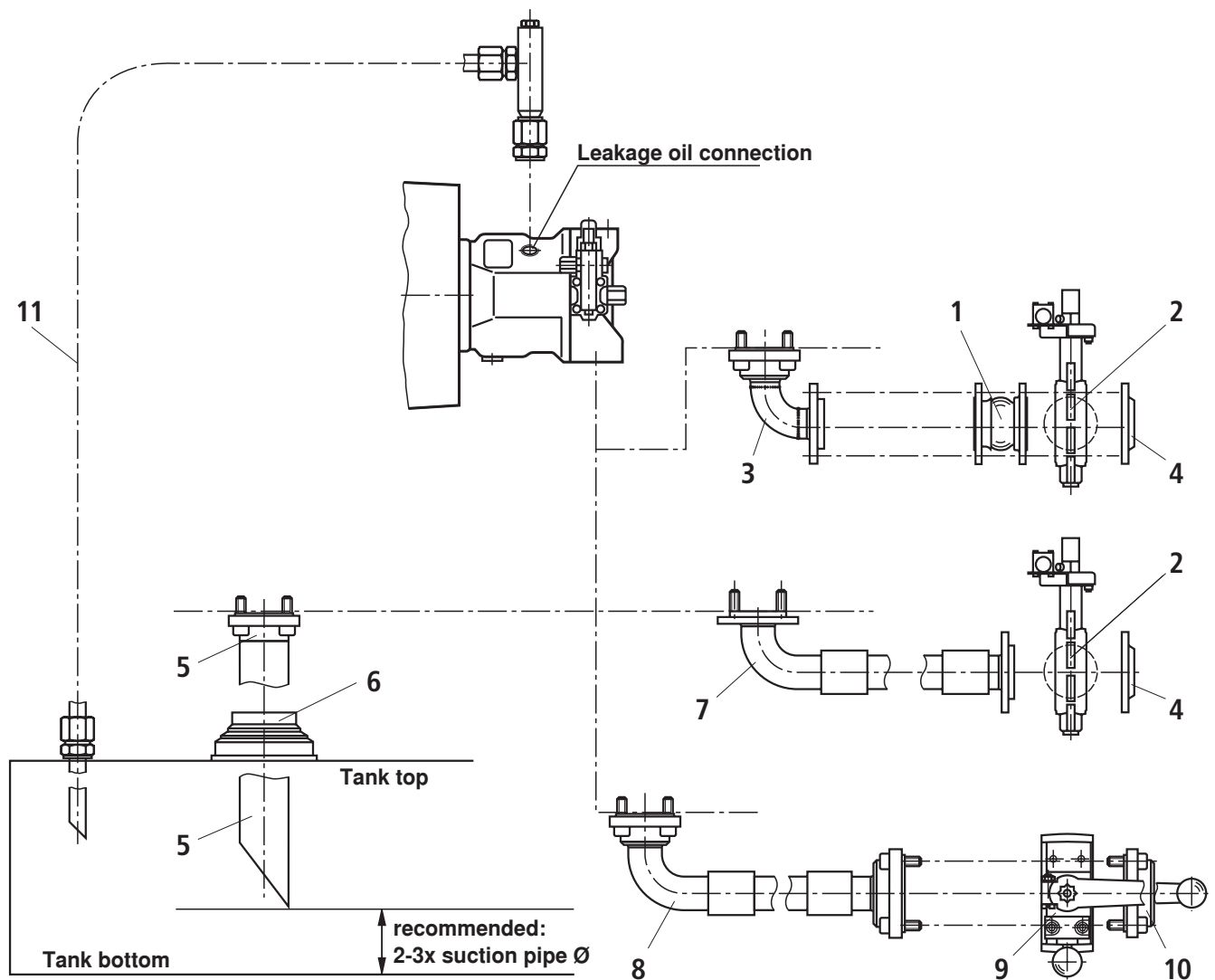
Optional accessories at the pressure port



- 1 Hose line AB 02314, AB 02316
- 2 Shock and vibration absorber data sheet 29253
- 3 Fitting AB 02012
- 4 Inline filter data sheet 51421; 51422
- 5 Check valve AB 020112
- 6 SAE flange AB 02214
- 7 SAE flange high pressure AB 02213
- 8 Shock and vibration absorber data sheet 50142
- 9 Pump shut-off block data sheet 25891
- 10 Pump control block with attachment filter AB 05101-002

Items 1 to 10 as optional accessories upon request

Optional accessories at the suction and leakage oil connection



- 1 Compensator DIN AB 02231
- 2 Shut-off valve DIN AB 02129
- 3 Flange bend SAE-DIN AB 02229
- 4 DIN flange AB 02204
- 5 Suction pipe AB 02303
- 6 Elastic pipe fitting AB 01203

- 7 Suction tube SAE-DIN AB 02315
- 8 Suction tube SAE-SAE AB 02315
- 9 Shut-off valve SAE (on request)
- 10 SAE flange AB 02215
- 11 Drain line

Items 1 to 11 as optional accessories upon request

Installation information

Fluid tank

- Adjust useful volume of the tank to the operating conditions.
- The admissible fluid temperature must not be exceeded; use coolers, if necessary.

Lines and connections

- Remove the protective plug at the pump.
- Select the inner width of the pipes according to the connections (suction speed 0.8 m/s).
- Pipelines and fittings must be carefully cleaned before the assembly.
Observe the installation information of the manufacturers.

Filter

- Use return line and/or pressure filters.

Hydraulic fluid

- Please observe the notice according to data sheet 90220.
- Brand-name hydraulic oils are recommended. In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary.
- Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity.
- According to the operating conditions, the oil quality must be checked by means of an oil analysis at certain intervals and the oil must be replaced, if necessary. In this connection, it is also necessary to clean the fluid tank.
- Fluid flowing back must not be directly sucked in under any circumstances. The largest distance between suction and return line possible is to be selected.
- The return flow exit must always be below the oil level.
- Ensure tight assembly of the pipelines.

Commissioning, maintenance and operating instructions

In this connection, please observe the notices listed in the following documents:

- Data sheet 07009
- Data sheet 07009-MON
- Data sheet 92703-01
- Data sheet 92711

Legal provisions

- In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- The EU Regulation 640/2009 on the Ecodesign Requirements for Electric Motors.

Notice in the sense of the EC Machinery Directive 2006/42/EC, according to annex II part 1, section A, manufacturer's declaration:

- The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100 and DIN 60204-1.
- The commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

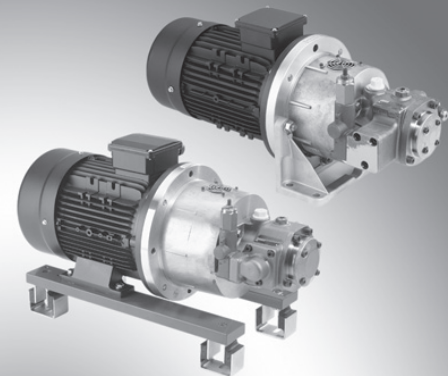
Motor-pump group

RE 51171/07.12

1/16

Type ABAPG and ABHPG

with pump type: PV7
 Electric motor frame size 90S to 250M
 max. pressure up to 160 bar
 max. flow up to 162.5 l/min



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Features

- In the motor-pump groups, electric energy is converted into hydraulic energy.
- They have been designed for hydrostatic drives in the open circuit.
- Electric motor design IM B5 (ABHPG) and/or IM B3/B5 (ABAPG)
 - Pump fastened at the electric motor with rigid pump carrier and coupling
 - Low operating noise
 - Versatile possible applications on tank, base frame or separate installation
 - Clear, maintenance-friendly set-up
 - With vane pump PV7 (variable displacement pump)

Ordering code

-V7-
M
0
/
4
5
2
3/S
E
HOY

Assembly

with motor design...
 B35 = **ABAPG**
 B5 = **ABHPG**

Pump type

Vane pump PV7 = **V7**
 according to data sheet 10515
 and 10522

Frame size/size

10 ... 118 cm³
 per rotation = **06-10 ... 100-118**

Seal material (according to DIN ISO 1629)

NBR = **M**

Controller type

direct operated = **A**
 Pressure controller = **C**

Controller option

Standard = **0**

Zero stroke pressure range

160 bar = **16**

Motor supplier

HOY = Hoyer Motors (preferred)
SIE = Siemens
VEM = VEM

Damping bearing design

E = elastic damping bearing (only ABAPG)

Pump carrier design

S = rigid pump carrier AB 03337

Motor protection

3 = PTC resistor with 3 temperature sensors

Efficiency class

2 = IE 2

Rated frequency

5 = 50 Hz

Number of pole pairs

4 = 4-pole

Rated voltage

CA = 230/400 V at 50 Hz (up to 3 kW)
CB = 400/690 V at 50 Hz (from 4 kW)

Motor power (in kW)

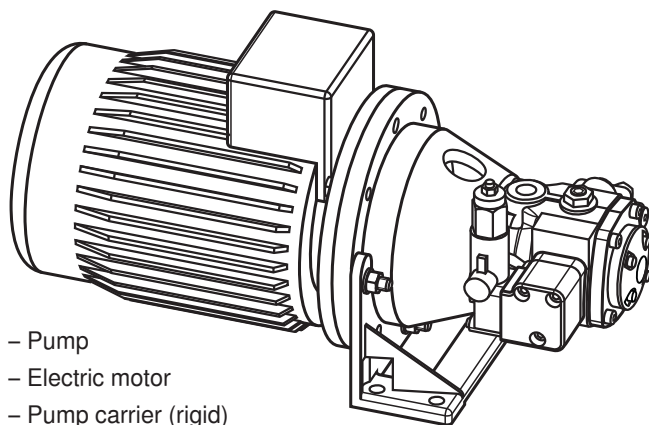
1.1 ... 55.0 = 1.1 ... 55.0 kW

Order example:

ABAPG-V7-63-71MA0-16/30,0CB4523/SE HOY

Set-up of the motor-pump group

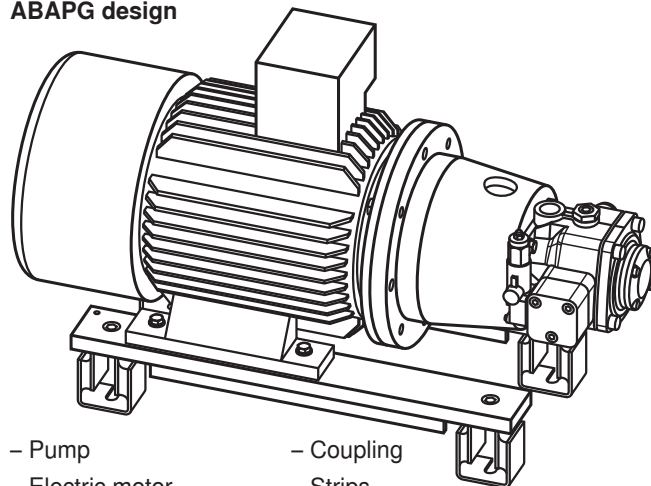
ABHPG design



- Pump
- Electric motor
- Pump carrier (rigid)
- Coupling
- Pump base

Use of this design is recommended for restricted installation conditions (e. g. on oil tanks)
 Max. performance range 7.5 kW

ABAPG design



- Pump
- Electric motor
- Pump carrier (rigid)
- Coupling
- Strips
- Damping bearing

Use of this design is particularly recommended for requirements on low noise levels
 Min. performance range 5.5 kW


STEP files of the relevant assemblies on request

Technical data (For applications outside these parameters, please consult us!)

Line connections	See table Line connections on page 13		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN ISO 3448 (other fluids on request!) <ul style="list-style-type: none"> • Please observe our specifications according to data sheet 90220. • Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity. • According to the operating conditions, the fluid must be renewed at certain intervals. 		
Pump type	PV7 frame size 6 according to data sheet 10522 PV7 frame size 10-100 according to data sheet 10515		
– Direction of rotation	R = clockwise		
Operating pressure, absolute			
– Input	$p_{\min\text{-max}}$	bar	0.8 to 2.5
– Output	p_{nom}	bar	up to 160 (depending on the frame size)
– Leakage port	p_{max}	bar	2
Hydraulic fluid temperature range, observe viscosity range	ϑ		–10 to +70
– T_{optimal} with HLP 46 (DIN 51524)	ϑ	°C	+45 to +55
– T_{max} in continuous operation	ϑ	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50126 (ABUKG) and 50112 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406 (c). ¹⁾ At least cleanliness class 19/16/13 with size 10 to 25 and/or cleanliness class 20/18/15 with size 14 to size 150		
Viscosity range	ϑ	mm ² /s	16 to 160 optimal Max. 200 in case of start-up in zero stroke operation. Max. 800 in case of start-up in delivery operation. (See data sheet 10515, 10522)
Electric motor	– Motor type		
	– Efficiency class		
	– Number of pole pairs		
	– Voltage according to IEC 38	U	V
	– Speed	n	min ⁻¹
	– Protection class		IP
	– Installation position		
Surface treatment	By default, all steel components and components are at least provided with temporary corrosion protection (e.g. for transport).		

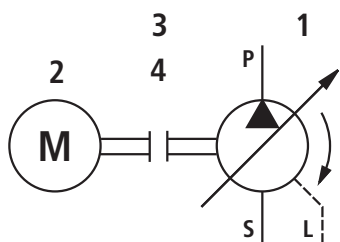
¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

For selecting the filters, see data sheet 51501.

 **Notice:** For assembly, commissioning and maintenance of hydraulic systems please observe the data sheet 07900. The motor-pump group is constructed and manufactured in accordance with the harmonized EN standards/specifications.

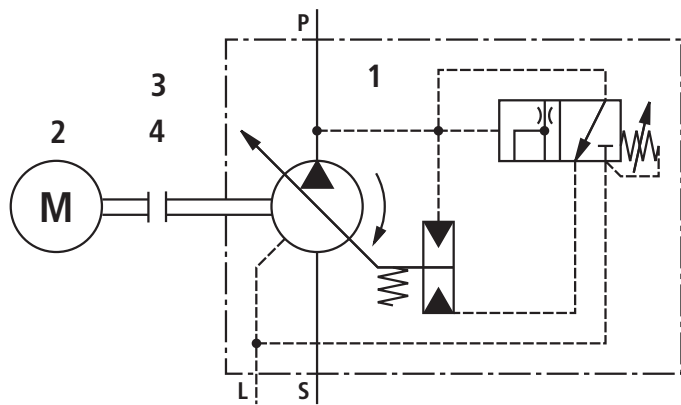
Circuit diagrams

Vane pump direct operated (frame size 6)



- 1 Vane pump PV7
- 2 Electric motor
- 3 Pump carrier (rigid)
- 4 Coupling

Vane pump pilot operated (frame size 10-100)



- 1 Vane pump PV7
- 2 Electric motor
- 3 Pump carrier (rigid)
- 4 Coupling

Standard program incl. preferred types ABHPG-PV7

Frequency	50 Hz 1450 min ⁻¹		50 Hz 1450 min ⁻¹	Electric motor	ABHPG material no. (motor B5)						
					Pump	$q_{v \max}$ in l/min	$p_{\max.}$ in bar	Power in kW	Frame size	HOYER MOTORS	MKZ 1)
PV7-1X/6-10 RA01MA0-10	13.8		38	1.10	90S	R901313084	A3	R901313063	A3	R901313107	A3
			52	1.50	90L	R901313085	A3	R901313064	A3	R901313108	A3
			79	2.20	100L	R901313086	A3	R901313065	A3	R901313109	A3
			100	3.00	100L	R901313092	A3	R901313066	A3	R901313110	A3
PV7-1X/10-14 RE01MC0-16	19.3		36	1.50	90L	R901313093	A3	R901313067	A3	R901313111	A3
			53	2.20	100L	R901313094	A3	R901313068	A3	R901313112	A3
			74	3.00	100L	R901313095	A2	R901313070	A3	R901313113	A3
			100	4.00	112M	R901313096	A2	R901313071	A3	R901312476	A3
			137	5.50	132S	R901313098	A3	R901313072	A3	R901313114	A3
			160	7.50	132M	R901313099	A3	R901313074	A3	R901313116	A3
PV7-1X/16-20 RE01MC0-16	27.6		30	2.20	100L	R901313100	A3	R901313076	A3	R901313117	A3
			44	3.00	100L	R901313101	A3	R901313077	A3	R901313118	A3
			59	4.00	112M	R901313102	A3	R901313079	A3	R920011826	A3
			85	5.50	132S	R901307490	A2	R901307482	A3	R901307498	A3
			118	7.50	132M	R901307491	A3	R901307483	A3	R901307499	A3
PV7-1X/25-30 RE01MC0-16	41.3		28	3.00	100L	R901313103	A3	R901313080	A3	R901313120	A3
			40	4.00	112M	R901313105	A3	R901313081	A3	R901313122	A3
			59	5.50	132S	R901307492	A2	R901307484	A3	R901307500	A3
			83	7.50	132M	R901307493	A2	R901307485	A3	R901307501	A3
PV7-1X/40-45- RE37MC0-16	62.0		28	4.00	112M	R901313106	A3	R901313083	A3	R901313123	A3
			39	5.50	132S	R901307494	A2	R901307486	A3	R901307502	A3
			55	7.50	132M	R901307495	A3	R901307487	A3	R901307503	A3
PV7-1X/63-71- RE07MC0-16	97.8		25	5.50	132S	R901307496	A3	R901307488	A3	R901307505	A3
			33	7.50	132M	R901307497	A3	R901307489	A3	R901307506	A3

¹⁾ MKZ = Material mark

A2 = Preferred delivery range

A3 = Standard delivery range

Device dimensions see page 7-12

Standard program incl. preferred types ABAPG-PV7

Frequency	50 Hz 1450 min ⁻¹		50 Hz 1450 min ⁻¹	Electric motor	ABAPG material no. (motor B35)					
					Pump	$q_{v \max}$ in l/min	$p_{\max.}$ in bar	Power in kW	Frame size	HOYER MOTORS
PV7-1X/10-14- RE01MC0-16	19.3	137	5.50	132S	R901313140	A3	R901313127	A3	R901313150	A3
		160	7.50	132M	R901313141	A3	R901313128	A3	R901313152	A3
PV7-1X/16-20- RE01MC0-16	27.6	85	5.50	132S	R901305578	A2	R901305557	A3	R901305597	A3
		118	7.50	132M	R901305579	A3	R901305558	A3	R901305598	A3
		160	11.00	160M	R901313142	A3	R901313129	A3	R901313153	A3
PV7-1X/25-30- RE01MC0-16	41.3	59	5.50	132S	R901305580	A2	R901305559	A3	R901305599	A3
		83	7.50	132M	R901305581	A2	R901305560	A3	R901305600	A3
		128	11.00	160M	R901306934	A3	R901313130	A3	R901313154	A3
		160	15.00	160L	R901313143	A3	R901313131	A3	R901313156	A3
PV7-1X/40-45- RE37MC0-16	62.0	39	5.50	132S	R901305582	A2	R901305561	A3	R901305601	A3
		55	7.50	132M	R901305583	A3	R901305562	A3	R901305602	A3
		79	11.00	160M	R901305584	A2	R901305563	A3	R901305603	A3
		110	15.00	160L	R901305585	A3	R901305564	A3	R901305604	A3
		136	18.50	180M	R901313144	A3	R901313133	A3	R901313157	A3
		160	22.00	180L	R901313145	A3	R901313134	A3	R901313158	A3
PV7-1X/63-71- RE07MC0-16	97.8	25	5.50	132S	R901305586	A3	R901305565	A3	R901305605	A3
		33	7.50	132M	R901305587	A3	R901305566	A3	R901305606	A3
		50	11.00	160M	R901305588	A3	R901305568	A3	R901305607	A3
		70	15.00	160L	R901305589	A3	R901305569	A3	R901305608	A3
		86	18.50	180M	R901305590	A3	R901305570	A3	R901305609	A3
		104	22.00	180L	R901305591	A3	R901305571	A3	R901305610	A3
		144	30.00	200L	R901313146	A3	R901313135	A3	R901313159	A3
		160	37.00	225S	R901304861	A3	R901313136	A3	R901313160	A3
PV7-1X/100-118- RE07MC0-16	162.5	30	11.00	160M	R901305592	A3	R901305572	A3	R901305611	A3
		43	15.00	160L	R901305593	A3	R901305574	A3	R901305612	A3
		54	18.50	180M	R901305594	A2	R901305575	A3	R901305613	A3
		65	22.00	180L	R901305595	A3	R901305576	A3	R901305614	A3
		89	30.00	200L	R901305596	A3	R901305577	A3	R901305615	A3
		110	37.00	225S	R901313147	A3	R901313137	A3	R901313161	A3
		137	45.00	225M	R901313148	A3	R901313138	A3	R901313162	A3
		160	55.00	250M	R901313149	A3	R901313139	A3	R901313163	A3

1) MKZ = Material mark

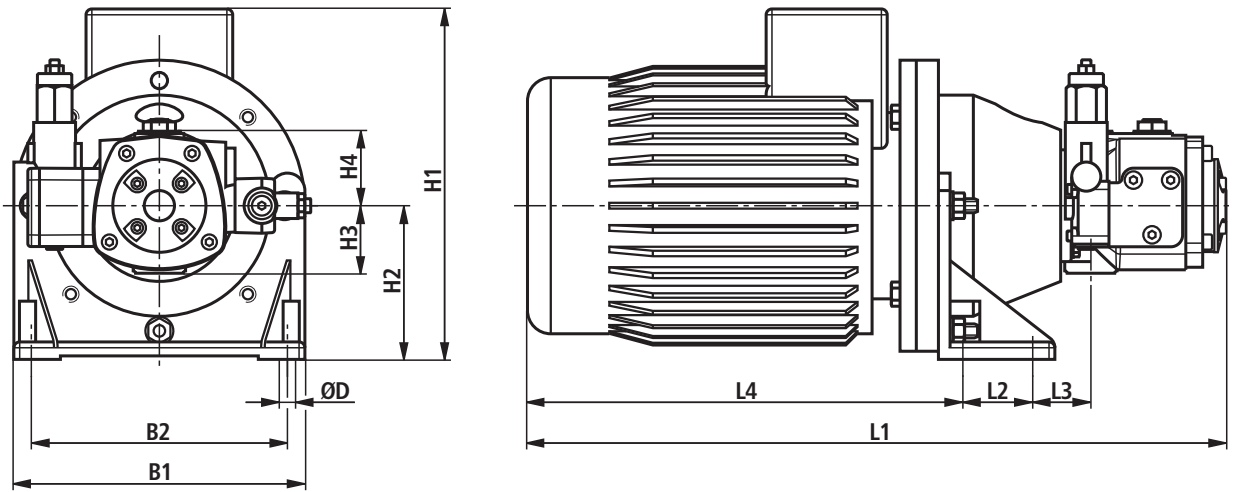
A2 = Preferred delivery range

A3 = Standard delivery range

Device dimensions see page 7-12

Device dimensions: Type ABHPG-V7 (motor supplier HOYER-MOTORS)

(dimensions in mm)

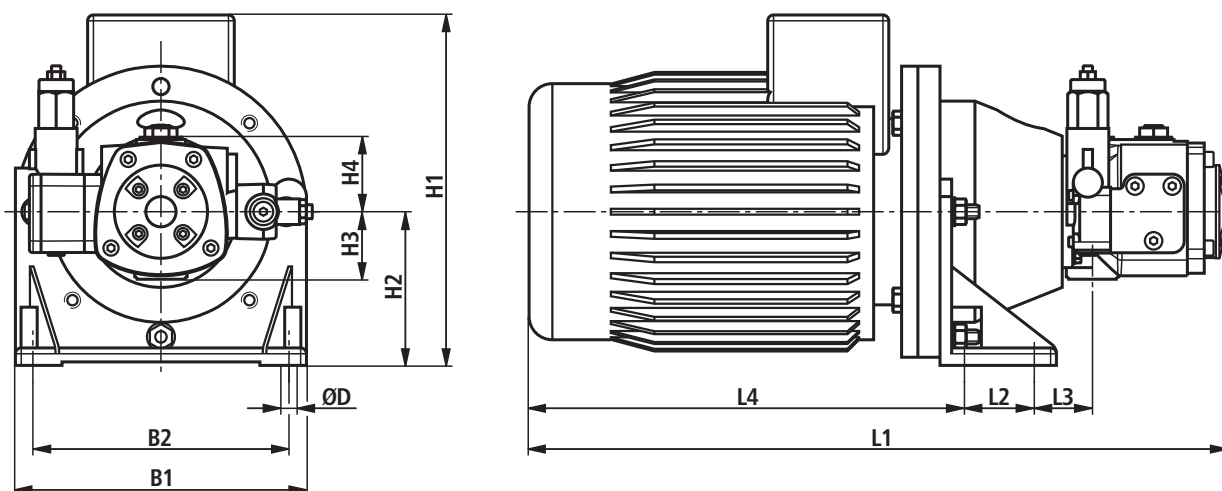


ABHPG-V7 with motor supplier HOYER-MOTORS

Pump	Electric motor	Dimensions										
	kW / frame size	B1	B2	ØD	H1	H2	H3	H4	L1	L2	L3	L4
PV7/6-10	1.1 / 90S	210	180	11	244	112	56.5	56.5	452	60	86.5	305
	1.5 / 90L	210	180	11	244	112	56.5	56.5	478	60	86.5	331
	2.2 / 100L	250	220	14	279	132	56.5	56.5	521	60	80.5	380
	3.0 / 100L	250	220	14	279	132	56.5	56.5	521	60	80.5	380
PV7/10-14	1.5 / 90L	210	180	11	244	112	58	64	485	60	88	331
	2.2 / 100L	250	220	14	279	132	58	64	528	60	82	380
	3.0 / 100L	250	220	14	279	132	58	64	528	60	82	38
	4.0 / 112M	250	220	14	301	132	58	64	522	60	82	374
	5.5 / 132S	300	260	14	348	160	58	64	590	80	82	422
	7.5 / 132M	300	260	14	348	160	58	64	653	80	82	485
PV7/16-20	2.2 / 100L	250	220	14	279	132	68	72	536	60	92	380
	3.0 / 100L	250	220	14	279	132	68	72	536	60	92	380
	4.0 / 112M	250	220	14	301	132	68	72	530	60	92	374
	5.5 / 132S	300	260	14	348	160	68	72	609	80	103	422
	7.5 / 132M	300	260	14	348	160	68	72	672	80	103	485
PV7/25-30	3.0 / 100L	250	220	14	279	132	92	80	544	60	116	380
	4.0 / 112M	250	220	14	301	132	92	80	538	60	116	374
	5.5 / 132S	300	260	14	348	160	92	80	617	80	127	422
	7.5 / 132M	300	260	14	348	160	92	80	680	80	127	485
PV7/40-45	4.0 / 112M	250	220	14	301	132	89	94	552	60	113	374
	5.5 / 132S	300	260	14	348	160	89	94	644	80	137	422
	7.5 / 132M	300	260	14	348	160	89	94	707	80	137	485
PV7/63-71	5.5 / 132S	300	260	14	348	160	105	100	650	80	153	422
	7.5 / 132M	300	260	14	348	160	105	100	713	80	153	485

Device dimensions: Type ABHPG-V7 (motor supplier VEM)

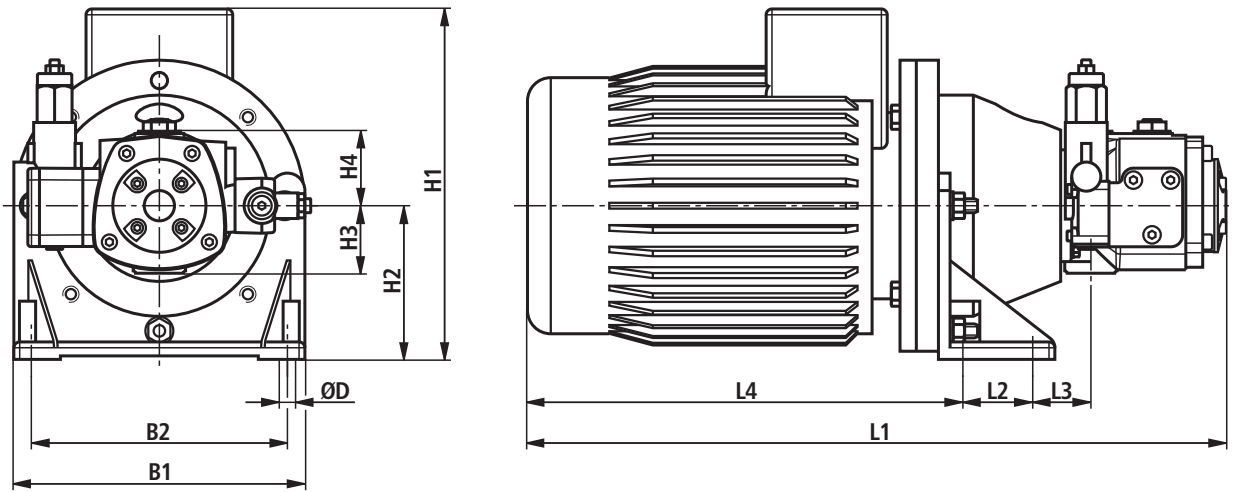
(dimensions in mm)



ABHPG-V7 with motor supplier VEM

Pump	Electric motor	Dimensions										
	kW / frame size	B1	B2	ØD	H1	H2	H3	H4	L1	L2	L3	L4
PV7/6-10	1.1 / 90S	210	180	11	240	112	56.5	56.5	438	60	86.5	291
	1.5 / 90L	210	180	11	232	112	56.5	56.5	479	60	86.5	332
	2.2 / 100L	250	220	14	269	132	56.5	56.5	513	60	80.5	372
	3.0 / 100L	250	220	14	268	132	56.5	56.5	542	60	80.5	401
PV7/10-14	1.5 / 90L	210	180	11	232	112	58	64	486	60	88	332
	2.2 / 100L	250	220	14	269	132	58	64	520	60	82	372
	3.0 / 100L	250	220	14	268	132	58	64	549	60	82	401
	4.0 / 112M	250	220	14	310	132	58	64	587	60	82	439
	5.5 / 132S	300	260	14	259	160	58	64	657	80	82	489
	7.5 / 132M	300	260	14	259	160	58	64	657	80	82	489
PV7/16-20	2.2 / 100L	250	220	14	269	132	68	72	528	60	92	372
	3.0 / 100L	250	220	14	268	132	68	72	557	60	92	401
	4.0 / 112M	250	220	14	310	132	68	72	595	60	92	439
	5.5 / 132S	300	260	14	359	160	68	72	676	80	103	489
	7.5 / 132M	300	260	14	359	160	68	72	676	80	103	489
PV7/25-30	3.0 / 100L	250	220	14	268	132	92	80	565	60	116	401
	4.0 / 112M	250	220	14	310	132	92	80	603	60	116	439
	5.5 / 132S	300	260	14	359	160	92	80	684	80	127	489
	7.5 / 132M	300	260	14	359	160	92	80	684	80	127	489
PV7/40-45	4.0 / 112M	250	220	14	310	132	89	94	617	60	113	439
	5.5 / 132S	300	260	14	359	160	89	94	711	80	137	489
	7.5 / 132M	300	260	14	359	160	89	94	711	80	137	489
PV7/63-71	5.5 / 132S	300	260	14	359	160	105	100	717	80	153	489
	7.5 / 132M	300	260	14	359	160	105	100	717	80	153	489

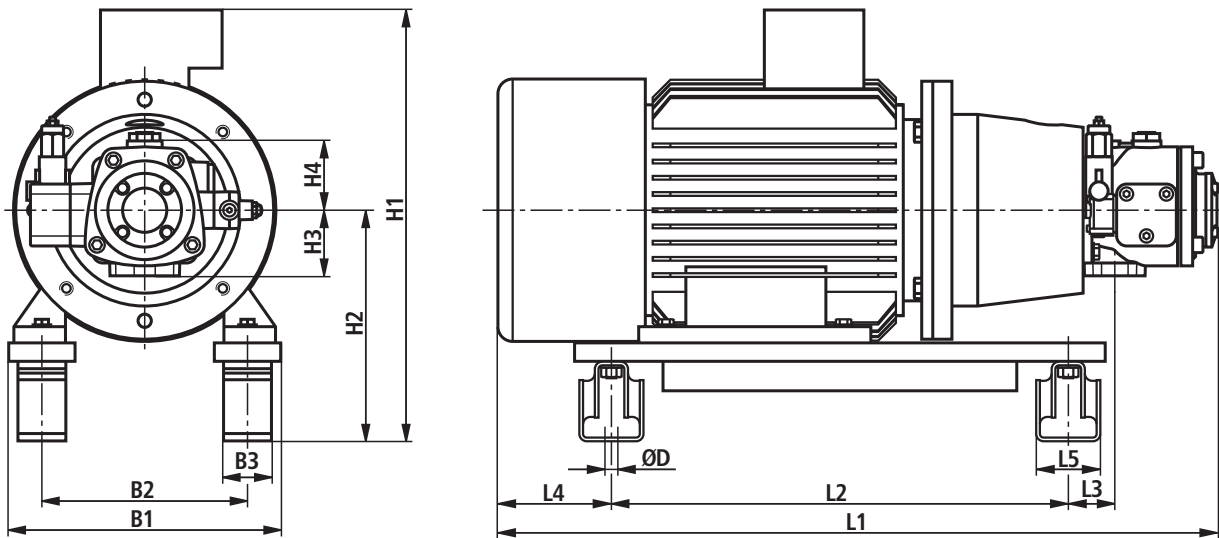
Device dimensions: Type ABHPG-V7 (motor supplier SIEMENS) (dimensions in mm)



ABHPG-V7 with motor supplier SIEMENS

Pump	Electric motor	Dimensions										
	kW / frame size	B1	B2	ØD	H1	H2	H3	H4	L1	L2	L3	L4
PV7/6-10	1.1 / 90S	210	180	11	240	112	56.5	56.5	438	60	86.5	291
	1.5 / 90L	210	180	11	232	112	56.5	56.5	479	60	86.5	332
	2.2 / 100L	250	220	14	269	132	56.5	56.5	513	60	80.5	372
	3.0 / 100L	250	220	14	268	132	56.5	56.5	542	60	80.5	401
PV7/10-14	1.5 / 90L	210	180	11	232	112	58	64	486	60	88	332
	2.2 / 100L	250	220	14	269	132	58	64	520	60	82	372
	3.0 / 100L	250	220	14	268	132	58	64	549	60	82	401
	4.0 / 112M	250	220	14	310	132	58	64	587	60	82	439
	5.5 / 132S	300	260	14	359	160	58	64	657	80	82	489
7.5 / 132M	300	260	14	359	160	58	64	657	80	82	489	
PV7/16-20	2.2 / 100L	250	220	14	269	132	68	72	528	60	92	372
	3.0 / 100L	250	220	14	268	132	68	72	557	60	92	401
	4.0 / 112M	250	220	14	310	132	68	72	595	60	92	439
	5.5 / 132S	300	260	14	359	160	68	72	676	80	103	489
	7.5 / 132M	300	260	14	359	160	68	72	676	80	103	489
PV7/25-30	3.0 / 100L	250	220	14	368	132	92	80	565	60	116	401
	4.0 / 112M	250	220	14	310	132	92	80	603	60	116	439
	5.5 / 132S	300	260	14	359	160	92	80	684	80	127	489
	7.5 / 132M	300	260	14	359	160	92	80	684	80	127	489
PV7/40-45	4.0 / 112M	250	220	14	310	132	89	94	617	60	113	439
	5.5 / 132S	300	260	14	359	160	89	94	711	80	137	489
	7.5 / 132M	300	260	14	359	160	89	94	711	80	137	489
PV7/63-71	5.5 / 132S	300	260	14	359	160	105	100	717	80	153	489
	7.5 / 132M	300	260	14	359	160	105	100	717	80	153	489

Device dimensions: Type ABAPG-V7 (motor supplier HOYER-MOTORS)
(dimensions in mm)

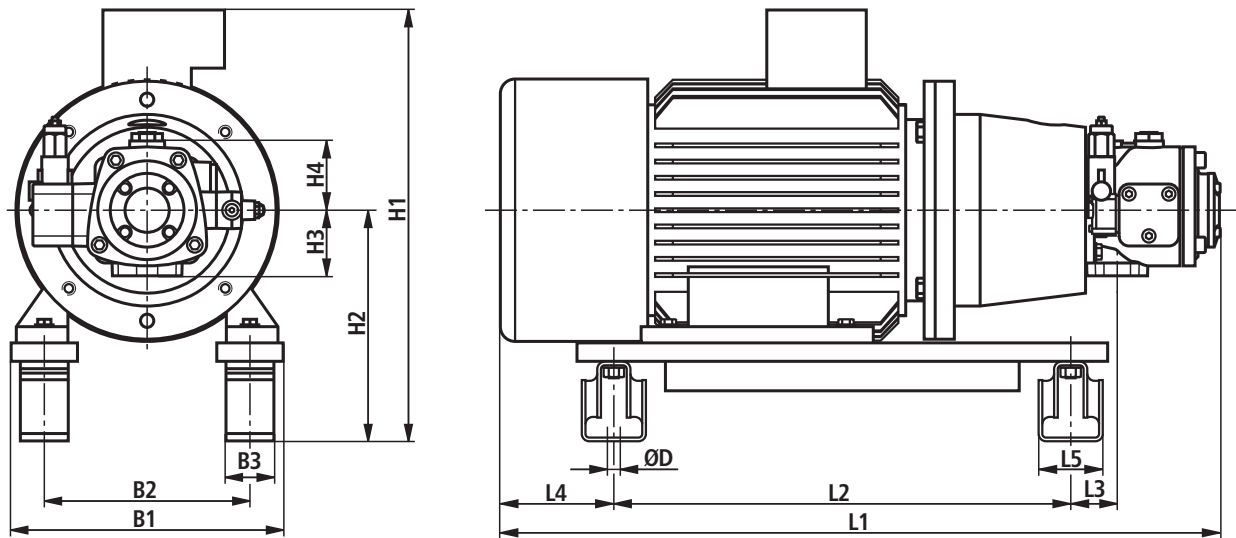


ABAPG-V7 with motor supplier HOYER-MOTORS

Pump	Electric motor	Dimensions												
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	H4	L1	L2	L3	L4	L5
PV7/10-14	5.5 / 132S	300	216	50	13.5	423	235	58	64	675	480	-6	78	79
	7.5 / 132M	300	216	50	13.5	423	235	58	64	738	480	-6	141	79
PV7/16-20	5.5 / 132S	300	216	50	13.5	423	235	68	72	702	480	16	78	79
	7.5 / 132M	300	216	50	13.5	423	235	68	72	765	480	16	141	79
	11.0 / 160M	350	254	50	13.5	523	263	68	72	874	580	59	107	79
PV7/25-30	5.5 / 132S	300	216	50	13.5	423	235	92	80	714	480	17	78	79
	7.5 / 132M	300	216	50	13.5	423	235	92	80	777	480	17	141	79
	11.0 / 160M	350	254	50	13.5	523	263	92	80	886	580	60	107	79
	15.0 / 160L	350	254	50	13.5	523	263	92	80	941	580	60	162	79
PV7/40-45	5.5 / 132S	300	216	50	13.5	423	235	89	94	737	480	35	78	79
	7.5 / 132M	300	216	50	13.5	423	235	89	94	800	480	35	141	79
	11.0 / 160M	350	254	50	13.5	523	63	89	94	896	580	65	107	79
	15.0 / 160L	350	254	50	13.5	523	263	89	94	951	580	65	162	79
	18.5 / 180M	369	279	65	17.5	588	313	89	94	9581	620	63	154	87
PV7/63-71	22.0 / 180L	369	279	65	17.5	610	313	89	94	1021	620	63	194	87
	5.5 / 132S	300	216	50	13.5	423	235	105	100	761	480	43	78	79
	7.5 / 132M	300	216	50	13.5	423	235	105	100	824	480	43	141	79
	11.0 / 160M	350	254	50	13.5	523	263	105	100	920	580	73	107	79
	15.0 / 160L	350	254	50	13.5	523	263	105	100	975	580	73	162	79
	18.5 / 180M	369	279	65	17.5	588	313	105	100	1005	620	71	154	87
	22.0 / 180L	369	279	65	17.5	610	313	105	100	1045	620	71	194	87
	30.0 / 200L	418	318	80	17.5	665	360	105	100	1075	700	38	177	100
PV7/100-118	37.0 / 225S	456	356	80	17.5	720	385	105	100	1120	800	-6	166	100
	11.0 / 160M	350	254	65	17.5	553	293	126	111	975	580	107	107	87
	15.0 / 160L	350	254	65	17.5	553	293	126	111	1030	580	107	162	87
	18.5 / 180M	369	279	65	17.5	588	313	126	111	1060	620	105	154	87
	22.0 / 180L	369	279	65	17.5	610	313	126	111	1100	620	105	194	87
	30.0 / 200L	418	318	80	17.5	665	360	126	111	1130	700	71.5	177	100
	37.0 / 225S	456	356	80	17.5	720	385	126	111	1179	800	31.5	166	100
	45.0 / 225M	456	356	80	17.5	720	385	126	111	1209	800	31.5	196	100
55.0 / 250M	550	406	80	17.5	785	420	126	111	1282	850	52.5	198	100	

Device dimensions: Type ABAPG-V7 (motor supplier VEM)

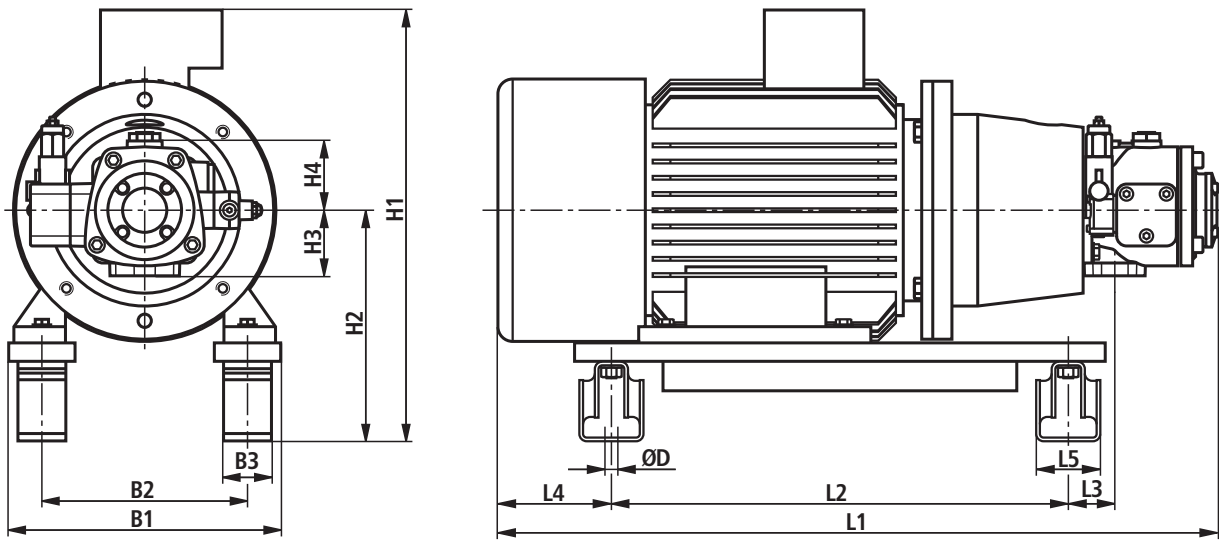
(dimensions in mm)



ABAPG-V7 with motor supplier VEM

Pump	Electric motor	Dimensions												
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	H4	L1	L2	L3	L4	L5
PV7/10-14	5.5 / 132S	300	216	50	13.5	434	235	58	64	742	480	-6	145	79
	7.5 / 132M	300	216	50	13.5	434	235	58	64	742	480	-6	145	79
PV7/16-20	5.5 / 132S	300	216	50	13.5	434	235	68	72	769	480	16	145	79
	7.5 / 132M	300	216	50	13.5	434	235	68	72	769	480	16	145	79
	11.0 / 160M	350	254	50	13.5	505	263	68	72	830	580	59	63	79
PV7/25-30	5.5 / 132S	300	216	50	13.5	434	235	92	80	781	480	17	145	79
	7.5 / 132M	300	216	50	13.5	434	235	92	80	781	480	17	145	79
	11.0 / 160M	350	254	50	13.5	505	263	92	80	842	580	60	63	79
	15.0 / 160L	350	254	50	13.5	505	263	92	80	938	580	60	159	79
PV7/40-45	5.5 / 132S	300	216	50	13.5	434	235	89	94	804	480	35	145	79
	7.5 / 132M	300	216	50	13.5	434	235	89	94	804	480	35	145	79
	11.0 / 160M	350	254	50	13.5	505	63	89	94	852	580	65	63	79
	15.0 / 160L	350	254	50	13.5	505	263	89	94	948	580	65	159	79
	18.5 / 180M	369	279	65	17.5	574	313	89	94	961	620	63	134	87
PV7/63-71	22.0 / 180L	369	279	65	17.5	574	313	89	94	961	620	63	134	87
	5.5 / 132S	300	216	50	13.5	434	235	105	100	828	480	43	145	79
	7.5 / 132M	300	216	50	13.5	434	235	105	100	828	480	43	145	79
	11.0 / 160M	350	254	50	13.5	505	263	105	100	876	580	73	63	79
	15.0 / 160L	350	254	50	13.5	505	263	105	100	972	580	73	159	79
	18.5 / 180M	369	279	65	17.5	574	313	105	100	985	620	71	134	87
	22.0 / 180L	369	279	65	17.5	574	313	105	100	985	620	71	134	87
	30.0 / 200L	418	318	80	17.5	660	360	105	100	1032	700	38	134	100
37.0 / 225S	456	356	80	17.5	685	385	105	100	1062	800	-6	108	100	
PV7/100-118	11.0 / 160M	350	254	65	17.5	535	293	126	111	931	580	107	63	87
	15.0 / 160L	350	254	65	17.5	535	293	126	111	1027	580	107	159	87
	18.5 / 180M	369	279	65	17.5	574	313	126	111	1040	620	105	134	87
	22.0 / 180L	369	279	65	17.5	574	313	126	111	1040	620	105	134	87
	30.0 / 200L	418	318	80	17.5	660	360	126	111	1087	700	71.5	134	100
	37.0 / 225S	456	356	80	17.5	685	385	126	111	1121	800	31.5	108	100
	45.0 / 225M	456	356	80	17.5	709	385	126	111	1226	800	31.5	213	100
55.0 / 250M	550	406	80	17.5	806	420	126	111	1291	850	52.5	207	100	

Device dimensions: Type ABAPG-V7 (motor supplier SIEMENS)
(dimensions in mm)



ABAPG-V7 with motor supplier SIEMENS

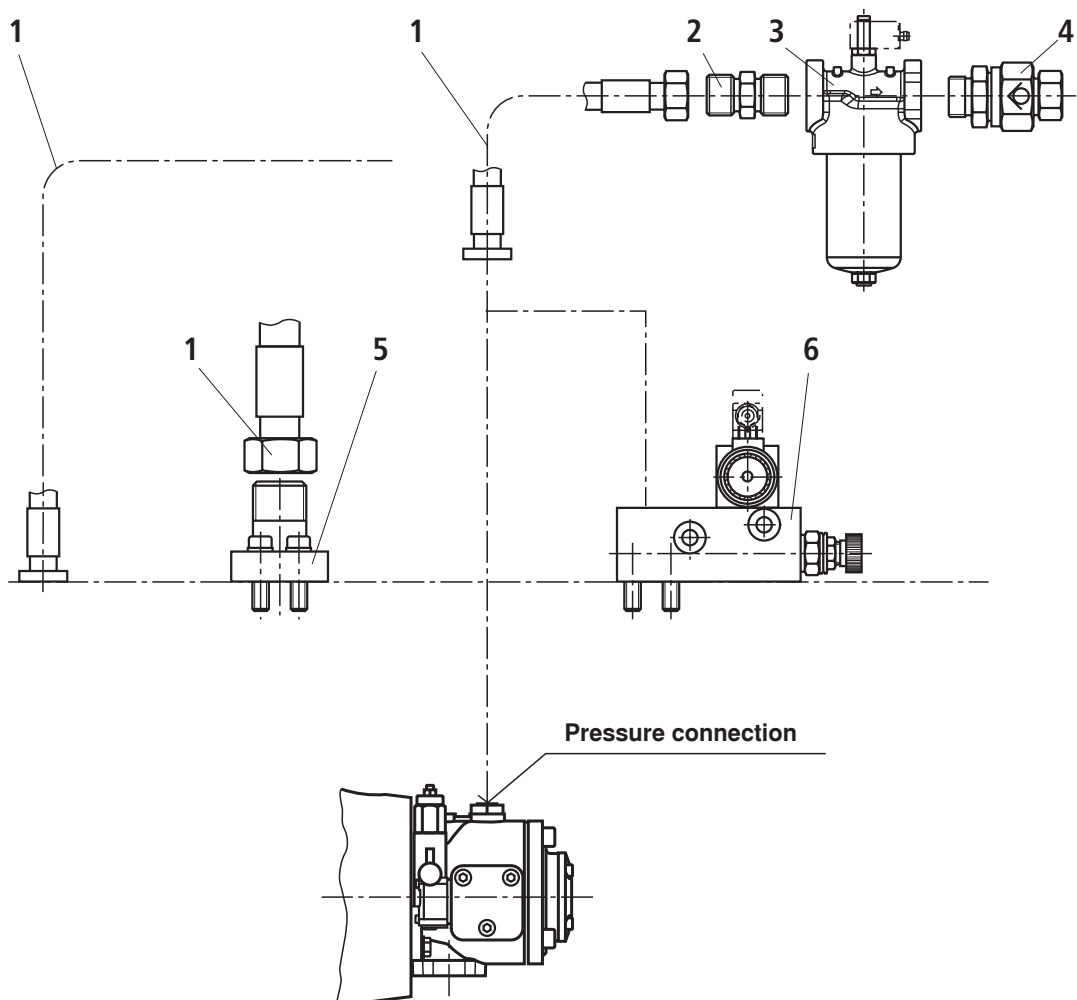
Pump	Electric motor	Dimensions												
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	H4	L1	L2	L3	L4	L5
PV7/10-14	5.5 / 132S	300	216	50	13.5	437	235	58	64	678	480	-6	81	79
	7.5 / 132M	300	216	50	13.5	437	235	58	64	678	480	-6	81	79
PV7/16-20	5.5 / 132S	300	216	50	13.5	437	235	68	72	705	480	16	81	79
	7.5 / 132M	300	216	50	13.5	437	235	68	72	705	480	16	81	79
	11.0 / 160M	350	254	50	13.5	500	263	68	72	863	580	59	96	79
PV7/25-30	5.5 / 132S	300	216	50	13.5	437	235	92	80	717	480	17	81	79
	7.5 / 132M	300	216	50	13.5	437	235	92	80	717	480	17	81	79
	11.0 / 160M	350	254	50	13.5	500	263	92	80	875	580	60	96	79
	15.0 / 160L	350	254	50	13.5	500	263	92	80	875	580	60	96	79
PV7/40-45	5.5 / 132S	300	216	50	13.5	437	235	89	94	740	480	35	81	79
	7.5 / 132M	300	216	50	13.5	437	235	89	94	740	480	35	81	79
	11.0 / 160M	350	254	50	13.5	500	63	89	94	885	580	65	96	79
	15.0 / 160L	350	254	50	13.5	500	263	89	94	885	580	65	96	79
	18.5 / 180M	369	279	65	17.5	575	313	89	94	950	620	63	123	87
PV7/63-71	22.0 / 180L	369	279	65	17.5	575	313	89	94	1001	620	63	174	87
	5.5 / 132S	300	216	50	13.5	437	235	105	100	764	480	43	81	79
	7.5 / 132M	300	216	50	13.5	437	235	105	100	764	480	43	81	79
	11.0 / 160M	350	254	50	13.5	500	263	105	100	909	580	73	96	79
	15.0 / 160L	350	254	50	13.5	500	263	105	100	909	580	73	96	79
	18.5 / 180M	369	279	65	17.5	575	313	105	100	974	620	71	123	87
	22.0 / 180L	369	279	65	17.5	575	313	105	100	1025	620	71	174	87
PV7/100-118	30.0 / 200L	418	318	80	17.5	660	360	105	100	1025	700	38	127	100
	37.0 / 225S	456	356	80	17.5	713	385	105	100	1094	800	-6	140	100
	11.0 / 160M	350	254	65	17.5	530	293	126	111	964	580	107	96	87
	15.0 / 160L	350	254	65	17.5	530	293	126	111	964	580	107	96	87
	18.5 / 180M	369	279	65	17.5	575	313	126	111	1029	620	105	123	87
	22.0 / 180L	369	279	65	17.5	575	313	126	111	1080	620	105	174	87
	30.0 / 200L	418	318	80	17.5	660	360	126	111	1080	700	71.5	127	100

Line connections

Pump type	Line connections		
	Pressure connection P	Suction port S	Leakage oil connection L / L1
PV7-1X/6-10	ISO 228/1 G 3/8	ISO 228/1 G 1/2	ISO 228/1 G 1/4
PV7-1X/10-14	ISO 228/1 G 1/2	ISO 228/1 G 1	ISO 228/1 G 1/4
PV7-1X/16-20	ISO 228/1 G 3/4	ISO 228/1 G 1 1/4	ISO 228/1 G 3/8
PV7-1X/25-30	ISO 228/1 G 1	ISO 228/1 G 1 1/2	ISO 228/1 G 3/8
PV7-1X/40-45	ISO 228/1 G 1	DIN ISO 6162-1 SAE 1 1/2" ¹⁾	ISO 228/1 G 1/2
PV7-1X/63-71	DIN ISO 6162-2 SAE 1 1/4" ¹⁾	DIN ISO 6162-1 SAE 2" ¹⁾	ISO 228/1 G 1/2
PV7-1X/100-118	DIN ISO 6162-2 SAE 1 1/2" ¹⁾	DIN ISO 6162-1 SAE 2 1/2" ¹⁾	ISO 228/1 G 3/4

¹⁾ Standard pressure SAE flange figure with metric mounting screws

Optional accessories at the pressure connection



1 Hose line AB 02314, AB 02316

2 Fitting AB 02012

3 Inline filter data sheet 51421; 51422

4 Check valve AB 020112

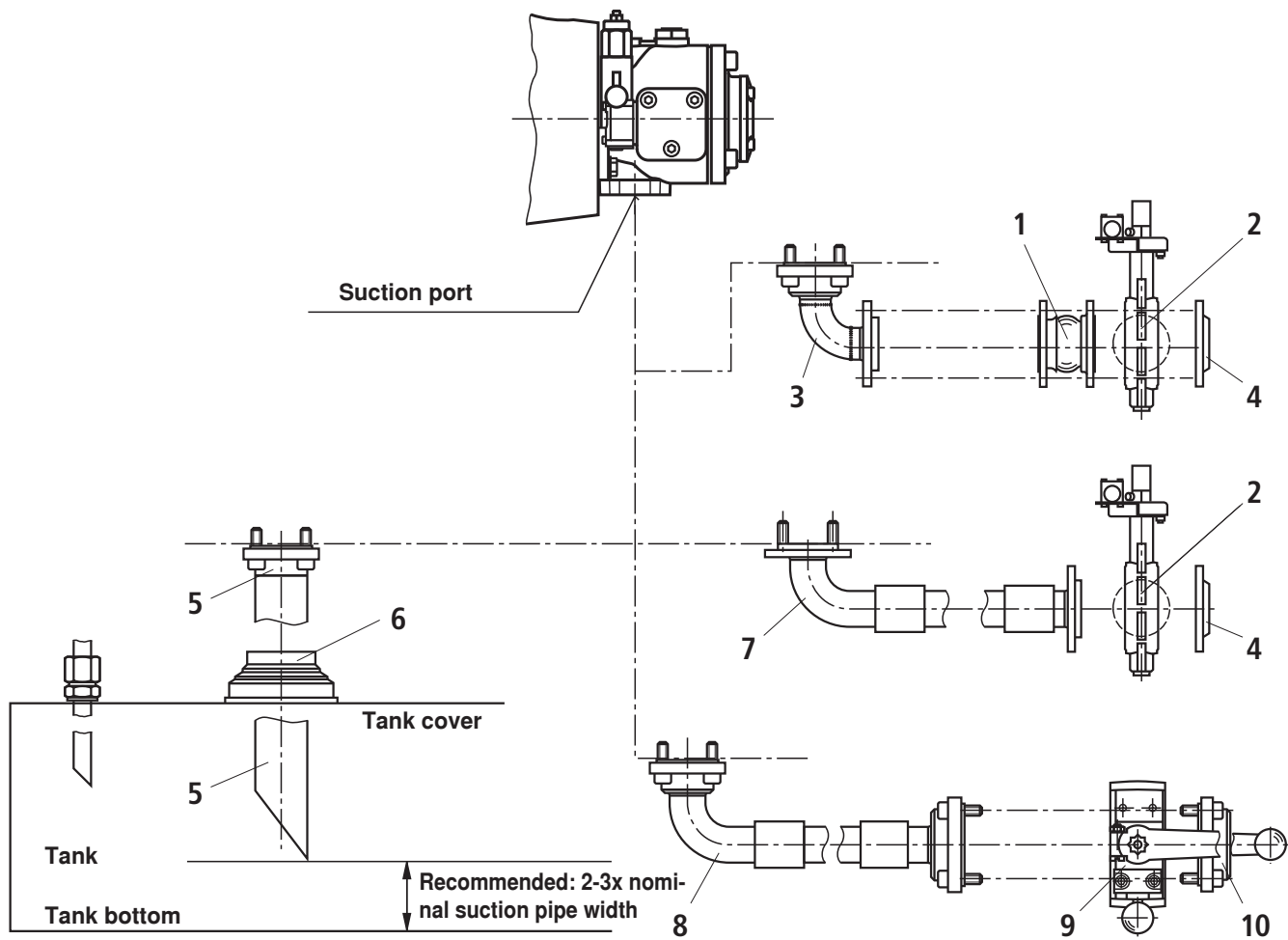
5 SAE flange AB 02214

6 Intermediate flange only necessary for size 63 and 100

Items 1 to 5 as optional accessories upon request.

Hydraulic start-up aid pump safety block according to data sheet 25891 (only for size 63 and 100, intermediate flange might be necessary) or pump with controller option 5 (K plate). All figures are examples.

Optional accessories at the suction port



- 1 Compensator DIN AB 02231
- 2 Shut-off valve DIN AB 02129
- 3 Flange bend SAE-DIN AB 02229
- 4 DIN flange AB 02204
- 5 Suction pipe AB 02303
- 6 Elastic pipe fitting AB 01203

- 7 Suction tube SAE-DIN AB 02315
- 8 Suction tube SAE-SAE AB 02315
- 9 Shut-off valve SAE (on request)
- 10 SAE flange AB 02215

Items 1 to 10 as optional accessories upon request. All figures are examples.

Installation information

Fluid tank

- Adjust useful volume of the tank to the operating conditions.
- The admissible fluid temperature must not be exceeded; use coolers, if necessary.
- Suction and return line are to be designed so that the largest distance possible between these two lines is guaranteed. Return fluid must not be directly sucked in again.
- The return flow exit must always be below the oil level.

Lines and connections

- Remove the protective plug at the pump.
- Select the inner width of the pipes according to the connections.
- Pipelines and fittings must be carefully cleaned before the assembly. Observe the installation information of the manufacturers.
- Ensure tight assembly of the pipelines.

Filtration of the hydraulic fluid

- The finer the filtration, the better the achieved cleanliness class of the hydraulic fluid, the longer the life cycle of the vane pump (cleanliness classes see page 3).

Hydraulic fluid

- Please observe the notice according to data sheet 90220 and 90223.
- Brand-name hydraulic oils are recommended. In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary.
- Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity.
- We recommend checking the hydraulic fluid at regular intervals by means of an oil analysis. The measures resulting therefrom are to be implemented.

Commissioning, maintenance and operating instructions

In this connection, please observe the notices contained in the following documents:

- Data sheet 07009
- Data sheet 07009-MON
- Data sheet 10515
- Data sheet 10522

Legal provisions

- In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- The EU Regulation 640/2009 on the environmentally friendly design of electric motors.

Notice in the sense of the EC Machinery Directive 2006/42/EC, according to annex II part 1, section A, manufacturer's declaration:

- The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100 and DIN EN 60204-1.
- The commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

Installation position

- Horizontal according to the dimensional drawing – deviating designs only after coordination with the manufacturer.
- Exclusive use in stationary systems.

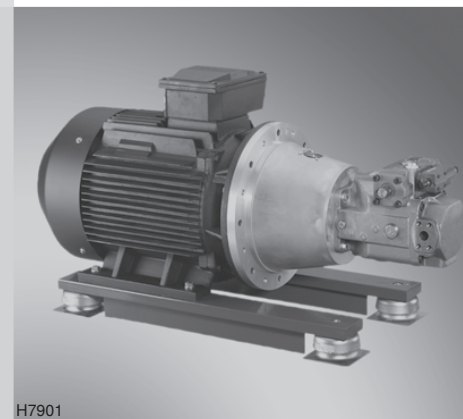
Motor-pump group

RE 51172/ 11.12

1/14

Type ABAPG

with pump type: A4VSO
Series 10, 30: Size 0040 to 0500
Electric motor frame size 180M to 400M



H7901

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Features

- In the motor-pump groups, electric energy is converted into hydraulic energy.
- They have been designed for hydrostatic drives in open circuits.
- Electric motor, design IM B3/B5 (ABAPG)
 - Pump fastened at the electric motor with rigid pump carrier and coupling
 - Versatile possible applications on tank, base frame or separate installation
 - Clear, maintenance-friendly set-up
 - With axial piston pump A4VSO (variable displacement pump)
 - Adjustment of DR (pressure controller) and DRG (pressure controller, hydraulically remote controlled for size 355)

Ordering code

ABAPG – A4VSO P P / CB 4 5 2 3 / S E HOY

Assembly

with motor design B35 = ABAPG

Pump type

Axial piston pump A4VSO
According to data sheet 92050 = A4VSO

Displacement

40 ... 500 cm³ per rotation = 40 ... 500

Control and adjustment device

e.g.
Pressure controller (size 0040–250, 500) = DR
Hydraulically remote controlled pressure controller (size 0355) = DRG

Seal material (according to DIN ISO 1629)

NBR = P

Shaft end version

Cylindrical with fitting key DIN 6885 = P

Mounting flange

ISO 4-hole = B
ISO 8-hole = H

Motor supplier

HOY = Hoyer Motors (preferred)
SIE = Siemens
VEM = VEM

Damping bearing design

E = Elastic damping bearing

Pump carrier design

S = Rigid pump carrier AB 03337

Motor protection

3 = PTC resistor with 3 temperature sensors

Efficiency class

2 = IE 2

Rated frequency

5 = 50 Hz

Number of pole pairs

4 = 4-pole

Rated voltage

CB = 400/690 at 50 Hz

Motor power

15 ... 400 = 15 ... 400 kW

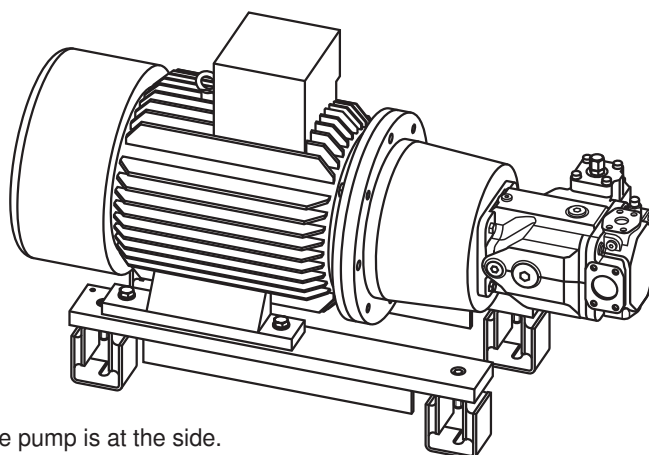
Order example:

ABAPG-A4VSO180DRPPB/110CB4523/SE HOY

Set-up of the motor-pump group

ABAPG design

- Pump
- Electric motor
- Pump carrier
- Coupling
- Strips
- Damping bearing



By default, the suction port of the pump is at the side.
Pump can be turned in 90° steps.


STEP files of the relevant assemblies on request

Technical data (For applications outside these parameters, please consult us!)

Line connections	See table Line connections on page 11		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN ISO 3448 (other fluids on request!) <ul style="list-style-type: none"> • Please observe our provisions according to data sheet 90220, 90221, 90223. • Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity. • According to the operating conditions, the fluid must be renewed at certain intervals. 		
Pump type	A4VSO according to data sheet 92050		
– Direction of rotation	R = clockwise		
Operating pressure, absolute			
– Inlet	$p_{\min-\max}$	bar	0.8 to 30
– Output	p_{nom}	bar	350
– Peak pressure	p_{\max}	bar	400
– Leakage port	p_{\max}	bar	4
Hydraulic fluid temperature range, observe viscosity range	ϑ		–25 to +90
– T_{optimal} with HLP 46 (DIN 51524)	ϑ	°C	+40 to +50
– T_{\max} in continuous operation	ϑ	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50126 (ABUKG) and 50112 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406 (c) depending on the pump type used ¹⁾ . At least cleanliness class 20/18/15 must be achieved.		
Viscosity range	ν	mm ² /s	16 to 36 optimally 10 to 1000 for short periods (see data sheet 92050)
Electric motor	– Motor type	Three-phase asynchronous motor	
	– Efficiency class	IE2	
	– Number of pole pairs	4	
	– Voltage according to IEC 38 U	V	400 / 690 at 50 Hz (CB)
	– Speed	$n \text{ min}^{-1}$	1450 at 50 Hz
	– Protection class	IP	55
	– Installation position	Horizontal	
Surface treatment	By default, all steel components and components are at least provided with temporary corrosion protection (e.g. for transport).		

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

For selecting the filters, see data sheet 51501.

 **Notice:** For assembly, commissioning and maintenance of hydraulic systems please observe the data sheet 07900. The motor-pump group is constructed and manufactured in accordance with the harmonized EN standards/specifications.

Technical data: Hydraulic fluid

(For applications outside these parameters, please consult us!)

Operating viscosity range

The unit can be operated within the operating viscosity range of 16...100 mm²/s without limitation of the technical data.

We recommend selecting the operating viscosity (at operating temperature) in the optimal range for efficiency and service life of

$$v_{\text{opt}} = \text{opt. operating viscosity } 16\text{...}36 \text{ mm}^2/\text{s},$$

relating to the tank temperature (open circuit).

Limit viscosity range

The following values apply to limit operating conditions:

$$v_{\text{min}} = 10 \text{ mm}^2/\text{s}$$

for short periods ($t < 3 \text{ min}$) at max. admissible leakage temperature

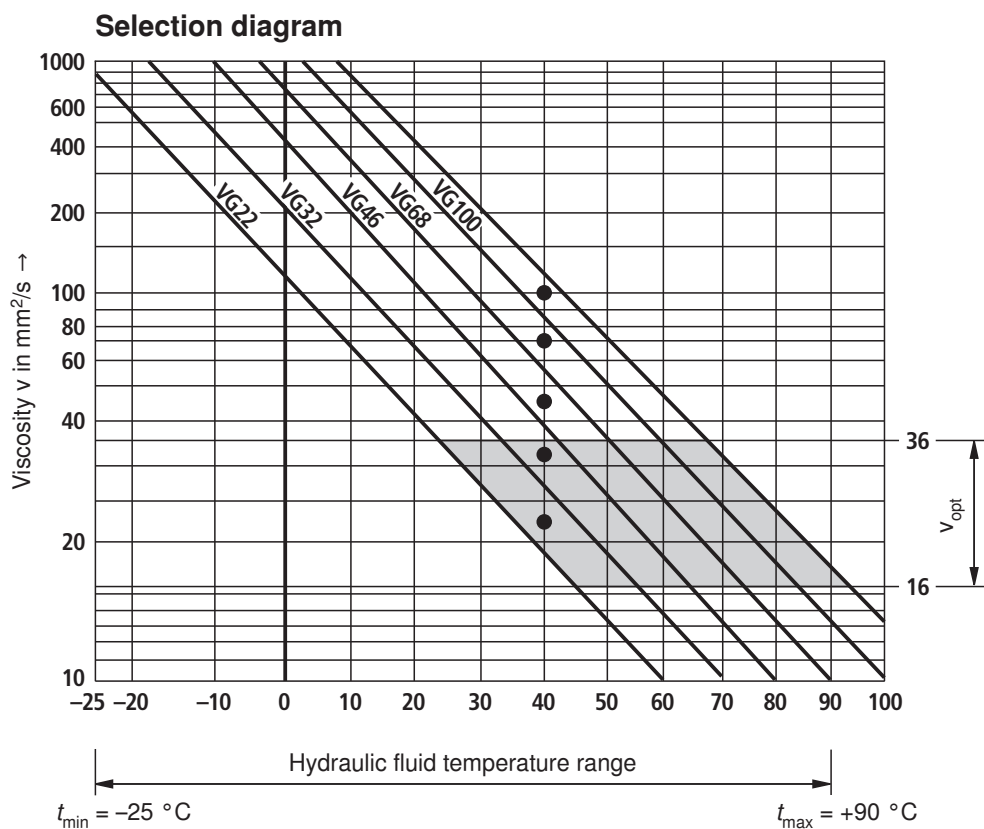
$$t_{\text{max}} = +90^\circ \text{C}$$

$$v_{\text{max}} = 1000 \text{ mm}^2/\text{s}$$

for start-up only (cold start, within 15 min. an operating viscosity of less than 100 mm²/s should be reached)

$$t_{\text{min}} \text{ to } -25^\circ \text{C}$$

For detailed information on the use at low temperatures see data sheet 90300-03-B.



Notes on hydraulic fluid selection

The hydraulic fluid should be selected so as to ensure that, within the operating temperature range, the operating viscosity is within the optimal range (v_{opt}), see selection diagram, grayed-out field.

We recommend choosing the next higher viscosity class.

Temperature range (compare selection diagram)

$$t_{\text{min}} = -25^\circ \text{C}$$

$$t_{\text{max}} = +90^\circ \text{C}$$

Example:

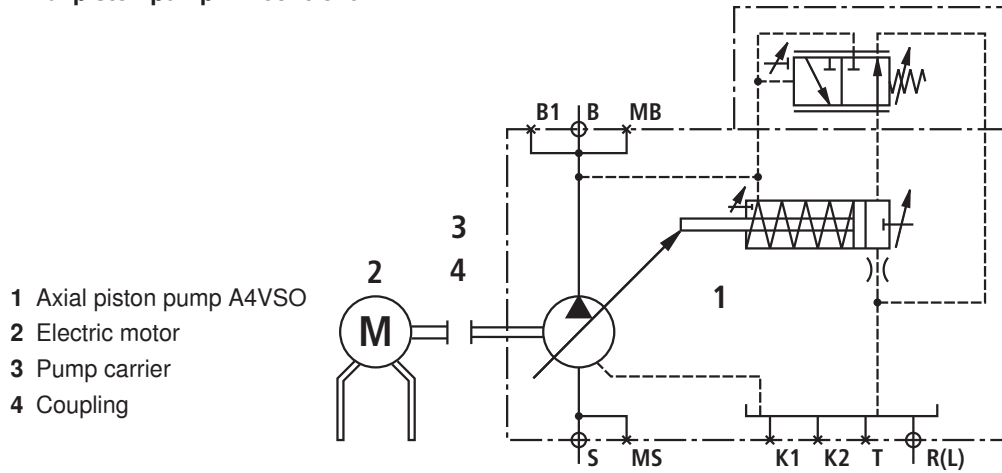
At an ambient temperature of $X^\circ \text{C}$ the tank has an operating temperature of 60°C . Within the optimal operating viscosity range (v_{opt} ; grayed-out field) this corresponds to the viscosity classes VG 46 or VG 68; to select: VG 68.

Note:

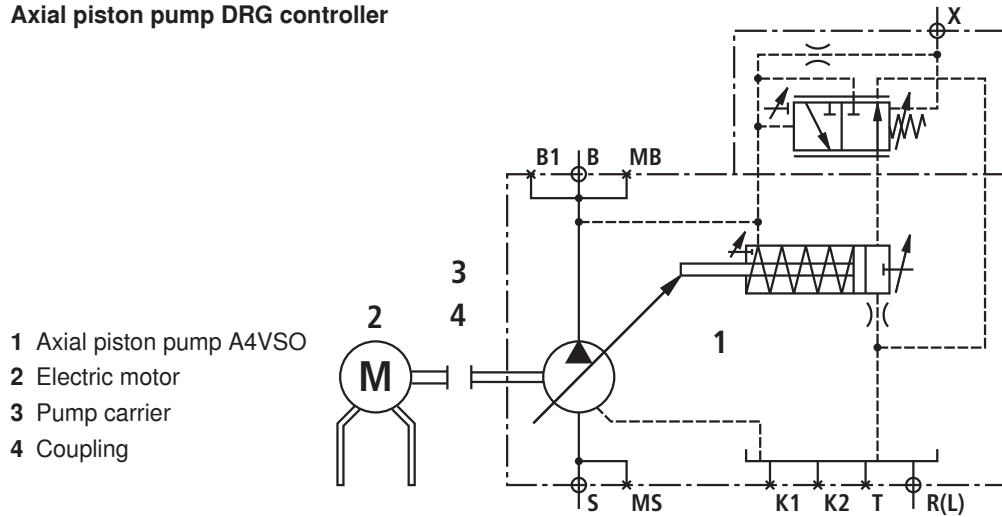
The leakage temperature, influenced by pressure and speed, is always higher than the tank temperature. However, the temperature must never exceed 90°C at any point of the system.

Circuit diagrams

Axial piston pump DR controller



Axial piston pump DRG controller



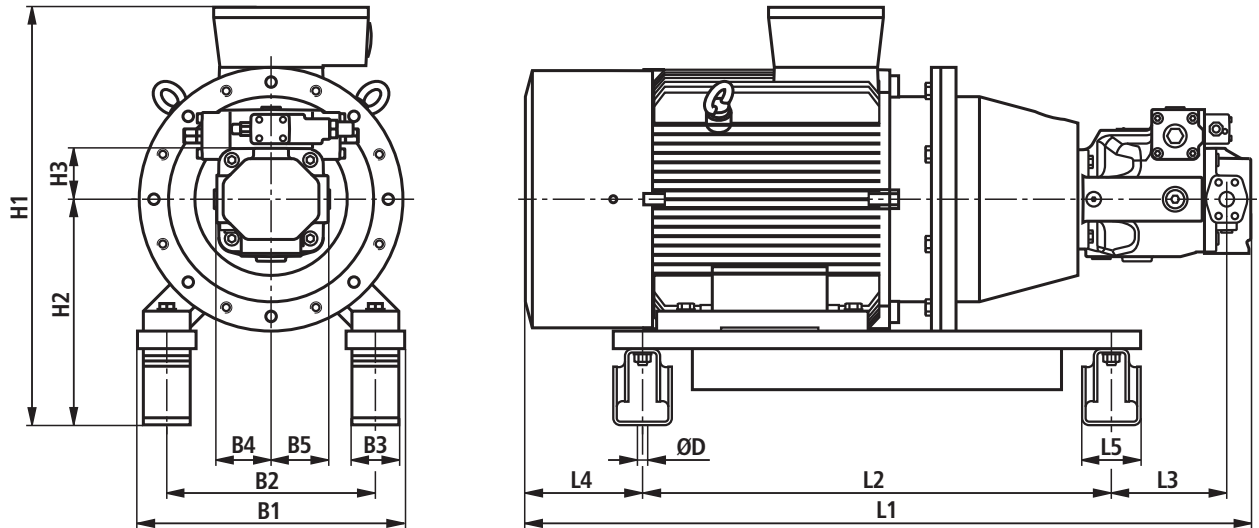
Standard type selection table ABAPG – A4VSO

Pump A4VSO...	Frequency		$P_{max.}$ in bar	Power in kW	Electric motor frame size	ABAPG Material no. (motor B35)			ABAPG Material no. (motor B35) prepared for PSBD ¹⁾		
	$q_{v, max}$ in l/min	50 Hz 1450 min ⁻¹				HOYER Motors	VEM	SIEMENS	HOYER Motors	VEM	SIEMENS
40	55	156	18.5	180M	R901317969	R901318008	R901318043	R901318101	R901318212	R901318256	
		195	22.0	180L	R901317970	R901318009	R901318044	R901318102	R901318213	R901318257	
		278	30.0	200L	R901317971	R901318010	R901318045	R901318103	R901318214	R901318258	
		348	37.0	225S	R901317972	R901318011	R901318046	R901318104	R901318215	R901318259	
		350	45.0	225M	R901317973	R901318012	R901318048	R901318105	R901318216	R901318260	
71	98	150	30.0	200L	R901317974	R901318013	R901318049	R901318106	R901318217	R901318261	
		185	37.0	225S	R901317975	R901318014	R901318050	R901318107	R901318218	R901318262	
		238	45.0	225M	R901317976	R901318015	R901318051	R901318108	R901318219	R901318263	
		295	55.0	250M	R901317977	R901318016	R901318053	R901318109	R901318220	R901318264	
		350	75.0	280S	R901317978	R901318017	R901318054	R901318110	R901318221	R901318265	
125	172	162	55.0	250M	R901317979	R901318018	R901318055				
		227	75.0	280S	R901317980	R901318019	R901318056				
		276	90.0	280M	R901317981	R901318020	R901318057		-		
		342	110.0	315S	R901317982	R901318021	R901318058				
		350	132.0	315M	R901317983	R901318022	R901318059				
180	248	160	75.0	280S	R901317984	R901318023	R901318060				
		193	90.0	280M	R901317985	R901318024	R901318061				
		237	110.0	315S	R901317986	R901318025	R901318062				
		282	132.0	315M	R901317987	R901318026	R901318063		-		
		344	160.0	315L	R901317988	R901318027	R901318064				
		350	200.0	315L/315M	R901317989	R901318028	On request				
250	344	167	110.0	315S	R901317990	R901318029	R901318066				
		203	132.0	315M	R901317991	R901318030	R901318067				
		249	160.0	315L	R901317992	R901318031	R901318068		-		
		311	200.0	315L/315M	R901317993	R901318032	On request				
		350	250.0	355M/315L	R901317994	R901318033	R901318070				
355	489	169	160.0	315L	R901317995	R901318034	R901318072				
		212	200.0	315L/315M	R901317996	R901318035	On request				
		267	250.0	355M/315L	R901317997	R901318036	R901318074		-		
		334	315.0	355L/315L	R901317998	R901318037	R901318076				
500	689	150	200.0	315L/315M	R901317999	R901318038	On request				
		191	250.0	355M/315L	R901318000	R901318039	R901318078				
		247	315.0	355L/315L	R901318001	R901318040	R901318079		-		
		274	355.0	355L	R901318003	On request	On request				
		314	400.0	400M	R901318005	On request	On request				

All types are part of the standard delivery range (A3)
Device dimensions see page 7-10

¹⁾ Other degree of hardness of the damping bearings. Pump manifold block PSBD02 (data sheet 62300) must be ordered separately.

Device dimensions: Type ABAPG-A4VSO 40DR – 125DR (dimensions in mm)



ABAPG-A4VSO with motor supplier HOYER-MOTORS

Pump A4VSO...	Electric motor kW / frame size	Dimensions													Weight [kg]
		B1	B2	B3	B4/B5	ØD	H1	H2	H3	L1	L2	L3	L4	L5	
40DR	18 / 180M	369	279	65	80	17.5	588	313	75	1170	620	247	264	87	254
	22 / 180L	369	279	65	80	17.5	588	313	75	1210	620	247	304	87	281
	30 / 200L	418	318	80	80	17.5	665	360	75	1240	700	214	287	100	361
	37 / 225S	456	356	80	80	17.5	720	385	75	1315	800	170	306	100	456
	45 / 225M	456	356	80	80	17.5	720	385	75	1345	800	170	336	100	475
71DR	30 / 200L	418	318	80	92.5	17.5	665	360	85	1293	700	265	287	100	377
	37 / 225S	456	356	80	92.5	17.5	720	385	85	1344	800	197	306	100	472
	45 / 225M	456	356	80	92.5	17.5	720	385	85	1374	800	197	336	100	491
	55 / 250M	526	406	80	92.5	17.5	785	420	85	1458	850	229	338	100	586
125DR	55 / 250M	526	406	80	113	17.5	785	420	100	1535	850	302	338	100	629

ABAPG-A4VSO with motor supplier VEM

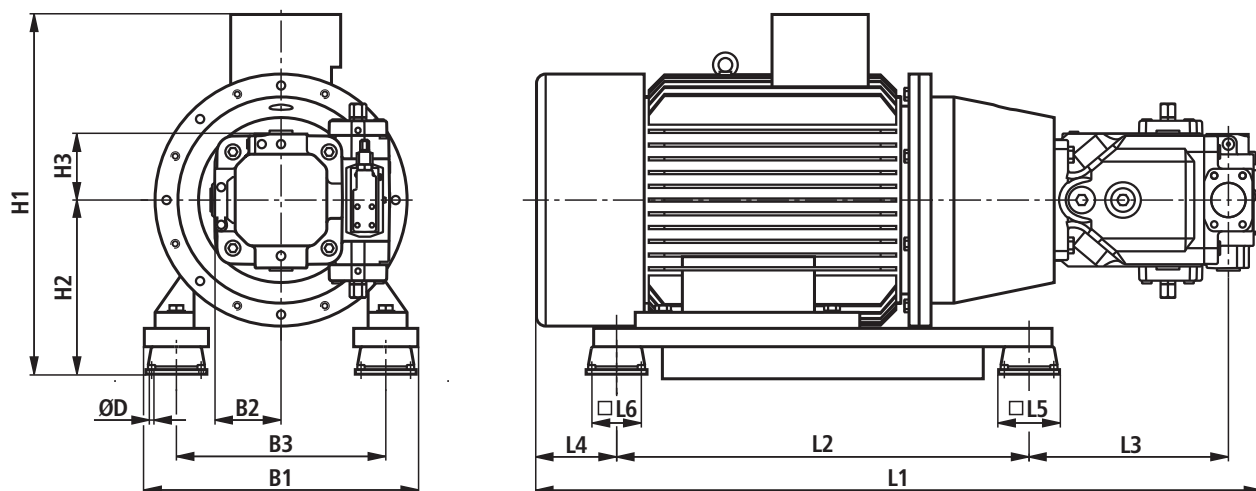
Pump A4VSO...	Electric motor kW / frame size	Dimensions													Weight [kg]
		B1	B2	B3	B4/B5	ØD	H1	H2	H3	L1	L2	L3	L4	L5	
40DR	18 / 180M	369	279	65	80	17.5	574	313	75	1150	620	247	244	87	290
	22 / 180L	369	279	65	80	17.5	574	313	75	1150	620	247	244	87	360
	30 / 200L	418	318	80	80	17.5	660	360	75	1197	700	214	244	100	380
	37 / 225S	456	356	80	80	17.5	685	385	75	1257	800	170	248	100	437
	45 / 225M	456	356	80	80	17.5	709	385	75	1362	800	170	353	100	502
71DR	30 / 200L	418	318	80	92.5	17.5	660	360	85	1250	700	265	244	100	396
	37 / 225S	456	356	80	92.5	17.5	685	385	85	1286	800	197	248	100	453
	45 / 225M	456	356	80	92.5	17.5	709	385	85	1391	800	197	353	100	518
	55 / 250M	526	406	80	92.5	17.5	806	420	85	1467	850	229	347	100	699
125DR	55 / 250M	526	406	80	113	17.5	806	420	100	1544	850	302	347	100	742

ABAPG-A4VSO with motor supplier SIEMENS

Pump A4VSO...	Electric motor kW / frame size	Dimensions													Weight [kg]
		B1	B2	B3	B4/B5	ØD	H1	H2	H3	L1	L2	L3	L4	L5	
40DR	18 / 180M	369	279	65	80	17.5	575	313	75	1139	620	247	233	87	235
	22 / 180L	369	279	65	80	17.5	757	313	75	1190	620	247	284	87	265
	30 / 200L	418	318	80	80	17.5	660	360	75	1190	700	214	237	100	325
	37 / 225S	456	356	80	80	17.5	713	385	75	1289	800	170	280	100	397
	45 / 225M	456	356	80	80	17.5	713	385	75	1349	800	170	340	100	427
71DR	30 / 200L	418	318	80	92.5	17.5	660	360	85	1243	700	265	237	100	341
	37 / 225S	456	356	80	92.5	17.5	713	385	85	1318	800	197	280	100	413
	45 / 225M	456	356	80	92.5	17.5	713	385	85	1378	800	197	340	100	443
	55 / 250M	526	406	80	92.5	17.5	812	420	85	1494	850	229	374	100	595
125DR	55 / 250M	526	406	80	113	17.5	812	420	100	1571	850	302	374	100	637

Device dimensions: Type ABAPG-A4VSO 71DR – 500DR HOYER-MOTORS

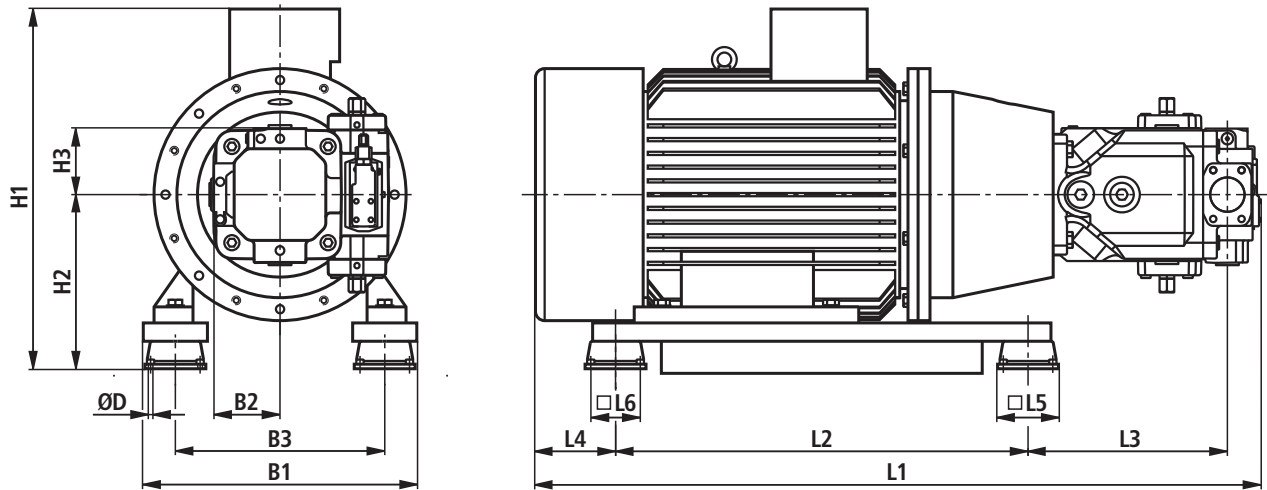
(dimensions in mm)

**ABAPG-A4VSO with motor supplier HOYER-MOTORS**

Pump A4VSO...	Electric motor kW / frame size	Dimensions													Weight [kg]
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5	L6	
71DR	75 / 280S	597	92.5	457	11.9	780	380	85	1535	900	279	315	133	108	867
125DR	75 / 280S	597	113	457	11.9	780	380	100	1595	900	335	315	133	108	910
	90 / 280M	597	113	457	11.9	780	380	100	1645	900	335	365	133	108	910
	110 / 315S	648	113	508	13.5	972	442	100	1910	1100	251	514	175	143	1265
	132 / 315M	648	113	508	13.5	972	442	100	2020	1100	251	624	175	143	1475
180DR	75 / 280S	597	116	457	11.9	780	380	100	1615	900	343	315	133	108	922
	90 / 280M	597	116	457	11.9	780	380	100	1665	900	343	365	133	108	922
	110 / 315S	648	116	508	13.5	972	442	100	1930	1100	259	514	175	143	1310
	132 / 315M	648	116	508	13.5	972	442	100	2040	1100	259	624	175	143	1490
	160 / 315L	648	116	508	13.5	972	442	100	2060	1100	329	574	175	143	1605
250DR	200 / 315L	648	116	508	13.5	972	442	100	2060	1100	329	574	175	143	1660
	110 / 315S	648	144	508	13.5	972	442	133	2010	1100	341	514	175	143	1395
	132 / 315M	648	144	508	13.5	972	442	133	2120	1100	341	624	175	143	1575
	160 / 315L	648	144	508	13.5	972	442	133	2120	1100	391	574	175	143	1645
	200 / 315L	648	144	508	13.5	972	442	133	2120	1100	391	574	175	143	1700
355DRG	250 / 355M	770	144	610	13.5	1147	492	133	2315	1400	299	561	175	143	2380
	160 / 315L	648	144	508	13.5	972	442	133	2149	1100	404	574	175	143	1660
	200 / 315L	648	144	508	13.5	972	442	133	2149	1100	404	574	175	143	1715
	250 / 355M	770	144	610	13.5	1147	492	133	2389	1400	357	561	175	143	2410
500DR	315 / 355L	770	144	610	13.5	1147	492	133	2389	1400	357	561	175	143	2580
	200 / 315L	648	180	508	13.5	972	442	190	2270	1100	517	574	175	143	1880
	250 / 355M	770	180	610	13.5	1147	492	190	2460	1400	420	561	175	143	2510
	315 / 355L	770	180	610	13.5	1147	492	190	2508	1400	468	561	175	143	2670
	355 / 355L	770	180	610	13.5	1147	492	190	2508	1400	468	561	175	143	3250
400 / 400M	886	180	686	13.5	1267	567	190	2880	1700	391	710	175	143	4840	

Device dimensions: Type ABAPG-A4VSO 71DR – 500DR VEM

(dimensions in mm)



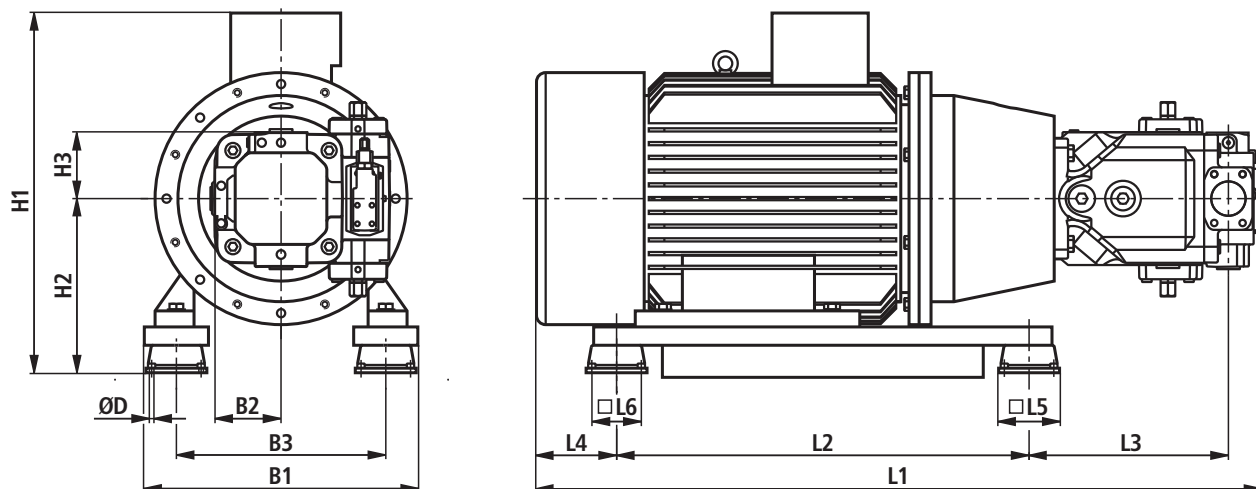
ABAPG-A4VSO with motor supplier VEM

Pump A4VSO...	Electric motor kW / frame size	Dimensions												Weight [kg]	
		B1	B2	B3	ØD	H1 ¹⁾	H2 ¹⁾	H3	L1	L2	L3	L4	L5		L6
71DR	75 / 280S	597	92.5	457	11.9	766	380	85	1484	900	279	264	133	108	749
125DR	75 / 280S	597	113	457	11.9	766	380	100	1544	900	335	264	133	108	792
	90 / 280M	597	113	457	11.9	766	380	100	1590	900	335	310	133	108	847
	110 / 315S	648	113	508	13.5	858	442	100	1745	1100	251	349	175	143	1050
	132 / 315M	648	113	508	13.5	858	442	100	1800	1100	251	404	175	143	1170
180DR	75 / 280S	597	116	457	11.9	766	380	100	1564	900	343	264	133	108	804
	90 / 280M	597	116	457	11.9	766	380	100	1610	900	343	310	133	108	859
	110 / 315S	648	116	508	13.5	858	442	100	1765	1100	259	349	175	143	1095
	132 / 315M	648	116	508	13.5	858	442	100	1820	1100	259	404	175	143	1185
	160 / 315L	648	116	508	13.5	858	442	100	1900	1100	259	484	175	143	1310
250DR	200 / 315L	648	116	508	13.5	936	442	100	2005	1100	279	569	175	143	1660
	110 / 315S	648	144	508	13.5	858	442	133	1845	1100	341	349	175	143	1180
	132 / 315M	648	144	508	13.5	858	442	133	1900	1100	341	404	175	143	1270
	160 / 315L	648	144	508	13.5	858	442	133	1980	1100	341	484	175	143	1405
	200 / 315L	648	144	508	13.5	936	442	133	2065	1100	341	569	175	143	1695
355DRG	250 / 355M	648	144	508	13.5	936	442	133	2185	1100	391	639	175	143	1905
	160 / 315L	648	144	508	13.5	858	442	133	2009	1100	354	484	175	143	1420
	200 / 315L	648	144	508	13.5	936	442	133	2094	1100	354	569	175	143	1715
	250 / 355M	648	144	508	13.5	936	442	133	2214	1100	404	639	175	143	1895
500DR	315 / 355L	648	144	508	13.5	936	442	133	2374	1100	444	759	175	143	2135
	200 / 315L	648	180	508	13.5	936	442	190	2215	1100	467	569	175	143	1880
	250 / 355M	648	180	508	13.5	936	442	190	2335	1100	517	639	175	143	2055
	315 / 355L	648	180	508	13.5	936	442	190	2455	1100	517	759	175	143	2235

¹⁾ -15 or -20

Device dimensions: Type ABAPG-A4VSO 71DR – 500DR SIEMENS

(dimensions in mm)



ABAPG-A4VSO with motor supplier SIEMENS

Pump A4VSO...	Electric motor kW / frame size	Dimensions												Weight [kg]	
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5		L6
71DR	75 / 280S	597	92.5	457	11.9	812	380	85	1520	900	279	300	133	108	767
125DR	75 / 280S	597	113	457	11.9	812	380	100	1580	900	335	300	133	108	810
	90 / 280M	597	113	457	11.9	812	380	100	1690	900	335	410	133	108	882
	110 / 315S	648	113	508	13.5	942	442	100	1767	1100	251	371	175	143	1040
	132 / 315M	648	113	508	13.5	942	442	100	1927	1100	251	531	175	143	1190
180DR	75 / 280S	597	116	457	11.9	812	380	100	1600	900	343	300	133	108	822
	90 / 280M	597	116	457	11.9	812	380	100	1710	900	343	410	133	108	894
	110 / 315S	648	116	508	13.5	942	442	100	1787	1100	259	371	175	143	1085
	132 / 315M	648	116	508	13.5	942	442	100	1947	1100	259	531	175	143	1205
	160 / 315L	648	116	508	13.5	942	442	100	1967	1100	329	481	175	143	1340
250DR	110 / 315S	648	144	508	13.5	942	442	133	1867	1100	341	371	175	143	1170
	132 / 315M	648	144	508	13.5	942	442	133	2027	1100	341	531	175	143	1290
	160 / 315L	648	144	508	13.5	942	442	133	2027	1100	391	481	175	143	1380
	250 / 355M	648	144	508	13.5	942	442	133	2167	1100	391	621	175	143	1725
355DRG	160 / 315L	648	144	508	13.5	942	442	133	2056	1100	404	481	175	143	1395
	250 / 355M	648	144	508	13.5	942	442	133	2196	1100	404	621	175	143	1715
	315 / 355L	648	144	508	13.5	942	442	133	2236	1100	444	621	175	143	1985
500DR	250 / 355M	648	180	508	13.5	942	442	190	2317	1100	517	621	175	143	1875
	315 / 355L	648	180	508	13.5	942	442	190	2317	1100	517	621	175	143	2085

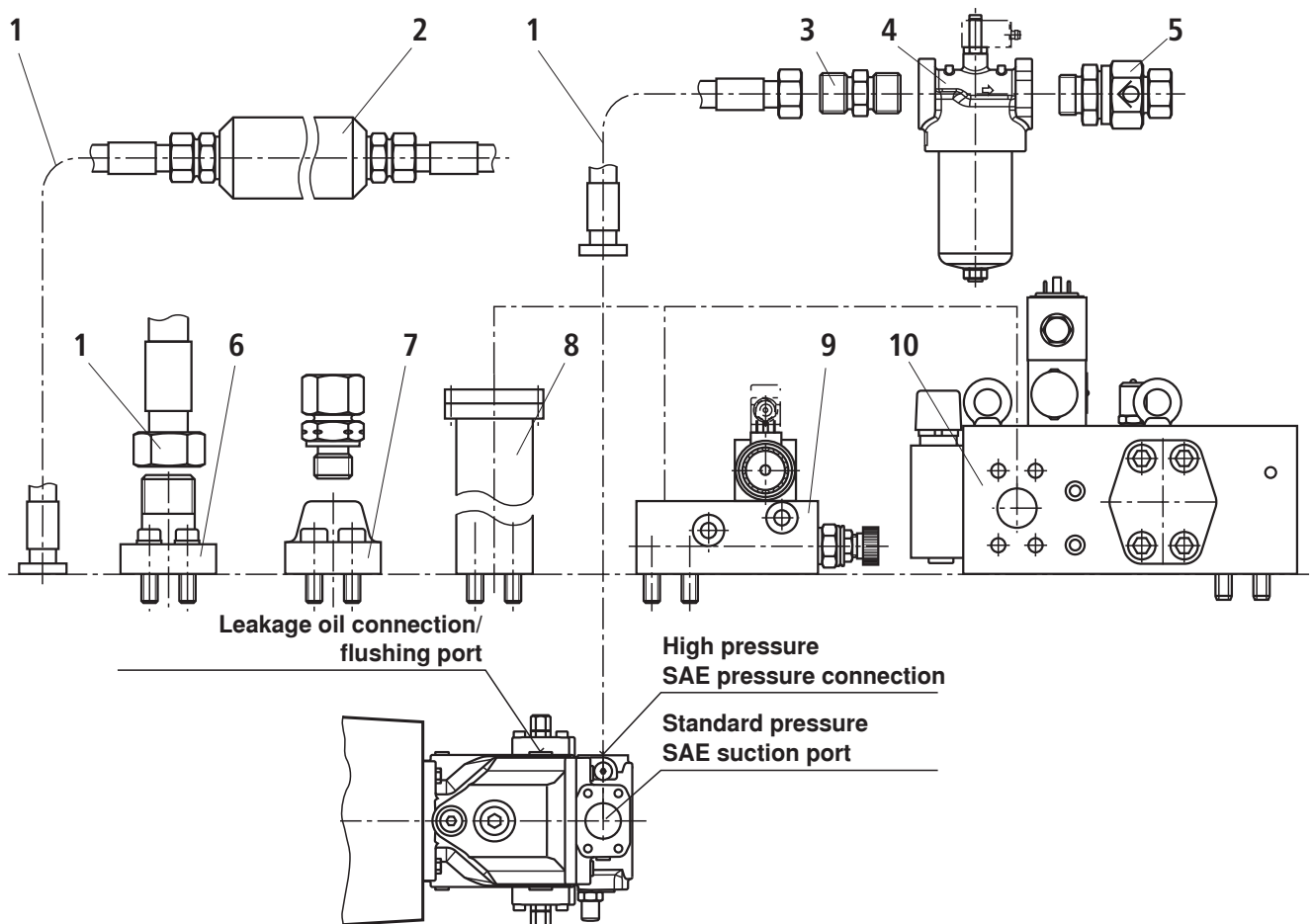
Line connections

Pump type	Line connections			
	Pressure connection B	Suction port S	Leakage oil connection L / L1	Pilot oil port X
A4VSO40	DIN ISO 6162-2 - 3/4" ²⁾	DIN ISO 6162-1 - 1 1/2" ¹⁾	DIN 3852-1 - M22X1.5	-
A4VSO71	DIN ISO 6162-2 - 1" ²⁾	DIN ISO 6162-1 - 2" ¹⁾	DIN 3852-1 - M27X2	-
A4VSO125	DIN ISO 6162-2 - 1 1/4" ²⁾	DIN ISO 6162-1 - 2 1/2" ¹⁾	DIN 3852-1 - M33X2	-
A4VSO180	DIN ISO 6162-2 - 1 1/4" ²⁾	DIN ISO 6162-1 - 3" ¹⁾	DIN 3852-1 - M33X2	-
A4VSO250	DIN ISO 6162-2 - 1 1/2" ²⁾	DIN ISO 6162-1 - 3" ¹⁾	DIN 3852-1 - M42X2	DIN 3852-1 - M14x1.5
A4VSO355	DIN ISO 6162-2 - 1 1/2" ²⁾	DIN ISO 6162-1 - 4" ¹⁾	DIN 3852-1 - M42X2	DIN 3852-1 - M14x1.5
A4VSO500	DIN ISO 6162-2 - 2" ²⁾	DIN ISO 6162-1 - 5" ¹⁾	DIN 3852-1 - M48X2	DIN 3852-1 - M14x1.5

¹⁾ Standard pressure SAE flange figure with metric mounting screws

²⁾ High pressure SAE flange figure with metric mounting screws

Optional accessories at the pressure connection

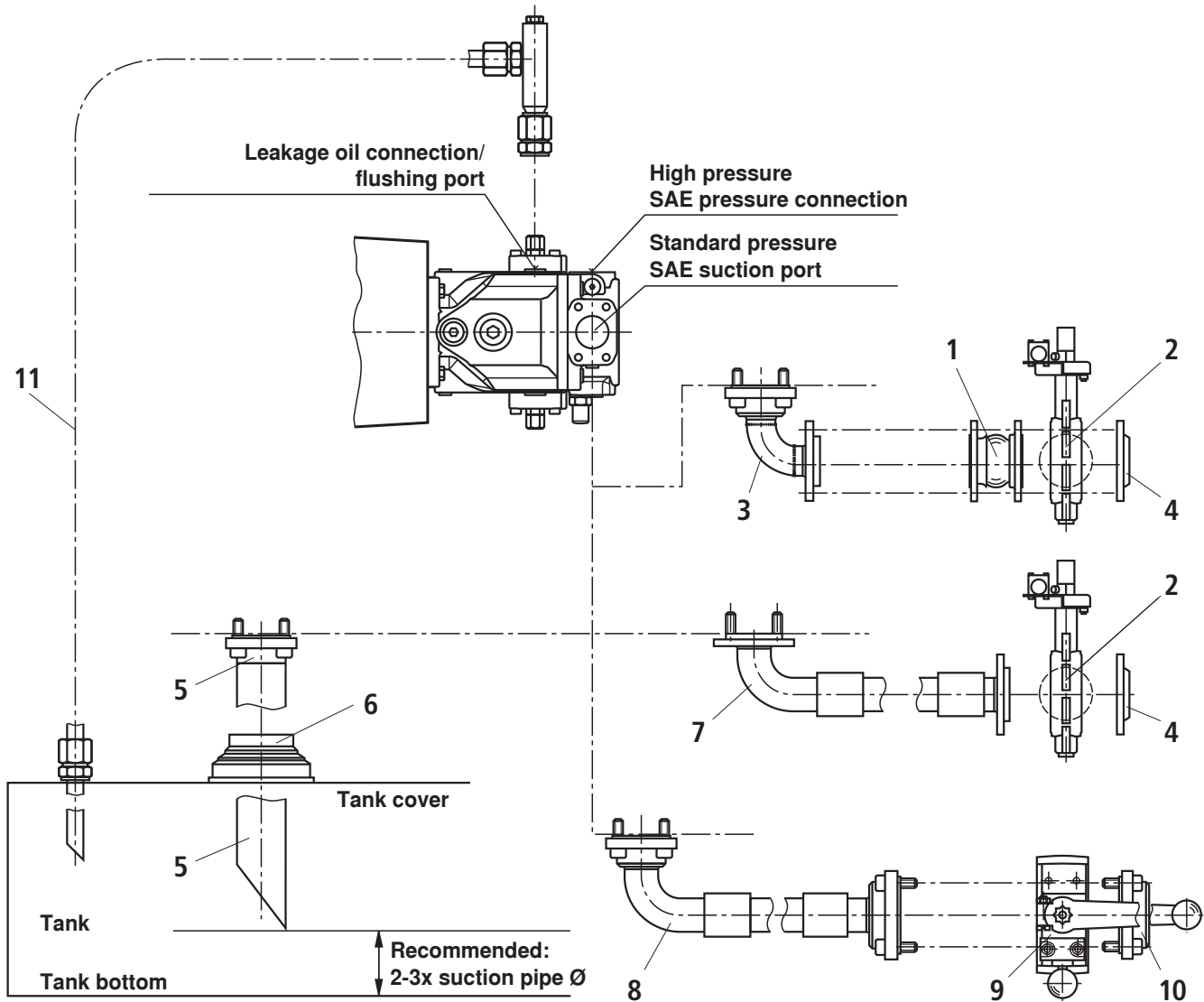


- 1 Hose line AB 02314, AB 02316
- 2 Shock and vibration absorber data sheet 29253
- 3 Fitting ZN 11001-11-AN1 to A4VSO71
- 4 Inline filter data sheet 51422
- 5 Check valve AB 02112 to A4VSO71
- 6 SAE flange high pressure AB 02214
- 7 SAE flange high pressure AB 02213

- 8 Shock and vibration absorber data sheet 50142 to A4VSO250
- 9 Pump safety block data sheet 25891 to A4VSO180
- 10 Pump manifold block data sheet 62300 to A4VSO355

Items 1 to 10 as optional accessories upon request

Optional accessories at the suction port and leakage oil connection



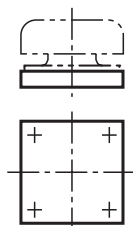
- 1 Compensator DIN AB 02231
- 2 Shut-off valve DIN AB 02129
- 3 Flange bend SAE-DIN AB 02229
- 4 DIN flange AB 02204
- 5 Suction pipe AB 02303
- 6 Elastic pipe fitting AB 01203
- 7 Suction tube SAE-DIN AB 02315

- 8 Suction tube SAE-SAE AB 02315
- 9 Shut-off valve SAE (on request)
- 10 SAE flange AB 02215
- 11 Drain line

Items 1 to 11 as optional accessories upon request

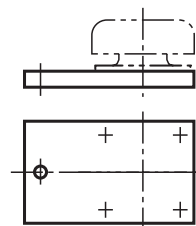
Optional accessories for damping bearing AB33-11

Accessories: Plate



Weld-on plate

Accessories: Clip



Clip for foundation installation

Installation information

Fluid tank

- Adjust useful volume of the tank to the operating conditions.
- The admissible fluid temperature must not be exceeded; use coolers, if necessary.
- Suction and return line are to be designed so that the largest distance possible between these two lines is guaranteed. Return fluid must not be directly sucked in again.
- The return flow exit must always be below the oil level.

Lines and connections

- Observe all instructions regarding pipe laying dependent on the installation position of the motor-pump group in the hydraulic system according to 92050-01-B.
- Ensure that the pump housing is completely filled with hydraulic fluid during commissioning and operation.
- Remove the protective plug at the pump.
- Select the clear width of the pipes according to the connections (suction speed 0.8 m/s).
- Pipelines and fittings must be carefully cleaned before assembly. Observe the installation information of the manufacturers.
- Connections between pump and further hydraulic systems must be elastic.
- Ensure tight assembly of the pipelines.
- Observe admissible leakage pressure.

Installation position

- Horizontal according to the dimensional drawing. Deviating designs only after coordination with the manufacturer.
- Exclusive use in stationary systems.

Filtration of the hydraulic fluid

- Use return flow and/or pressure filters.
- The finer the filtration, the better the achieved cleanliness class of the hydraulic fluid, the longer the life cycle of the axial piston unit.
- In order to guarantee functional safety of the axial piston unit, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary for the hydraulic fluid.

Hydraulic fluid

- Please observe the instructions according to data sheets 90220 and 90221.
- Brand-name hydraulic oils are recommended. In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary.
- Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity.
- We recommend checking the hydraulic fluid at regular intervals by means of an oil analysis. The measures resulting therefrom are to be implemented.

Commissioning, maintenance and operating instructions

In this connection, please observe the instructions contained in the following documents:

- Data sheet 07009
- Data sheet 07009-MON
- Data sheet 92050
- Data sheet 92050-01-B

Legal provisions

- In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- The EU Regulation 640/2009 on the environmentally friendly design of electric motors.

Notice pursuant to the EC Machinery Directive 2006/42/EC, according to annex II part 1, section A, manufacturer's declaration:

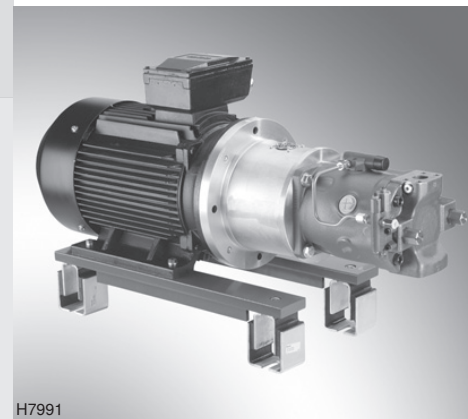
- The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100 and DIN EN 60204-1.
- The commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

Motor-pump group

RE 51174/ 01.13
Replaces: 11.12

1/14

Type ABAPG

with pump type: A10VSO
Series 32: Sizes 45 to 180
Electric motor frame size 132M to 315M

H7991

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Features

- In the motor-pump groups, electric energy is converted into hydraulic energy.
- They have been designed for hydrostatic drives in open circuits.
- Electric motor, design IM B3/B5 (ABAPG)
 - Pump fastened at the electric motor with rigid pump carrier and coupling
 - Low operating noise
 - Versatile possible applications on tank, base frame or separate installation
 - Clear, maintenance-friendly set-up
 - With axial piston pump A10VSO (variable displacement pump), shock and vibration absorber type
 - DRS (hydraulic flow controller) und LA6DS (power controller with pressure cut off) adjustment

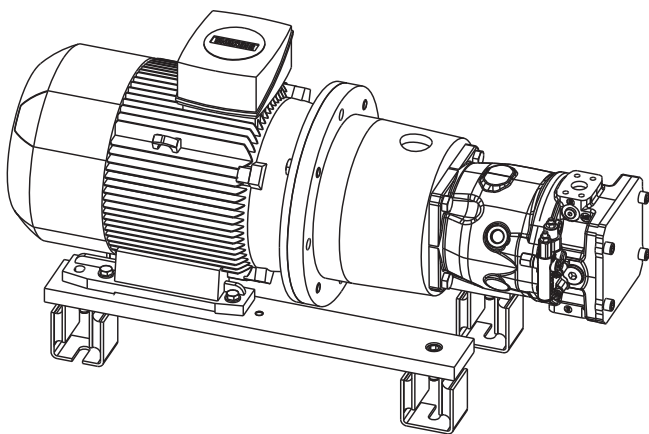
Ordering code

ABAPG		A10VSO		V		S		B/		CB		4		5		2		3/S		E		HOY	
Assembly with motor design B35 = ABAPG																						Motor supplier HOY = Hoyer Motors (preferred) SIE = Siemens VEM = VEM	
Pump type Axial piston pump A10VSO According to data sheet 92714		= A10VSO																				Damping bearing design E = Elastic damping bearing	
Displacement 10 ... 140 cm ³ per rotation		= 10 ... 140																				Pump carrier design S = Rigid pump carrier AB 03337	
Control and adjustment device e.g. Pressure/flow controller, hydraulic, X-T closed Power controller with pressure cut off and flow control, hydraulic, X-T closed				= DRS																		Motor protection 3 = PTC resistor with 3 temperature sensors	
Seal material (according to DIN ISO 1629) FKM				= V																		Efficiency class 2 = IE 2	
Shaft end version Splined shaft (ANSI B92.1a standard shaft)				= S																		Rated frequency 5 = 50 Hz	
Mounting flange ISO 4-hole				= B																		Number of pole pairs 4 =	
Motor power 7.5 kW ... 132 kW				= 7.5 ... 132																		Rated voltage CB = 400 / 690 at 50 Hz	

Order example:

ABAPG-A10VSO 45DRSVSB/18,5CB4523/SE HOY

Set-up of the motor-pump group



- Pump
- Electric motor
- Pump carrier
- Coupling
- Strips
- Damping bearing


STEP files of the relevant assemblies on request.

Technical data (For applications outside these parameters, please consult us!)

Line connections	See table Line connections on page 16		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN ISO 3448 (other fluids on request!) <ul style="list-style-type: none"> • Please observe our provisions according to data sheet 90220, 90221. • Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity. • According to the operating conditions, the fluid must be renewed at certain intervals. 		
Pump type	A10VSO series 32 according to data sheet 92714		
– Direction of rotation	R = clockwise		
Operating pressure, absolute			
– Inlet	$p_{\min-max}$	bar	0.8 to 10 for sizes 45 to 100, 1 to 10 from size 140
– Output	p_{nom}	bar	280
– Peak pressure	p_{max}	bar	350
– Leakage port	p_{max}	bar	2
Hydraulic fluid temperature range, observe viscosity range	ϑ		–25 to +90
– T_{optimal} with HLP 46 (DIN 51524)	ϑ	°C	+45 to +55
– T_{max} in continuous operation	ϑ	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50126 (ABUKG) and 50112 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406 (c) depending on the pump type used ¹⁾ . At least cleanliness class 20/18/15 must be achieved.		
Viscosity range	ν	mm ² /s	16 to 36 optimally 10 to 1000 for short periods (see data sheet 92714)
Electric motor	– Motor type		
	– Efficiency class		
	– Number of pole pairs		
	– Voltage according to IEC 38 U		
	– Speed		
	– Protection class		
	– Installation position		
Surface treatment	By default, all steel components and components are at least provided with temporary corrosion protection (e.g. for transport).		

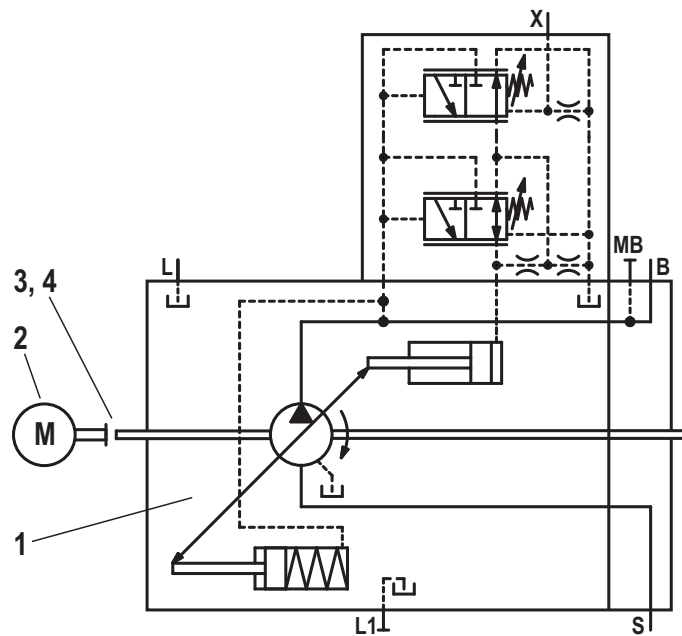
¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

For selecting the filters, see data sheet 51501.

 **Notice:** For assembly, commissioning and maintenance of hydraulic systems please observe data sheet 07900. The motor-pump group is constructed and manufactured in accordance with the harmonized EN standards/specifications.

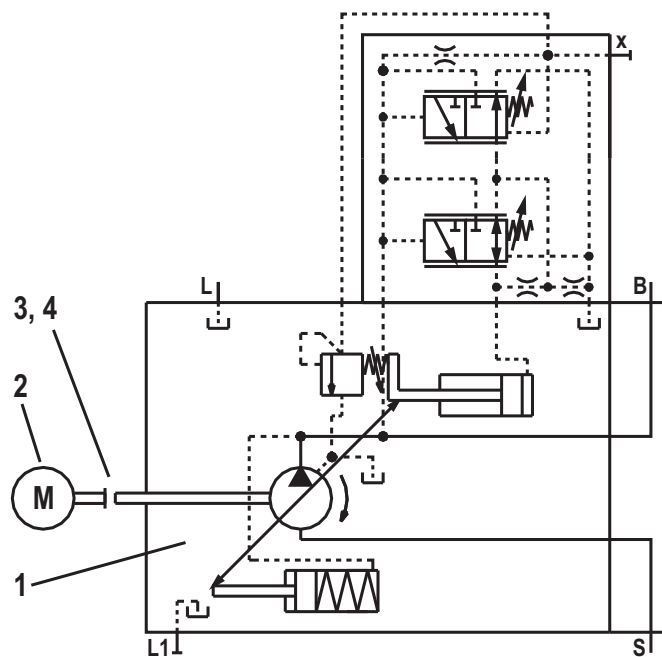
Circuit diagrams

Axial piston pump with flow controller, hydraulic (basic design), type ABAPG...DRS



- 1 Axial piston pump A10VSO
- 2 Electric motor
- 3 Pump carrier
- 4 Coupling

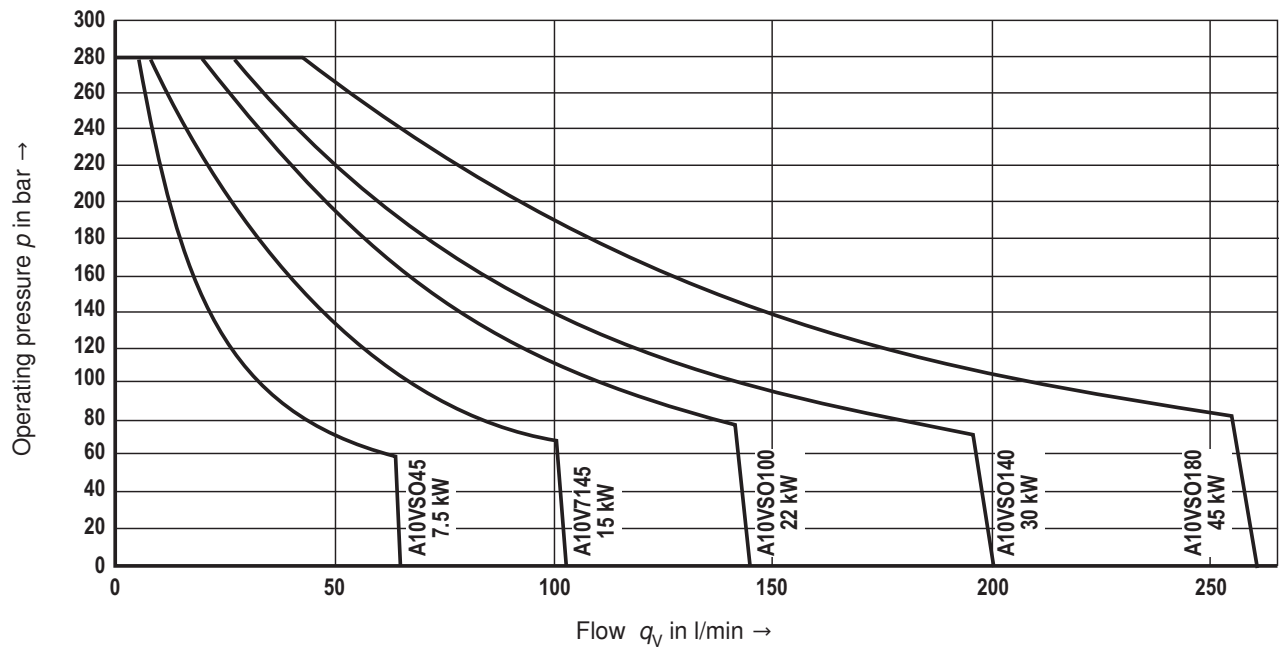
Axial piston pump with power controller with pressure cut off, type ABAPG...LA6DS



- 1 Axial piston pump A10VSO
- 2 Electric motor
- 3 Pump carrier
- 4 Coupling

Performance characteristic

Axial piston pump with power controller, type ABAPG...LA6DS measured at $n = 1450 \text{ min}^{-1}$
(factory setting)



 For the project planning, please use the performance characteristic from data sheet 92714.

Standard program incl. preferred types ABAPG-A10VSO, series 32

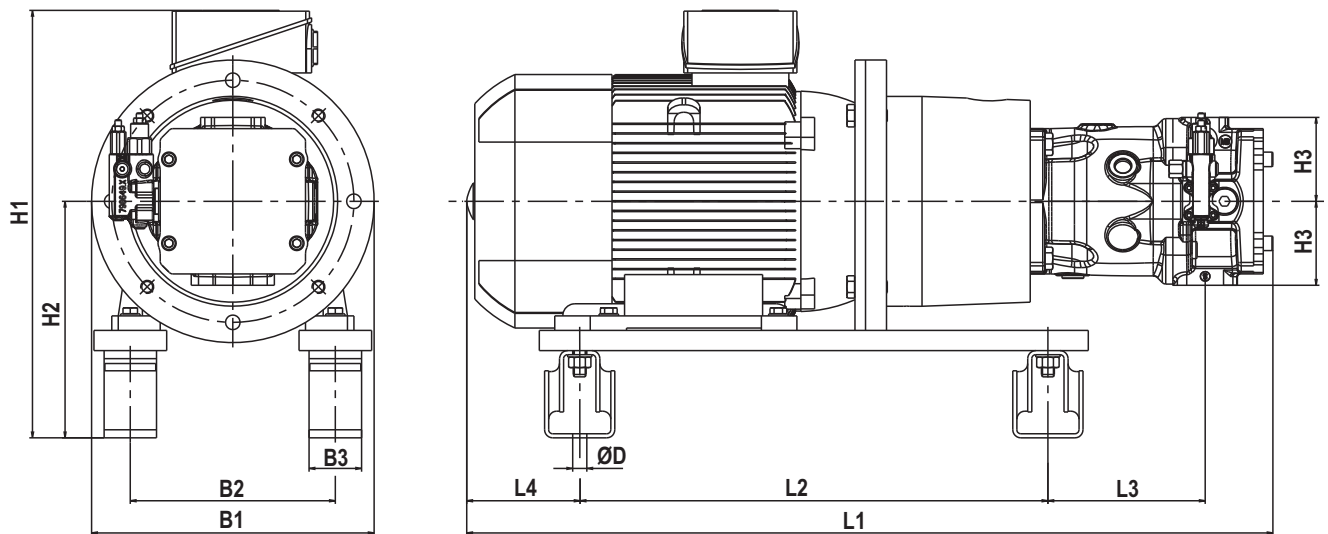
Frequency	50 Hz 1450 min ⁻¹										
	Pump	q _v max in l/min	p _{max} in bar	Power in kW	Motor frame size	ABAPG					
						VEM	MKZ	HOY	MKZ	SIE	MKZ
A10VSO 45...32 DRS	62	78	11.0	160M	R901342822	A3	R901342824	A3	R901342825	A3	
		118	15.0	160L	R901342818	A2	R901342819	A3	R901342820	A3	
		157	18.5	180M	R901342831	A3	R901342832	A3	R901342833	A3	
		193	22.0	180L	R901342827	A3	R901342828	A3	R901342829	A3	
		276	30.0	200L	R901342834	A3	R901342835	A3	R901342836	A3	
		280	37.0	225S	R901342837	A3	R901342838	A3	R901342839	A3	
A10VSO 71...32 DRS	98	68	15.0	160L	R901342840	A3	R901342841	A3	R901342842	A3	
		88	18.5	180M	R901342846	A3	R901342847	A3	R901342848	A3	
		112	22.0	180L	R901342843	A2	R901342844	A3	R901342845	A3	
		158	30.0	200L	R901342849	A3	R901342850	A3	R901342851	A3	
		198	37.0	225S	R901342855	A3	R901342856	A3	R901342857	A3	
		244	45.0	225M	R901342852	A3	R901342853	A3	R901342854	A3	
A10VSO 100...32 DRS	138	280	55.0	250M	R901342858	A3	R901342859	A3	R901342860	A3	
		57	18.5	180M	R901342864	A3	R901342865	A3	R901342866	A3	
		72	22.0	180L	R901342861	A3	R901342862	A3	R901342863	A3	
		101	30.0	200L	R901342867	A3	R901342868	A3	R901342870	A3	
		129	37.0	225S	R901342874	A3	R901342875	A3	R901342876	A3	
		160	45.0	225M	R901342871	A2	R901342872	A3	R901342873	A3	
		196	55.0	250M	R901342877	A3	R901342878	A3	R901342879	A3	
		273	75.0	280S	R901342883	A3	R901342884	A3	R901342885	A3	
280	90.0	280M	R901342880	A3	R901342881	A3	R901342882	A3			
A10VSO 140...32 DRS	193	52	22.0	180L	R901342886	A3	R901342887	A3	R901342888	A3	
		75	30.0	200L	R901342890	A3	R901342891	A3	R901342892	A3	
		95	37.0	225S	R901342897	A3	R901342898	A3	R901342899	A3	
		119	45.0	225M	R901342894	A3	R901342895	A3	R901342896	A3	
		148	55.0	250M	R901342900	A3	R901342901	A3	R901342903	A3	
		204	75.0	280S	R901342907	A3	R901342908	A3	R901342909	A3	
		246	90.0	280M	R901342904	A3	R901342905	A3	R901342906	A3	
		280	110.0	315S	R901342910	A3	R901342911	A3	R901342912	A3	
A10VSO 180...32 DRS	248	62	30.0	200L	R901342913	A3	R901342914	A3	R901342915	A3	
		77	37.0	225S	R901342920	A3	R901342921	A3	R901342922	A3	
		95	45.0	225M	R901342916	A3	R901342917	A3	R901342918	A3	
		120	55.0	250M	R901342923	A3	R901342924	A3	R901342925	A3	
		167	75.0	280S	R901342929	A3	R901342930	A3	R901342931	A3	
		203	90.0	280M	R901342926	A3	R901342927	A3	R901342928	A3	
		251	110.0	315S	R901342936	A3	R901342937	A3	R901342938	A3	
		280	132.0	315M	R901342932	A3	R901342933	A3	R901342934	A3	
A10VSO 45LA6S	62		7.5	132M	R901342939	A3	R901342940	A3	R901342941	A3	
A10VSO 71LA6S	98		15.0	160L	R901342942	A3	R901342943	A3	R901342944	A3	
A10VSO- 100LA6S	138		22.0	180L	R901342945	A3	R901342947	A3	R901342948	A3	
A10VSO- 140LA6S	193		30.0	200L	R901342949	A3	R901342950	A3	R901342951	A3	
A10VSO- 180LA6S	248		45.0	225M	R901342952	A3	R901342953	A3	R901342954	A3	

MKZ = material mark

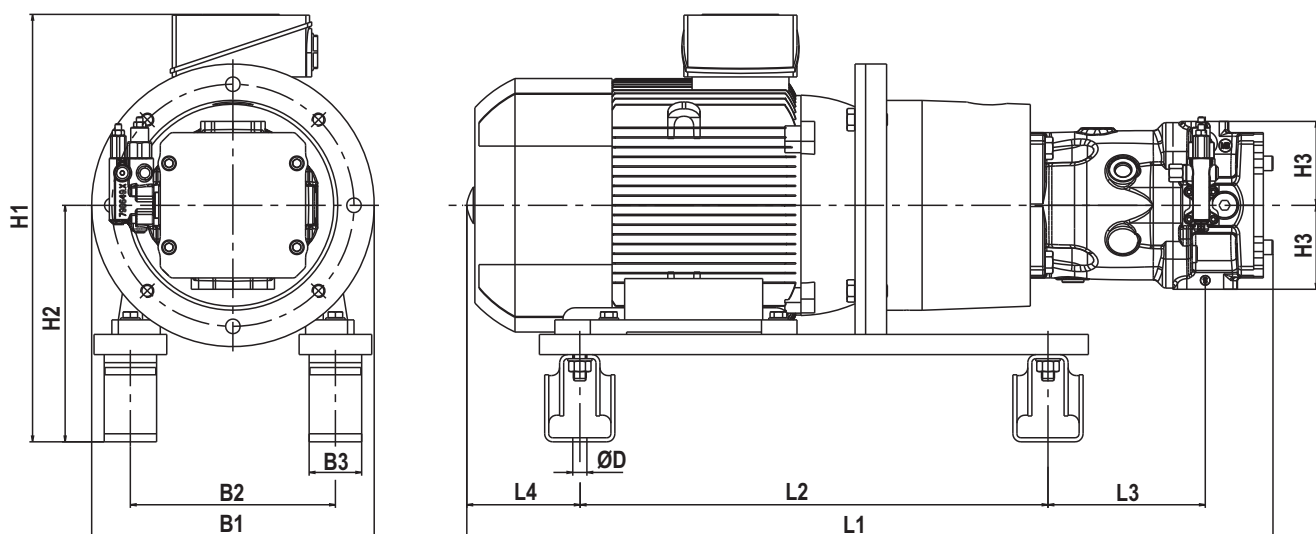
A2 = preferred delivery range

A3 = standard delivery range. Device dimensions see pages 7 to 10

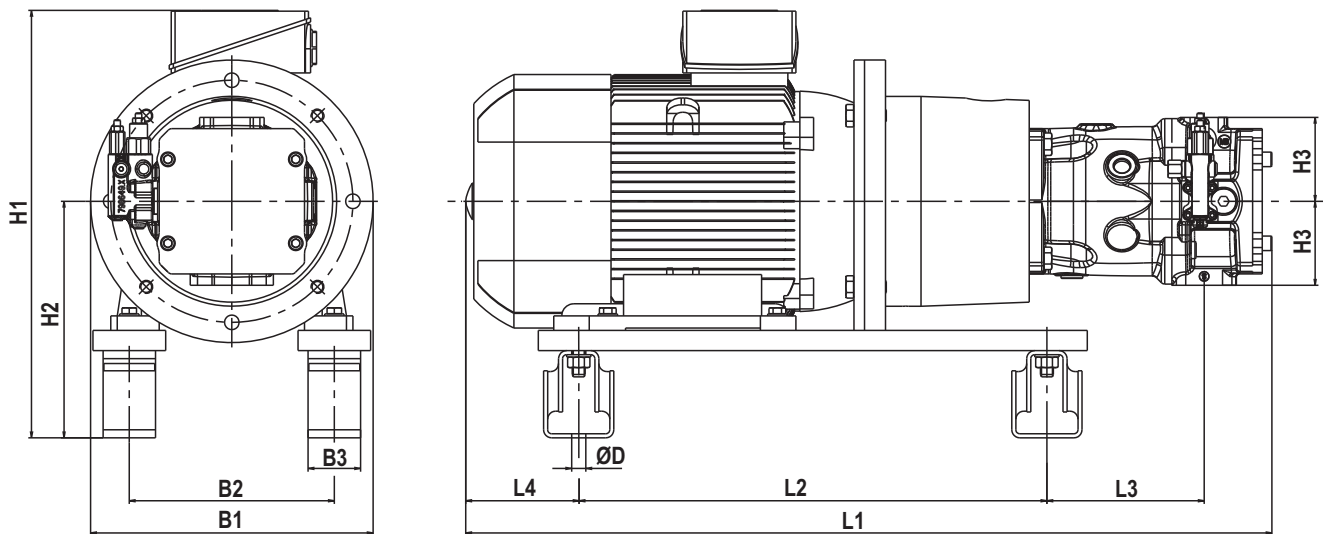
Device dimensions: Type ABAPG A10VSO HOYER-MOTORS (nominal dimensions in mm)



Pump	Electric motor KW / frame size	Dimensions											Weight
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	
A10VSO 45 DRS	11 / 160M	350	254	50	13.5	523	263	91	959	580	190	107	186.5
	15 / 160L	350	254	50	13.5	523	263	91	1014	580	190	162	202.5
	18.5 / 180M	350	279	65	17.5	588	313	91	1060	620	204	154	249.6
	22 / 180L	350	279	65	17.5	588	313	91	1100	620	204	194	276.6
	30 / 200L	400	318	65	17.5	643	338	91	1130	700	171	177	354.8
	37 / 225S	450	356	80	17.5	720	385	91	1175	800	127	166	449.1
A10VSO 71 DRS	15 / 160L	350	254	65	17.5	553	293	104	1065	580	239	162	223.3
	18.5 / 180M	350	279	65	17.5	588	313	104	1095	620	237	154	265.3
	22 / 180L	350	279	65	17.5	588	313	104	1135	620	237	194	292.3
	30 / 200L	400	318	80	17.5	665	360	104	1165	700	204	177	371.5
	37 / 225S	450	356	80	17.5	720	385	104	1204	800	154	166	465.0
	45 / 225M	450	356	80	17.5	720	385	104	1234	800	154	196	484.1
	55 / 250M	550	406	80	17.5	785	420	104	1304	850	172	198	579.0
A10VSO100 DRS	18.5 / 180M	350	279	65	17.5	588	313	100	1154	620	295	154	284.9
	22 / 180L	350	279	65	17.5	588	313	100	1194	620	295	194	311.9
	30 / 200L	400	318	80	17.5	665	360	100	1224	700	262	177	377.8
	37 / 225S	450	356	80	17.5	720	385	100	1269	800	218	166	488.5
	45 / 225M	450	356	80	17.5	720	385	100	1299	800	218	196	507.5
	55 / 250M	550	406	80	17.5	785	420	100	1383	850	250	198	604.0
A10VSO140 DRS	22 / 180L	350	279	65	17.5	588	313	110	1235	620	319	194	316.7
	30 / 200L	400	318	80	17.5	665	360	110	1265	700	286	177	397.0
	37 / 225S	450	356	80	17.5	720	385	110	1300	800	232	166	492.3
	45 / 225M	450	356	80	17.5	720	385	110	1330	800	232	196	511.3
	55 / 250M	550	406	80	17.5	785	420	110	1400	850	250	198	609.0
A10VSO180 DRS	30 / 200L	400	318	80	17.5	665	360	110	1275	700	296	177	402.0
	37 / 225S	450	356	80	17.5	720	385	110	1310	800	242	166	497.3
	45 / 225M	450	356	80	17.5	720	385	110	1340	800	242	196	516.3
	55 / 250M	550	406	80	17.5	785	420	110	1410	850	260	198	614.0
A10VSO 45 LA6S	7.5 / 132M	300	216	50	13.5	423	235	91	899	480	196	141	202.5
A10VSO 71 LA6S	15 / 160L	350	254	65	17.5	553	293	104	1065	580	239	162	223.3
A10VSO100 LA6S	22 / 180L	350	279	65	17.5	588	313	100	1194	620	295	194	311.9
A10VSO140 LA6S	30 / 200L	400	318	80	17.5	665	360	110	1265	700	286	177	397.0
A10VSO180 LA6S	45 / 225M	450	356	80	17.5	720	385	110	1340	800	242	196	516.3

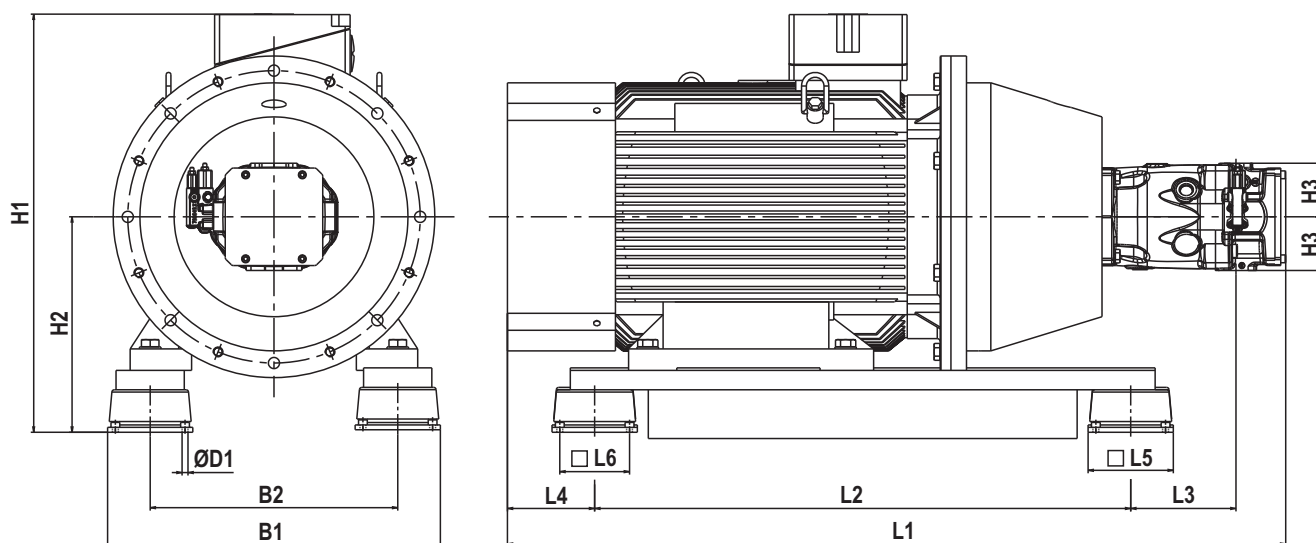
Device dimensions: Type ABAPG A10VSO VEM (nominal dimensions in mm)


Pump	Electric motor	Dimensions											
	KW / frame size	B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	Weight
A10VSO 45 DRS	11 / 160M	350	254	50	13.5	505	263	91	915	580	190	63	188.5
	15 / 160L	350	254	50	13.5	505	263	91	1011	580	190	159	229.5
	18.5 / 180M	350	279	65	17.5	574	313	91	1040	620	204	134	285.6
	22 / 180L	350	279	65	17.5	574	313	91	1040	620	204	134	290.6
	30 / 200L	400	318	65	17.5	638	338	91	1087	700	171	134	373.8
A10VSO 71 DRS	37 / 225S	450	356	80	17.5	685	385	91	1117	800	127	108	430.1
	15 / 160L	350	254	65	17.5	535	293	104	1062	580	239	159	250.3
	18.5 / 180M	350	279	65	17.5	574	313	104	1075	620	237	134	301.3
	22 / 180L	350	279	65	17.5	574	313	104	1075	620	237	134	306.3
	30 / 200L	400	318	80	17.5	660	360	104	1122	700	204	134	390.5
	37 / 225S	450	356	80	17.5	685	385	104	1146	800	154	108	446.0
A10VSO100 DRS	45 / 225M	450	356	80	17.5	709	385	104	1251	800	154	213	511.1
	55 / 250M	550	406	80	17.5	806	420	104	1313	850	172	207	692.0
	18.5 / 180M	350	279	65	17.5	574	313	100	1134	620	295	134	320.9
	22 / 180L	350	279	65	17.5	574	313	100	1134	620	295	134	325.9
	30 / 200L	400	318	80	17.5	660	360	100	1181	700	262	134	396.8
A10VSO140 DRS	37 / 225S	450	356	80	17.5	685	385	100	1211	800	218	108	469.5
	45 / 225M	450	356	80	17.5	709	385	100	1316	800	218	213	534.5
	55 / 250M	550	406	80	17.5	806	420	100	1392	850	250	207	717.0
	22 / 180L	350	279	65	17.5	574	313	110	1175	620	319	134	330.7
	30 / 200L	400	318	80	17.5	660	360	110	1222	700	286	134	416.0
A10VSO180 DRS	37 / 225S	450	356	80	17.5	685	385	110	1242	800	232	108	473.3
	45 / 225M	450	356	80	17.5	709	385	110	1347	800	232	213	538.3
	55 / 250M	550	406	80	17.5	806	420	110	1409	850	250	207	722.0
	30 / 200L	400	318	80	17.5	660	360	110	1232	700	296	134	421.0
A10VSO180 DRS	37 / 225S	450	356	80	17.5	685	385	110	1252	800	242	108	478.3
	45 / 225M	450	356	80	17.5	709	385	110	1357	800	242	213	543.3
	55 / 250M	550	406	80	17.5	806	420	110	1419	850	260	207	727.0
A10VSO 45 LA6S	7.5 / 132M	300	216	50	13.5	434	235	91	903	480	196	145	229.5
A10VSO 71 LA6S	15 / 160L	350	254	65	17.5	535	293	104	1062	580	239	159	250.3
A10VSO100 LA6S	22 / 180L	350	279	65	17.5	574	313	100	1134	620	295	134	325.9
A10VSO140 LA6S	30 / 200L	400	318	80	17.5	660	360	110	1222	700	286	134	416.0
A10VSO180 LA6S	45 / 225M	450	356	80	17.5	709	385	110	1357	800	242	213	543.3

Device dimensions: Type ABAPG A10VSO SIEMENS (nominal dimensions in mm)


Pump	Electric motor KW / frame size	Dimensions											
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	Weight
A10VSO 45 DRS	11 / 160M	350	254	50	13.5	500	263	91	948	580	190	96	140.5
	15 / 160L	350	254	50	13.5	500	263	91	948	580	190	96	147.5
	18.5 / 180M	350	279	65	17.5	575	313	91	1029	620	204	123	230.6
	22 / 180L	350	279	65	17.5	575	313	91	1080	620	204	174	260.6
	30 / 200L	400	318	65	17.5	638	338	91	1080	700	171	127	320.8
A10VSO 71 DRS	37 / 225S	450	356	80	17.5	713	385	91	1149	800	127	140	390.1
	15 / 160L	350	254	65	17.5	530	293	104	999	580	239	96	168.3
	18.5 / 180M	350	279	65	17.5	575	313	104	1064	620	237	123	246.3
	22 / 180L	350	279	65	17.5	575	313	104	1115	620	237	174	276.3
	30 / 200L	400	318	80	17.5	660	360	104	1115	700	204	127	337.5
	37 / 225S	450	356	80	17.5	713	385	104	1178	800	154	140	406.0
A10VSO100 DRS	45 / 225M	450	356	80	17.5	713	385	104	1238	800	154	200	436.1
	55 / 250M	550	406	80	17.5	812	420	104	1340	850	172	234	587.0
	18.5 / 180M	350	279	65	17.5	575	313	100	1123	620	295	123	265.9
	22 / 180L	350	279	65	17.5	575	313	100	1174	620	295	174	295.9
	30 / 200L	400	318	80	17.5	660	360	100	1174	700	262	127	343.8
A10VSO140 DRS	37 / 225S	450	356	80	17.5	713	385	100	1243	800	218	140	429.5
	45 / 225M	450	356	80	17.5	713	385	110	1334	800	232	200	463.3
	55 / 250M	550	406	80	17.5	812	420	110	1436	850	250	234	617.0
	22 / 180L	350	279	65	17.5	575	313	110	1215	620	319	174	300.7
	30 / 200L	400	318	80	17.5	660	360	110	1215	700	286	127	363.0
A10VSO180 DRS	37 / 225S	450	356	80	17.5	713	385	110	1274	800	232	140	433.3
	45 / 225M	450	356	80	17.5	713	385	110	1334	800	232	200	463.3
	55 / 250M	550	406	80	17.5	812	420	110	1436	850	250	234	617.0
	30 / 200L	400	318	80	17.5	660	360	110	1225	700	296	127	368.0
A10VSO180 DRS	37 / 225S	450	356	80	17.5	713	385	110	1284	800	242	140	438.3
	45 / 225M	450	356	80	17.5	713	385	110	1344	800	242	200	468.3
	55 / 250M	550	406	80	17.5	812	420	110	1446	850	260	234	622.0
A10VSO 45 LA6S	7.5 / 132M	300	216	50	13.5	437	235	91	839	480	196	81	147.5
A10VSO 71 LA6S	15 / 160L	350	254	65	17.5	530	293	104	999	580	239	96	168.3
A10VSO100 LA6S	22 / 180L	350	279	65	17.5	575	313	100	1174	620	295	174	295.9
A10VSO140 LA6S	30 / 200L	400	318	80	17.5	660	360	110	1215	700	286	127	363.0
A10VSO180 LA6S	45 / 225M	450	356	80	17.5	713	385	110	1344	800	242	200	468.3

Device dimensions: Type ABAPG A10VSO HOYER-MOTORS, VEM, SIEMENS from 75 kW (nominal dimensions in mm)



ABAPG with motor supplier HOYER-MOTORS

Pump	Electric motor KW / frame size	Dimensions												
		B1	B2	ØD1	H1	H2	H3	L1	L2	L3	L4	L5	L6	Weight
A10VSO100 DRS	75 / 280S	590	457	11.9	780	380	100	1443	900	283	175	133	108	775 kg
	90 / 280M	590	457	11.9	780	380	100	1493	900	283	225	133	108	875 kg
A10VSO140 DRS	75 / 280S	590	457	11.9	780	380	110	1477	900	300	175	133	108	787 kg
	90 / 280M	590	457	11.9	780	380	110	1527	900	300	225	133	108	887 kg
	110 / 315S	683	508	13.5	972	442	110	1747	1100	201	344	175	143	1275 kg
A10VSO180 DRS	75 / 280S	590	457	11.9	780	380	110	1487	900	310	175	133	108	792 kg
	90 / 280M	590	457	11.9	780	380	110	1537	900	310	225	133	108	892 kg
	110 / 315S	683	508	13.5	972	442	110	1757	1100	211	344	175	143	1280 kg
	132 / 315M	683	508	13.5	972	442	110	1867	1100	211	454	175	143	1460 kg

ABAPG with motor supplier VEM

Pump	Electric motor KW / frame size	Dimensions												
		B1	B2	ØD1	H1	H2	H3	L1	L2	L3	L4	L5	L6	Weight
A10VSO100 DRS	75 / 280S	590	457	11.9	766	380	100	1392	900	283	124	133	108	757 kg
	90 / 280M	590	457	11.9	766	380	100	1438	900	283	170	133	108	812 kg
A10VSO140 DRS	75 / 280S	590	457	11.9	766	380	110	1426	900	300	124	133	108	769 kg
	90 / 280M	590	457	11.9	766	380	110	1472	900	300	170	133	108	824 kg
	110 / 315S	683	508	13.5	858	442	110	1582	1100	201	179	175	143	1060 kg
A10VSO180 DRS	75 / 280S	590	457	11.9	766	380	110	1436	900	310	124	133	108	774 kg
	90 / 280M	590	457	11.9	766	380	110	1482	900	310	170	133	108	829 kg
	110 / 315S	683	508	13.5	858	442	110	1592	1100	211	179	175	143	1065 kg
	132 / 315M	683	508	13.5	858	442	110	1647	1100	211	234	175	143	1155 kg

ABAPG with motor supplier Siemens

Pump	Electric motor KW / frame size	Dimensions												
		B1	B2	ØD1	H1	H2	H3	L1	L2	L3	L4	L5	L6	Weight
A10VSO100 DRS	75 / 280S	590	457	11.9	812	380	100	1428	900	283	160	133	108	767 kg
	90 / 280M	590	457	11.9	812	380	100	1538	900	283	270	133	108	847 kg
A10VSO140 DRS	75 / 280S	590	457	11.9	812	380	110	1462	900	300	160	133	108	779 kg
	90 / 280M	590	457	11.9	812	380	110	1572	900	300	270	133	108	859 kg
	110 / 315S	683	508	13.5	942	442	110	1604	1100	201	201	175	143	1050 kg
A10VSO180 DRS	75 / 280S	590	457	11.9	812	380	110	1472	900	310	160	133	108	784 kg
	90 / 280M	590	457	11.9	812	380	110	1582	900	310	270	133	108	864 kg
	110 / 315S	683	508	13.5	942	442	110	1614	1100	211	201	175	143	1055 kg
	132 / 315M	683	508	13.5	942	442	110	1774	1100	211	361	175	143	1175 kg

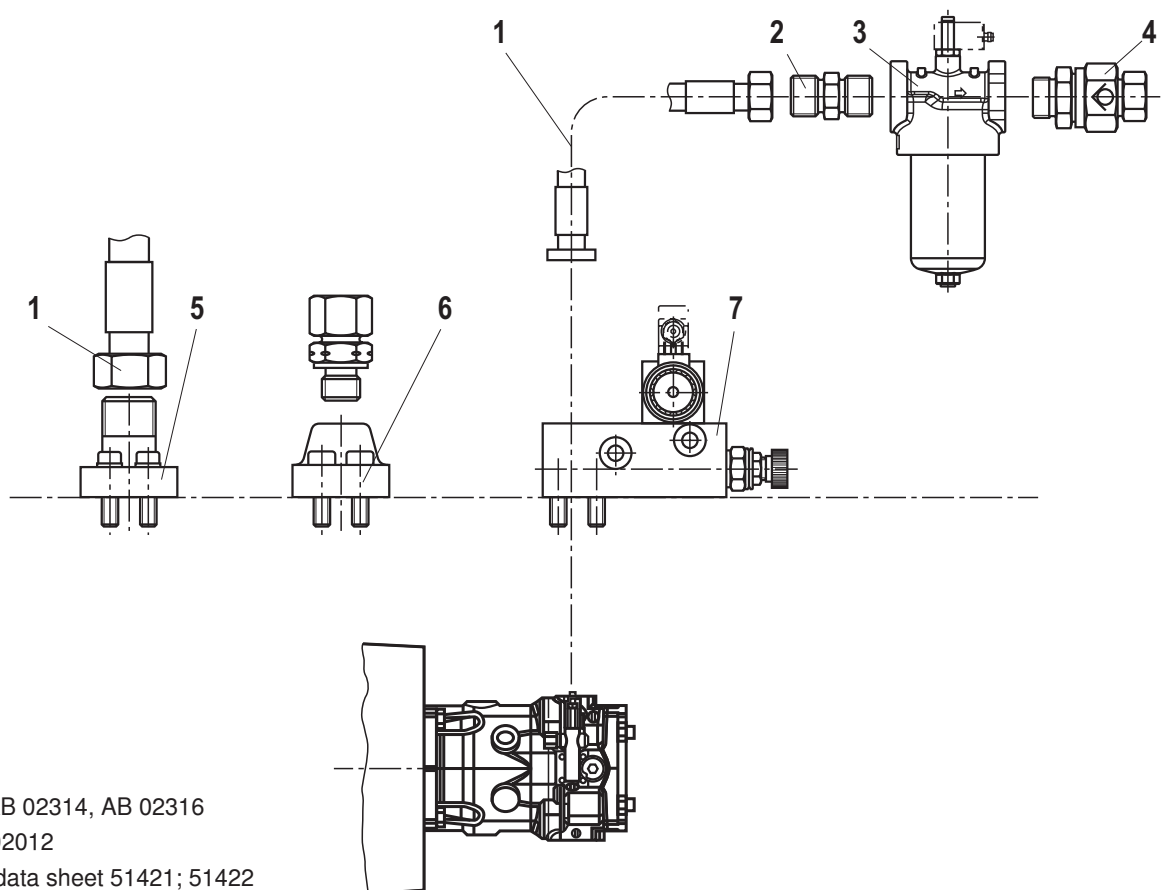
Pressure line connections

Pump type	Line connections			
	Pressure connection P(B)	Suction port S	Leakage oil connection L / L1	Pilot oil port X
A10VSO 45	DIN/ISO 6162-1 1"	DIN/ISO 6162-1 1 1/2"	DIN 3852 – M22x1.5	DIN 3852 – M14x1.5
A10VSO 71	DIN/ISO 6162-1 1"	DIN/ISO 6162-1 2"	DIN 3852 – M22x1.5	DIN 3852 – M14x1.5
A10VSO100	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M33x2	DIN 3852 – M14x1.5
A10VSO140	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M33x2	DIN 3852 – M14x1.5
A10VSO180	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M33x2	DIN 3852 – M14x1.5

Standard pressure SAE flange figure with metric mounting screws

High pressure SAE flange figure with metric mounting screws

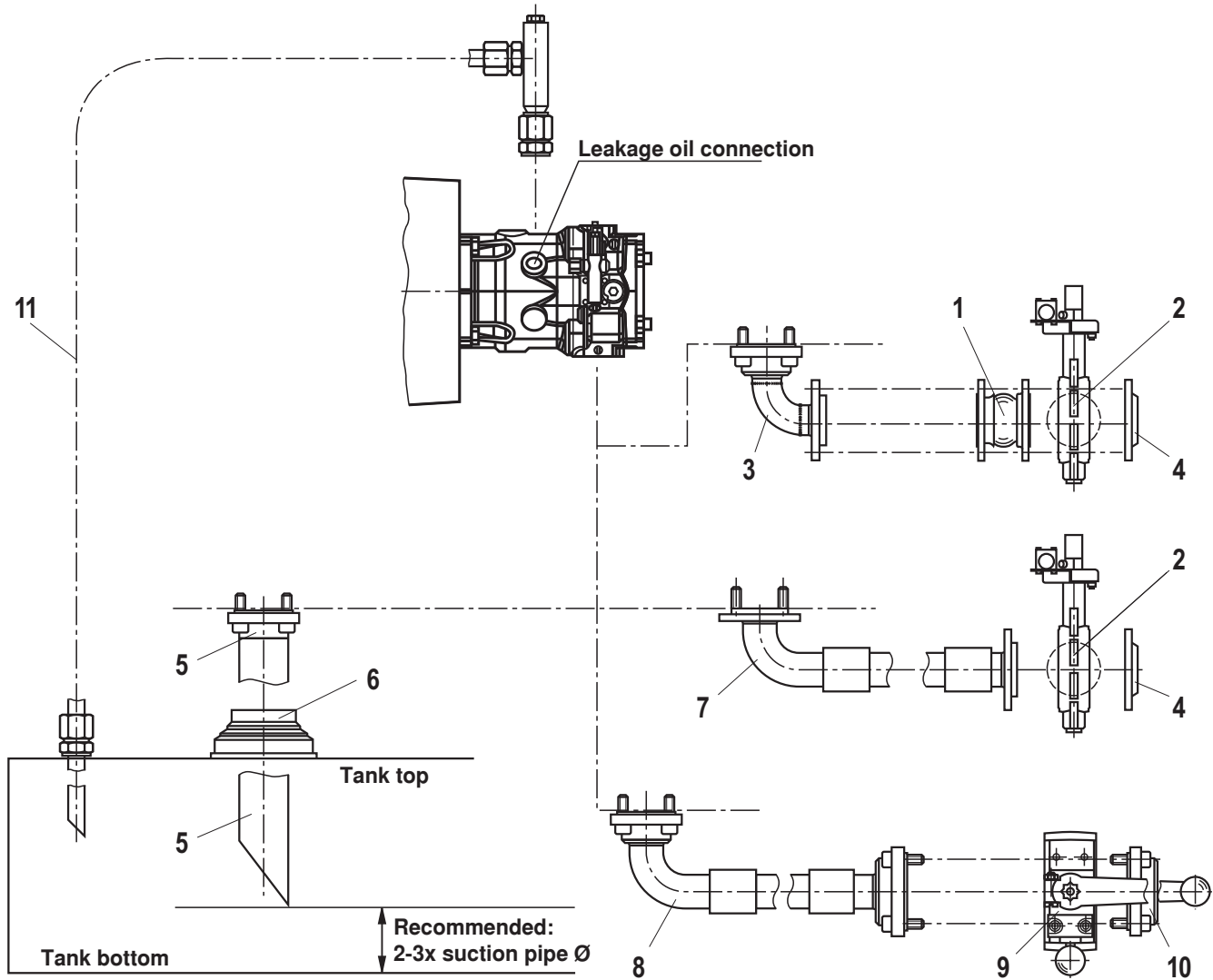
Optional accessories at the pressure connection



- 1 Hose line AB 02314, AB 02316
- 2 Fitting AB 02012
- 3 Inline filter data sheet 51421; 51422
- 4 Check valve AB 02112
- 5 SAE flange AB 02214
- 6 SAE flange high pressure AB 02213
- 7 Pump shut-off block data sheet 25891

Items 1 to 7 as optional accessories upon request

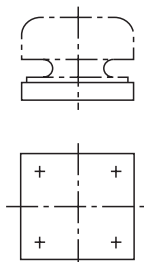
Optional accessories at the suction port and leakage oil connection



- 1 Compensator DIN AB 02231
 - 2 Shut-off valve DIN AB 02129
 - 3 Flange bend SAE-DIN AB 02229
 - 4 DIN flange AB 02204
 - 5 Suction pipe AB 02303
 - 6 Elastic pipe fitting AB 01203
 - 7 Suction tube SAE-DIN AB 02315
 - 8 Suction tube SAE-SAE AB 02315
 - 9 Shut-off valve SAE (on request)
 - 10 SAE flange AB 02215
 - 11 Drain line
- Items 1 to 11 as optional accessories upon request

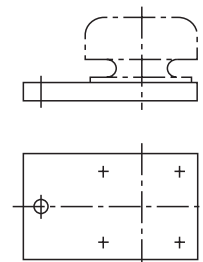
Optional accessories for damping bearing according to AB33-11 (from 75 kW)

Accessories: Plate



Weld-on plate

Accessories: Clip



Clip for foundation installation

Installation information

Fluid tank

- Adjust useful volume of the tank to the operating conditions.
- The admissible fluid temperature must not be exceeded; use coolers, if necessary.

Lines and connections

- Remove the protective plug at the pump.
- Select the clear width of the pipes according to the connections (suction speed 0.8 m/s).
- Pipelines and fittings must be carefully cleaned before assembly. Observe the installation information of the manufacturers.

Filter

- Use return flow and/or pressure filters.

Hydraulic fluid

- Please observe the instructions according to data sheet 90220.
- Brand-name hydraulic oils are recommended. In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary.
- Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity.
- According to the operating conditions, the oil quality must be checked by means of an oil analysis at certain intervals and the oil must be replaced, if necessary. In this connection, it is also necessary to clean the fluid tank.
- Return fluid must not be directly sucked in again under any circumstances. The largest distance between suction and return line possible is to be selected.
- The return flow exit must always be below the oil level.
- Ensure tight assembly of the pipelines.

Commissioning, maintenance and operating instructions

In this connection, please observe the instructions contained in the following documents:

- Data sheet 07009
- Data sheet 07009-MON
- Data sheet 92714

Legal provisions

- In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- The EU Regulation 640/2009 on the environmentally friendly design of electric motors.

Notice pursuant to the EC Machinery Directive 2006/42/EC, according to annex II part 1, section A, manufacturer's declaration:

- The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100 and DIN 60204-1.
- The commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

Motor-pump group

Type ABHPG

RE 51175

Edition: 2013-11



motor block

- ▶ With pump type: PGZ
- ▶ Electric motor frame size 90S to 132M
- ▶ Maximum pressure up to 15 bar
- ▶ Maximum flow up to 186 l/min

Features

In the motor-pump groups, electric energy is converted into hydraulic energy.

They have been designed for hydrostatic drives in open circuits.

- ▶ Electric motor design IM B5 (ABHPG)
- ▶ Pump fastened at the electric motor with rigid pump carrier and coupling
- ▶ Low operating noise
- ▶ Versatile possible applications on tank, base frame or separate installation
- ▶ Clear, maintenance-friendly set-up
- ▶ With gerotor pump PGZ (displacement pump)

Contents

Features	1
Ordering code	2, 3
Set-up of the motor-pump group	3
Technical data	4
Circuit diagrams	5
Standard program incl. preferred types	5
Unit dimensions	6 ... 8
Line connections	9
Optional accessories at the pressure connection	9
Optional accessories at the suction port	10
Installation information	11
Commissioning, maintenance and operating instructions	11

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18		
ABHPG	-	GZ	-		R	E	07	V	E4	/		4	5	2	3	/	S	E	

Assembly

01	With motor design B5	ABHPG
----	----------------------	-------

Pump type

02	GZ according to data sheet 10545	GZ
----	----------------------------------	----

Frame size

03	4	4
	5	5

Displacement

04	In cm ³ per rotation	...
----	---------------------------------	-----

Direction of rotation

05	Clockwise	R
----	-----------	---

Shaft end version

06	E. g. cylindrical	E
----	-------------------	---

Suction and pressure port

07	SAE flange connection	07
----	-----------------------	----

Seal material

08	FKM	V
----	-----	---

Mounting flange centering

09	4-hole mounting	E4
----	-----------------	----

Motor power

10	In kW	...
----	-------	-----

Rated voltage

11	230/400 V at 50 Hz (up to 3 kW)	CA
	400/690 V at 50 Hz (from 4 kW)	CB

Number of pole pairs

12	4-pole	4
----	--------	---

Rated frequency

13	50 Hz	5
----	-------	---

Efficiency class

14	IE 2	2
----	------	---

Motor protection

15	PTC resistor with 3 temperature sensors	3
----	---	---

Pump carrier design

16	Rigid pump carrier AB 03337	S
----	-----------------------------	---

Damping bearing design

17	Elastic damping bearing	E
----	-------------------------	---

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18				
ABHPG	-	GZ				R	E	07	V	E4	/			4	5	2	3	/	S	E	

Motor supplier (e.g.)

18	Hoyer Motors	HOY
	Siemens	SIE
	VEM	VEM

Order example:

ABHPG-GZ4-20RE07VE4/ 1,1CB4523/SE HOY

Set-up of the motor-pump group

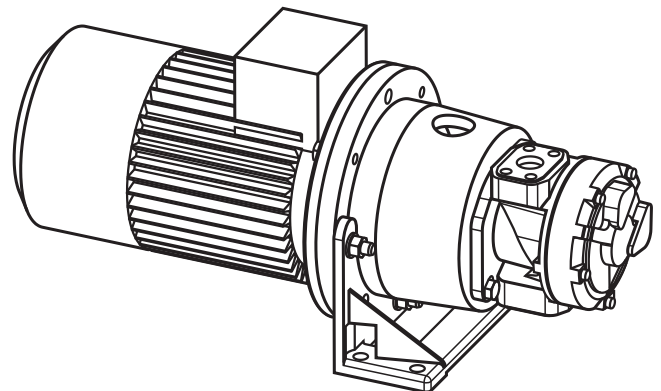
ABHPG design

- ▶ Pump
- ▶ Electric motor
- ▶ Pump carrier (rigid)
- ▶ Coupling
- ▶ Pump base

Use of this design is recommended for restricted installation conditions (e. g. on oil tanks)

Max. performance range 7.5 kW

STEP files of the relevant assemblies on request




Technical data

(For applications outside these parameters, please consult us!)

Line connections	See line connections table on page 9		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN ISO 3448 (other fluids on request!) ▶ Please observe our provisions according to data sheet 90220. ▶ Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity. ▶ According to the operating conditions, the fluid must be renewed at certain intervals.		
Pump type	PGZ according to data sheet 10545		
– Direction of rotation	R = clockwise		
Operating pressure, absolute			
– Input	$p_{\min-\max}$	bar	0.7 ... 2 (0.5 for a short time at the start)
– Output	p_{nom}	bar	15
Hydraulic fluid temperature range, observe viscosity range	u		+20 ... +80
– T_{optimal} with HLP 46 (DIN 51524)	u	°C	+40 ... +50
– T_{max} in continuous operation	u	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50126 (ABUKG) and 50112 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406 (c) ¹⁾ . At least cleanliness class 21/18/15		
Viscosity range	u	mm ² /s	10 ... 2000 (see data sheet 10213)
Electric motor	– Motor type		Three-phase asynchronous motor
	– Efficiency class		IE2
	– Number of pole pairs		4
	– Voltage according to IEC 38U		V 230/400 at 50 Hz (CA), 400/690 at 50 Hz (CB)
	– Speed		$n \text{ min}^{-1}$ 1450 at 50 Hz
	– Protection class		IP 55
	– Installation position		Horizontal
Surface treatment	By default, all steel components and components are at least provided with temporary corrosion protection (e.g. for transport).		

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

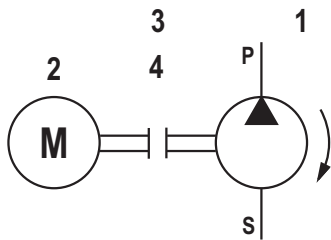
For selecting the filters, see data sheet 51501.

 **Notice!**

For assembly, commissioning and maintenance of hydraulic systems please observe the data sheet 07900. The motor-pump group is constructed and manufactured in accordance with the harmonized EN standards/specifications.

Circuit diagrams

Gerotor pump PGZ



- 1 Gerotor pump PGZ
- 2 Electric motor
- 3 Pump carrier (rigid)
- 4 Coupling

Standard program incl. preferred types ABHPG-PGZ

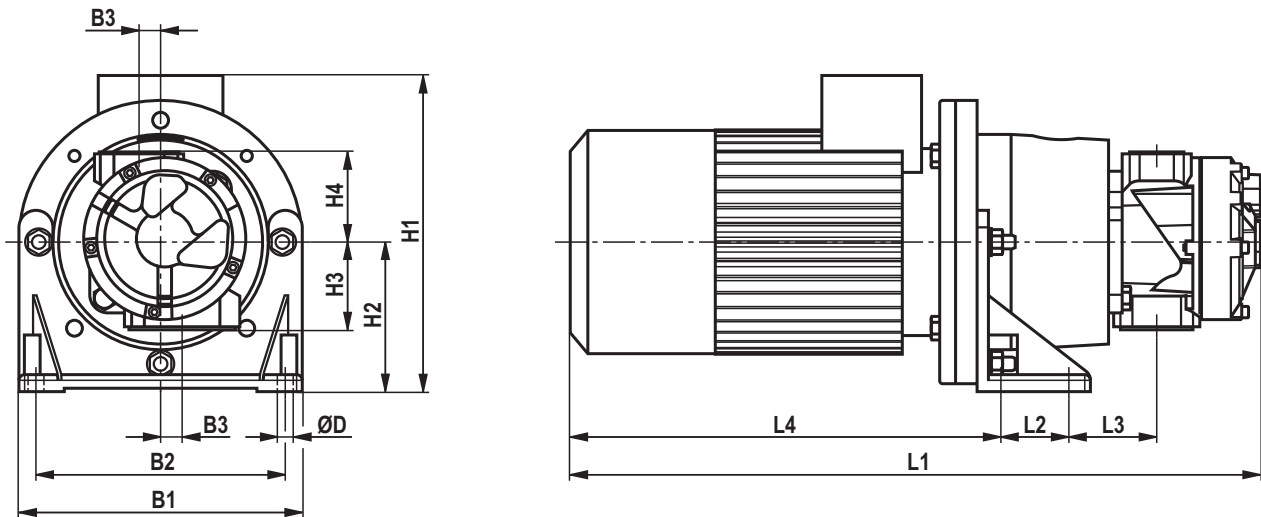
Frequency	50 Hz		50 Hz	Electric motor	ABHPG material no. (motor B5)					
	1450 min ⁻¹		1450 min ⁻¹		HOYER MOTORS	MKZ ¹⁾	VEM	MKZ ¹⁾	SIEMENS	MKZ ¹⁾
Pump	q_v max. in l/min	$p_{max.}$ in bar	Power in kW	Frame size						
PGZ 20	28	9	1.10	90S	R901371809	A3	R901371811	A3	R901371810	A3
		15	1.50	90L	R901346901	A3	R901371813	A3	R901371812	A3
PGZ 32	46	10	1.50	90L	R901371815	A3	R901371817	A3	R901371816	A3
		15	2.20	100L	R901371818	A3	R901371821	A3	R901371820	A3
PGZ 40	58	8	1.50	90L	R901371822	A3	R901371824	A3	R901371823	A3
		14	2.20	100L	R901371825	A3	R901371827	A3	R901371826	A3
		15	3.00	100L	R901371828	A3	R901371830	A3	R901371829	A3
PGZ 50	71	7	1.50	90L	R901371831	A3	R901371833	A3	R901371832	A3
		12	2.20	100L	R901371834	A3	R901371836	A3	R901371835	A3
		15	3.00	100L	R901371837	A3	R901371839	A3	R901371838	A3
PGZ 63	88	9	2.20	100L	R901314152	A3	R901371841	A3	R901371840	A3
		14	3.00	100L	R901371843	A3	R901371845	A3	R901371844	A3
		15	4.00	112M	R901371846	A3	R901371848	A3	R901371847	A3
PGZ 80	116	6	2.20	100L	R901371849	A3	R901371851	A3	R901371850	A3
		10	3.00	100L	R901371852	A3	R901371854	A3	R901371853	A3
		14	4.00	122M	R901371855	A3	R901371857	A3	R901371856	A3
		15	5.50	132S	R901371858	A3	R901371860	A3	R901371859	A3
PGZ 100	144	7	3.00	100L	R901371861	A3	R901371863	A3	R901371862	A3
		11	4.00	112M	R901371864	A3	R901371866	A3	R901371865	A3
		15	5.50	132S	R901371867	A3	R901371869	A3	R901371868	A3
PGZ 140	186	7	4.00	112M	R901371870	A3	R901371874	A3	R901371871	A3
		11	5.50	132S	R901371875	A3	R901371878	A3	R901371876	A3
		15	7.50	132M	R901371879	A3	R901371881	A3	R901371880	A3

¹⁾ MKZ = material mark

A3 = standard delivery range

Unit dimensions see page 6 ... 8

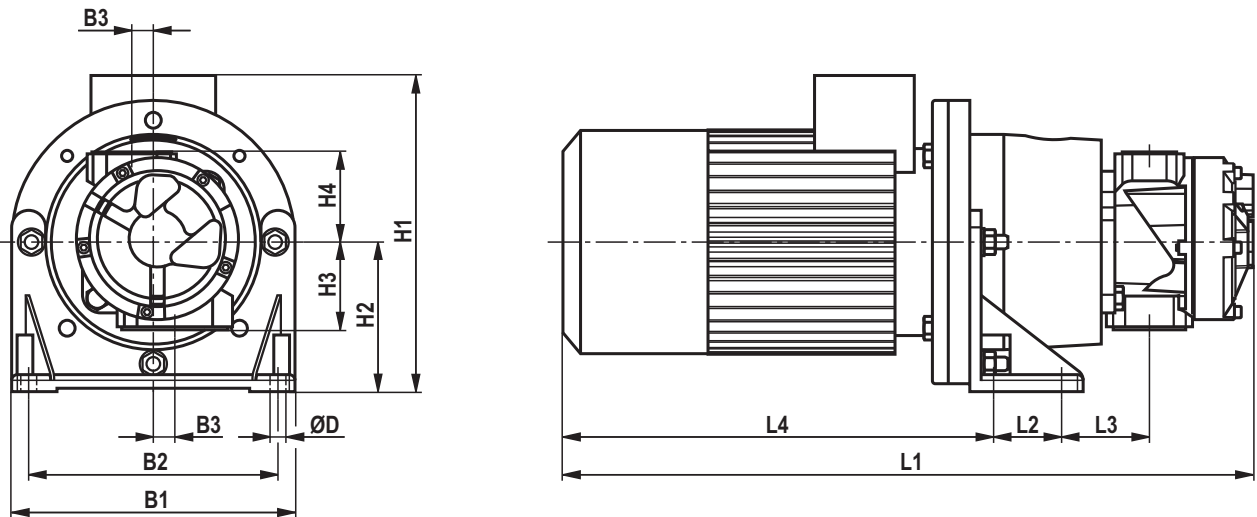
Unit dimensions: Type ABHPG-PGZ (motor supplier HOYER-MOTORS) (dimensions in mm)



ABHPG-PGZ with motor supplier HOYER-MOTORS

Pump		Electric motor		Dimensions													Weight in kg	
Frame size	Size	kW	Frame size	B1	B2	B3	B4	ØD	H1	H2	H3	H4	L1	L2	L3	L4		L5
PGZ4	20	1.10	90S	210.0	180.0	19.0	19.0	11.0	244.0	112.0	77.4	79.6	525.5	60.0	86.5	305.0	86.5	26
		1.50	90L	210.0	180.0	19.0	19.0	11.0	244.0	112.0	77.4	79.6	551.5	60.0	86.5	331.0	86.5	29
PGZ4	32	1.50	90L	210.0	180.0	19.0	19.0	11.0	244.0	112.0	77.4	79.6	556.5	60.0	86.5	331.0	86.5	29
		2.20	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	596.5	60.0	77.5	380.0	77.5	37
PGZ4	40	1.50	90L	210.0	180.0	19.0	19.0	11.0	244.0	112.0	77.4	79.6	560.0	60.0	86.5	331.0	86.5	30
		2.20	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	600.0	60.0	77.5	380.0	77.5	37
		3.00	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	600.0	60.0	77.5	380.0	77.5	42
PGZ4	50	1.50	90L	210.0	180.0	19.0	19.0	11.0	244.0	112.0	77.4	79.6	564.0	60.0	86.5	331.0	86.5	30
		2.20	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	604.0	60.0	77.5	380.0	77.5	38
		3.00	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	604.0	60.0	77.5	380.0	77.5	42
PGZ4	63	2.20	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	609.0	60.0	77.5	380.0	77.5	38
		3.00	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	609.0	60.0	77.5	380.0	77.5	42
		4.00	112M	250.0	220.0	19.0	19.0	14.0	301.0	132.0	77.4	79.6	603.0	60.0	77.5	374.0	77.5	49
PGZ4	80	2.20	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	617.0	60.0	77.5	380.0	77.5	39
		3.00	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	77.4	79.6	617.0	60.0	77.5	380.0	77.5	43
		4.00	112M	250.0	220.0	19.0	19.0	14.0	301.0	132.0	77.4	79.6	611.0	60.0	77.5	374.0	77.5	50
		5.50	132S	290.0	260.0	19.0	19.0	14.0	348.0	160.0	77.4	79.6	679.0	80.0	77.5	422.0	77.5	67
PGZ5	100	3.00	100L	250.0	220.0	19.0	19.0	14.0	279.0	132.0	72.9	76.1	625.5	60.0	83.5	380.0	77.5	44
		4.00	112M	250.0	220.0	19.0	19.0	14.0	301.0	132.0	72.9	76.1	619.5	60.0	83.5	374.0	77.5	50
		5.50	132S	290.0	260.0	19.0	19.0	14.0	348.0	160.0	72.9	76.1	687.5	80.0	83.5	422.0	77.5	67
PGZ5	140	4.00	112M	250.0	220.0	19.0	19.0	14.0	301.0	132.0	72.9	76.1	632.0	60.0	83.5	374.0	77.5	52
		5.50	132S	290.0	260.0	19.0	19.0	14.0	348.0	160.0	72.9	76.1	700.0	80.0	83.5	422.0	77.5	69
		7.50	132M	290.0	260.0	19.0	19.0	14.0	348.0	160.0	72.9	76.1	763.0	80.0	83.5	485.0	77.5	80

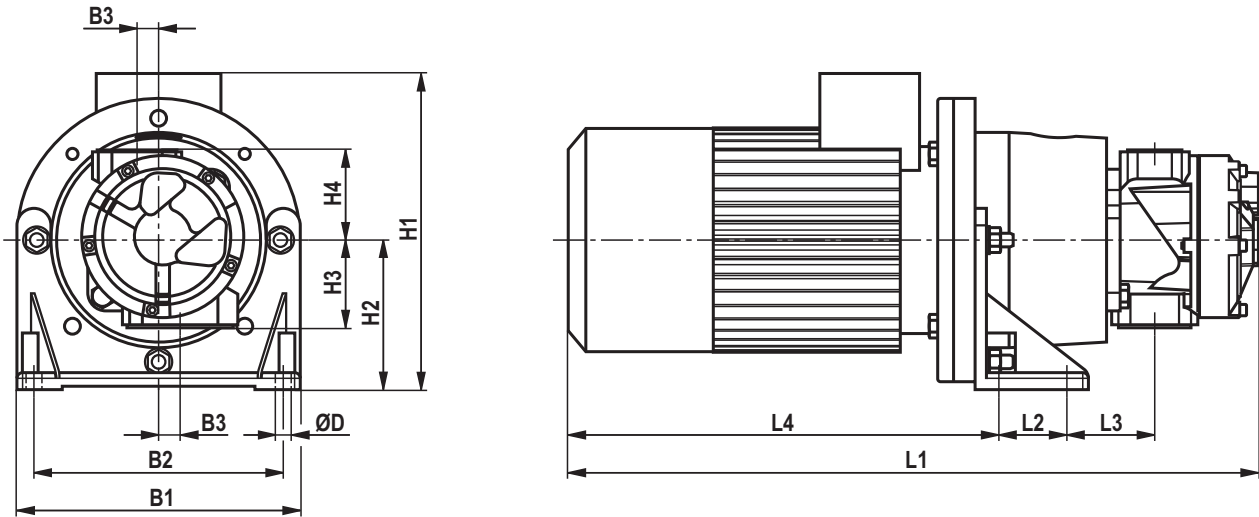
Unit dimensions: Type ABHPG-PGZ (motor supplier VEM)
(dimensions in mm)



ABHPG-PGZ with motor supplier VEM

Pump		Electric motor		Dimensions														Weight in kg
Frame size	Size	kW	Frame size	B1	B2	B3	B4	ØD	H1	H2	H3	H4	L1	L2	L3	L4	L5	
PGZ4	20	1.10	90S	210.0	180.0	19.0	19.0	11.0	240.0	112.0	77.4	79.6	511.5	60.0	86.5	291.0	86.5	34
		1.50	90L	210.0	180.0	19.0	19.0	11.0	232.0	112.0	77.4	79.6	552.5	60.0	86.5	332.0	86.5	33
PGZ4	32	1.50	90L	210.0	180.0	19.0	19.0	11.0	232.0	112.0	77.4	79.6	557.5	60.0	86.5	332.0	86.5	34
		2.20	100L	250.0	220.0	19.0	19.0	14.0	269.0	132.0	77.4	79.6	588.5	60.0	77.5	372.0	77.5	47
PGZ4	40	1.50	90L	210.0	180.0	19.0	19.0	11.0	232.0	112.0	77.4	79.6	561.0	60.0	86.5	332.0	86.5	34
		2.20	100L	250.0	220.0	19.0	19.0	14.0	269.0	132.0	77.4	79.6	592.0	60.0	77.5	372.0	77.5	47
		3.00	100L	250.0	220.0	19.0	19.0	14.0	268.0	132.0	77.4	79.6	621.0	60.0	77.5	401.0	77.5	56
PGZ4	50	1.50	90L	210.0	180.0	19.0	19.0	11.0	232.0	112.0	77.4	79.6	565.0	60.0	86.5	332.0	86.5	35
		2.20	100L	250.0	220.0	19.0	19.0	14.0	269.0	132.0	77.4	79.6	596.0	60.0	77.5	372.0	77.5	48
		3.00	100L	250.0	220.0	19.0	19.0	14.0	268.0	132.0	77.4	79.6	625.0	60.0	77.5	401.0	77.5	57
PGZ4	63	2.20	100L	250.0	220.0	19.0	19.0	14.0	269.0	132.0	77.4	79.6	601.0	60.0	77.5	372.0	77.5	48
		3.00	100L	250.0	220.0	19.0	19.0	14.0	268.0	132.0	77.4	79.6	630.0	60.0	77.5	401.0	77.5	57
		4.00	112M	250.0	220.0	19.0	19.0	14.0	310.0	132.0	77.4	79.6	668.0	60.0	77.5	439.0	77.5	65
PGZ4	80	2.20	100L	250.0	220.0	19.0	19.0	14.0	269.0	132.0	77.4	79.6	609.0	60.0	77.5	372.0	77.5	49
		3.00	100L	250.0	220.0	19.0	19.0	14.0	268.0	132.0	77.4	79.6	638.0	60.0	77.5	401.0	77.5	58
		4.00	112M	250.0	220.0	19.0	19.0	14.0	310.0	132.0	77.4	79.6	676.0	60.0	77.5	439.0	77.5	66
		5.50	132S	290.0	260.0	19.0	19.0	14.0	359.0	160.0	77.4	79.6	746.0	80.0	77.5	489.0	77.5	106
PGZ5	100	3.00	100L	250.0	220.0	19.0	19.0	14.0	268.0	132.0	72.9	76.1	646.5	60.0	83.5	401.0	77.5	58
		4.00	112M	250.0	220.0	19.0	19.0	14.0	310.0	132.0	72.9	76.1	684.5	60.0	83.5	439.0	77.5	66
		5.50	132S	290.0	260.0	19.0	19.0	14.0	359.0	160.0	72.9	76.1	754.5	80.0	83.5	489.0	77.5	106
PGZ5	140	4.00	112M	250.0	220.0	19.0	19.0	14.0	310.0	132.0	72.9	76.1	697.0	60.0	83.5	439.0	77.5	68
		5.50	132S	290.0	260.0	19.0	19.0	14.0	359.0	160.0	72.9	76.1	767.0	80.0	83.5	489.0	77.5	108
		7.50	132M	290.0	260.0	19.0	19.0	14.0	359.0	160.0	72.9	76.1	767.0	80.0	83.5	489.0	77.5	110

Unit dimensions: Type ABHPG-PGZ (motor supplier SIEMENS)
(dimensions in mm)



ABHPG-PGZ with motor supplier SIEMENS

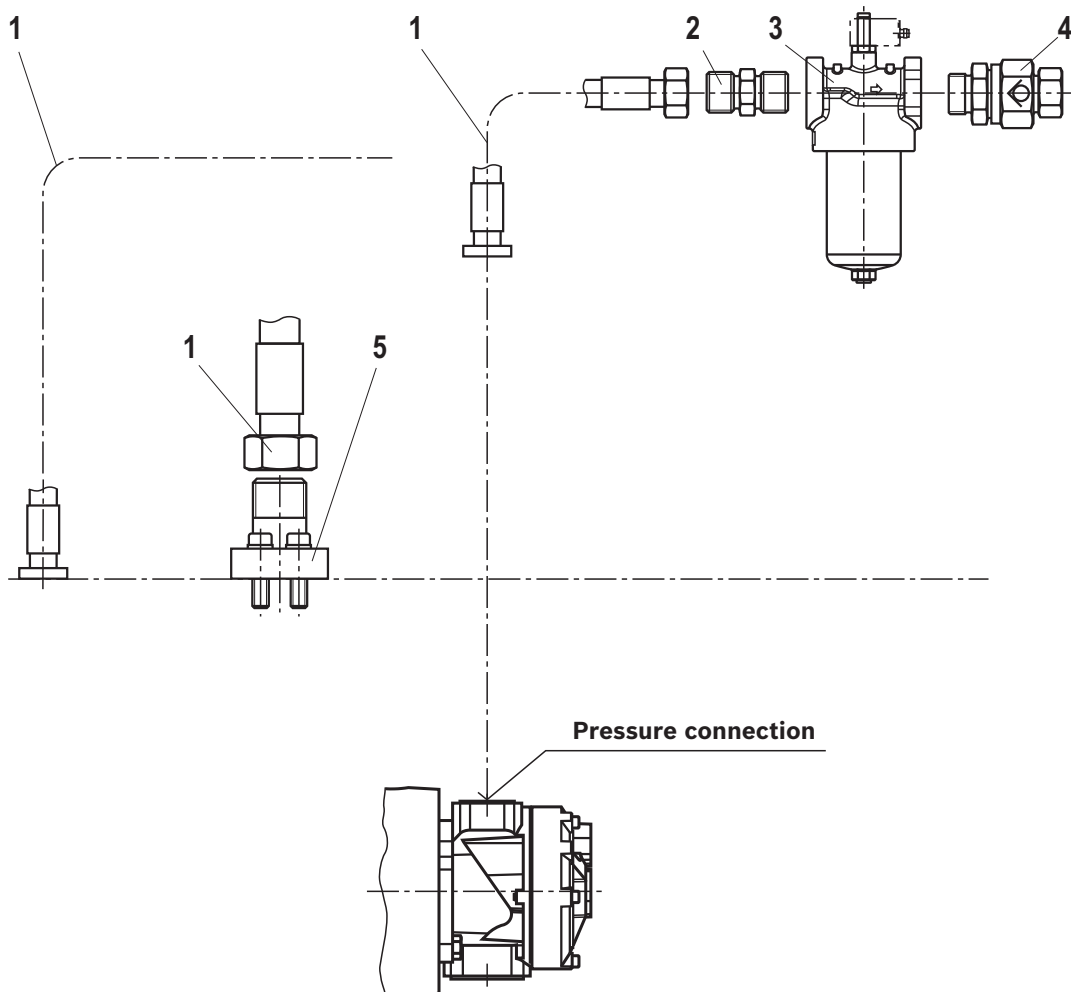
Pump		Electric motor		Dimensions													Weight in kg	
Frame size	Size	kW	Frame size	B1	B2	B3	B4	ØD	H1	H2	H3	H4	L1	L2	L3	L4		L5
PGZ4	20	1.10	90S	210.0	180.0	19.0	19.0	11.0	259.0	112.0	77.4	79.6	521.5	60.0	86.5	301.0	86.5	23
		1.50	90L	210.0	180.0	19.0	19.0	11.0	240.0	112.0	77.4	79.6	548.5	60.0	86.5	328.0	86.5	25
PGZ4	32	1.50	90L	210.0	180.0	19.0	19.0	11.0	240.0	112.0	77.4	79.6	553.5	60.0	86.5	328.0	86.5	26
		2.20	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	592.5	60.0	77.5	376.0	77.5	33
PGZ4	40	1.50	90L	210.0	180.0	19.0	19.0	11.0	240.0	112.0	77.4	79.6	557.0	60.0	86.5	328.0	86.5	26
		2.20	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	596.0	60.0	77.5	376.0	77.5	33
		3.00	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	596.0	60.0	77.5	376.0	77.5	36
PGZ4	50	1.50	90L	210.0	180.0	19.0	19.0	11.0	240.0	112.0	77.4	79.6	561.0	60.0	86.5	328.0	86.5	27
		2.20	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	600.0	60.0	77.5	376.0	77.5	34
		3.00	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	600.0	60.0	77.5	376.0	77.5	37
PGZ4	63	2.20	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	605.0	60.0	77.5	376.0	77.5	34
		3.00	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	605.0	60.0	77.5	376.0	77.5	37
		4.00	112M	250.0	220.0	19.0	19.0	14.0	309.0	132.0	77.4	79.6	598.0	60.0	77.5	369.0	77.5	41
PGZ4	80	2.20	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	613.0	60.0	77.5	376.0	77.5	35
		3.00	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	77.4	79.6	613.0	60.0	77.5	376.0	77.5	38
		4.00	112M	250.0	220.0	19.0	19.0	14.0	309.0	132.0	77.4	79.6	606.0	60.0	77.5	369.0	77.5	42
		5.50	132S	290.0	260.0	19.0	19.0	14.0	362.0	160.0	77.4	79.6	682.0	80.0	77.5	425.0	77.5	64
PGZ5	100	3.00	100L	250.0	220.0	19.0	19.0	14.0	298.0	132.0	72.9	76.1	621.5	60.0	83.5	376.0	77.5	38
		4.00	112M	250.0	220.0	19.0	19.0	14.0	309.0	132.0	72.9	76.1	614.5	60.0	83.5	369.0	77.5	42
		5.50	132S	290.0	260.0	19.0	19.0	14.0	362.0	160.0	72.9	76.1	690.5	80.0	83.5	425.0	77.5	64
PGZ5	140	4.00	112M	250.0	220.0	19.0	19.0	14.0	309.0	132.0	72.9	76.1	627.0	60.0	83.5	369.0	77.5	44
		5.50	132S	290.0	260.0	19.0	19.0	14.0	362.0	160.0	72.9	76.1	703.0	80.0	83.5	425.0	77.5	66
		7.50	132M	290.0	260.0	19.0	19.0	14.0	362.0	160.0	72.9	76.1	703.0	80.0	83.5	425.0	77.5	78

Line connections

Pump type	Line connections	
	Pressure connection P	Suction port S
PGZ4-1X	DIN ISO 6162-1 SAE 1 1/2" ¹⁾	DIN ISO 6162-1 SAE 1 1/2" ¹⁾
PGZ5-1X	DIN ISO 6162-1 SAE 2" ¹⁾	DIN ISO 6162-1 SAE 2" ¹⁾

¹⁾ Standard pressure SAE flange figure with metric mounting screws

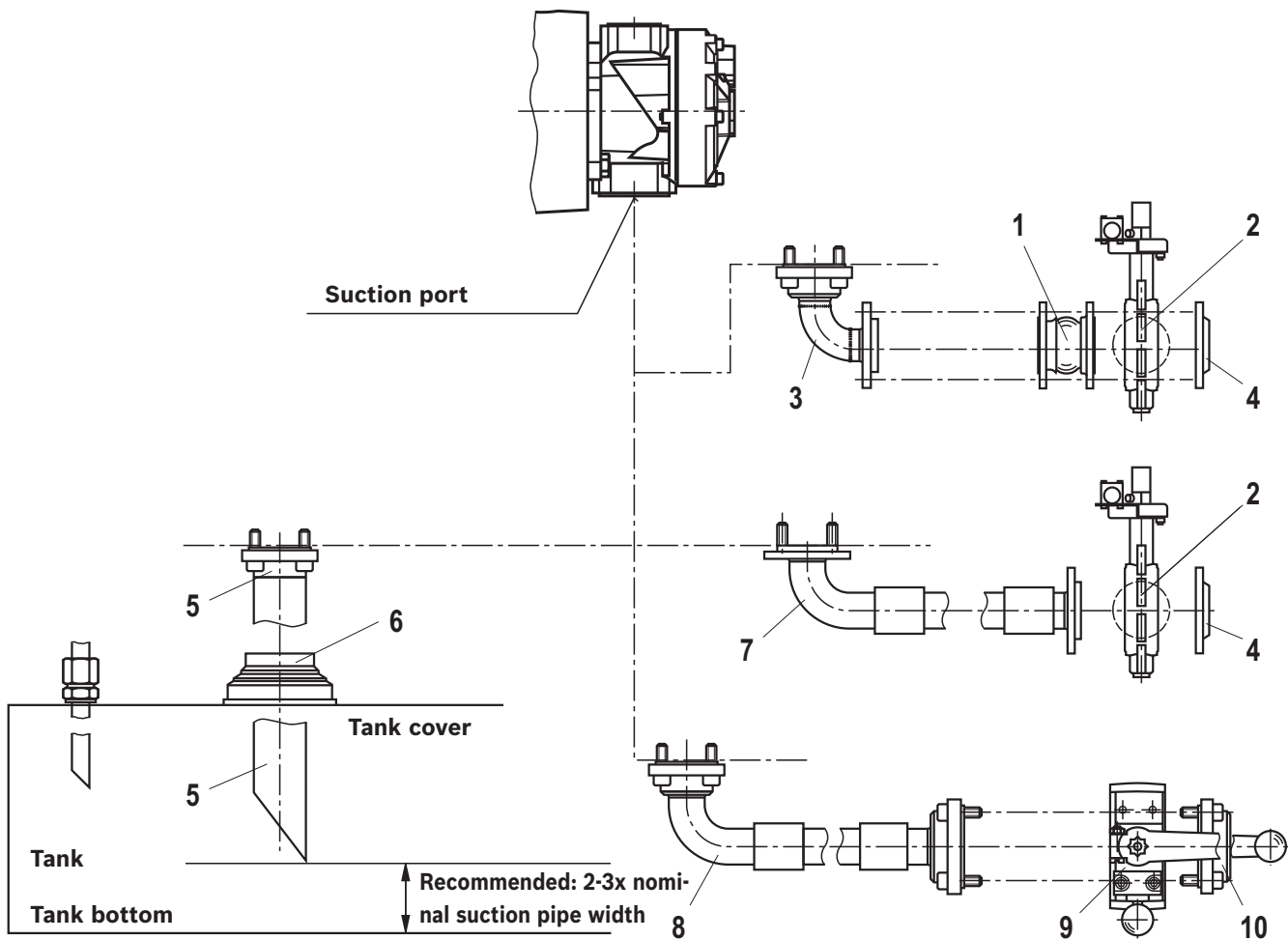
Optional accessories at the pressure connection



- 1 Hose line AB 02314, AB 02316
- 2 Fitting AB 02012
- 3 Inline filter data sheet 51421; 51422
- 4 Check valve AB 02112
- 5 SAE flange AB 02214

Items 1 to 5 as optional accessories upon request.
All figures are examples.

Optional accessories at the suction port



- 1 Compensator DIN AB 02231
- 2 Shut-off valve DIN AB 02129
- 3 Flange bend SAE-DIN AB 02229
- 4 DIN flange AB 02204
- 5 Suction pipe AB 02303
- 6 Elastic pipe fitting AB 01203
- 7 Suction tube SAE-DIN AB 02315

- 8 Suction tube SAE-SAE AB 02315
- 9 Shut-off valve SAE (on request)
- 10 SAE flange AB 02215

Items 1 to 10 as optional accessories upon request.
All figures are examples.

Installation information

Fluid tank

- ▶ Adjust useful volume of the tank to the operating conditions.
- ▶ The admissible fluid temperature must not be exceeded; use coolers, if necessary.
- ▶ Suction and return line are to be designed so that the largest distance possible between these two lines is guaranteed. Return fluid must not be directly sucked in again.
- ▶ The return flow exit must always be below the oil level.

Lines and connections

- ▶ Remove the protective plug at the pump.
- ▶ Select the inner width of the pipes according to the connections.
- ▶ Pipelines and fittings must be carefully cleaned before assembly.
Observe the installation information of the manufacturers.
- ▶ Ensure tight assembly of the pipelines.

Filtration of the hydraulic fluid

- ▶ The finer the filtration, the better the achieved cleanliness class of the hydraulic fluid, the longer the life cycle (for cleanliness classes see page 4).

Hydraulic fluid

- ▶ Please observe the notice according to data sheet 90220 and 90223.
- ▶ Brand-name hydraulic oils are recommended. In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary.
- ▶ Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity.
- ▶ We recommend checking the hydraulic fluid at regular intervals by means of an oil analysis. The measures resulting therefrom are to be implemented.

Commissioning, maintenance and operating instructions

In this connection, please observe the instructions contained in the following documents:

- ▶ Data sheet 07009
- ▶ Data sheet 07009-MON
- ▶ Data sheet 10515
- ▶ Data sheet 10522

Legal provisions

- ▶ In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- ▶ The EU Regulation 640/2009 on the environmentally friendly design of electric motors.

Notice pursuant to the EC Machinery Directive 2006/42/EC, according to appendix II part 1, section A, manufacturer's declaration:

- ▶ The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100 and DIN EN 60204-1.
- ▶ Commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

Installation position

- ▶ Horizontal according to the dimensional drawing. Deviating designs only after coordination with the manufacturer.
- ▶ Exclusive use in stationary systems.

Motor-pump groups

Type ABAPG and ABHPG

RE 51180

Edition: 2015-02



- ▶ With pump type: A10VSO
 - Series 52: Size 10,
 - Series 31: Sizes 18 to 140
- ▶ Electric motor frame size 100L bis 315S
Efficiency class IE3

Features

Electric energy is converted into hydraulic energy via the motor-pump groups.

They have been designed for hydrostatic drives in open circuits.

- ▶ Efficiency class IE3
- ▶ Electric motor design IM B5 (ABHPG) and/or IM B3/B5 (ABAPG)
- ▶ Pump connected at the electric motor with rigid pump carrier and coupling
- ▶ Low operating noise
- ▶ Versatile possible applications on tank, base frame or separate installation
- ▶ Clear, maintenance-friendly set-up
- ▶ With axial piston pump A10VSO (variable displacement pump)
- ▶ Adjustment DFR1 (pressure/flow controller) and DFLR (pressure/flow power controller)

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Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	
	-	A10VSO		V	P	/			4	5	3	3	/	S	E	HOY

Module

01	With motor design B35	ABAPG
	With motor design B5	ABHPG

Pump type

02	Axial piston pump A10VSO according to data sheets 92703 with NG10 and 92711 NG18 ... 140	A10VSO
----	--	--------

Displacement

03	10 ... 140 cm ³ per rotation	10 ... 140
----	---	------------

Control and adjustment device

04	E.g. Pressure/flow controller	DFR1
	E.g., pressure, flow and power controller	DFLR

Seal material (according to DIN ISO 1629)

05	FKM	V
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Shaft end version

06	Cylindrical with key DIN 6885	P
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Mounting flange

07	ISO 2-hole	A
	ISO4-hole	B

Motor power

08	3 kW ... 110 kW	3 ... 110
----	-----------------	-----------

Rated voltage

09	230/400 V at 50 Hz (up to 3 kW)	CA
	400/690 V at 50 Hz (from 4 kW)	CB

10	Number of pole pairs	4
----	----------------------	---

Rated frequency

11	50 Hz	5
----	-------	---

Efficiency class

12	IE3 according to IEC 60034-30	3
----	-------------------------------	---

Motor protection

13	PTC resistor with 3 temperature sensors	3
----	---	---

Pump carrier design

14	Rigid pump carrier AB 03337	S
----	-----------------------------	---

Damping bearing design

15	Elastic damping bearing	E
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Motor supplier

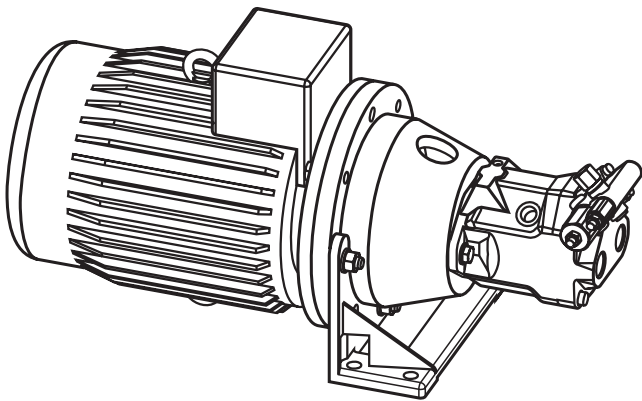
16	Hoyer Motors	HOY
	Siemens	SIE

Order example:

ABAPG-A10VSO 28DFR1VPA/18.5CB4523/SE HOY

Set-up of the motor-pump group

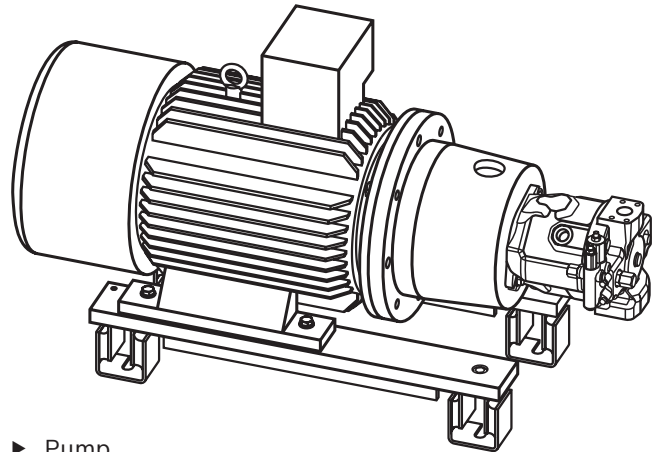
ABHPG design



- ▶ Pump
- ▶ Electric motor
- ▶ Pump carrier
- ▶ Coupling
- ▶ Pump base

The use of this design is recommended in confined spaces (e.g. on oil tanks) max. performance range 7.5 kW

ABAPG design



- ▶ Pump
- ▶ Electric motor
- ▶ Pump carrier
- ▶ Coupling
- ▶ Strips
- ▶ Damping bearing

Use of this design is particularly recommended for requirements on low noise levels min. performance range 5.5 kW

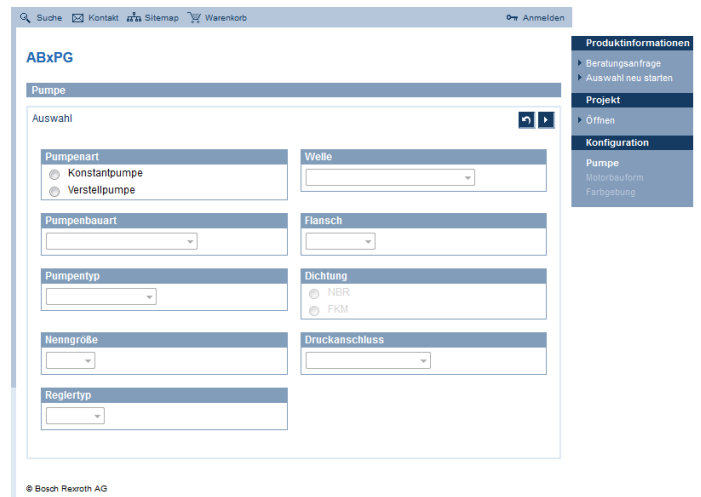
The motor-pump group configurator

Motor-pump groups can be put together quickly and easily with the APAPG configurator: The standard types defined in the data sheet enables users and sales people without detailed knowledge to individually configure the central drive unit for aggregates. A practical, product-neutral kit

provides 3D data that can be immediately applied to applications. This saves time.

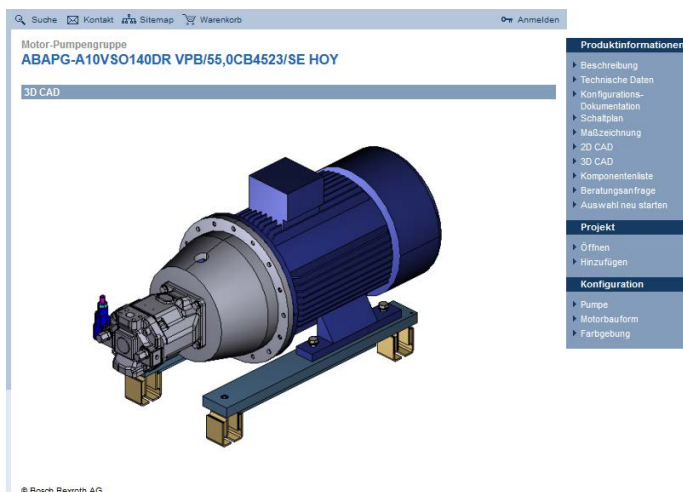
This is performed online by selecting the relevant product components or by specifying the operating conditions (flow rate, rated frequency, type of pump, operating pressure).

Thanks to the intuitive menu navigation, you are guided safely through the required configuration steps. Related features are clearly arranged on one page.



Associated features are clearly displayed on the same page.

When the configuration is finished, you can have the complete configuration documentation sent to you via email including material list, circuit diagram, 2D drawing and 3D model (STEP). This is done by way of an automatic request to your local distributor who will promptly contact you and send you an offer.



Technical data

(For applications outside these parameters, please consult us!)

Line connections	see Line connections table on page 17		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN ISO 3448 (other fluids on request!) ▶ Please observe our provisions according to data sheet 90220, 90221, 90223. ▶ Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity. ▶ According to the operating conditions, the fluid must be renewed at certain intervals.		
Pump type	A10VS010 series 52 according to data sheet 92703 A10VS018-140 series 31 according to data sheet 92711		
▶ Direction of rotation	Clockwise		
Operating pressure, absolute			
▶ Input	$p_{\min\text{-max}}$	bar	0.8 ... 10
▶ Output	p_{nom}	bar	280 and 250 with A10VSO10
▶ Peak pressure	p_{max}	bar	350 and 315 with A10VSO10
▶ Leakage port	p_{max}	bar	2
Hydraulic fluid temperature range, observe	ϑ	°C	-25 ... +90
viscosity range			
▶ T_{optimal} with HLP 46 (DIN 51524)	ϑ	°C	+45 ... +55
▶ T_{max} in continuous operation	ϑ	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50125 (ABUKG) and 50112 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406 (c) and according to the pump type used ¹⁾ . At least cleanliness class 20/18/15 must be achieved.		
Viscosity range	ϑ	mm ² /s	16 ... 36 optimal 10 ... 1000 shortly (see data sheets 92703, 92711)
Electric motor	▶ Motor type		
	▶ Efficiency class		
	▶ Number of pole pairs		
	▶ Voltage according to IEC 38	U	V
	▶ Speed	n	min ⁻¹
	▶ Protection class	IP	55
	▶ Installation position		
Surface treatment	By default, all steel components and components are at least provided with temporary corrosion protection (e.g. for transport).		

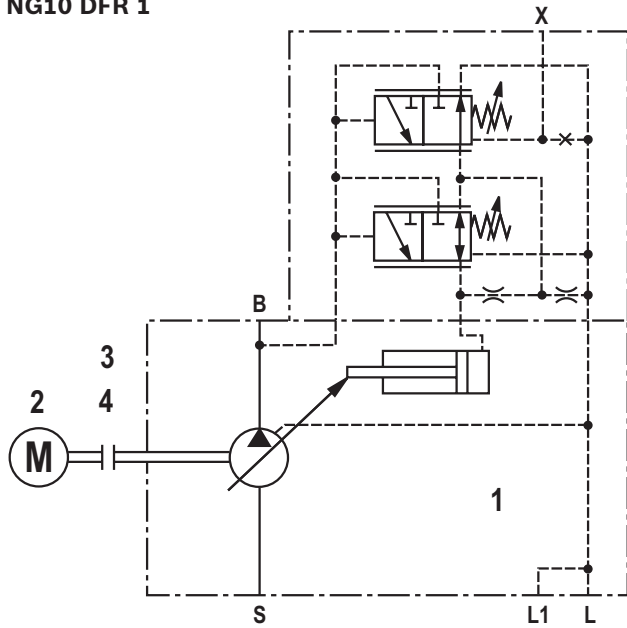
¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

For selecting the filters, see data sheet 51501.

Circuit diagrams

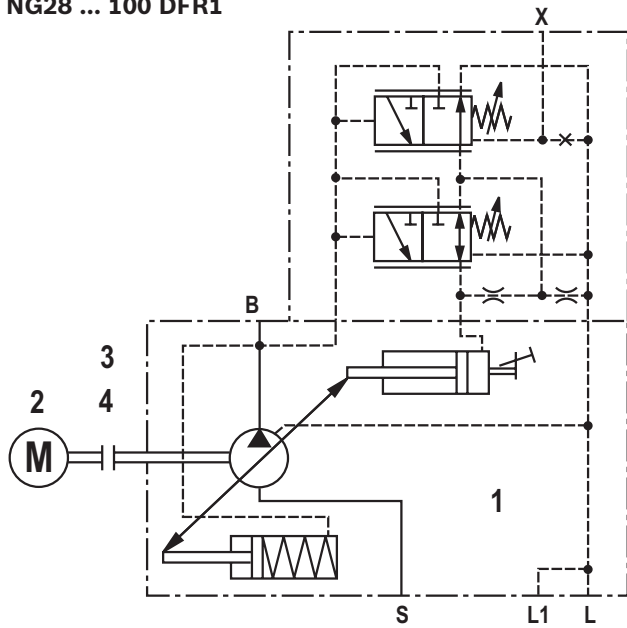
Axial piston pump (basic design)

NG10 DFR 1

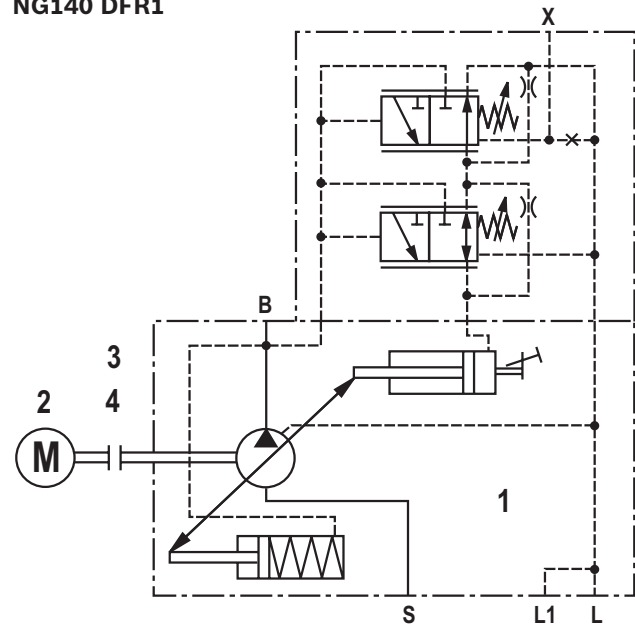


- 1 Axial piston pump A10VSO
- 2 Electric motor
- 3 Pump carrier
- 4 Coupling

NG28 ... 100 DFR1



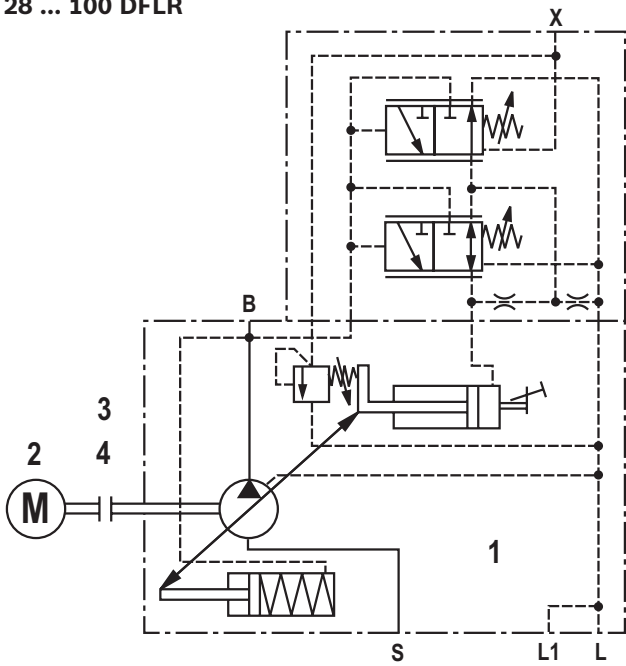
NG140 DFR1



Circuit diagrams

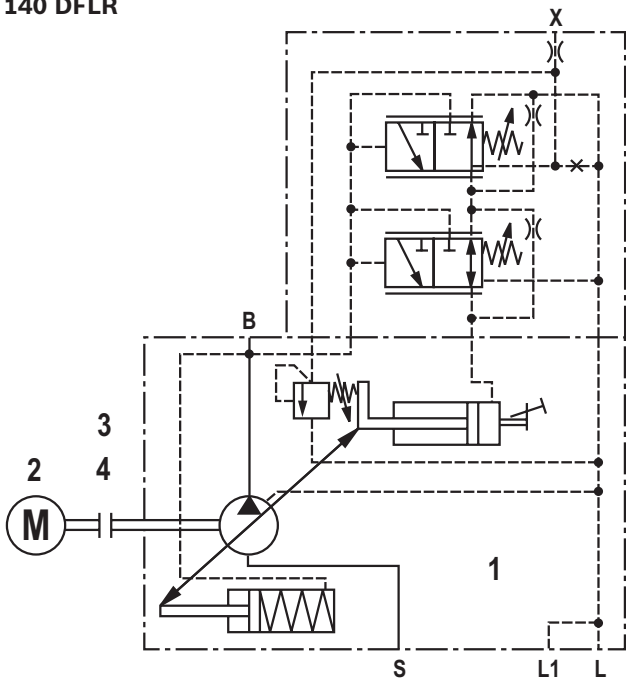
Axial piston pump with pressure/flow power controller (basic design)

28 ... 100 DFLR



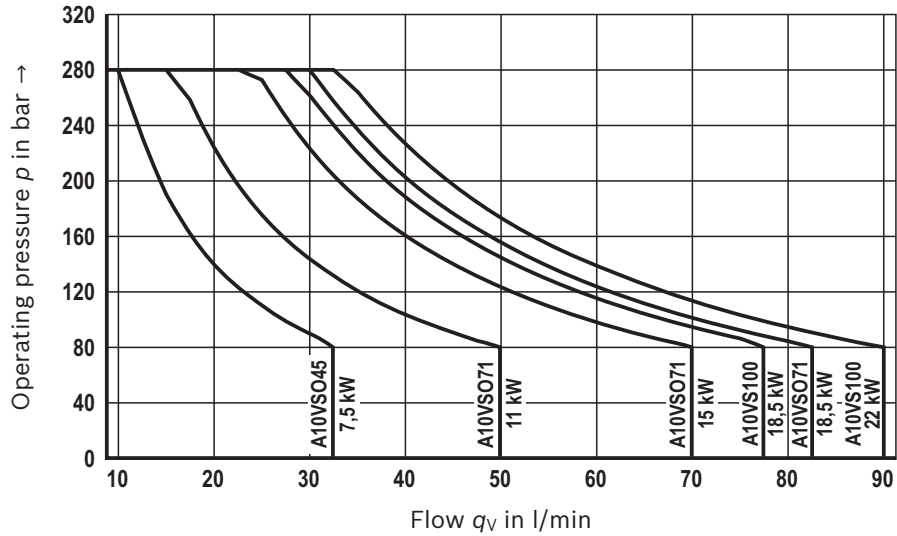
- 1 Axial piston pump A10VSO
- 2 Electric motor
- 3 Pump carrier
- 4 Coupling

140 DFLR



Performance characteristic

Axial piston pump with power controller at $n = 1450 \text{ min}^{-1}$
(application example)



👉 For the project planning, please use the performance characteristic from data sheet 92711.

Standard program incl. preferred types ABHPG-A10VSO ¹⁾

Frequency	50 Hz		Electric motor size	ABHPG material no. (Motor B5)				
	1450 min ⁻¹			50 Hz				
Pump	$q_{V \max}$ in l/min	p_{\max} in bar	Power in kW	HOY	MKZ ²⁾	SIE	MKZ ²⁾	
A10VSO10DFR1	14	60	3.00	100L	R901397364	A3	R901397377	A3
		92	4.00	112M	R901397365	A3	R901397378	A3
		139	5.50	132S	R901397366	A3	R901397379	A3
		203	7.50	132M	R901397367	A3	R901397380	A3
A10VSO18DFR1	25	41	3.00	100L	R901397368	A3	R901397382	A3
		58	4.00	112M	R901397369	A2	R901397383	A3
		98	5.50	132S	R901397370	A3	R901397384	A3
		137	7.50	132M	R901397371	A3	R901397385	A3
A10VSO28DFR1	38	66	5.50	132S	R901397372	A3	R901397386	A3
		93	7.50	132M	R901397374	A3	R901397387	A3
A10VSO45DFR1	62	48	7.50	132M	R901397376	A3	R901397389	A3
A10VSO45DFLR	62	48	7.50	132M	R901397375	A3	R901397388	A3

¹⁾ Pump manifold possible without special design.
²⁾ MKZ = material mark
 A2 = preferred delivery range
 A3 = Standard delivery range dimensions see page 11-16

Standard program incl. preferred types ABAPG-A10VSO

Frequency	50 Hz		50 Hz	Electric	ABAPG material no.			
	1450 min ⁻¹		1450 min ⁻¹		(Motor B5)			
Pump	q _V max in l/min	p _{max} in bar	Power in kW	motor size	HOY	MKZ ²⁾	SIE	MKZ ²⁾
A10VSO10DFR1	14	139	5.50	132S	R901397616	A3	R901397666	A3
		203	7.50	132M	R901397617	A3	R901397667	A3
A10VSO18DFR1	25	98	5.50	132S	R901397618	A3	R901397668	A3
		137	7.50	132M	R901397619	A2	R901397670	A3
		229	11.00	160M	R901397621	A2	R901397671	A3
		280	15.00	160L	R901397622	A3	R901397672	A3
A10VSO28DFR1	39	66	5.50	132S	R901397623	A3	R901397673	A3
		93	7.50	132M	R901397624	A3	R901397674	A3
		150	11.00	160M	R901397625	A2	R901397675	A3
		212	15.00	160L	R901397626	A2	R901397676	A3
		263	18.50	180M	R901397627	A3	R901397677	A3
		280	22.00	180L	R901397628	A3	R901397678	A3
A10VSO45DFR1	62	48	7.50	132M	R901397629	A3	R901397679	A3
		79	11.00	160M	R901397630	A3	R901397680	A3
		117	15.00	160L	R901397631	A2	R901397682	A3
		147	18.50	180M	R901397632	A3	R901397683	A3
		182	22.00	180L	R901397633	A3	R901397684	A3
		262	30.00	200L	R901397634	A3	R901397685	A3
		280	37.00	225S	R901397635	A3	R901397686	A3
A10VSO71DFR1	98	48	11.00	160M	R901397636	A3	R901397687	A3
		72	15.00	160L	R901397637	A3	R901397688	A3
		91	18.50	180M	R901397638	A3	R901397689	A3
		109	22.00	180L	R901397639	A2	R901397690	A3
		156	30.00	200L	R901397640	A3	R901397691	A3
		197	37.00	225S	R901397641	A3	R901397692	A3
		244	45.00	225M	R901397642	A3	R901397693	A3
		280	55.00	250M	R901397643	A3	R901397694	A3
A10VSO100DFR1	138	61	18.50	180M	R901397644	A3	R901397695	A3
		73	22.00	180L	R901397645	A3	R901397696	A3
		107	30.00	200L	R901397646	A3	R901397697	A3
		136	37.00	225S	R901397647	A3	R901397698	A3
		170	45.00	225M	R901397648	A2	R901397699	A3
		208	55.00	250M	R901397649	A3	R901397700	A3
		280	75.00	280S	R901397650	A3	R901397701	A3
		280	90.00	280M	R901397651	A3	R901397702	A3
A10VSO140DFR1	193	53	22.00	180L	R901397652	A3	R901397703	A3
		74	30.00	200L	R901397653	A3	R901397704	A3
		94	37.00	225S	R901397654	A3	R901397705	A3
		119	45.00	225M	R901397655	A3	R901397707	A3
		146	55.00	250M	R901397656	A3	R901397708	A3
		205	75.00	280S	R901397657	A3	R901397709	A3
		246	90.00	280M	R901397658	A3	R901397710	A3
		280	110.00	315S	R901397659	A3	R901397711	A3
A10VSO45DFLR	62	48	7.50	132M	R901397660	A3	R901397712	A3
A10VSO71DFLR	98	48	11.00	160M	R901397661	A3	R901397714	A3
		72	15.00	160L	R901397662	A3	R901397715	A3
		91	18.50	180M	R901397663	A3	R901397716	A3
A10VSO100DFLR	138	61	18.50	180M	R901397664	A3	R901397717	A3
		73	22.00	180L	R901397665	A3	R901397718	A3

¹⁾ MKZ = material mark
A2 = preferred delivery program

A3 = Standard delivery range dimensions see page 11-16

Standard range ABAPG-A10VSO designed for pump manifold block ¹⁾

Frequency	50 Hz 1450 min ⁻¹		50 Hz 1450 min ⁻¹	Electric motor Frame size	ABAPG material no. (motor B35) for PSBD			
Pump	q _{V max} in l/min	p _{max} in bar	Power in kW		HOY	MKZ ²⁾	SIE	MKZ ²⁾
A10VSO18DFR1	25	98	5.50	132S	R901397719	A3	R901397793	A3
		137	7.50	132M	R901397720	A3	R901397794	A3
		229	11.00	160M	R901397721	A3	R901397795	A3
		280	15.00	160L	R901397722	A3	R901397796	A3
A10VSO28DFR1	39	66	5.50	132S	R901397723	A3	R901397797	A3
		93	7.50	132M	R901397724	A3	R901397798	A3
		150	11.00	160M	R901397725	A3	R901397799	A3
		212	15.00	160L	R901397726	A3	R901397800	A3
		263	18.50	180M	R901397727	A3	R901397801	A3
		280	22.00	180L	R901397728	A3	R901397802	A3
A10VSO45DFR1	62	48	7.50	132M	R901397729	A3	R901397803	A3
		79	11.00	160M	R901397730	A3	R901397804	A3
		117	15.00	160L	R901397732	A3	R901397805	A3
		147	18.50	180M	R901397733	A3	R901397806	A3
		182	22.00	180L	R901397734	A3	R901397807	A3
		262	30.00	200L	R901397735	A3	R901397808	A3
		280	37.00	225S	R901397736	A3	R901397809	A3
A10VSO71DFR1	98	48	11.00	160M	R901397737	A3	R901397810	A3
		72	15.00	160L	R901397760	A3	R901397811	A3
		91	18.50	180M	R901397762	A3	R901397813	A3
		109	22.00	180L	R901397763	A3	R901397814	A3
		156	30.00	200L	R901397764	A3	R901397815	A3
		197	37.00	225S	R901397765	A3	R901397816	A3
		244	45.00	225M	R901397766	A3	R901397817	A3
		280	55.00	250M	R901397768	A3	R901397818	A3
A10VSO100DFR1	138	61	18.50	180M	R901397769	A3	R901397819	A3
		73	22.00	180L	R901397770	A3	R901397821	A3
		107	30.00	200L	R901397772	A3	R901397822	A3
		136	37.00	225S	R901397773	A3	R901397823	A3
		170	45.00	225M	R901397774	A3	R901397824	A3
		208	55.00	250M	R901397775	A3	R901397825	A3
		280	75.00	280S	R901397776	A3	R901397826	A3
A10VSO140DFR1	193	53	22.00	180L	R901397778	A3	R901397827	A3
		74	30.00	200L	R901397779	A3	R901397828	A3
		94	37.00	225S	R901397780	A3	R901397829	A3
		119	45.00	225M	R901397781	A3	R901397830	A3
		146	55.00	250M	R901397782	A3	R901397831	A3
		205	75.00	280S	R901397783	A3	R901397832	A3
		246	90.00	280M	R901397785	A3	R901397834	A3
		280	110.00	315S	R901397786	A3	R901397835	A3
A10VSO45DFLR	62	48	7.50	132M	R901397787	A3	R901397837	A3
A10VSO71DFLR	98	48	11.00	160M	R901397788	A3	R901397838	A3
		72	15.00	160L	R901397789	A3	R901397839	A3
		91	18.50	180M	R901397790	A3	R901397840	A3
A10VSO100DFLR	138	61	18.50	180M	R901397791	A3	R901397842	A3
		73	22.00	180L	R901397792	A3	R901397843	A3

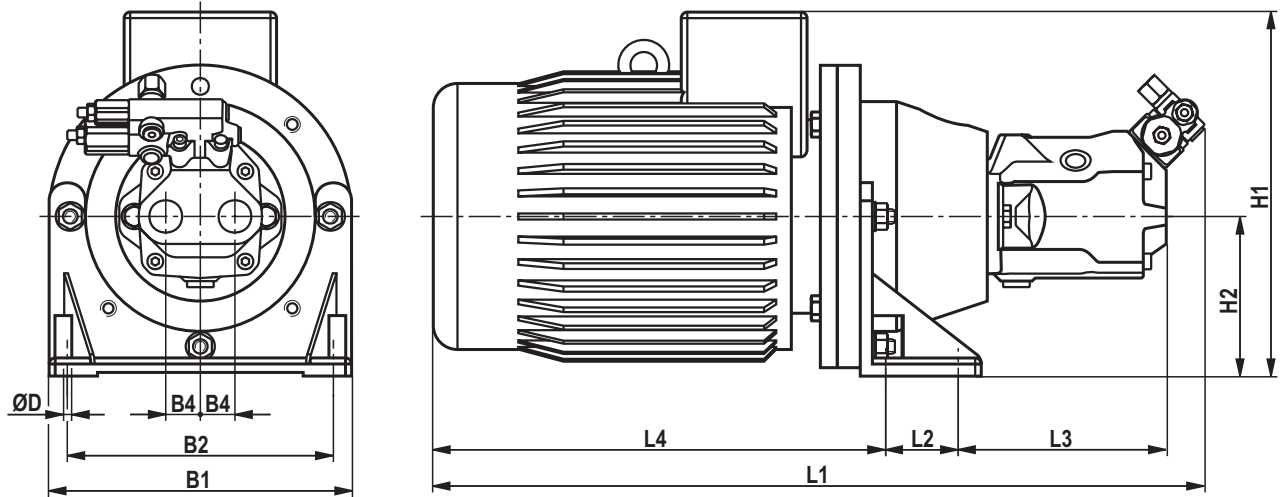
1) Pump manifold block must be ordered separately.

2) MKZ = material mark

A2 = preferred delivery program

A3 = Standard delivery range dimensions see page 11 ... 16

Dimensions: Type ABHPG A10VSO 10 HOYER-MOTORS
(dimensions in mm)



ABHPG with motor supplier HOYER-MOTORS

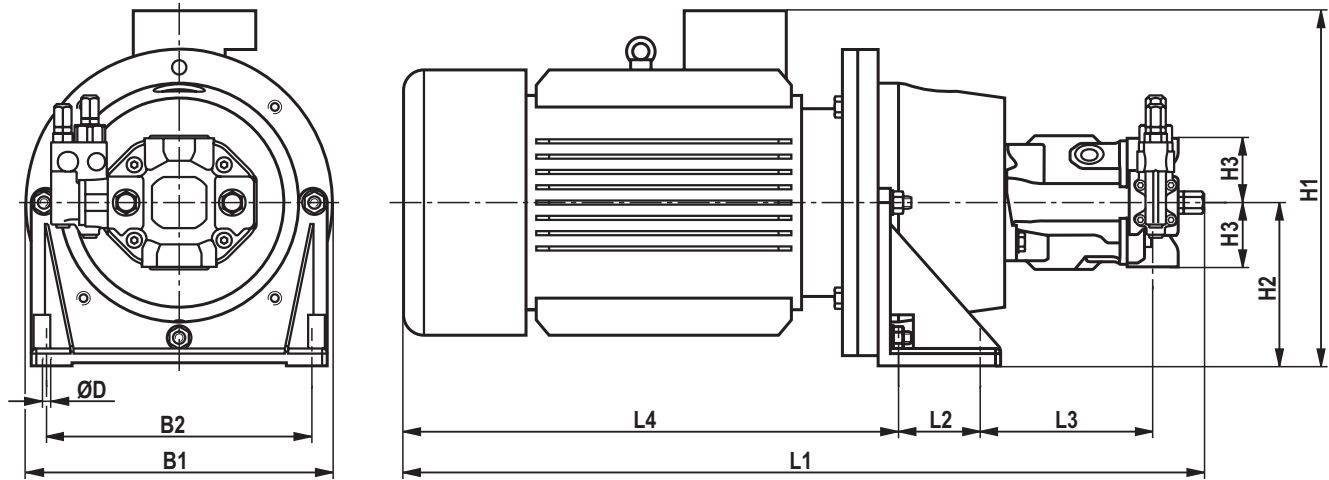
Pump	E-motor kW / frame size	Dimensions										Weight in kg
		B1	B2	B4	ØD	H1	H2	L1	L2	L3	L4	
A10VSO 10	3.0 / 100L	250	220	28.6	14.0	279	132	650	60	172	386	44
	4.0 / 112M	250	220	28.6	14.0	300	132	674	60	172	410	52
	5.5 / 132S	300	260	28.6	14.0	347	160	707	80	172	423	66
	7.5 / 132M	300	260	28.6	14.0	347	160	745	80	172	481	74

ABHPG with motor supplier SIEMENS

Pump	E-motor kW / frame size	Dimensions										Weight in kg
		B1	B2	B4	ØD	H1	H2	L1	L2	L3	L4	
A10VSO 10	3.0 / 100L	250	220	28.6	14.0	298	132	674.5	60	172	410.5	44
	4.0 / 112M	250	220	28.6	14.0	309	132	658	60	172	394	48
	5.5 / 132S	300	260	28.6	14.0	362	160	761	80	172	495	80
	7.5 / 132M	300	260	28.6	14.0	362	160	761	80	172	495	80

Dimensions: Type ABHPG A10VSO 18 ... 45 HOYER-MOTORS, SIEMENS

(dimensions in mm)



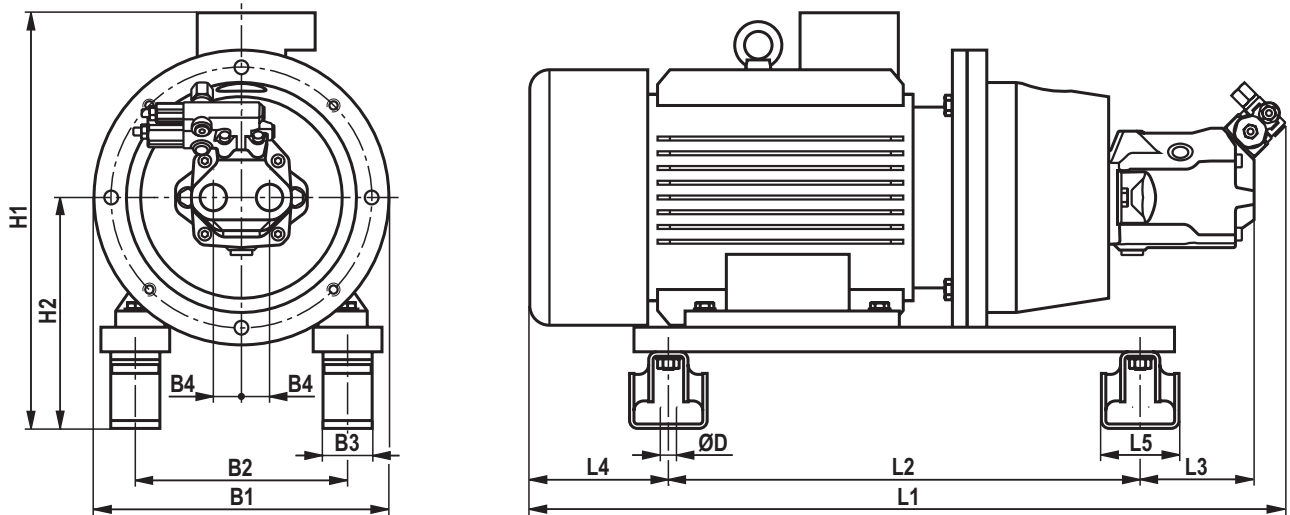
ABHPG with motor supplier HOYER-MOTORS

Pump	E-motor kW / frame size	Dimensions										Weight in kg
		B1	B2	ØD	H1	H2	H3	L1	L2	L3	L4	
A10VSO 18	3.0 / 100L	250	220	14.0	279	132	63	665	60	169	386	48
	4.0 / 112M	250	220	14.0	300	132	63	689	60	169	410	56
	5.5 / 132S	300	260	14.0	347	160	63	722	80	169	423	67
	7.5 / 132M	300	260	14.0	347	160	63	760	80	169	461	75
A10VSO 28	5.5 / 132S	300	260	14.0	347	160	80	744	80	199	423	78
	7.5 / 132M	300	260	14.0	347	160	80	782	80	199	461	86
A10VSO 45	7.5 / 132M	300	260	14.0	347	160	90	800	80	219	461	90

ABHPG with motor supplier SIEMENS

Pump	E-motor kW / frame size	Dimensions										Weight in kg
		B1	B2	ØD	H1	H2	H3	L1	L2	L3	L4	
A10VSO 18	3.0 / 100L	250	220	14.0	298	132	63	689.5	60	169	410.5	48
	4.0 / 112M	250	220	14.0	309	132	63	673	60	169	394	52
	5.5 / 132S	300	260	14.0	362	160	63	774	80	169	475	84
	7.5 / 132M	300	260	14.0	362	160	63	774	80	169	475	84
A10VSO 28	5.5 / 132S	300	260	14.0	362	160	80	796	80	199	475	92
	7.5 / 132M	300	260	14.0	362	160	80	796	80	199	475	92
A10VSO 45	7.5 / 132M	300	260	14.0	362	160	90	814	80	219	475	97

Dimensions: Type ABAPG A10VSO 10 HOYER-MOTORS, SIEMENS
(dimensions in mm)



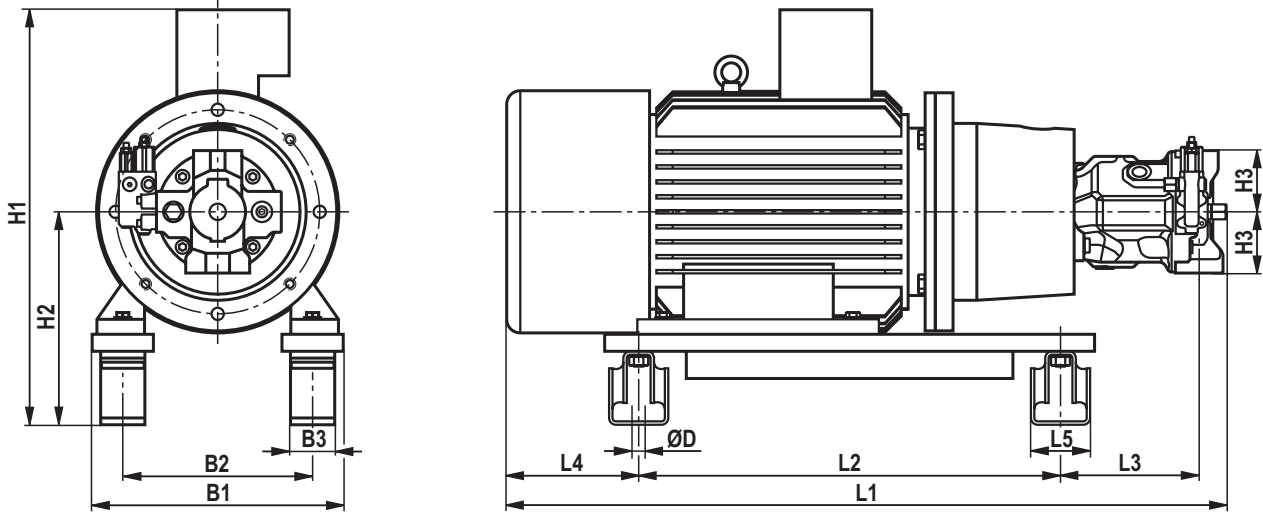
ABAPG with motor supplier HOYER-MOTORS

Pump	E-motor kW / frame size	Dimensions											Weight in kg	
		B1	B2	B3	B4	ØD	H1	H2	L1	L2	L3	L4		L5
A10VSO 10	5.5 / 132S	300	216	50	28.6	13.5	423	235	724	480	116	96	79	82
	7.5 / 132M	300	216	50	28.6	13.5	423	235	762	480	116	134	79	90

ABAPG with motor supplier SIEMENS

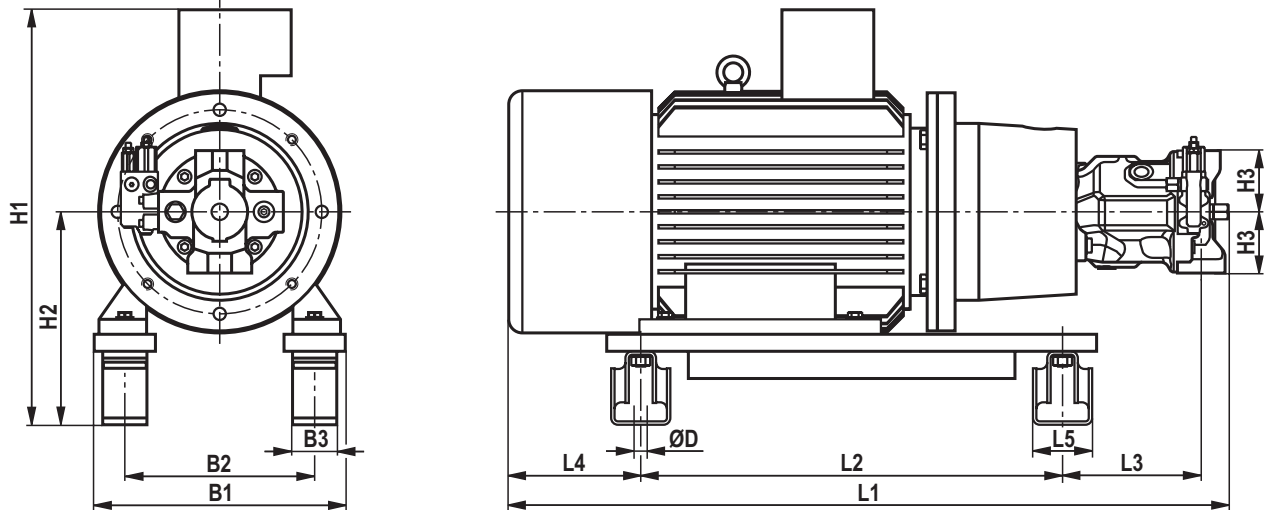
Pump	E-motor kW / frame size	Dimensions											Weight in kg	
		B1	B2	B3	B4	ØD	H1	H2	L1	L2	L3	L4		L5
A10VSO 10	5.5 / 132S	300	216	50	28.6	13.5	437	235	759	480	116	131	79	96
	7.5 / 132M	300	216	50	28.6	13.5	437	235	759	480	116	131	79	96

Dimensions: Type ABAPG A10VSO 18 ... 140 HOYER-MOTORS to 55 kW
(dimensions in mm)



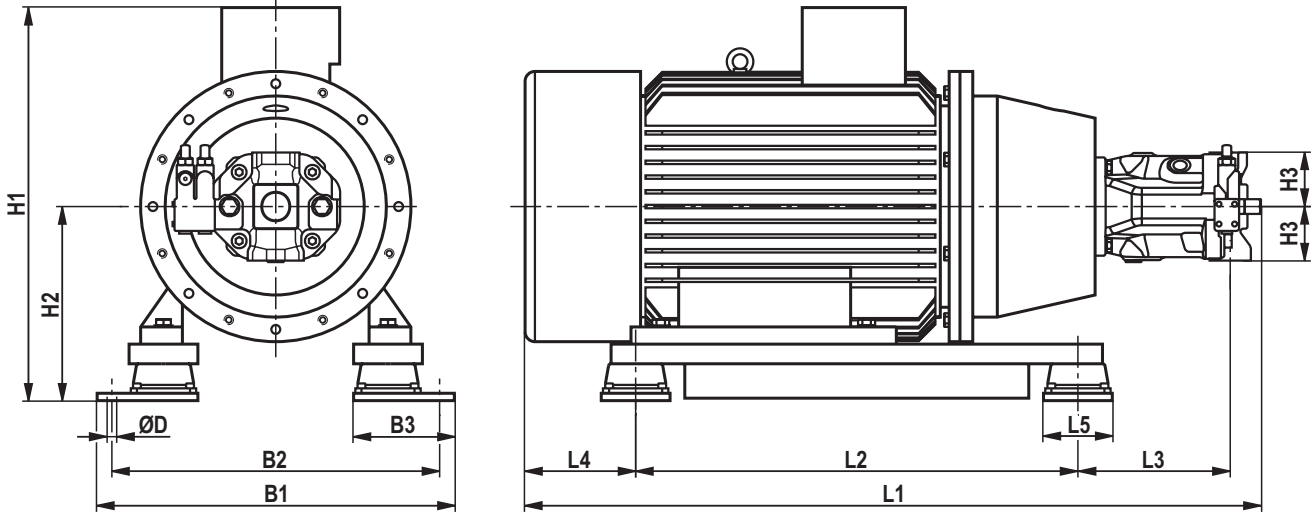
ABAPG with motor supplier HOYER-MOTORS

Pump	E-motor kW / frame size	Dimensions											Weight in kg	
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4		L5
A10VSO 18	5.5 / 132S	300	216	50	13.5	422	235	63	722	480	113	79	79	83
	7.5 / 132M	300	216	50	13.5	422	235	63	760	480	113	117	79	91
	11.0 / 160M	350	254	50	13.5	539	263	63	883	580	151	102	79	185
	15.0 / 160L	350	254	50	13.5	539	263	63	927	580	151	146	79	195
A10VSO 28	5.5 / 132S	300	216	50	13.5	422	235	80	744	480	143	79	79	94
	7.5 / 132M	300	216	50	13.5	422	235	80	782	480	143	117	79	102
	11.0 / 160M	350	254	50	13.5	539	263	80	894	580	170	102	79	196
	15.0 / 160L	350	254	50	13.5	539	263	80	938	580	170	146	79	205
	18.5 / 180M	269	279	65	17.5	605	313	80	985.5	620	184	139.5	87	251
	22.0 / 180L	369	279	65	17.5	605	313	80	1023.5	620	184	177.5	87	266
A10VSO 45	7.5 / 132M	300	216	50	13.5	422	235	90	800	480	163	117	79	107
	11.0 / 160M	350	254	50	13.5	539	263	90	912	580	190	102	79	200
	15.0 / 160L	350	254	50	13.5	539	263	90	956	580	190	146	79	210
	18.5 / 180M	369	279	65	17.5	605	313	90	1003.5	620	204	139.5	87	258
	22.0 / 180L	369	279	65	17.5	605	313	90	1041.5	620	204	177.5	87	273
	30.0 / 200L	418	318	65	17.5	651	338	90	1087	700	171	176	87	362
A10VSO 71	37.0 / 225S	456	356	80	17.5	721	385	90	1140.5	800	127	173.5	100	431
	11.0 / 160M	350	254	50	13.5	539	263	104	961	580	239	102	79	221
	15.0 / 160L	350	254	65	13.5	539	293	104	1005	580	239	146	87	231
	18.5 / 180M	369	279	65	17.5	605	313	104	1036.5	620	237	139.5	87	275
	22.0 / 180L	369	279	65	17.5	605	313	104	1074.5	620	237	177.5	87	290
	30.0 / 200L	418	318	80	17.5	651	360	104	1120	700	204	176	100	384
	37.0 / 225S	456	356	80	17.5	721	385	104	1173.5	800	160	173.5	100	436
	45.0 / 225M	456	356	80	17.5	721	385	104	1198.5	800	160	198.5	100	466
A10VSO100	55.0 / 250M	550	406	80	17.5	794	420	104	1274	850	192	192	100	585
	18.5 / 180M	369	279	65	17.5	605	313	100	1108.5	620	295	139.5	87	295
	22.0 / 180L	369	279	65	17.5	605	313	100	1146.5	620	295	177.5	87	310
	30.0 / 200L	418	318	80	17.5	651	360	100	1216	700	286	176	100	404
	37.0 / 225S	456	356	80	17.5	721	385	100	1245.5	800	218	173.5	100	456
A10VSO140	45.0 / 225M	456	356	80	17.5	721	385	100	1270.5	800	218	198.5	100	486
	55.0 / 250M	550	406	80	17.5	794	420	100	1346	850	250	192	100	605
	22.0 / 180L	369	279	65	17.5	605	313	110	1178.5	620	319	177.5	87	311
	30.0 / 200L	418	318	80	17.5	651	360	110	1224	700	286	176	100	403
	37.0 / 225S	456	356	80	17.5	721	385	110	1281.5	800	246	173.5	100	454
A10VSO140	45.0 / 225M	456	356	80	17.5	721	385	110	1306.5	800	246	198.5	100	484
	55.0 / 250M	550	406	80	17.5	794	420	110	1371	850	267	192	100	597

Dimensions: Type ABAPG A10VSO 18 ... 140 SIEMENS to 55 kW
 (dimensions in mm)

ABAPG with motor supplier SIEMENS

Pump	E-motor	Dimensions											Weight in kg	
	kW / frame size	B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4		L5
A10VSO 18	5.5 / 132S	300	216	50	13.5	437	235	63	774	480	113	131	79	97
	7.5 / 132M	300	216	50	13.5	437	235	63	774	480	113	131	79	97
	11.0 / 160M	350	254	50	13.5	500	263	63	877	580	151	106	79	127
	15.0 / 160L	350	254	50	13.5	500	263	63	937	580	151	156	79	144
A10VSO 28	5.5 / 132S	300	216	50	13.5	437	235	80	796	480	143	131	79	108
	7.5 / 132M	300	216	50	13.5	437	235	80	796	480	143	131	79	108
	11.0 / 160M	350	254	50	13.5	500	263	80	888	580	170	106	79	138
	15.0 / 160L	350	254	50	13.5	500	263	80	948	580	170	156	79	154
	18.5 / 180M	269	279	65	17.5	575	313	80	968	620	184	122	87	226
	22.0 / 180L	369	279	65	17.5	575	313	80	998	620	184	152	87	231
A10VSO 45	7.5 / 132M	300	216	50	13.5	437	235	90	814	480	163	131	79	113
	11.0 / 160M	350	254	50	13.5	500	263	90	906	580	190	106	79	142
	15.0 / 160L	350	254	50	13.5	500	263	90	966	580	190	156	79	159
	18.5 / 180M	369	279	65	17.5	575	313	90	986	620	204	122	87	233
	22.0 / 180L	369	279	65	17.5	575	313	90	1016	620	204	152	87	238
	30.0 / 200L	418	318	65	17.5	638	338	90	1070.5	700	171	159.5	87	327
A10VSO 71	37.0 / 225S	456	356	80	17.5	713	385	90	1081	800	127	114	100	401
	11.0 / 160M	350	254	50	13.5	500	263	104	955	580	239	106	79	163
	15.0 / 160L	350	254	65	13.5	530	293	104	1015	580	239	156	87	180
	18.5 / 180M	369	279	65	17.5	575	313	104	1019	620	237	122	87	250
	22.0 / 180L	369	279	65	17.5	575	313	104	1049	620	237	152	87	255
	30.0 / 200L	418	318	80	17.5	660	360	104	1103.5	700	204	159.5	100	349
	37.0 / 225S	456	356	80	17.5	713	385	104	1114	800	160	114	100	406
A10VSO100	45.0 / 225M	456	356	80	17.5	713	385	100	1199	800	160	199	100	441
	55.0 / 250M	550	406	80	17.5	812	420	100	1252	850	192	170	100	584
	18.5 / 180M	369	279	65	17.5	575	313	100	1091	620	295	122	87	270
	22.0 / 180L	369	279	65	17.5	575	313	100	1121	620	295	152	87	275
	30.0 / 200L	418	318	80	17.5	660	360	100	1199.5	700	286	159.5	100	369
A10VSO140	37.0 / 225S	456	356	80	17.5	713	385	100	1186	800	218	114	100	426
	45.0 / 225M	456	356	80	17.5	713	385	100	1271	800	218	199	100	461
	55.0 / 250M	550	406	80	17.5	812	420	100	1324	850	250	170	100	604
	22.0 / 180L	369	279	65	17.5	575	313	110	1153	620	319	152	87	276
	30.0 / 200L	418	318	80	17.5	660	360	110	1207.5	700	286	159.5	100	368
A10VSO140	37.0 / 225S	456	356	80	17.5	713	385	110	1222	800	246	114	100	424
	45.0 / 225M	456	356	80	17.5	713	385	110	1307	800	246	199	100	459
	55.0 / 250M	550	406	80	17.5	812	420	110	1349	850	267	170	100	596

Dimensions: Type ABAPG A10VSO 100 ... 140 HOYER-MOTORS, SIEMENS
(dimensions in mm)



ABAPG with motor supplier HOYER-MOTORS

Pump	E-motor kW / frame size	Dimensions											Weight in kg	
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4		L5
A10VSO100	75.0 / 280S	727	667	205	23.0	798	395	100	1433	900	300	186	133	760
	75.0 / 280S	727	667	205	23.0	798	395	110	1451	900	310	186	133	736
A10VSO140	90.0 / 280M	727	667	205	23.0	798	395	110	1502	900	310	235	135	836
	110.0 / 315S	828	768	250	23.0	1009	462	110	1700	1,100	216	332	170	1214

ABAPG with motor supplier SIEMENS

Pump	E-motor kW / frame size	Dimensions											Weight in kg	
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4		L5
A10VSO100	75.0 / 280S	727	667	205	23.0	827	395	100	1415	900	300	160	141	792
	75.0 / 280S	727	667	205	23.0	827	395	110	1433	900	310	160	141	768
A10VSO140	90.0 / 280M	727	667	205	23.0	827	395	110	1543	900	310	270	141	868
	110.0 / 315S	828	768	250	23.0	962	462	110	1559	1,100	216	201	160	1016

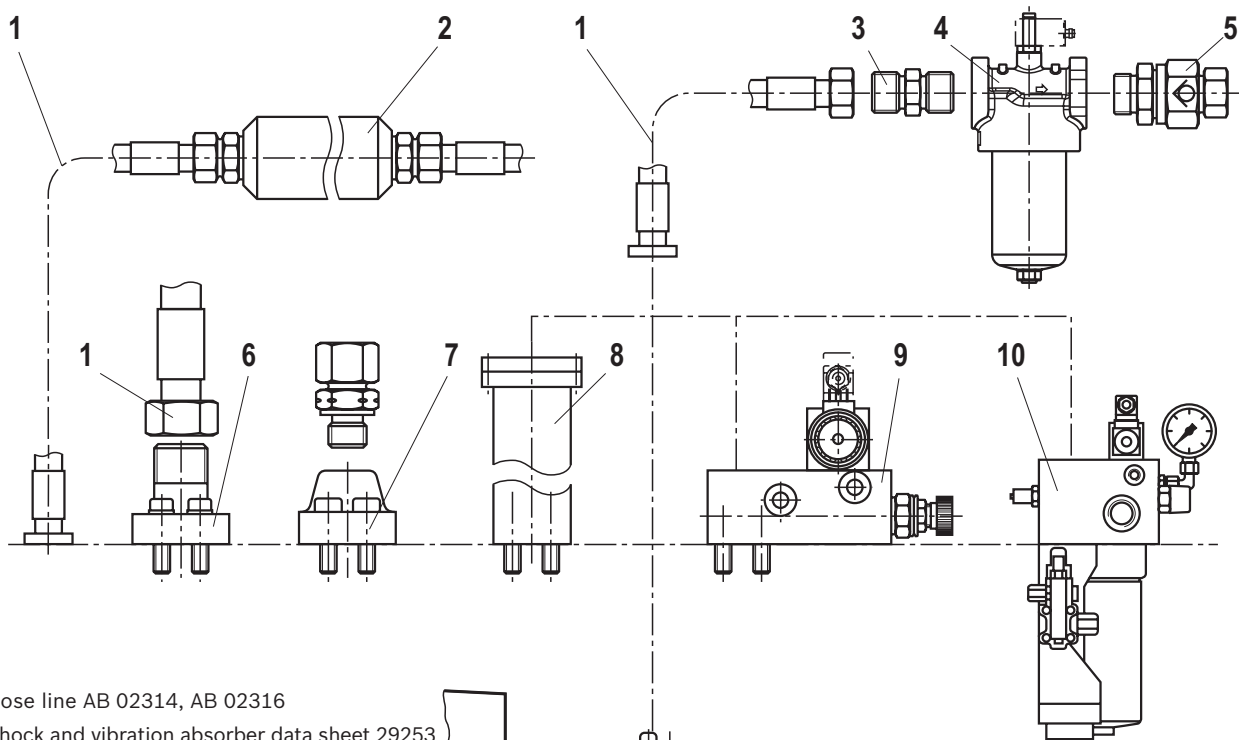
Pressure line connections

Pump type	Line connections			
	Pressure connection P(B)	Suction port S	Leakage oil connection L / L1	Pilot oil port X
A10VSO 10	DIN 3852 – M27x2	DIN 3852 – M27x2	DIN 3852 – M16x1.5	DIN 3852 – M14x1.5
A10VSO 18	DIN/ISO 6162-1 3/4"	DIN/ISO 6162-1 1"	DIN 3852 – M16x1.5	DIN 3852 – M14x1.5
A10VSO 28	DIN/ISO 6162-1 3/4"	DIN/ISO 6162-1 1 1/4"	DIN 3852 – M18x1.5	DIN 3852 – M14x1.5
A10VSO 45	DIN/ISO 6162-1 1"	DIN/ISO 6162-1 1 1/2"	DIN 3852 – M22x1.5	DIN 3852 – M14x1.5
A10VSO 71	DIN/ISO 6162-1 1"	DIN/ISO 6162-1 2"	DIN 3852 – M22x1.5	DIN 3852 – M14x1.5
A10VSO100	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M27x2	DIN 3852 – M14x1.5
A10VSO140	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M27x2	DIN 3852 – M14x1.5

Standard pressure SAE flange figure with metric mounting screws

High pressure SAE flange figure with metric mounting screws

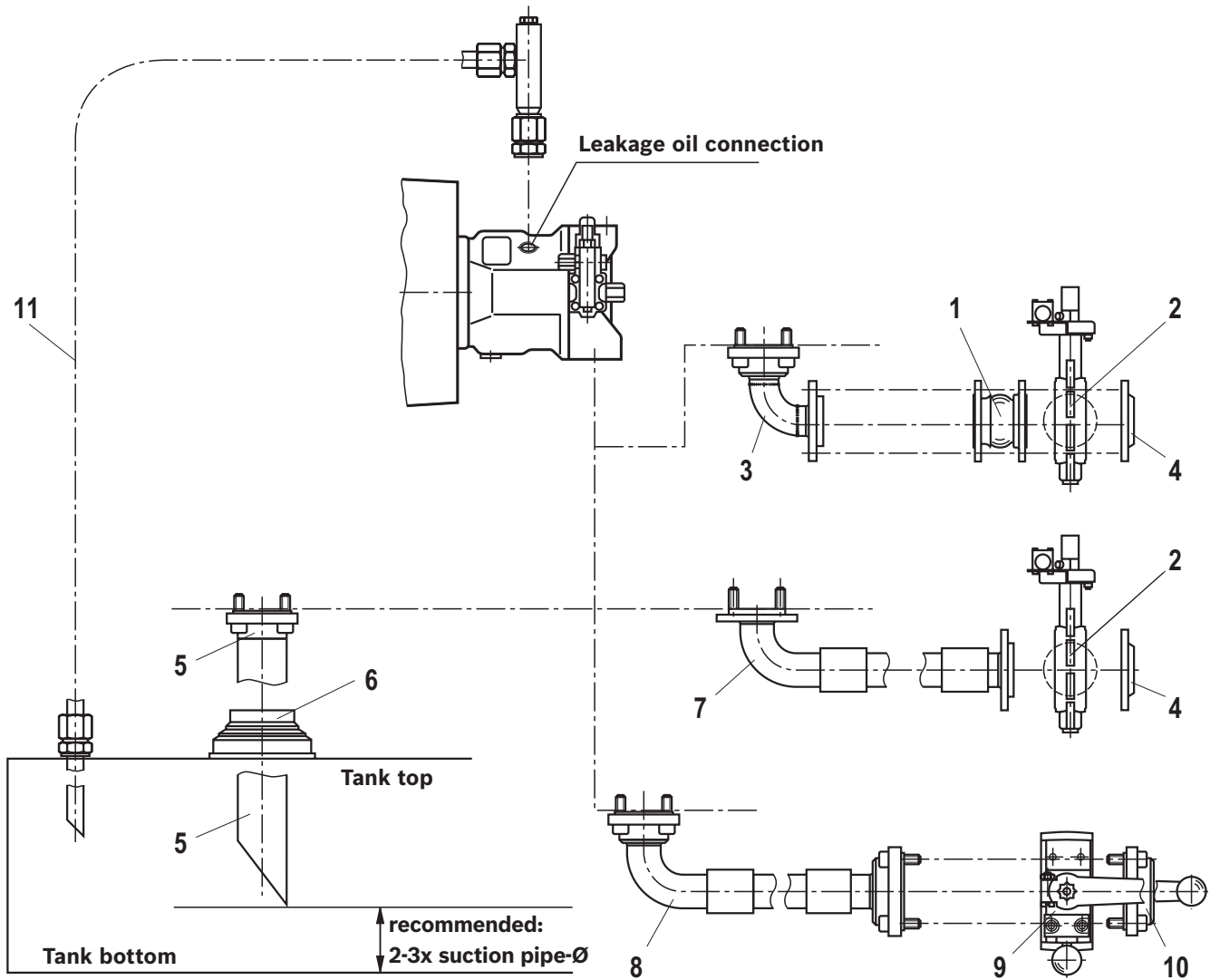
Optional accessories at the pressure connection



- 1 Hose line AB 02314, AB 02316
- 2 Shock and vibration absorber data sheet 29253
- 3 Fitting AB 02012
- 4 In-line filter data sheet 51421; 51422
- 5 Check valve AB 02112
- 6 SAE flange AB 02214
- 7 SAE flange high pressure AB 02213
- 8 Shock and vibration absorber data sheet 50142
- 9 Pump shut-off block data sheet 25891
- 10 Pump control block with attachment filter AB 05101-002

Items 1 to 10 as optional accessories upon request

Optional accessories at the suction port and leakage oil connection



- 1 Compensator DIN AB 02231
- 2 Shut-off valve DIN AB 02129
- 3 Flange bend SAE-DIN AB 02229
- 4 DIN flange AB 02204
- 5 Suction pipe AB 02303
- 6 Elastic pipe fitting AB 01203

- 7 Suction tube SAE-DIN AB 02315
- 8 Suction tube SAE-SAE AB 02315
- 9 Shut-off valve SAE (on request)
- 10 SAE flange AB 02215
- 11 Drain line

Items 1 to 11 as optional accessories upon request

Instructions for transport, installation, commissioning, operation and maintenance

1. General safety instructions

⚠ WARNING!

Risk of injury and property damage due to improper handling of the product

If the module is not properly installed, used and maintained, personal injury and damage can occur to the module or system.

- ▶ Installation, adjustment, maintenance and repair of the module may only be performed by authorized, trained and qualified personnel.

Please note:

- ▶ The module may only be used in accordance with the data described in the product documentation!
- ▶ Unauthorized modifications or changes which affect the safety and proper function are not permitted!
- ▶ Existing protective devices must not be removed.
- ▶ The general safety and accident prevention regulations must be observed!

2. Transportation and storage

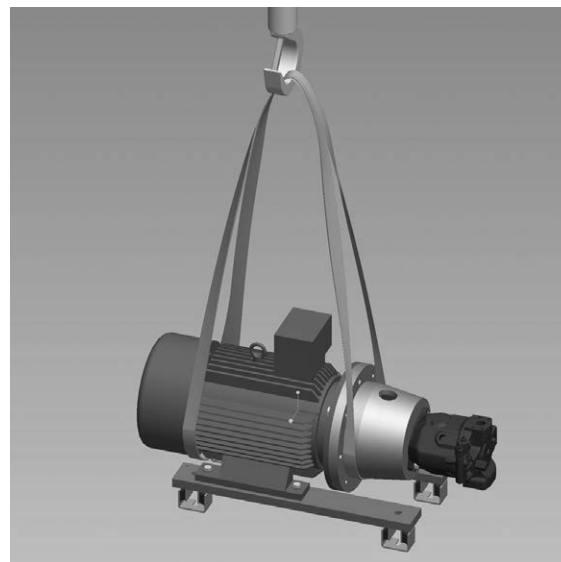
Transport

⚠ WARNING!

Risks of injury caused by tumbling, falling or uncontrolled movement of the module!

The module can lose its stability in cases of improper transport and thereby tip over, fall or move in an uncontrolled manner.

- ▶ Be aware of the module weight.
- ▶ Place the product on a suitable foundation/ ground.
- ▶ Before removing the existing auxiliary structure make additional suitable measures (e.g. by fasteners or with the help of cranes) for the adequate stability of the module.
- ▶ Only the intended attachment points should be used for fastening or lifting the module (see Fig.).
- ▶ Modules are never to be attached or raised on the established components (pipes, hoses, control blocks, accumulator, etc.).
- ▶ Observe the maximum load-bearing capacity of the attachment devices and floor conveyors.
- ▶ Ensure that no unauthorized persons are within the danger zone.
- ▶ The module must not be raised on the fan cover of the motor.
- ▶ The eye bolts of the motor must not be used for lifting the module. They are only intended for lifting the motor without additional attachments.
- ▶ Auxiliary eyelets e.g. on fan covers and cooler attachments, are also suitable for lifting the corresponding items must not be used for the transport of the module.



Instructions for transport, installation, commissioning, operation and maintenance

Storage

In general it is recommended that the modules are stored as follows until actual installation date:

- ▶ in the original packaging
- ▶ dry and dust-free
- ▶ at room temperature
- ▶ free of vibrations and oscillations
- ▶ protected from light and direct sunlight

3. Assembly and installation

- ▶ Position the module as indicated in the dimensions.
- ▶ Attach the product to the designated locations as specified in the dimensions .
- ▶ Always depressurize and deenergize the relevant plant part before assembling the module.
- ▶ Ground the module before connecting and establish equipotential bonding using an equalization strip.
- ▶ Always ensure absolute cleanliness.

WARNING!

Risk of death by electric shock! Working in the areas of live parts is extremely dangerous.

Work at the electric system may only be performed by a specialized electrician. Electricians tools (VDE tools) are strictly required.

- ▶ Using a suitable measuring device, check before the beginning of the work whether parts of the system are still under residual voltage (e.g. with capacitors). Wait until they have discharged.

- ▶ Electrical wiring work must be performed by trained specialist personnel in accordance with local regulations!
- ▶ Before starting work, make sure that all electrical connections are switched off and cannot be switched back on again. This also applies to auxiliary circuits such as space heaters.
- ▶ The connections must be made such that a continuous and safe electrical connection is ensured. This applies equally to power and ground connections.
- ▶ Wiring diagrams for the power and accessory connections (e.g. PTC thermistors, heating) are located in the terminal box.
- ▶ Make sure that the terminal box is clean and dry.
- ▶ Unused cable entry glands must be closed off.
- ▶ Check the terminal box seal before refitting.

Instructions for transport, installation, commissioning, operation and maintenance

4. Commissioning

- ▶ Before initial operation the pump must be vented and primed in order to protect internal components from damage.
- ▶ When commissioning or re-commissioning machinery or a system, you should ensure that the tank, as well the suction line and the pressure line of the module are filled with oil according to the manufacturer's instructions and remain filled during operation.
- ▶ Check the direction of rotation of the motor.
- ▶ Ensure that the suction pressure does not fall below the specified minimum.

Notice:

The module will be damaged by polluted oil!

Polluted oil could result in wear and malfunctions.

In particular, foreign matter in the suction line such as welding globules and metallic swarf can damage the module.

- ▶ During commissioning, absolute cleanliness must be ensured.

- ▶ When connecting the measuring terminals ensure that no contaminants infiltrate the module.
- ▶ In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary. Brand-name hydraulic oils are recommended.

CAUTION!

Commissioning an incorrectly installed product!

Risk of injury and damage to property!

- ▶ Make sure that all electrical and hydraulic connections

are either connected or closed.

- ▶ Only take a fully installed product with original accessories from Bosch Rexroth into operation.

5. Operation

The product is a module which does not require any settings or modifications during operation. As a result, this chapter of the instructions does not contain any information on adjustment options. Only use the product within

the performance range provided in the technical data. The machine manufacturer is responsible for the correct project planning of the module and its control.

6. Maintenance

Maintenance

- ▶ Only genuine spare parts from Bosch Rexroth are permitted.

Cleaning and care

- ▶ Always ensure absolute cleanliness when working at the product.
- ▶ Do not use high-pressure washers for cleaning.
- ▶ Tightly seal openings such as inspection holes with suitable protective devices and verify that all gaskets

and seals on electrical connections are secure so that no detergent can penetrate into the product.

- ▶ Never use solvents or aggressive cleaning agents.
- ▶ Cleaning intervals depend on the degree of contamination occurring locally.

Necessary and amending documentation

▶ Axial piston-variable displacement pump A4VSO, A10VO, A10VSO, ...	Operating instructions	92703-01-B
▶ Axial piston-variable displacement pump A10VO	Data sheet	92703
▶ Axial piston-variable displacement pump A10VSO	Data sheet	92711
▶ Control device DR, DRE, ...	Data sheet	92060
▶ Pump control block PSBD 02	Data sheet	62300
▶ Pump safety block type DBA, DBAW	Data sheet	25880
▶ Motor-pump groups -IE2- A10VSO series 31/52	Data sheet	51170
▶ Motor-pump groups -IE2- PV7	Data sheet	51171
▶ Motor-pump groups -IE2- A4VSO series 10/30	Data sheet	51172
▶ Motor-pump groups -IE2- A10VSO series 32	Data sheet	51174
▶ Motor-pump groups -IE2- PGZ	Data sheet	51175
▶ Motor-pump groups -IE3- A10VSO series 31/52	Data sheet	51180
▶ Motor-pump groups -IE3- PV7	Data sheet	51181
▶ Motor-pump groups -IE3- A4VSO series 10/30	Data sheet	51182
▶ Motor-pump groups -IE3- A10VSO series 32	Data sheet	51184
▶ General Operating Instructions for Hydraulic Power Units and Assemblies	Operating instructions	07009-B

Motor-pump groups

Type ABAPG and ABHPG

RE 51181

Edition: 2015-02



- ▶ With pump type: PV7
 - Maximum pressure up to 160 bar
 - Max. volume flow: Up to 162.5 l/min
- ▶ Electric motor frame size 90S to 250M
Efficiency class IE3

Features

Electric energy is converted into hydraulic energy via the motor-pump groups.

They have been designed for hydrostatic drives in open circuits.

- ▶ Efficiency class IE3
- ▶ Electric motor design IM B5 (ABHPG) and/or IM B3/B5 (ABAPG)
- ▶ Pump fastened at the electric motor with rigid pump carrier and coupling
- ▶ Low operating noise
- ▶ Versatile possible applications on tank, base frame or separate installation
- ▶ Clear, maintenance-friendly set-up
- ▶ With vane pump PV7 (variable displacement pump)

Contents

Features	1
Ordering code	2
Set-up of the motor-pump group	3
	4
Technical data	5
Circuit diagrams	6
Standard program incl. preferred types	7, 8
Dimensions	9 ... 12
Line connections	13
Optional accessories at the pressure connection	13, 14
Instructions for transport, installation, commissioning, operation and maintenance	15 ... 17
Required and amending documentation	18

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16						
	-	V7	-		M		0	-	16	/			4	5	3	3	/	S	E		HOY

Assembly

01	With motor design B35	ABAPG
	With motor design B5	ABHPG

Pump type

02	Vane pump PV7 according to data sheet 10515 and 10522	V7
----	---	----

Frame size/size

03	10 ... 118 cm ³ per rotation	06-10 ... 100-118
----	---	-------------------

Seal material (according to DIN ISO 1629)

04	NBR	M
----	-----	---

Controller type

05	Direct operated	A
	Pressure controller	C

Controller option

06	Standard	0
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Zero stroke pressure range

07	160 bar	16
----	---------	----

Motor power

08	1.1 kW... 55.0 kW	1.1 ... 55.0
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Rated voltage

09	230/400 V at 50 Hz (up to 3 kW)	CA
	400/690 V at 50 Hz (from 4 kW)	CB

Number of pole pairs

10	4-pole	4
----	--------	---

Rated frequency

11	50 Hz	5
----	-------	---

Efficiency class

12	IE3 according to IEC 60034-30	3
----	-------------------------------	---

Motor protection

13	PTC resistor with 3 temperature sensors	3
----	---	---

Pump carrier design

14	Rigid pump carrier AB 03337	S
----	-----------------------------	---

Damping bearing design

15	Elastic damping bearing (only ABAPG)	E
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Motor supplier

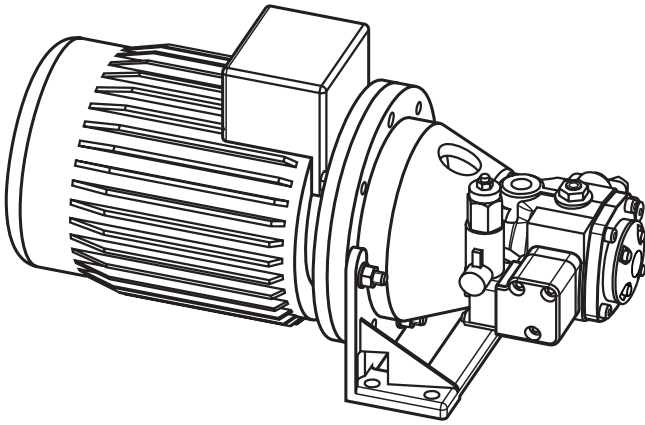
16	Hoyer Motors (preferred)	HOY
	Siemens	SIE

Order example:

ABAPG-V7-63-71MA0-16/30.0CB4523/SE HOY

Set-up of the motor-pump group

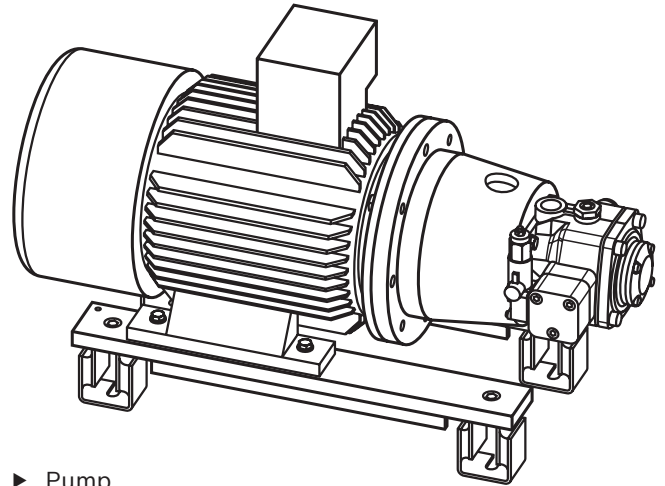
ABHPG design



- ▶ Pump
- ▶ Electric motor
- ▶ Pump carrier (rigid)
- ▶ Coupling
- ▶ Pump base

The use of this design is recommended in confined spaces (e.g. on oil tanks) max. performance range 7.5 kW

ABAPG design



- ▶ Pump
- ▶ Electric motor
- ▶ Pump carrier (rigid)
- ▶ Coupling
- ▶ Strips
- ▶ Damping bearing

Use of this design is particularly recommended for requirements on low noise levels min. performance range 5.5 kW

The motor-pump group configurator

Motor-pump groups can be put together quickly and easily with the APAPG configurator: The standard types defined in the datasheet enables users and sales people without detailed knowledge to individually configure the central drive unit for aggregates. A practical, product-neutral kit

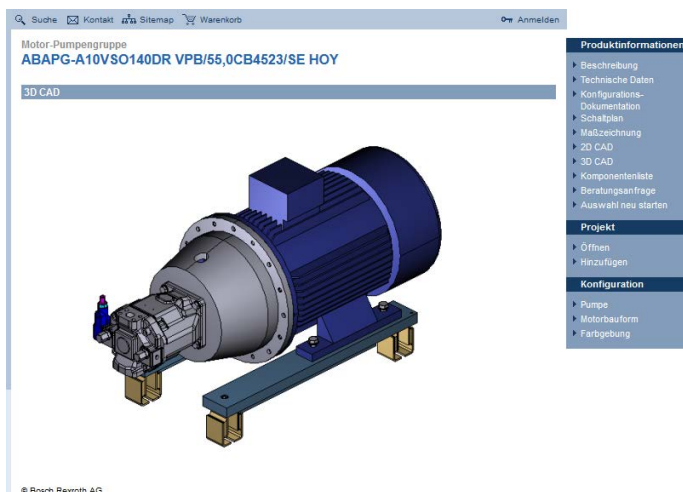
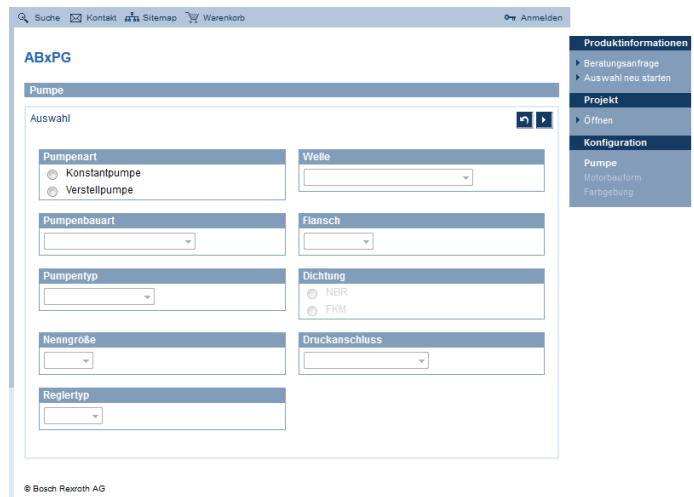
provides 3D data that can be immediately applied to applications. This saves time.

This is performed online by selecting the relevant product components or by specifying the operating conditions (flow rate, rated frequency, type of pump, operating pressure).



Thanks to the intuitive menu navigation, you are guided safely through the required configuration steps. Related features are clearly arranged on one page.

Associated features are clearly displayed on the same page.



When the configuration is finished, you can have the complete configuration documentation sent to you via email including material list, circuit diagram, 2D drawing and 3D model (STEP). This is done by way of an automatic request to your local distributor who will promptly contact you and send you an offer.

Technical data

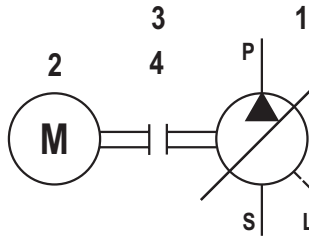
(For applications outside these parameters, please consult us!)

Line connections	see Line connections table on page 13		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN ISO 3448 (other fluids on request!) ▶ Please observe our provisions according to data sheet 90220. ▶ Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity. ▶ According to the operating conditions, the fluid must be renewed at certain intervals.		
Pump type	PV7 frame size 6 according to data sheet 10522 PV7 frame size 10 ... 100 according to data sheet 10515		
▶ Direction of rotation	Clockwise		
Operating pressure, absolute			
▶ Input	$p_{\min\text{-max}}$	bar	0.8 ... 2.5
▶ Output	p_{nom}	bar	up to 160 (depending on the frame size)
▶ Leakage port	p_{max}	bar	2
Hydraulic fluid temperature range, observe	ϑ	°C	-10 ... +70
viscosity range			
▶ T_{optimal} with HLP 46 (DIN 51524)	ϑ	°C	+45 ... +55
▶ T_{max} in continuous operation	ϑ	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50125 (ABUKG) and 50112 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of pressure flow according to ISO 4406 (c) ¹⁾ Minimum purity class 19/16/13 with NG10 ... 25 and purity class 20/18/15 with NG14 ... NG150		
Viscosity range	ϑ	mm ² /s	16 ... 160 optimal Max. 200 in case of start-up in zero stroke operation. Max. 800 in case of start-up in delivery operation. (See data sheet 10515, 10522)
Electric motor	▶ Motor type		
	▶ Efficiency class		
	▶ Number of pole pairs		
	▶ Voltage according to IEC 38	U	V
	▶ Speed	n	min ⁻¹
	▶ Protection class	IP	55
	▶ Installation position	horizontal	
Surface treatment	By default, all steel components and components are at least provided with temporary corrosion protection (e.g. for transport).		

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.
 For selecting the filters, see data sheet 51501.

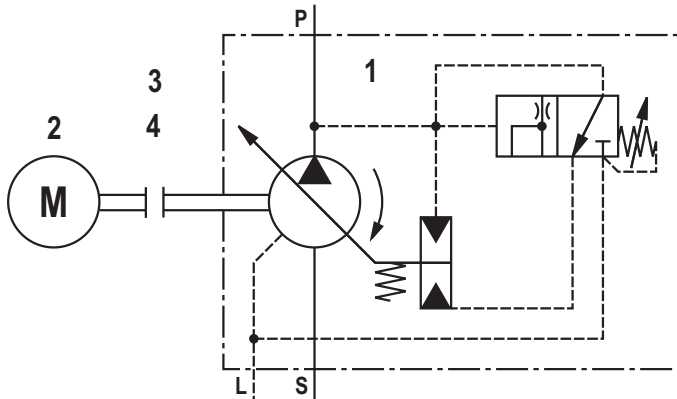
Circuit diagrams

Vane pump direct operated (frame size 6)



- 1 Vane pump PV7
- 2 Electric motor
- 3 Pump carrier (rigid)
- 4 Coupling

Vane pump pilot operated (frame size 10-100)



- 1 Vane pump PV7
- 2 Electric motor
- 3 Pump carrier (rigid)
- 4 Coupling

Standard program incl. preferred types ABHPG-PV7

Frequency	50 Hz 1450 min ⁻¹		Electric motor size	ABHPG material no. (Motor B5)				
	$q_{V \max}$ in l/min	p_{\max} in bar		Power in kW	HOY	MKZ ¹⁾	SIE	MKZ ¹⁾
PV7-1X/6- 10RA01MA0-10	13.8	38	1.10	90S	R901397390	A3	R901397415	A3
		52	1.50	90L	R901397391	A3	R901397416	A3
		79	2.20	100L	R901397392	A3	R901397417	A3
		100	3.00	100L	R901397393	A3	R901397418	A3
PV7-1X/10- 14RE01MC0-16	19.3	36	1.50	90L	R901397394	A3	R901397419	A3
		53	2.20	100L	R901397395	A3	R901397420	A3
		74	3.00	100L	R901397396	A2	R901397421	A3
		100	4.00	112M	R901397397	A2	R901397422	A3
		137	5.50	132S	R901397398	A3	R901397423	A3
		160	7.50	132M	R901397399	A3	R901397424	A3
PV7-1X/16- 20RE01MC0-16	27.6	30	2.20	100L	R901397401	A3	R901397425	A3
		44	3.00	100L	R901397402	A3	R901397426	A3
		59	4.00	112M	R901397403	A3	R901397427	A3
		85	5.50	132S	R901397404	A2	R901397430	A3
		118	7.50	132M	R901397405	A3	R901397431	A3
PV7-1X/25- 30RE01MC0-16	41.3	28	3.00	100L	R901397406	A3	R901397432	A3
		40	4.00	112M	R901397407	A3	R901397433	A3
		59	5.50	132S	R901397408	A2	R901397434	A3
		83	7.50	132M	R901397409	A2	R901397435	A3
PV7-1X/40- 45RE37MC0-16	62.0	28	4.00	112M	R901397410	A3	R901397436	A3
		39	5.50	132S	R901397411	A2	R901397437	A3
		55	7.50	132M	R901397412	A3	R901397438	A3
PV7-1X/63- 71RE07MC0-16	97.8	25	5.50	132S	R901397413	A3	R901397439	A3
		33	7.50	132M	R901397414	A3	R901397440	A3

¹⁾ MKZ = material mark

A2 = preferred delivery range

A3 = Standard delivery range dimensions see page 9... 12

Standard program incl. preferred types ABAPG-PV7

Frequency	50 Hz		50 Hz	Electric	ABAPG material no.			
	1450 min ⁻¹		1450 min ⁻¹		motor size	(Motor B5)		
Pump	$q_{V \max}$ in l/min	p_{\max} in bar	Power in kW		HOY	MKZ ¹⁾	SIE	MKZ ¹⁾
PV7-1X/10- 14RE01MC0-16	19.3	137	5.50	132S	R901397844	A3	R901397920	A3
		160	7.50	132M	R901397846	A3	R901397921	A3
PV7-1X/16- 20RE01MC0-16	27.6	85	5.50	132S	R901397847	A2	R901397922	A3
		118	7.50	132M	R901397848	A3	R901397923	A3
		160	11.00	160M	R901397849	A3	R901397924	A3
PV7-1X/25- 30RE01MC0-16	41.3	59	5.50	132S	R901397850	A2	R901397925	A3
		83	7.50	132M	R901397852	A2	R901397926	A3
		128	11.00	160M	R901397853	A3	R901397927	A3
		160	15.00	160L	R901397854	A3	R901397928	A3
PV7-1X/40- 45RE37MC0-16	62.0	39	5.50	132S	R901397855	A2	R901397929	A3
		55	7.50	132M	R901397856	A3	R901397930	A3
		79	11.00	160M	R901397858	A2	R901397931	A3
		110	15.00	160L	R901397859	A3	R901397932	A3
		136	18.50	180M	R901397860	A3	R901397933	A3
		160	22.00	180L	R901397862	A3	R901397934	A3
PV7-1X/63- 71RE07MC0-16	97.8	25	5.50	132S	R901397863	A3	R901397935	A3
		33	7.50	132M	R901397864	A3	R901397936	A3
		50	11.00	160M	R901397865	A3	R901397937	A3
		70	15.00	160L	R901397907	A3	R901397938	A3
		86	18.50	180M	R901397908	A3	R901397939	A3
		104	22.00	180L	R901397909	A3	R901397940	A3
		144	30.00	200L	R901397910	A3	R901397941	A3
		160	37.00	225S	R901397911	A3	R901397942	A3
PV7-1X/100- 118RE07MC0-16	162.5	30	11.00	160M	R901397912	A3	R901397943	A3
		43	15.00	160L	R901397913	A3	R901397944	A3
		54	18.50	180M	R901397914	A2	R901397945	A3
		65	22.00	180L	R901397915	A3	R901397946	A3
		89	30.00	200L	R901397916	A3	R901397947	A3
		110	37.00	225S	R901397917	A3	R901397948	A3
		137	45.00	225M	R901397918	A3	R901397949	A3
		160	55.00	250M	R901397919	A3	R901397950	A3

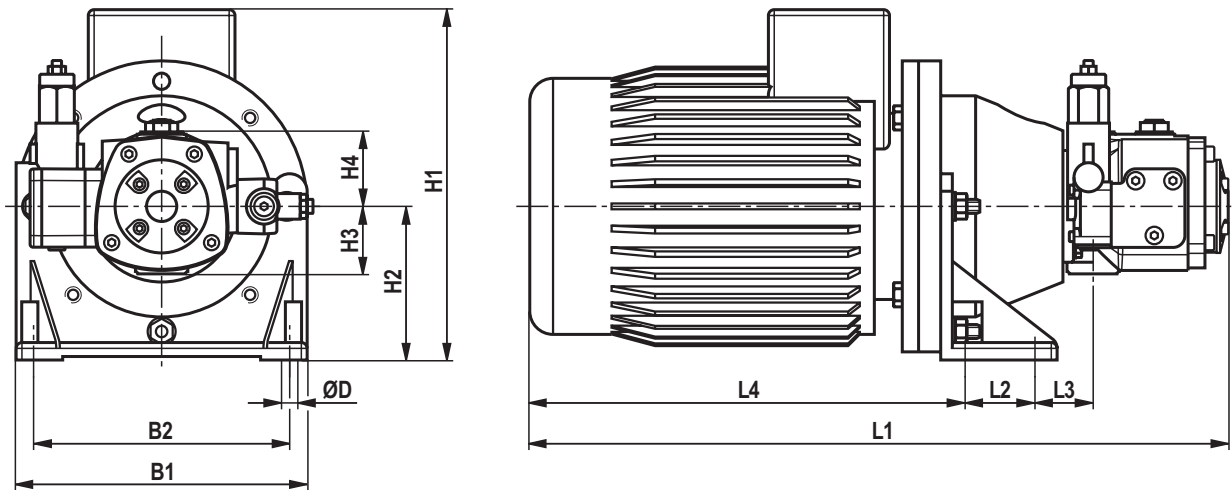
¹⁾ MKZ = material mark

A2 = preferred delivery range

A3 = Standard delivery range dimensions see page 9... 12

Dimensions: Type ABHPG-V7 (motor supplier HOYER-MOTORS)

(dimensions in mm)

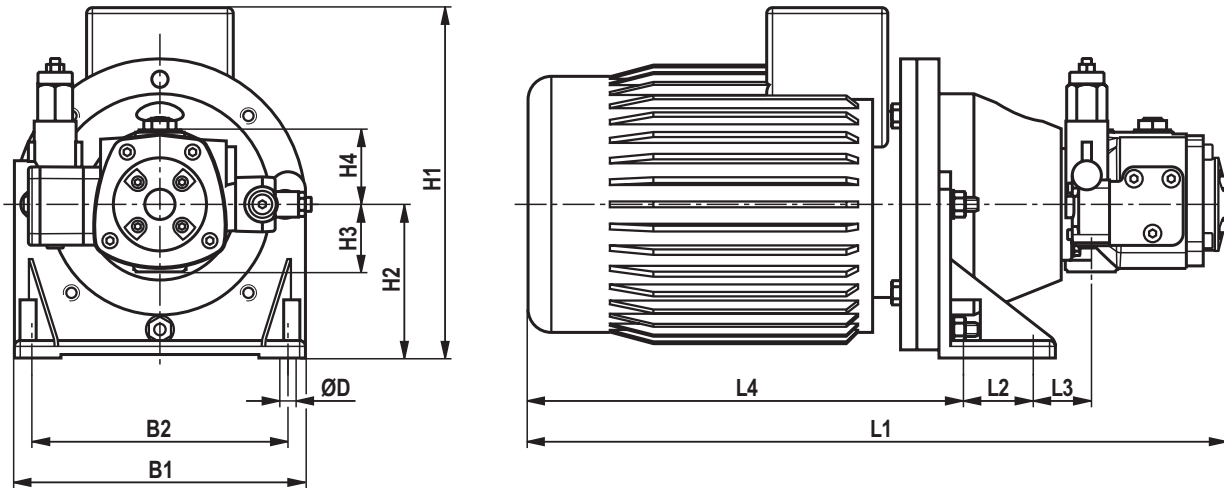


ABHPG-V7 with motor supplier HOYER-MOTORS

Pump	E-motor kW / frame size	Dimensions										Weight in kg	
		B1	B2	ØD	H1	H2	H3	H4	L1	L2	L3		L4
PV7/6-10	1.1 / 90S	210	180	11	244	112	56.5	56.5	450	60	86.5	298	28
	1.5 / 90L	210	180	11	244	112	56.5	56.5	478	60	86.5	325	31
	2.2 / 100L	250	220	14	279	132	56.5	56.5	505	60	80.5	386	38
	3.0 / 100L	250	220	14	279	132	56.5	56.5	505	60	80.5	386	41
PV7/10-14	1.5 / 90L	210	180	11	244	112	58	64	485	60	88	325	35
	2.2 / 100L	250	220	14	279	132	58	64	512	60	82	386	44
	3.0 / 100L	250	220	14	279	132	58	64	512	60	82	386	47
	4.0 / 112M	250	220	14	300	132	58	64	567	60	82	410	55
	5.5 / 132S	300	260	14	347	160	58	64	573	80	82	423	70
PV7/16-20	7.5 / 132M	300	260	14	347	160	58	64	636	80	82	461	78
	2.2 / 100L	250	220	14	279	132	68	72	520	60	92	386	48
	3.0 / 100L	250	220	14	279	132	68	72	520	60	92	386	51
	4.0 / 112M	250	220	14	300	132	68	72	575	60	92	410	59
	5.5 / 132S	300	260	14	347	160	68	72	592	80	103	423	73
PV7/25-30	7.5 / 132M	300	260	14	347	160	68	72	655	80	103	461	81
	3.0 / 100L	250	220	14	279	132	92	80	528	60	116	386	54
	4.0 / 112M	250	220	14	300	132	92	80	583	60	116	410	62
	5.5 / 132S	300	260	14	347	160	92	80	600	80	127	423	76
PV7/40-45	7.5 / 132M	300	260	14	347	160	92	80	663	80	127	461	84
	4.0 / 112M	250	220	14	300	132	89	94	597	60	113	410	73
	5.5 / 132S	300	260	14	347	160	89	94	627	80	137	423	87
PV7/63-71	7.5 / 132M	300	260	14	347	160	89	94	690	80	137	461	95
	5.5 / 132S	300	260	14	347	160	105	100	633	80	153	423	90
	7.5 / 132M	300	260	14	347	160	105	100	696	80	153	461	98

Dimensions: Type ABHPG-V7 (motor supplier SIEMENS)

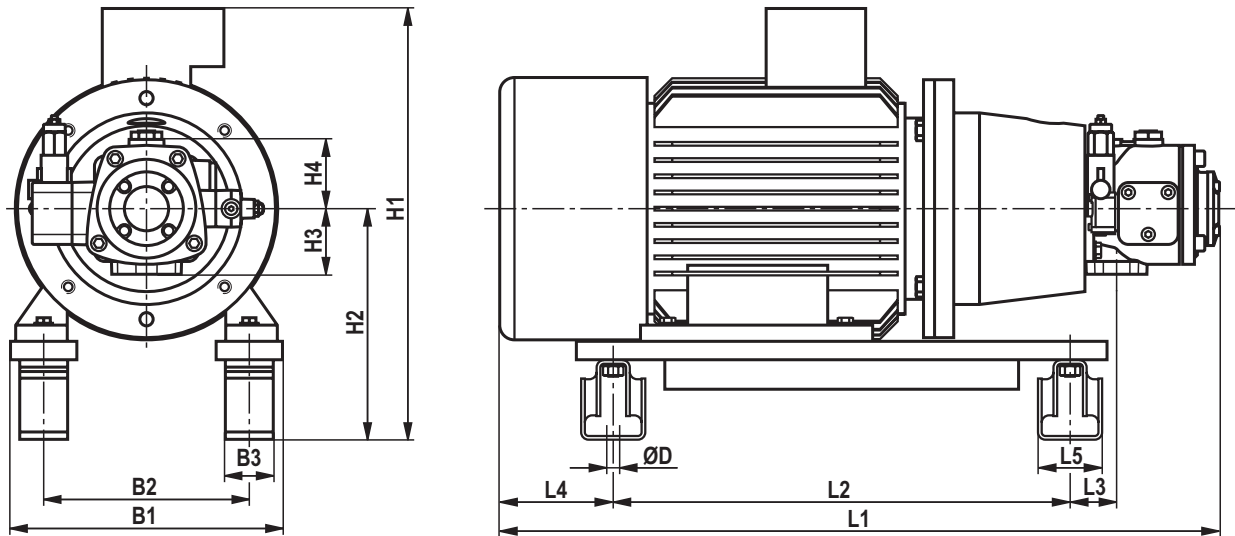
(dimensions in mm)



ABHPG-V7 with motor supplier SIEMENS

Pump	E-motor kW / frame size	Dimensions											Weight in kg
		B1	B2	ØD	H1	H2	H3	H4	L1	L2	L3	L4	
PV7/6-10	1.1 / 90S	210	180	11	240	112	56.5	56.5	438	60	86.5	291	28
	1.5 / 90L	210	180	11	232	112	56.5	56.5	519	60	86.5	372	25
	2.2 / 100L	250	220	14	269	132	56.5	56.5	547.5	60	80.5	406.5	41
	3.0 / 100L	250	220	14	268	132	56.5	56.5	576.5	60	80.5	435.5	41
PV7/10-14	1.5 / 90L	210	180	11	232	112	58	64	526	60	88	372	35
	2.2 / 100L	250	220	14	269	132	58	64	554.5	60	82	406.5	47
	3.0 / 100L	250	220	14	268	132	58	64	583.5	60	82	435.5	47
	4.0 / 112M	250	220	14	310	132	58	64	612	60	82	464	51
	5.5 / 132S	300	260	14	359	160	58	64	707	80	82	539	84
PV7/16-20	7.5 / 132M	300	260	14	359	160	58	64	707	80	82	539	84
	2.2 / 100L	250	220	14	269	132	68	72	562.5	60	92	406.5	51
	3.0 / 100L	250	220	14	268	132	68	72	591.5	60	92	435.5	51
	4.0 / 112M	250	220	14	310	132	68	72	620	60	92	464	55
	5.5 / 132S	300	260	14	359	160	68	72	726	80	103	539	87
PV7/25-30	7.5 / 132M	300	260	14	359	160	68	72	726	80	103	539	87
	3.0 / 100L	250	220	14	368	132	92	80	599.5	60	116	435.5	54
	4.0 / 112M	250	220	14	310	132	92	80	628	60	116	464	58
	5.5 / 132S	300	260	14	359	160	92	80	734	80	127	539	90
PV7/40-45	7.5 / 132M	300	260	14	359	160	92	80	734	80	127	539	90
	4.0 / 112M	250	220	14	310	132	89	94	642	60	113	464	69
	5.5 / 132S	300	260	14	359	160	89	94	761	80	137	539	101
PV7/63-71	7.5 / 132M	300	260	14	359	160	89	94	761	80	137	539	101
	5.5 / 132S	300	260	14	359	160	105	100	767	80	153	539	104
	7.5 / 132M	300	260	14	359	160	105	100	767	80	153	539	104

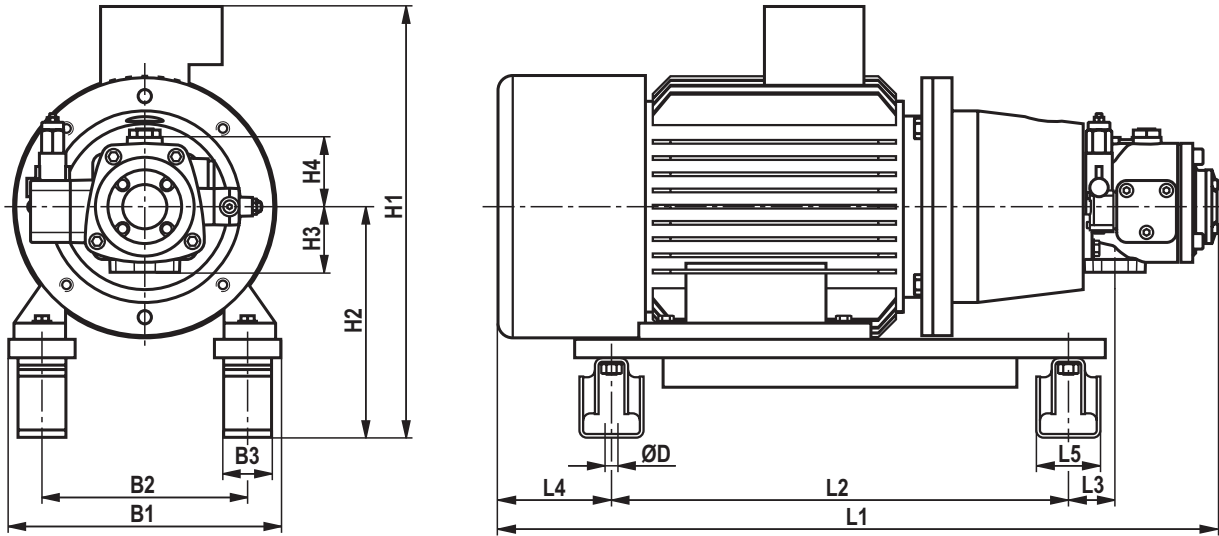
Dimensions: Type ABAPG-V7 (motor supplier HOYER-MOTORS)
(dimensions in mm)



ABAPG-V7 with motor supplier HOYER-MOTORS

Pump	E-motor kW / frame size	Dimensions											Weight in kg		
		B1	B2	B3	ØD	H1	H2	H3	H4	L1	L2	L3		L4	L5
PV7/10-14	5.5 / 132S	300	216	50	13.5	422	235	58	64	658	480	-6	78	80	89
	7.5 / 132M	300	216	50	13.5	422	235	58	64	721	480	-6	141	55	97
PV7/16-20	5.5 / 132S	300	216	50	13.5	422	235	68	72	685	480	16	78	80	91
	7.5 / 132M	300	216	50	13.5	422	235	68	72	748	480	16	141	55	99
	11.0 / 160M	350	254	50	13.5	539	263	68	72	866	580	59	107	74	191
PV7/25-30	5.5 / 132S	300	216	50	13.5	422	235	92	80	697	480	17	78	80	95
	7.5 / 132M	300	216	50	13.5	422	235	92	80	760	480	17	141	55	103
	11.0 / 160M	350	254	50	13.5	539	263	92	80	878	580	60	107	74	195
	15.0 / 160L	350	254	50	13.5	539	263	92	80	937	580	60	162	63	205
PV7/40-45	5.5 / 132S	300	216	50	13.5	422	235	89	94	720	480	35	78	80	103
	7.5 / 132M	300	216	50	13.5	422	235	89	94	783	480	35	141	55	111
	11.0 / 160M	350	254	50	13.5	539	63	89	94	888	580	65	107	74	204
	15.0 / 160L	350	254	50	13.5	539	263	89	94	947	580	65	162	63	214
	18.5 / 180M	369	279	65	17.5	605	313	89	94	976.5	620	63	154	72.5	262
22.0 / 180L	369	279	65	17.5	627	313	89	94	1016.5	620	63	194	70.5	277	
PV7/63-71	5.5 / 132S	300	216	50	13.5	422	235	105	100	744	480	43	78	80	106
	7.5 / 132M	300	216	50	13.5	422	235	105	100	807	480	43	141	55	114
	11.0 / 160M	350	254	50	13.5	539	263	105	100	912	580	73	107	74	210
	15.0 / 160L	350	254	50	13.5	539	263	105	100	971	580	73	162	63	220
	18.5 / 180M	369	279	65	17.5	605	313	105	100	1000.5	620	71	154	72.5	265
	22.0 / 180L	369	279	65	17.5	627	313	105	100	1040.5	620	71	194	70.5	280
	30.0 / 200L	418	318	80	17.5	673	360	105	100	1064	700	38	177	99	369
37.0 / 225S	456	356	80	17.5	721	385	105	100	1117.5	800	-6	166	107.5	421	
PV7/100-118	11.0 / 160M	350	254	65	17.5	539	293	126	111	967	580	107	107	74	234
	15.0 / 160L	350	254	65	17.5	539	293	126	111	1026	580	107	162	63	244
	18.5 / 180M	369	279	65	17.5	605	313	126	111	1055.5	620	105	154	72.5	289
	22.0 / 180L	369	279	65	17.5	627	313	126	111	1095.5	620	105	194	70.5	307
	30.0 / 200L	418	318	80	17.5	673	360	126	111	1119	700	71.5	177	99	393
	37.0 / 225S	456	356	80	17.5	721	385	126	111	1176.5	800	31.5	166	107.5	445
	45.0 / 225M	456	356	80	17.5	721	385	126	111	1206.5	800	31.5	196	102.5	475
55.0 / 250M	550	406	80	17.5	794	420	126	111	1276	850	52.5	198	94	588	

Dimensions: Type ABAHPG-V7 (motor supplier SIEMENS)
(dimensions in mm)



ABAPG-V7 with motor supplier SIEMENS

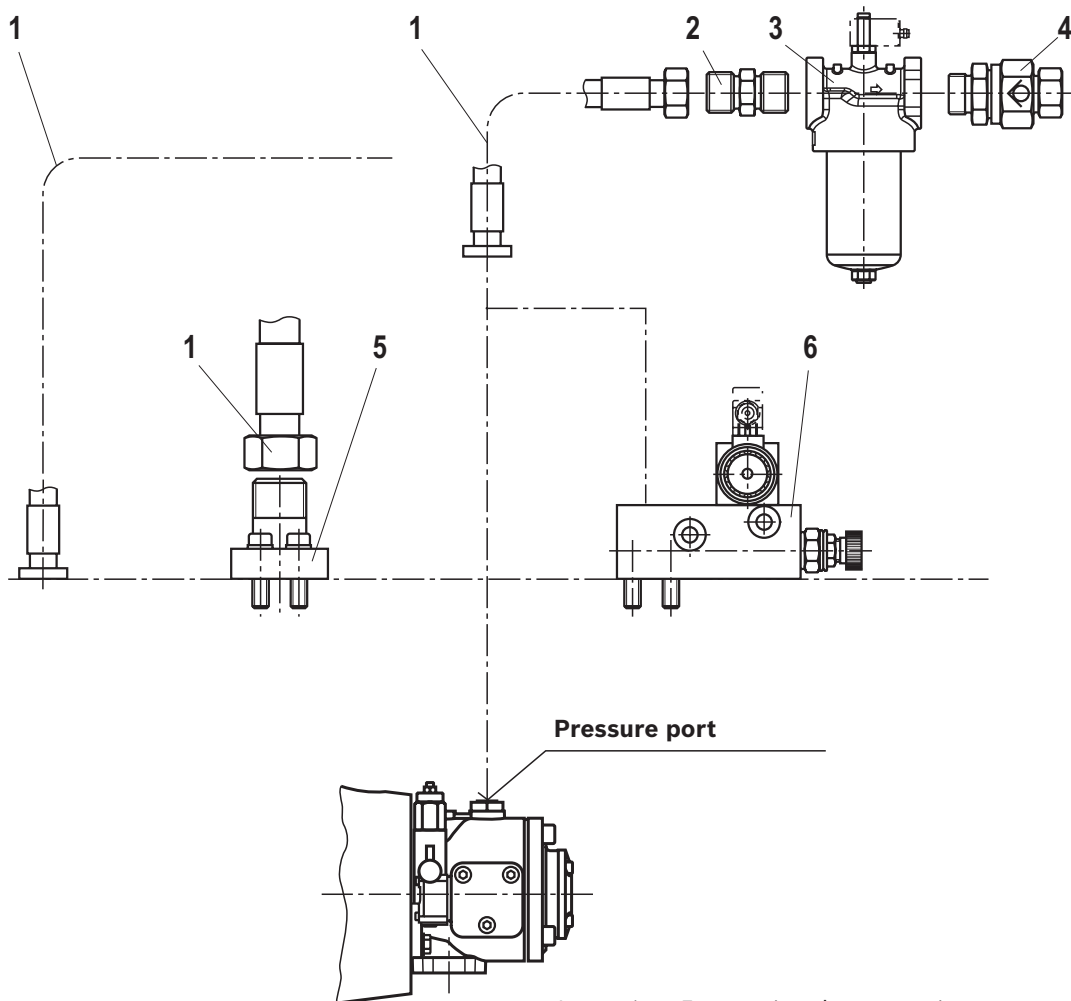
Pump	E-motor kW / frame size	Dimensions													Weight in kg
		B1	B2	B3	ØD	H1	H2	H3	H4	L1	L2	L3	L4	L5	
PV7/10-14	5.5 / 132S	300	216	50	13.5	437	235	58	64	728	480	-6	81	129	103
	7.5 / 132M	300	216	50	13.5	437	235	58	64	728	480	-6	81	129	103
PV7/16-20	5.5 / 132S	300	216	50	13.5	437	235	68	72	755	480	16	81	129	105
	7.5 / 132M	300	216	50	13.5	437	235	68	72	755	480	16	81	129	105
	11.0 / 160M	350	254	50	13.5	500	263	68	72	863	580	59	96	79	133
PV7/25-30	5.5 / 132S	300	216	50	13.5	437	235	92	80	767	480	17	81	129	109
	7.5 / 132M	300	216	50	13.5	437	235	92	80	767	480	17	81	129	109
	11.0 / 160M	350	254	50	13.5	500	263	92	80	875	580	60	96	79	137
	15.0 / 160L	350	254	50	13.5	500	263	92	80	935	580	60	96	139	154
PV7/40-45	5.5 / 132S	300	216	50	13.5	437	235	89	94	790	480	35	81	129	117
	7.5 / 132M	300	216	50	13.5	437	235	89	94	790	480	35	81	129	117
	11.0 / 160M	350	254	50	13.5	500	63	89	94	885	580	65	96	79	146
	15.0 / 160L	350	254	50	13.5	500	263	89	94	945	580	65	96	139	163
	18.5 / 180M	369	279	65	17.5	575	313	89	94	949	620	63	123	86	237
22.0 / 180L	369	279	65	17.5	575	313	89	94	979	620	63	174	65	242	
PV7/63-71	5.5 / 132S	300	216	50	13.5	437	235	105	100	814	480	43	81	129	120
	7.5 / 132M	300	216	50	13.5	437	235	105	100	814	480	43	81	129	120
	11.0 / 160M	350	254	50	13.5	500	263	105	100	909	580	73	96	79	152
	15.0 / 160L	350	254	50	13.5	500	263	105	100	969	580	73	96	139	169
	18.5 / 180M	369	279	65	17.5	575	313	105	100	973	620	71	123	86	240
	22.0 / 180L	369	279	65	17.5	575	313	105	100	1003	620	71	174	65	245
	30.0 / 200L	418	318	80	17.5	660	360	105	100	1057.5	700	38	127	132.5	334
37.0 / 225S	456	356	80	17.5	713	385	105	100	1075	800	-6	140	74	391	
PV7/100-118	11.0 / 160M	350	254	65	17.5	530	293	126	111	964	580	107	96	87	176
	15.0 / 160L	350	254	65	17.5	530	293	126	111	1024	580	107	96	139	193
	18.5 / 180M	369	279	65	17.5	575	313	126	111	1028	620	105	123	86	264
	22.0 / 180L	369	279	65	17.5	575	313	126	111	1058	620	105	174	65	272
	30.0 / 200L	418	318	80	17.5	660	360	126	111	1112.5	700	71.5	127	132.5	358
	37.0 / 225S	456	356	80	17.5	713	385	126	111	1130	800	31.5	140	74	415
	45.0 / 225M	456	356	80	17.5	713	385	126	111	1212	800	31.5	200	99	450
55.0 / 250M	550	406	80	17.5	812	420	126	111	1254	850	52.5	234	36	587	

Line connections

Pump type	Line connections		
	Pressure connection P	Suction port S	Leakage oil connection L / L1
PV7-1X/6-10	ISO 228/1 G 3/8	ISO 228/1 G 1/2	ISO 228/1 G 1/4
PV7-1X/10-14	ISO 228/1 G 1/2	ISO 228/1 G 1	ISO 228/1 G 1/4
PV7-1X/16-20	ISO 228/1 G 3/4	ISO 228/1 G 1 1/4	ISO 228/1 G 3/8
PV7-1X/25-30	ISO 228/1 G 1	ISO 228/1 G 1 1/2	ISO 228/1 G 3/8
PV7-1X/40-45	ISO 228/1 G 1	DIN ISO 6162-1 SAE 1 1/2" ¹⁾	ISO 228/1 G 1/2
PV7-1X/63-71	DIN ISO 6162-2 SAE 1 1/4" ¹⁾	DIN ISO 6162-1 SAE 2" ¹⁾	ISO 228/1 G 1/2
PV7-1X/100-118	DIN ISO 6162-2 SAE 1 1/2" ¹⁾	DIN ISO 6162-1 SAE 2 1/2" ¹⁾	ISO 228/1 G 3/4

¹⁾ Standard pressure SAE flange figure with metric mounting screws

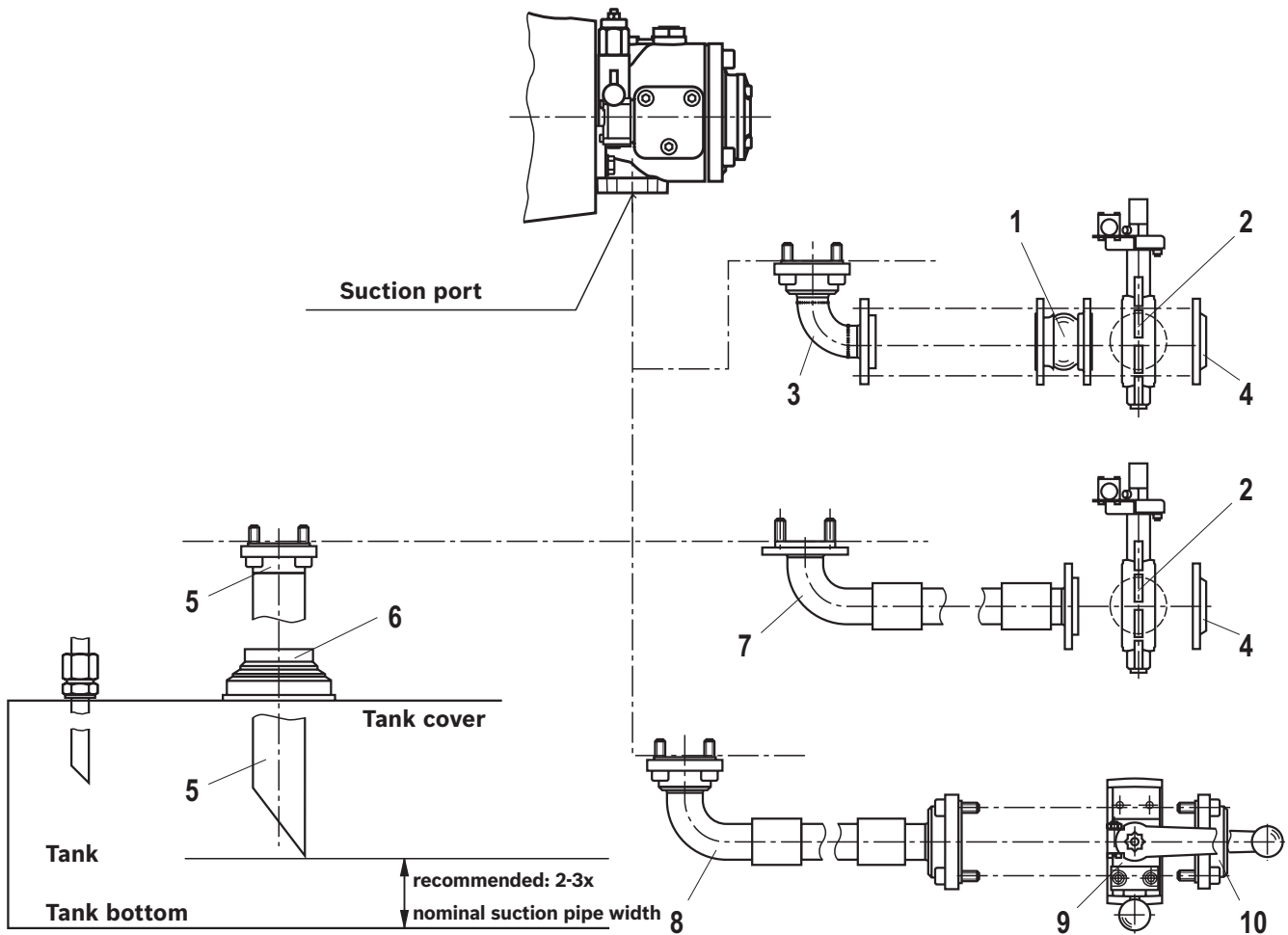
Optional accessories at the pressure connection



- 1 Hose line AB 02314, AB 02316
- 2 Fitting AB 02012
- 3 In-line filter data sheet 51421; 51422
- 4 Check valve AB 02112
- 5 SAE flange AB 02214
- 6 Intermediate flange only necessary for size 63 and 100

Items 1 to 5 as optional accessories upon request. Hydraulic start-up aid pump safety block according to data sheet 25891 (only for size 63 and 100, intermediate flange might be necessary) or pump with controller option 5 (K plate). All figures are examples.

Optional accessories at the suction port



- 1 Compensator DIN AB 02231
- 2 Shut-off valve DIN AB 02129
- 3 Flange bend SAE-DIN AB 02229
- 4 DIN flange AB 02204
- 5 Suction pipe AB 02303
- 6 Elastic pipe fitting AB 01203

- 7 Suction tube SAE-DIN AB 02315
- 8 Suction tube SAE-SAE AB 02315
- 9 Shut-off valve SAE (on request)
- 10 SAE flange AB 02215

Items 1 to 10 as optional accessories upon request.
All figures are examples.

Instructions for transport, installation, commissioning, operation and maintenance

1. General safety instructions

⚠ WARNING!

Risk of injury and property damage due to improper handling of the product!

If the module is not properly installed, used and maintained, personal injury and damage can occur to the module or system.

- ▶ Installation, adjustment, maintenance and repair of the module may only be performed by authorized, trained and qualified personnel.

Please note:

- ▶ The module may only be used in accordance with the data described in the product documentation!
- ▶ Unauthorized modifications or changes which affect the safety and proper function are not permitted!
- ▶ Existing protective devices must not be removed.
- ▶ The general safety and accident prevention regulations must be observed!

2. Transportation and storage

Transport

⚠ WARNING!

Risks of injury caused by tumbling, falling or uncontrolled movement of the module!

The module can lose its stability in cases of improper transport and thereby tip over, fall or move in an uncontrolled manner.

- ▶ Be aware of the module weight.
- ▶ Place the product on a suitable foundation/ ground.
- ▶ Before removing the existing auxiliary structure make additional suitable measures (e.g. by fasteners or with the help of cranes) for the adequate stability of the module.

- ▶ Only the intended attachment points should be used for fastening or lifting the unit (see Fig.).
- ▶ Modules are never to be attached or raised on the established components (pipes, hoses, control blocks, accumulator, etc.).
- ▶ Observe the maximum load-bearing capacity of the attachment devices and floor conveyors.
- ▶ Ensure that no unauthorized persons are within the danger zone.

- ▶ The module must not be raised on the fan cover of the motor.
- ▶ The eye bolts of the motor must not be used for lifting the module. They are only intended for lifting the motor without additional attachments.
- ▶ Auxiliary eyelets e.g. on fan covers and cooler attachments, are also suitable for lifting the corresponding items must not be used for the transport of the module.



Instructions for transport, installation, commissioning, operation and maintenance

Storage

In general it is recommended that the modules are stored as follows until actual installation date:

- ▶ in the original packaging
- ▶ dry and dust-free
- ▶ at room temperature
- ▶ free of vibrations and oscillations
- ▶ protected from light and direct sunlight

3. Assembly and installation

- ▶ Position the module as indicated in the dimensions.
- ▶ Attach the product to the designated locations as specified in the dimensions .
- ▶ Always depressurize and deenergize the relevant plant part before assembling the module.
- ▶ Ground the module before connecting and establish equipotential bonding using an equalization strip.
- ▶ Always ensure absolute cleanliness.

WARNING!

Risk of death by electric shock! Working in the areas of live parts is extremely dangerous.

Work at the electric system may only be performed by a specialized electrician. Electricians tools (VDE tools) are strictly required.

- ▶ Using a suitable measuring device, check before the beginning of the work whether parts of the system are still under residual voltage (e.g. with capacitors). Wait until they have discharged.

- ▶ Electrical wiring work must be performed by trained specialist personnel in accordance with local regulations!
- ▶ Before starting work, make sure that all electrical connections are switched off and cannot be switched back on again. This also applies to auxiliary circuits such as space heaters.
- ▶ The connections must be made such that a continuous and safe electrical connection is ensured. This applies equally to power and ground connections.
- ▶ Wiring diagrams for the power and accessory connections (e.g. PTC thermistors, heating) are located in the terminal box.
- ▶ Make sure that the terminal box is clean and dry.
- ▶ Unused cable entry glands must be closed off.
- ▶ Check the terminal box seal before refitting.

Instructions for transport, installation, commissioning, operation and maintenance

4. Commissioning

- ▶ Before initial operation the pump must be vented and primed in order to protect internal components from damage.
- ▶ When commissioning or re-commissioning machinery or a system, you should ensure that the tank, as well the suction line and the pressure line of the module are filled with oil according to the manufacturer's instructions and remain filled during operation.
- ▶ Check the direction of rotation of the motor.
- ▶ Ensure that the suction pressure does not fall below the specified minimum.

Notice:

The module will be damaged by polluted oil!

Polluted oil could result in wear and malfunctions.

In particular, foreign matter in the suction line such as welding globules and metallic swarf can damage the module.

- ▶ During commissioning, absolute cleanliness must be ensured.

- ▶ When connecting the measuring terminals ensure that no contaminants infiltrate the module.
- ▶ In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary. Brand-name hydraulic oils are recommended.

CAUTION!

Commissioning an incorrectly installed product!

Risk of injury and damage to property!

- ▶ Make sure that all electrical and hydraulic connections

are either connected or closed.

- ▶ Only take a fully installed product with original accessories from Bosch Rexroth into operation.

5. Operation

The product is a module which does not require any settings or modifications during operation. As a result, this chapter of the instructions does not contain any information on adjustment options. Only use the

product within the performance range provided in the technical data. The machine manufacturer is responsible for the correct project planning of the module and its control.

6. Maintenance

Maintenance

- ▶ Only genuine spare parts from Bosch Rexroth are permitted.

Cleaning and care

- ▶ Always ensure absolute cleanliness when working at the product.
- ▶ Do not use high-pressure washers for cleaning.
- ▶ Tightly seal openings such as inspection holes with suitable protective devices and verify that all gaskets and seals on electrical connections are secure so that no detergent can penetrate into the product.
- ▶ Never use solvents or aggressive cleaning agents.
- ▶ Cleaning intervals depend on the degree of contamination occurring locally.

Necessary and amending documentation

▶ Adjustable vane pump, pilot operated	Data sheet	10515
▶ Vane pump, direct operated	Data sheet	10522
▶ Pump safety block type DBA, DBAW	Data sheet	25891
▶ Motor-pump groups -IE2- A10VSO series 31/52	Data sheet	51170
▶ Motor-pump groups -IE2- PV7	Data sheet	51171
▶ Motor-pump groups -IE2- A4VSO series 10/30	Data sheet	51172
▶ Motor-pump groups -IE2- A10VSO series 32	Data sheet	51174
▶ Motor-pump groups -IE2- PGZ	Data sheet	51175
▶ Motor-pump groups -IE3- A10VSO series 31/52	Data sheet	51180
▶ Motor-pump groups -IE3- PV7	Data sheet	51181
▶ Motor-pump groups -IE3- A4VSO series 10/30	Data sheet	51182
▶ Motor-pump groups -IE3- A10VSO series 32	Data sheet	51184
▶ General Operating Instructions for Hydraulic Power Units and Assemblies	Operating instructions	07009-B

Motor-pump groups

Type ABAPG

RE 51182

Edition: 2015-02



H7901_d

- ▶ With pump type: A4VSO series 10, 30 nominal size 0040 to 0500
- ▶ Electric motor frame size 180M to 355L Efficiency class IE3

Features

Electric energy is converted into hydraulic energy via the motor-pump groups.

They have been designed for hydrostatic drives in open circuits.

- ▶ Electric motor, design IM B3/B5 (ABAPG)
- ▶ Pump fastened at the electric motor with rigid pump carrier and coupling
- ▶ Versatile possible applications on tank, base frame or separate installation
- ▶ Clear, maintenance-friendly set-up
- ▶ With axial piston pump A4VSO (variable displacement pump)
- ▶ Adjustment of DR (pressure controller) and DRG (pressure controller, hydraulically remote controlled for size 355)

Contents

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Set-up of the motor-pump group	3
	4
Technical data	5, 6
Circuit diagrams	7
Standard type selection table	8
Dimensions	9 ... 11
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Instructions for transport, installation, commissioning, operation and maintenance	14, 16
Necessary and amending documentation	17

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16		
ABAPG	-	A4VSO			P	P	/			4	5	3	3	/	S	E	HOY

Assembly

01	With motor design B35	ABAPG
----	-----------------------	-------

Pump type

02	Axial piston pump A4VSO according to data sheet 92050	A4VSO
----	---	-------

Displacement

03	40 ... 500 cm ³ per rotation	40 ... 500
----	---	------------

Control and adjustment device

04	Pressure controller (size 0040 ... 250, 500)	DR
	Pressure controller hydraulically remote controlled (size 0355)	DRG

Seal material (according to DIN ISO 1629)

05	NBR	P
----	-----	---

Shaft end version

06	Cylindrical with key DIN 6885	P
----	-------------------------------	---

Mounting flange

07	ISO 4-hole	B
	ISO 8-hole	H

Motor power

08	15 kW ... 400 kW	15 ... 400
----	------------------	------------

Rated voltage

09	400/690 V at 50 Hz	CB
----	--------------------	----

Number of pole pairs

10	4-pole	4
----	--------	---

Rated frequency

11	50 Hz	5
----	-------	---

Efficiency class

12	IE3 according to IEC 60034-30	3
----	-------------------------------	---

Motor protection

13	PTC resistor with 3 temperature sensors	3
----	---	---

Pump carrier design

14	Rigid pump carrier AB 03337	S
----	-----------------------------	---

Damping bearing design

15	Elastic damping bearing	E
----	-------------------------	---

Motor supplier

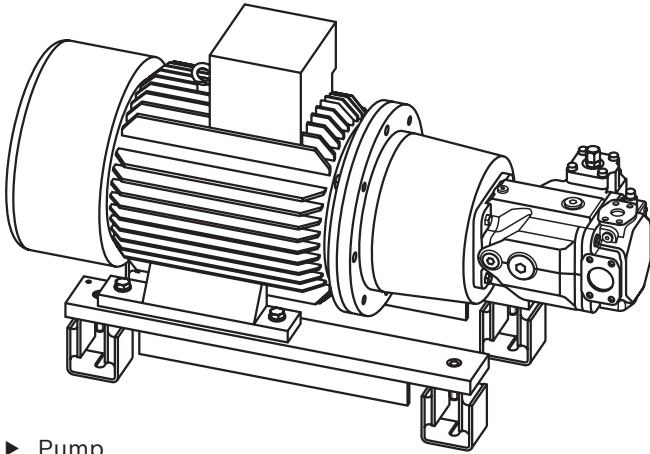
16	Hoyer Motors (preferred)	HOY
	Siemens	SIE

Order example:

ABAPG-A4VSO180DRPPB/110CB4523/SE HOY

Set-up of the motor-pump group

ABAPG design



- ▶ Pump
- ▶ Electric motor
- ▶ Pump carrier
- ▶ Coupling
- ▶ Strips
- ▶ Damping bearing

Pump suction port to the side as standard.
Pump rotation possible in 90° steps.

The motor-pump group configurator

Motor-pump groups can be put together quickly and easily with the APAPG configurator: The standard types defined in the datasheet enables users and sales people without detailed knowledge to individually configure the central drive unit for aggregates. A practical, product-neutral kit

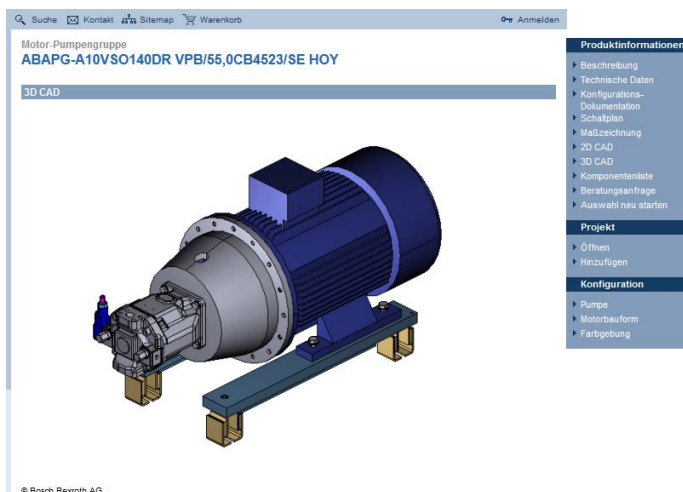
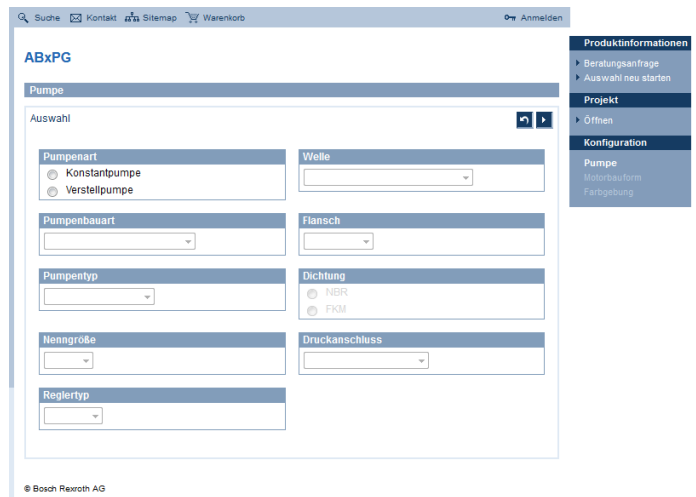
provides 3D data that can be immediately applied to applications. This saves time.

This is performed online by selecting the relevant product components or by specifying the operating conditions (flow rate, rated frequency, type of pump, operating pressure).



Thanks to the intuitive menu navigation, you are guided safely through the required configuration steps. Related features are clearly arranged on one page.

Associated features are clearly displayed on the same page.



When the configuration is finished, you can have the complete configuration documentation sent to you via email including material list, circuit diagram, 2D drawing and 3D model (STEP). This is done by way of an automatic request to your local distributor who will promptly contact you and send you an offer.

Technical data

(For applications outside these parameters, please consult us!)

Line connections	see Line connections table on page 12		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN ISO 3448 (other fluids on request!) ▶ Please observe our provisions according to data sheet 90220, 90221, 90223. ▶ Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity. ▶ According to the operating conditions, the fluid must be renewed at certain intervals.		
Pump type	A4VSO according to data sheet 92050		
▶ Direction of rotation	Clockwise		
Operating pressure, absolute			
▶ Input	$p_{\min\text{-max}}$	bar	0.8 ... 30
▶ Output	p_{nom}	bar	350
▶ Peak pressure	p_{max}	bar	400
▶ Leakage port	p_{max}	bar	4
Hydraulic fluid temperature range, observe	ϑ	°C	-25 ... +90
viscosity range			
▶ T_{optimal} with HLP 46 (DIN 51524)	ϑ	°C	+40 ... +50
▶ T_{max} in continuous operation	ϑ	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50125 (ABUKG) and 50112 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406 (c) and according to the pump type used ¹⁾ . At least cleanliness class 20/18/15 must be achieved.		
Viscosity range	ν	mm ² /s	16 ... 36 optimal 10 ... 1000 shortly (see data sheet 92050)
Electric motor	▶ Motor type		
	▶ Efficiency class		
	▶ Number of pole pairs		
	▶ Voltage according to IEC 38	U	V
	▶ Speed	n	min ⁻¹
	▶ Protection class	IP	55
	▶ Installation position		
Surface treatment	By default, all steel components and components are at least provided with temporary corrosion protection (e.g. for transport).		

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

For selecting the filters, see data sheet 51501.

Technical data: Hydraulic fluid

(For applications outside these parameters, please consult us!)

Operating viscosity range

The unit can be operated in the viscosity range of 16 ... 100 mm²/s without limiting the technical data. We recommend selecting the operating viscosity (at operating temperature) in the optimal range for efficiency and service life of

$$v_{\text{opt}} = \text{opt. Operating viscosity } 16 \dots 36 \text{ mm}^2/\text{s}$$

relating to the tank temperature (open circuit).

Limit viscosity range

The following values apply to limit operating conditions:

$$v_{\text{min}} = 10 \text{ mm}^2/\text{s}$$

for short periods ($t < 3 \text{ min}$)

at max. admissible leakage temperature

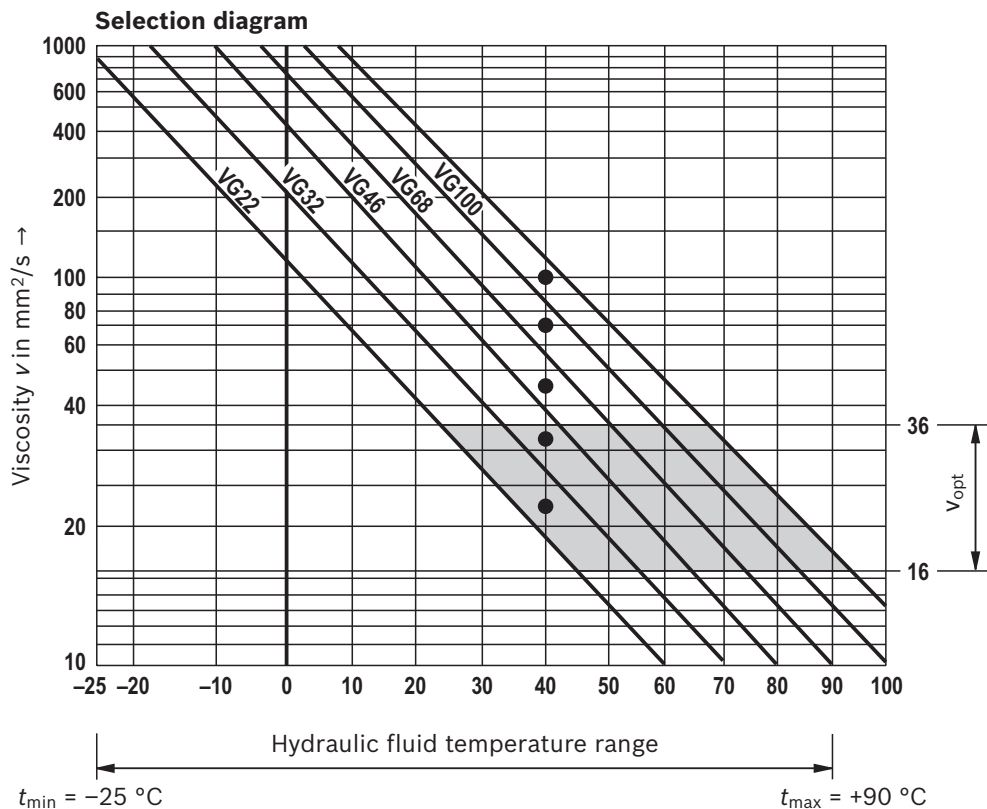
$$t_{\text{max}} = +90 \text{ }^\circ\text{C}$$

$$v_{\text{max}} = 1000 \text{ mm}^2/\text{s}$$

only for starting (cold start, an operating viscosity of less than 100 mm²/s should be achieved within 15 min)

$$t_{\text{min}} \text{ to } -25 \text{ }^\circ\text{C}$$

For detailed information on the use at low temperatures see data sheet 90300-03-B.



Notes on hydraulic fluid selection

The hydraulic fluid should be selected so as to ensure that, within the operating temperature range, the operating viscosity is within the optimal range (v_{opt}) see selection diagram, grayed-out field.

We recommend choosing the next higher viscosity class.

Temperature range (compare selection diagram)

$$t_{\text{min}} = -25 \text{ }^\circ\text{C} \quad t_{\text{max}} = +90 \text{ }^\circ\text{C}$$

Example:

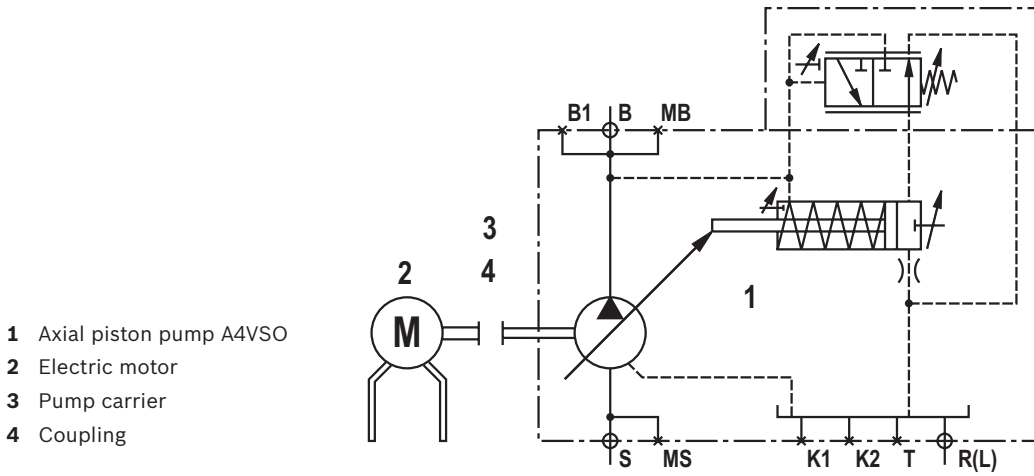
At an ambient temperature of X °C the tank has an operating temperature of 60 °C. Within the optimal operating viscosity range (v_{opt} ; grayed-out field) this corresponds to the viscosity classes VG 46 or VG 68; to select: VG 68.

Note:

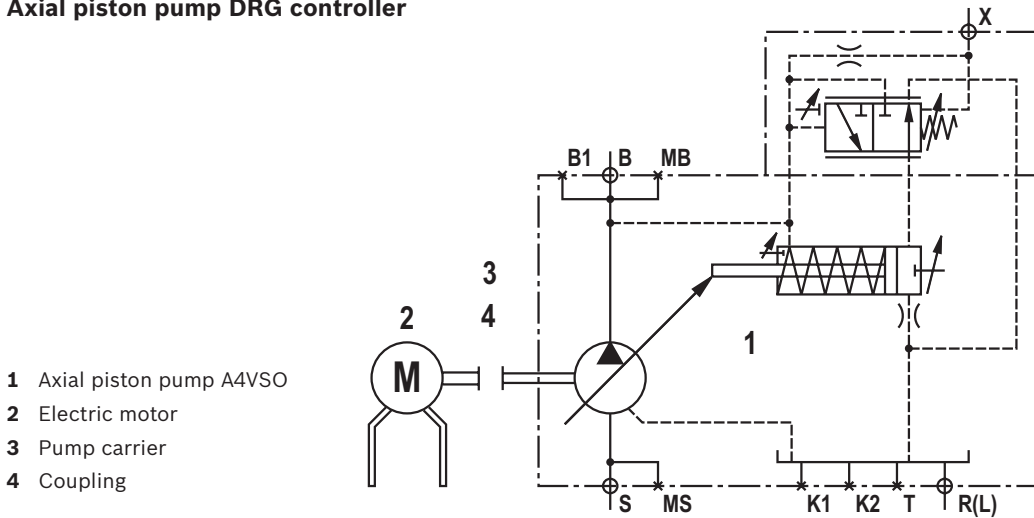
The leakage temperature, influenced by pressure and speed, is always higher than the tank temperature. However, the temperature must never exceed 90 °C at any point of the system.

Circuit diagrams

Axial piston pump DR controller



Axial piston pump DRG controller



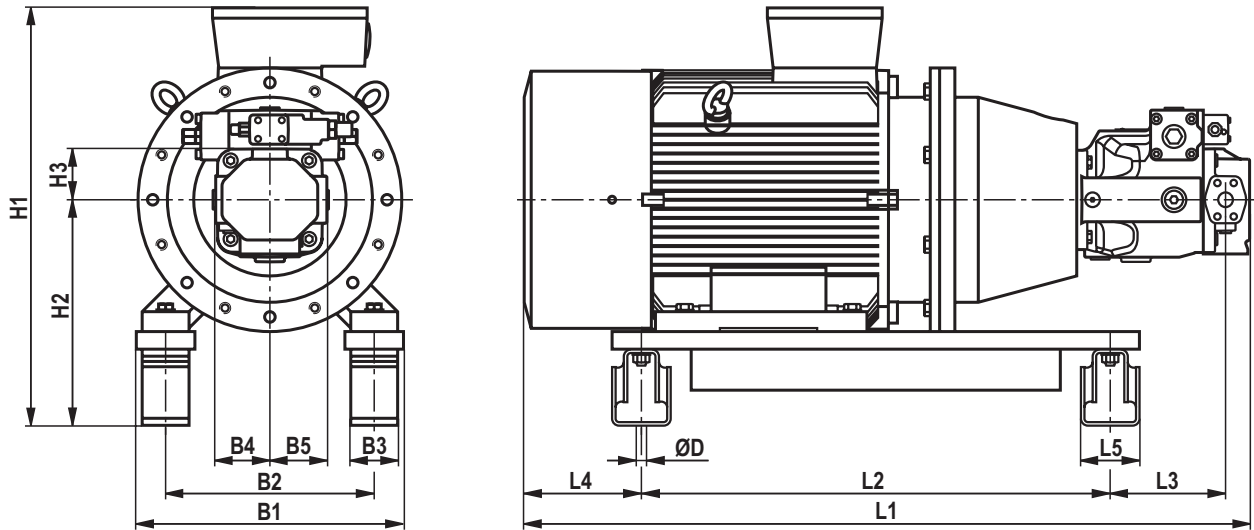
Standard type selection table ABAPG– A4VSO

Frequency	50 Hz		50 Hz	Electric motor frame size	ABAPG material no. (motor B5)		ABAPG material no. (motor B35) prepared for PSBD ¹⁾	
	1450 min ⁻¹		1450 min ⁻¹		HOYER	SIEMENS	HOYER	SIEMENS
Pump	q _{v max} in l/min	p _{max} in bar	Power in kW					
A4VSO 40	55	156	18.5	180M	R901397951	R901397987	R901398162	R901398175
		195	22.0	180L	R901397952	R901397988	R901398164	R901398176
		278	30.0	200L	R901397953	R901397989	R901398165	R901398178
		348	37.0	225S	R901397954	R901397990	R901398166	R901398179
		350	45.0	225M	R901397955	R901397991	R901398167	R901398180
A4VSO 71	98	150	30.0	200L	R901397956	R901397992	R901398168	R901398181
		185	37.0	225S	R901397957	R901397994	R901398170	R901398183
		238	45.0	225M	R901397958	R901397995	R901398171	R901398184
		295	55.0	250M	R901397959	R901397996	R901398172	R901398185
		350	75.0	280S	R901397960	R901397997	R901398174	R901398186
A4VSO125	172	162	55.0	250M	R901397962	R901397998	-	
		227	75.0	280S	R901397963	R901397999		
		276	90.0	280M	R901397964	R901398000		
		342	110.0	315S	R901397965	R901398148		
		350	132.0	315M	R901397966	R901398149		
A4VSO180	248	160	75.0	280S	R901397967	R901398150	-	
		193	90.0	280M	R901397968	R901398152		
		237	110.0	315S	R901397969	R901398153		
		282	132.0	315M	R901397970	R901398154		
		344	160.0	315L	R901397971	R901398156		
		350	200.0	315L	R901397972	-		
A4VSO250	344	167	110.0	315S	R901397973	R901398157	-	
		203	132.0	315M	R901397974	R901398158		
		249	160.0	315L	R901397975	R901398160		
		311	200.0	315L	R901397976	-		
		350	250.0	315	R901397977	-		
A4VSO355	489	169	160.0	315L	R901397978	R901398161	-	
		212	200.0	315L	R901397979	-		
		267	250.0	315L	R901397980	-		
		334	315.0	315/355L	R901397981	-		
A4VSO500	689	150	200.0	315L	R901397982	-	-	
		191	250.0	315	R901397983	-		
		247	315.0	315	R901397984	-		

All types are part of the standard delivery range (A3) for dimensions see page 9 ... 11

¹⁾ Other degree of hardness of the damping bearings. Pump manifold block PSBD02 (data sheet 62300) must be ordered separately.

Dimensions: Type ABAPG-A4VSO 40DR ... 125DR (dimensions in mm)



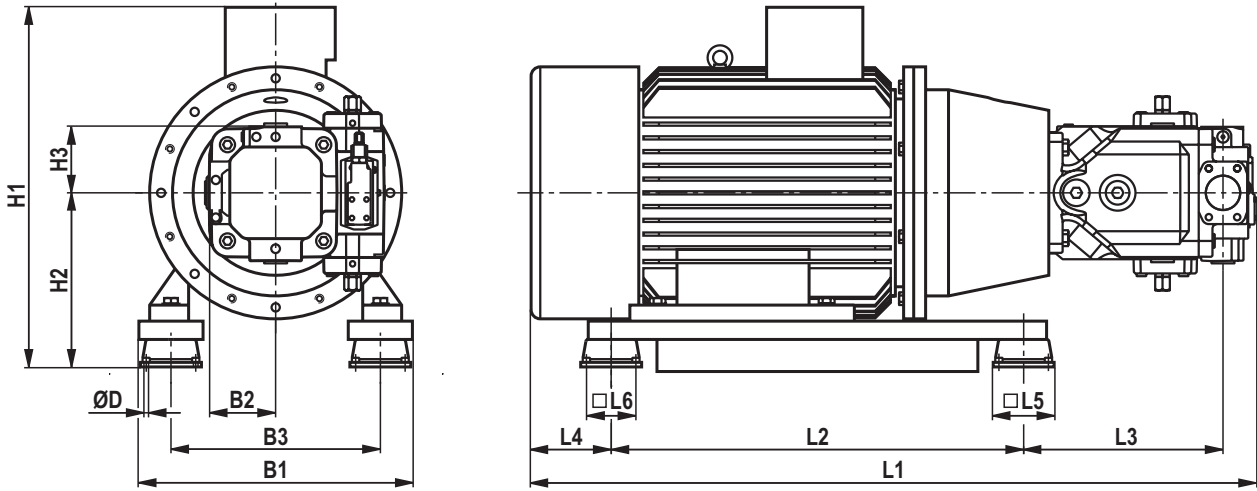
ABAPG-A4VSO with motor supplier HOYER-MOTORS

Pump A4VSO...	E-motor kW / frame size	Dimensions													Weight in kg
		B1	B2	B3	B4/B5	ØD	H1	H2	H3	L1	L2	L3	L4	L5	
40DR	18 / 180M	369	279	65	80	17.5	605	313	75	1155.5	620	247	249.5	87	238
	22 / 180L	369	279	65	80	17.5	605	313	75	1193.5	620	247	287.5	87	277
	30 / 200L	418	318	80	80	17.5	673	360	75	1239	700	214	286	100	347
	37 / 225S	456	356	80	80	17.5	721	385	75	1322.5	800	170	313.5	100	485
	45 / 225M	456	356	80	80	17.5	721	385	75	1247.5	800	170	338.5	100	493
71DR	30 / 200L	418	318	80	92.5	17.5	673	360	85	1292	700	265	286	100	363
	37 / 225S	456	356	80	92.5	17.5	721	385	85	1351.5	800	197	313.5	100	501
	45 / 225M	456	356	80	92.5	17.5	721	385	85	1376.5	800	197	338.5	100	509
	55 / 250M	526	406	80	92.5	17.5	794	420	85	1452	850	229	332	100	587
125DR	55 / 250M	526	406	80	113	17.5	794	420	100	1529	850	302	332	100	630

ABAPG-A4VSO with motor supplier Siemens

Pump A4VSO...	E-motor kW / frame size	Dimensions													Weight in kg
		B1	B2	B3	B4/B5	ØD	H1	H2	H3	L1	L2	L3	L4	L5	
40DR	18 / 180M	369	279	65	80	17.5	575	313	75	1138	620	247	232	87	230
	22 / 180L	369	279	65	80	17.5	757	313	75	1168	620	247	262	87	265
	30 / 200L	418	318	80	80	17.5	660	360	75	1222.5	700	214	269.5	100	315
	37 / 225S	456	356	80	80	17.5	713	385	75	1263	800	170	254	100	392
	45 / 225M	456	356	80	80	17.5	713	385	75	1348	800	170	339	100	412
71DR	30 / 200L	418	318	80	92.5	17.5	660	360	85	1275.5	700	265	269.5	100	331
	37 / 225S	456	356	80	92.5	17.5	713	385	85	1292	800	197	254	100	408
	45 / 225M	456	356	80	92.5	17.5	713	385	85	1377	800	197	339	100	428
	55 / 250M	526	406	80	92.5	17.5	812	420	85	1430	850	229	310	100	560
125DR	55 / 250M	526	406	80	113	17.5	812	420	100	1507	850	302	310	100	602

Dimensions: Type ABAPG-A4VSO 71DR ... 500DR HOYER-MOTORS
(dimensions in mm)

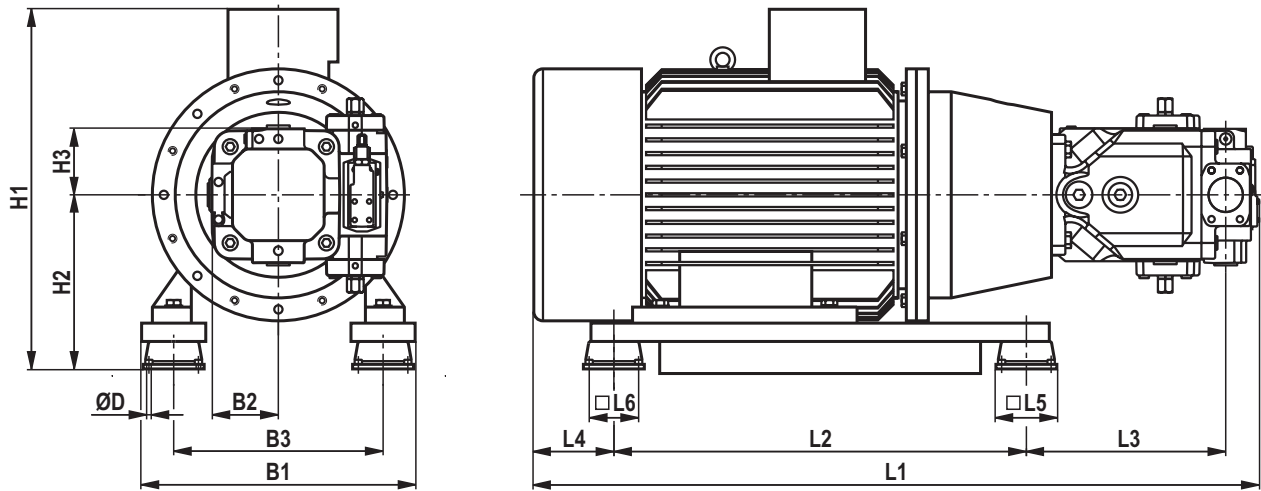


ABAPG-A4VSO with motor supplier HOYER-MOTORS

Pump A4VSO...	E-motor kW / frame size	Dimensions												Weight in kg	
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5		L6
71DR	75 / 280S	597	92.5	457	11.9	783	380	85	1539	900	279	319	133	108	897
125DR	75 / 280S	597	113	457	11.9	783	380	100	1599	900	335	319	133	108	940
	90 / 280M	597	113	457	11.9	783	380	100	1650	900	335	370	133	108	940
	110 / 315S	648	113	508	13.5	989	442	100	1888	1100	251	492	175	143	1282
	132 / 315M	648	113	508	13.5	989	442	100	1998	1100	251	602	175	143	1585
180DR	75 / 280S	597	116	457	11.9	783	380	100	1619	900	343	319	133	108	952
	90 / 280M	597	116	457	11.9	783	380	100	1670	900	343	370	133	108	952
	110 / 315S	648	116	508	13.5	989	442	100	1908	1100	259	492	175	143	1327
	132 / 315M	648	116	508	13.5	989	442	100	2018	1100	259	602	175	143	1600
	160 / 315L	648	116	508	13.5	989	442	100	2038	1100	329	552	175	143	1705
250DR	200 / 315L	648	116	508	13.5	972	442	100	2060	1100	329	574	175	143	1635
	110 / 315S	648	144	508	13.5	989	442	133	1988	1100	341	492	175	143	1412
	132 / 315M	648	144	508	13.5	989	442	133	2098	1100	341	602	175	143	1685
	160 / 315L	648	144	508	13.5	989	442	133	2098	1100	391	552	175	143	1745
355DRG	200 / 315L	648	144	508	13.5	972	442	133	2120	1100	391	574	175	143	1675
	250 / 355M	770	144	610	13.5	1147	492	133	2315	1400	299	561	175	143	2340
	160 / 315L	648	144	508	13.5	989	442	133	2127	1100	404	552	175	143	1760
	200 / 315L	648	144	508	13.5	972	442	133	2149	1100	404	574	175	143	1690
500DR	250 / 355M	770	144	610	13.5	1147	492	133	2389	1400	357	561	175	143	2370
	315 / 355L	770	144	610	13.5	1147	492	133	2389	1400	357	561	175	143	2520
	200 / 315L	648	180	508	13.5	972	442	190	2270	1100	517	574	175	143	1855
	250 / 355M	770	180	610	13.5	1147	492	190	2460	1400	420	561	175	143	2470
	315 / 355L	770	180	610	13.5	1147	492	190	2508	1400	468	561	175	143	2610
355 / 355L	770	180	610	13.5	1147	492	190	2508	1400	468	561	175	143	3250	
400 / 400M	886	180	686	13.5	1267	567	190	2880	1700	391	710	175	143	4840	

Dimensions: Type ABAPG-A4VSO 71DR ... 500DR SIEMENS

(dimensions in mm)



ABAPG-A4VSO with motor supplier SIEMENS

Pump A4VSO...	E-motor kW / frame size	Dimensions												Weight [kg]	
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	L5		L6
71DR	75 / 280S	597	92.5	457	11.9	812	380	85	1521	900	279	301	133	108	747
125DR	75 / 280S	597	113	457	11.9	812	380	100	1581	900	335	301	133	108	790
	90 / 280M	597	113	457	11.9	812	380	100	1691	900	335	411	133	108	782
	110 / 315S	648	113	508	13.5	942	442	100	1747	1100	251	351	175	143	1020
	132 / 315M	648	113	508	13.5	942	442	100	1912	1100	251	516	175	143	1100
180DR	75 / 280S	597	116	457	11.9	812	380	100	1601	900	343	301	133	108	802
	90 / 280M	597	116	457	11.9	812	380	100	1711	900	343	411	133	108	794
	110 / 315S	648	116	508	13.5	942	442	100	1767	1100	259	351	175	143	1065
	132 / 315M	648	116	508	13.5	942	442	100	1932	1100	259	516	175	143	1115
	160 / 315L	648	116	508	13.5	942	442	100	1952	1100	329	466	175	143	1290
250DR	110 / 315S	648	144	508	13.5	942	442	133	1847	1100	341	351	175	143	1150
	132 / 315M	648	144	508	13.5	942	442	133	2012	1100	341	516	175	143	1200
	160 / 315L	648	144	508	13.5	942	442	133	2012	1100	391	466	175	143	1330
	250 / 355M	648	144	508	13.5	942	442	133	2167	1100	391	621	175	143	1725
355DRG	160 / 315L	648	144	508	13.5	942	442	133	2041	1100	404	466	175	143	1345
	250 / 355M	648	144	508	13.5	942	442	133	2196	1100	404	621	175	143	1715
	315 / 355L	648	144	508	13.5	942	442	133	2236	1100	444	621	175	143	1985
500DR	250 / 355M	648	180	508	13.5	942	442	190	2317	1100	517	621	175	143	1875
	315 / 355L	648	180	508	13.5	942	442	190	2317	1100	517	621	175	143	2085

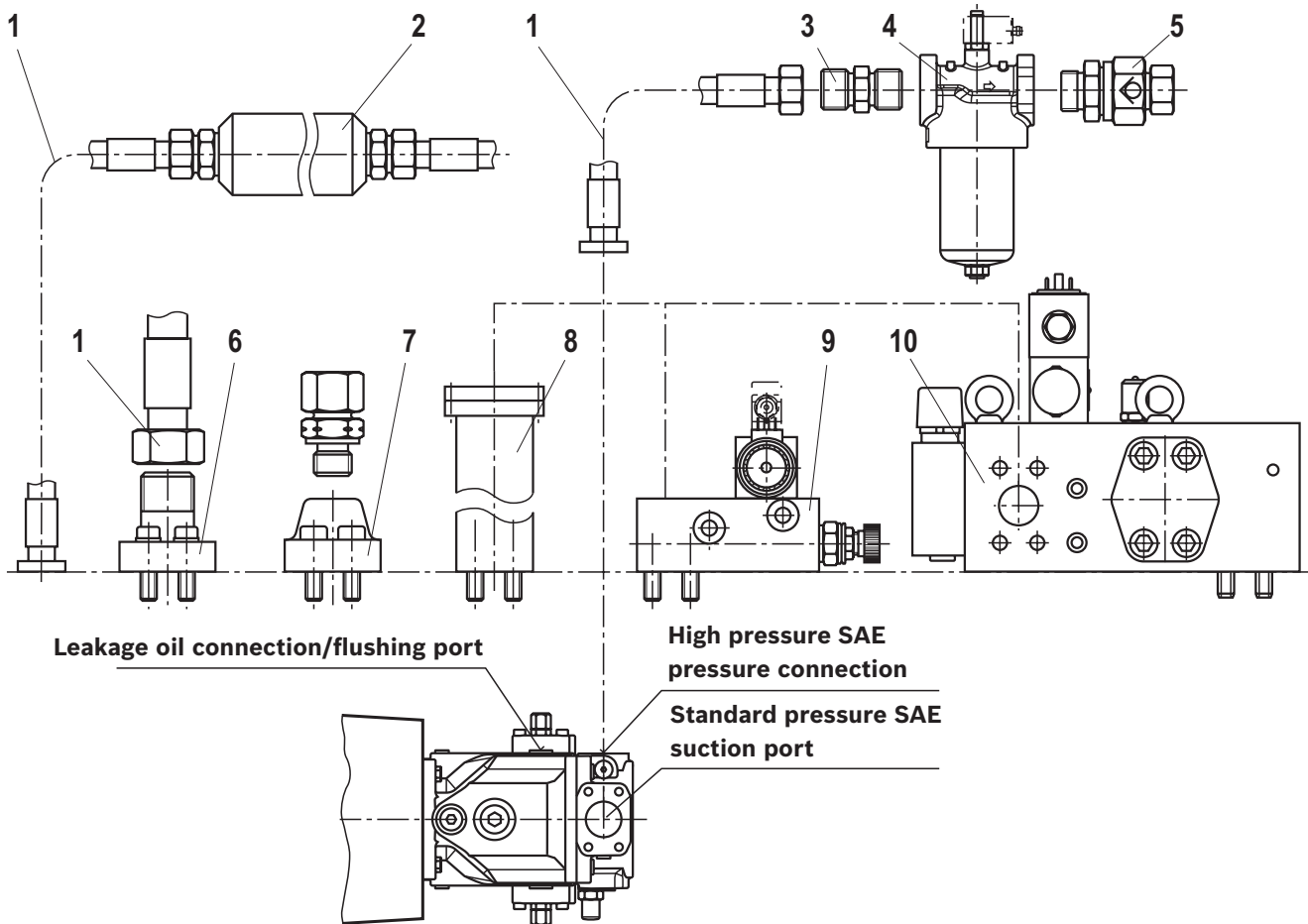
Pressure line connections

Pump type	Line connections			
	Pressure connection B	Suction port S	Leakage oil connection L / L1	Pilot oil port X
A4VSO40	DIN ISO 6162-2 - 3/4" ²⁾	DIN ISO 6162-1 - 1 1/2" ¹⁾	DIN 3852-1 M22X1.5	-
A4VSO71	DIN ISO 6162-2 - 1" ²⁾	DIN ISO 6162-1 - 2" ¹⁾	DIN 3852-1 M27X2	-
A4VSO125	DIN ISO 6162-2 - 1 1/4" ²⁾	DIN ISO 6162-1 - 2 1/2" ¹⁾	DIN 3852-1 M33X2	-
A4VSO180	DIN ISO 6162-2 - 1 1/4" ²⁾	DIN ISO 6162-1 - 3" ¹⁾	DIN 3852-1 M33X2	-
A4VSO250	DIN ISO 6162-2 - 1 1/2" ²⁾	DIN ISO 6162-1 - 3" ¹⁾	DIN 3852-1 M42X2	DIN 3852-1 M14x1.5
A4VSO355	DIN ISO 6162-2 - 1 1/2" ²⁾	DIN ISO 6162-1 - 4" ¹⁾	DIN 3852-1 M42X2	DIN 3852-1 M14x1.5
A4VSO500	DIN ISO 6162-2 - 2" ²⁾	DIN ISO 6162-1 - 5" ¹⁾	DIN 3852-1 M48X2	DIN 3852-1 M14x1.5

¹⁾ Standard pressure SAE flange figure with metric mounting screws

²⁾ High pressure SAE flange figure with metric mounting screws

Optional accessories at the pressure connection



1 Hose line AB 02314, AB 02316

2 Shock and vibration absorber data sheet 29253

3 Fitting ZN 11001-11-AN1 to A4VSO71

4 In-line filter data sheet 51422

5 Check valve AB 02112 to A4VSO71

6 SAE flange high pressure AB 02214

7 SAE flange high pressure AB 02213

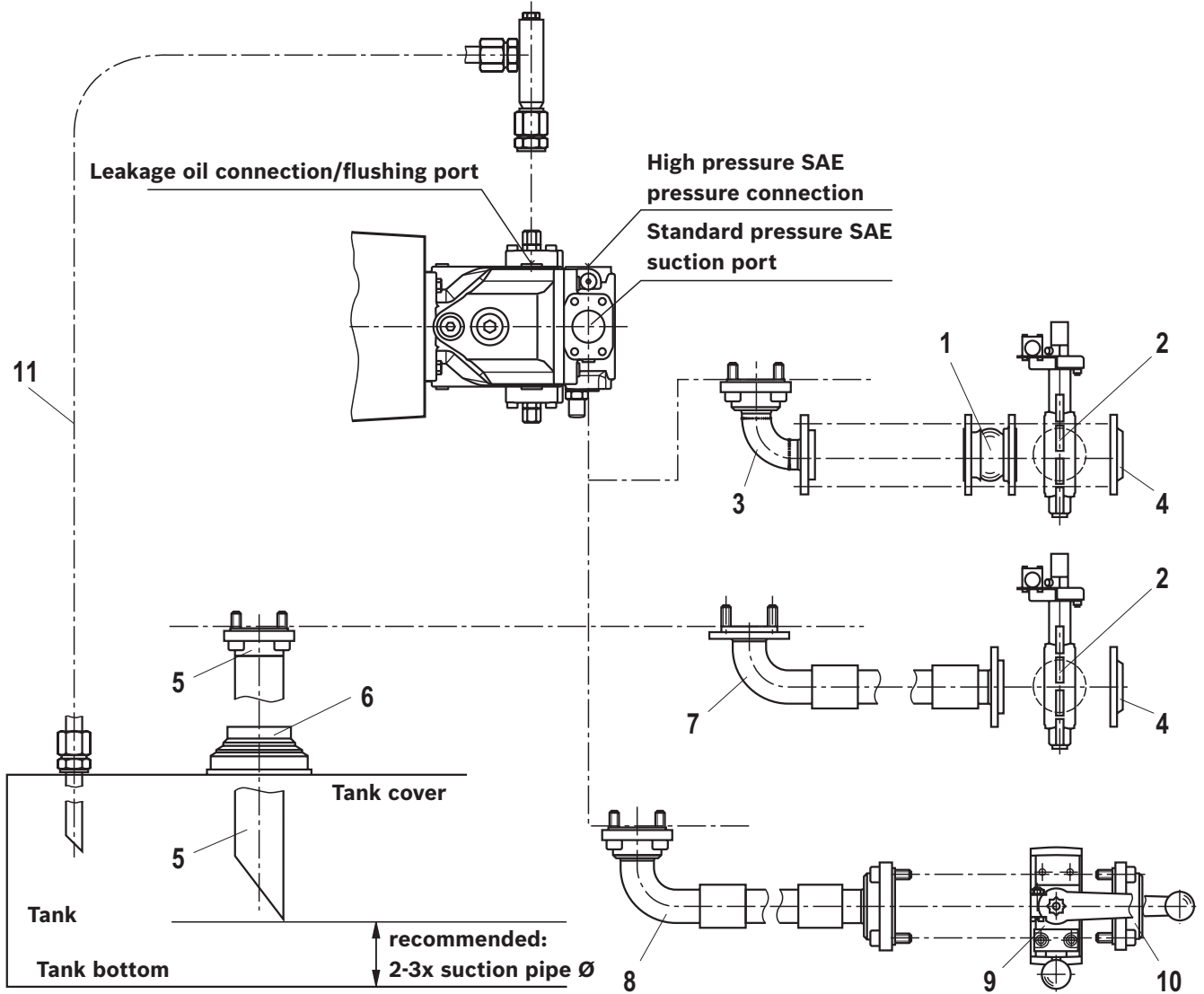
8 Shock and vibration absorber data sheet 50142 to A4VSO250

9 Pump safety block data sheet 25891 to A4VSO180

10 Pump manifold block data sheet 62300 to A4VSO355

Items 1 to 10 as optional accessories upon request

Optional accessories at the suction port and leakage oil connection



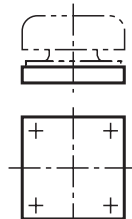
- 1 Compensator DIN AB 02231
- 2 Shut-off valve DIN AB 02129
- 3 Flange bend SAE-DIN AB 02229
- 4 DIN flange AB 02204
- 5 Suction pipe AB 02303
- 6 Elastic pipe fitting AB 01203
- 7 Suction tube SAE-DIN AB 02315

- 8 Suction tube SAE-SAE AB 02315
- 9 Shut-off valve SAE (on request)
- 10 SAE flange AB 02215
- 11 Drain line

Items 1 to 11 as optional accessories upon request

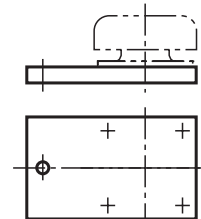
Optional accessories for damping bearing AB33-11

Accessories: plate



Weld-on plate

Accessories: clip



Clip for foundation installation

Instructions for transport, installation, commissioning, operation and maintenance

1. General safety instructions

⚠ WARNING!

Risk of injury and property damage due to improper handling of the product!

If the module is not properly installed, used and maintained, personal injury and damage can occur to the module or system.

- ▶ Installation, adjustment, maintenance and repair of the module may only be performed by authorized, trained and qualified personnel.

Please note:

- ▶ The module may only be used in accordance with the data described in the product documentation!
- ▶ Unauthorized modifications or changes which affect the safety and proper function are not permitted!
- ▶ Existing protective devices must not be removed.
- ▶ The general safety and accident prevention regulations must be observed!

2. Transportation and storage

Transport

⚠ WARNING!

Risks of injury caused by tumbling, falling or uncontrolled movement of the module!

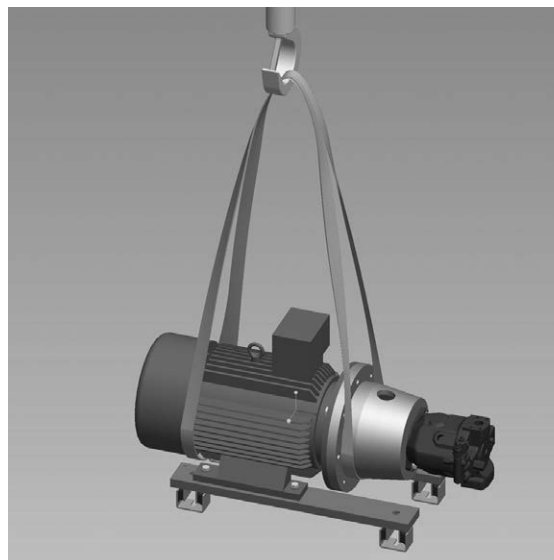
The module can lose its stability in cases of improper transport and thereby tip over, fall or move in an uncontrolled manner.

- ▶ Be aware of the module weight.
- ▶ Place the product on a suitable foundation / ground.
- ▶ Before removing the existing auxiliary structure make additional suitable measures (e.g. by fasteners or with the help of cranes) for the adequate

stability of the module.

- ▶ Only the intended attachment points should be used for fastening or lifting the unit (see Fig.).
- ▶ Modules are never to be attached or raised on the established components (pipes, hoses, control blocks, accumulator, etc.).
- ▶ Observe the maximum load-bearing capacity of the attachment devices and floor conveyors.
- ▶ Ensure that no unauthorized persons are within the danger zone.

- ▶ The module must not be raised on the fan cover of the motor.
- ▶ The eye bolts of the motor must not be used for lifting the module. They are only intended for lifting the motor without additional attachments.
- ▶ Auxiliary eyelets e.g. on fan covers and cooler attachments, are also suitable for lifting the corresponding items must not be used for the transport of the module.



Instructions for transport, installation, commissioning, operation and maintenance

Storage

In general it is recommended that the modules are stored as follows until actual installation date:

- ▶ in the original packaging
- ▶ dry and dust-free
- ▶ at room temperature
- ▶ free of vibrations and oscillations
- ▶ protected from light and direct sunlight

3. Assembly and installation

- ▶ Position the module as indicated in the dimensions.
- ▶ Attach the product to the designated locations as specified in the dimensions .
- ▶ Always depressurize and deenergize the relevant plant part before assembling the module.
- ▶ Ground the module before connecting and establish equipotential bonding using an equalization strip.
- ▶ Always ensure absolute cleanliness.

WARNING!

Risk of death by electric shock! Working in the areas of live parts is extremely dangerous.

Work at the electric system may only be performed by a specialized electrician. Electricians tools (VDE tools) are strictly required.

- ▶ Using a suitable measuring device, check before the beginning of the work whether parts of the system are still under residual voltage (e.g. with capacitors). Wait until they have discharged.

- ▶ Electrical wiring work must be performed by trained specialist personnel in accordance with local regulations!
- ▶ Before starting work, make sure that all electrical connections are switched off and cannot be switched back on again. This also applies to auxiliary circuits such as space heaters.
- ▶ The connections must be made such that a continuous and safe electrical connection is ensured. This applies equally to power and ground connections.
- ▶ Wiring diagrams for the power and accessory connections (e.g. PTC thermistors, heating) are located in the terminal box.
- ▶ Make sure that the terminal box is clean and dry.
- ▶ Unused cable entry glands must be closed off.
- ▶ Check the terminal box seal before refitting.

Instructions for transport, installation, commissioning, operation and maintenance

4. Commissioning

- ▶ Before initial operation the pump must be vented and primed in order to protect internal components from damage.
- ▶ When commissioning or re-commissioning machinery or a system, you should ensure that the tank, as well the suction line and the pressure line of the module are

filled with oil according to the manufacturer's instructions and remain filled during operation.

- ▶ Check the direction of rotation of the motor.
- ▶ Ensure that the suction pressure does not fall below the specified minimum.

Notice:

The module will be damaged by polluted oil!

Polluted oil could result in wear and malfunctions.

In particular, foreign matter in the suction line such as welding globules and metallic swarf can damage the module.

- ▶ During commissioning, absolute cleanliness must be ensured.

- ▶ When connecting the measuring terminals ensure that no contaminants infiltrate the module.
- ▶ In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary. Brand-name hydraulic oils are recommended.

CAUTION!

Commissioning an incorrectly installed product!

Risk of injury and damage to property!

- ▶ Make sure that all electrical and hydraulic connections

are either connected or closed.

- ▶ Only take a fully installed product with original accessories from Bosch Rexroth into operation.

5. Operation

The product is a module which does not require any settings or modifications during operation. As a result, this chapter of the instructions does not contain any information on adjustment options.

Only use the product within the performance range provided in the technical data. The machine manufacturer is responsible for the correct project planning of the module and its control.

6. Maintenance

Maintenance

- ▶ Only genuine spare parts from Bosch Rexroth are permitted.

Cleaning and care

- ▶ Always ensure absolute cleanliness when working at the product.
- ▶ Do not use high-pressure washers for cleaning.
- ▶ Tightly seal openings such as inspection holes with suitable protective devices and verify that all gaskets and seals on electrical connections are secure so that

no detergent can penetrate into the product.

- ▶ Never use solvents or aggressive cleaning agents.
- ▶ Cleaning intervals depend on the degree of contamination occurring locally.

Necessary and amending documentation

▶ Axial piston-variable displacement pump A4VSO, A10VO, A10VSO, ...	Operating instructions	92703-01-B
▶ Axial piston-variable displacement pump A4VSO	Data sheet	92050
▶ Control device DR, DRE, ...	Data sheet	92060
▶ Pump control block PSBD 02	Data sheet	62300
▶ Pump safety block type DBA, DBAW	Data sheet	25880
▶ Motor-pump groups -IE2- A10VSO series 31/52	Data sheet	51170
▶ Motor-pump groups -IE2- PV7	Data sheet	51171
▶ Motor-pump groups -IE2- A4VSO series 10/30	Data sheet	51172
▶ Motor-pump groups -IE2- A10VSO series 32	Data sheet	51174
▶ Motor-pump groups -IE2- PGZ	Data sheet	51175
▶ Motor-pump groups -IE3- A10VSO series 31/52	Data sheet	51180
▶ Motor-pump groups -IE3- PV7	Data sheet	51181
▶ Motor-pump groups -IE3- A4VSO series 10/30	Data sheet	51182
▶ Motor-pump groups -IE3- A10VSO series 32	Data sheet	51184
▶ General Operating Instructions for Hydraulic Power Units and Assemblies	Operating instructions	07009-B

Motor-pump groups

Type ABAPG

RE 51184

Edition: 2015-02



H7991_d

- ▶ With pump type: A10VSO
 - Series 32: Sizes 45 to 180
- ▶ Electric motor frame size 132L to 315M
Efficiency class IE3

Features

Electric energy is converted into hydraulic energy via the motor-pump groups.

They have been designed for hydrostatic drives in open circuits.

- ▶ Electric motor, design IM B3/B5 (ABAPG)
- ▶ Pump fastened at the electric motor with rigid pump carrier and coupling
- ▶ Low operating noise
- ▶ Versatile possible applications on tank, base frame or separate installation
- ▶ Clear, maintenance-friendly set-up
- ▶ With axial piston pump A10VSO (variable displacement pump), shock and vibration absorber type
- ▶ DRS (hydraulic flow controller) and LA6DS (power controller with pressure cut off) adjustment

Contents

Features	1
Ordering code	2
Set-up of the motor-pump group	3
	4
Technical data	5
Circuit diagrams	6
Performance characteristic	7
Standard program incl. preferred types	8
Dimensions	9 ... 11
Pressure line connections	12
Optional accessories	12, 13
Instructions for transport, installation, commissioning, operation and maintenance	14 ... 16
Necessary and amending documentation	17

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	
ABAPG	-	A10VSO		V	S	B	/	CB	4	5	3	3	/	S	E	HOY

Assembly

01	With motor design B35	ABAPG
----	-----------------------	-------

Pump type

02	Axial piston pump A10VSO according to data sheet 92714	A10VSO
----	--	--------

Displacement

03	10 ... 140 cm ³ per rotation	10 ... 140
----	---	------------

Control and adjustment device

04	e.g. Pressure/flow controller, hydraulic X-T closed	DRS
	e.g. power controller with pressure cut off and hydraulic flow controller X-T closed	LA6DS

Seal material (according to DIN ISO 1629)

05	FKM	V
----	-----	---

Shaft end version

06	Splined shaft (ANSI B92.1a standard shaft)	S
----	--	---

Mounting flange

07	ISO4-hole	B
----	-----------	---

Motor power

08	7.5 kW ... 132 kW	7.5 ... 132
----	-------------------	-------------

Rated voltage

09	400/690 V at 50 Hz	CB
----	--------------------	----

Number of pole pairs

10		4
----	--	---

Rated frequency

11	50 Hz	5
----	-------	---

Efficiency class

12	IE3 according to IEC 60034-30	3
----	-------------------------------	---

Motor protection

13	PTC resistor with 3 temperature sensors	3
----	---	---

Pump carrier design

14	Rigid pump carrier AB 03337	S
----	-----------------------------	---

Damping bearing design

15	Elastic damping bearing	E
----	-------------------------	---

Motor supplier

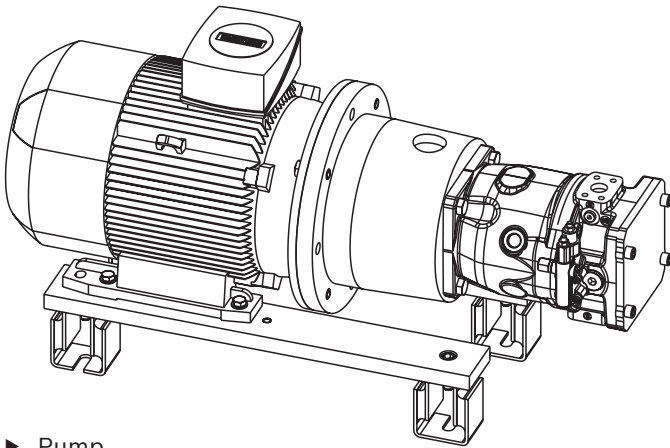
16	Hoyer Motors (preferred)	HOY
	Siemens	SIE

Order example:

ABAPG-A10VSO 45DRSVSB/18.5CB4523/SE HOY

Set-up of the motor-pump group

ABAPG design



- ▶ Pump
- ▶ Electric motor
- ▶ Pump carrier
- ▶ Coupling
- ▶ Strips
- ▶ Damping bearing

The motor-pump group configurator

Motor-pump groups can be put together quickly and easily with the APAPG configurator: The standard types defined in the data sheet enables users and sales people without detailed knowledge to individually configure the central drive unit for aggregates. A practical, product-neutral kit

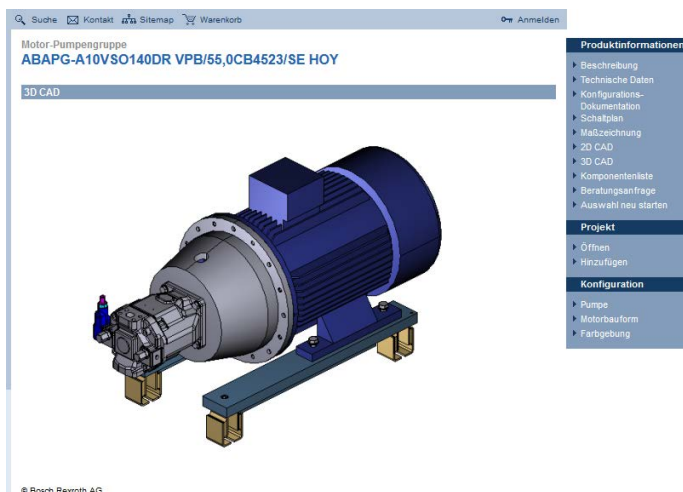
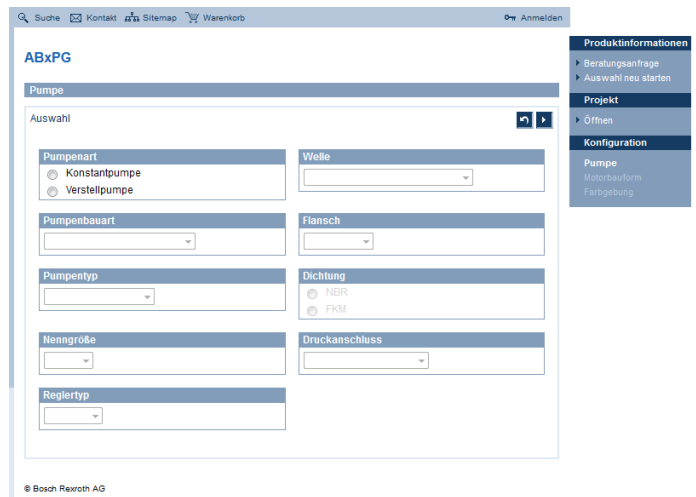
provides 3D data that can be immediately applied to applications. This saves time.

This is performed online by selecting the relevant product components or by specifying the operating conditions (flow rate, rated frequency, type of pump, operating pressure).



Thanks to the intuitive menu navigation, you are guided safely through the required configuration steps. Related features are clearly arranged on one page.

Associated features are clearly displayed on the same page.



When the configuration is finished, you can have the complete configuration documentation sent to you via email including material list, circuit diagram, 2D drawing and 3D model (STEP). This is done by way of an automatic request to your local distributor who will promptly contact you and send you an offer.

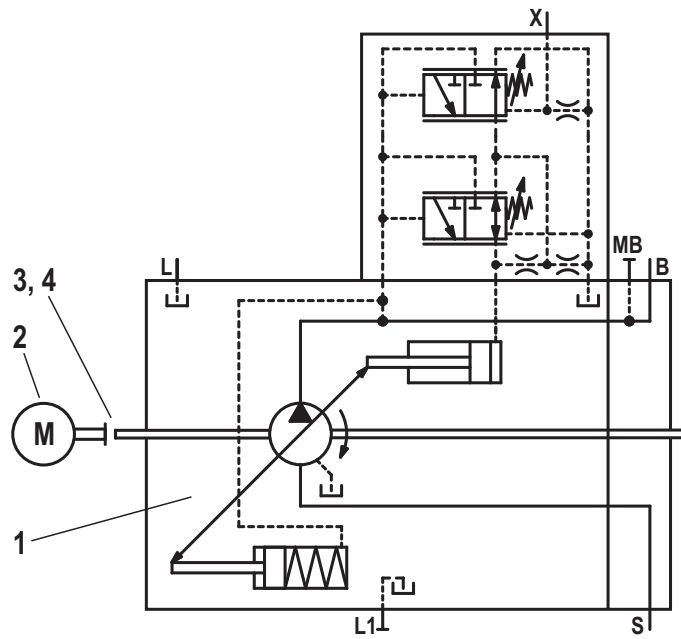
Technical data (For applications outside these parameters, please consult us!)

Line connections	see Line connections table on page 12		
Hydraulic fluid	Mineral oil HLP according to DIN 51524; part 2 e.g. with operating temperature 50 °C ISO VG46 DIN ISO 3448 (other fluids on request!) ▶ Please observe our provisions according to data sheet 90220, 90221. ▶ Different oil types must not be mixed as this might result in degradation and deterioration of the lubricity. ▶ According to the operating conditions, the fluid must be renewed at certain intervals.		
Pump type	A10VSO series 32 according to data sheet 92714		
▶ Direction of rotation	Clockwise		
Operating pressure, absolute			
▶ Input	$p_{\min\text{-max}}$	bar	0.8 ... 10 for sizes 45 to 100, 1 ... 10 from size 140
▶ Output	p_{nom}	bar	280
▶ Peak pressure	p_{max}	bar	350
▶ Leakage port	p_{max}	bar	2
Hydraulic fluid temperature range, observe	ϑ	°C	-25 ... +90
viscosity range			
▶ T_{optimal} with HLP 46 (DIN 51524)	ϑ	°C	+45 ... +55
▶ T_{max} in continuous operation	ϑ	°C	< +65
For start-up at low temperatures a heating can be provided. For cooling, you can either provide an oil/water or an oil/air cooler. See data sheet 50125 (ABUKG) and 50112 (KOL/KOLP).			
Cleanliness classes according to ISO code	Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406 (c) and according to the pump type used. ¹⁾ At least cleanliness class 20/18/15 must be achieved.		
Viscosity range	ν	mm ² /s	16 ... 36 optimal 10 ... 1000 for a short time (see data sheet 92714)
Electric motor	▶ Motor type		
	▶ Efficiency class		
	▶ Number of pole pairs		
	▶ Voltage according to IEC 38	U	V
	▶ Speed	n	min ⁻¹
	▶ Protection class	IP	55
	▶ Installation position	horizontal	
Surface treatment	By default, all steel components and components are at least provided with temporary corrosion protection (e.g. for transport).		

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.
For selecting the filters, see data sheet 51501.

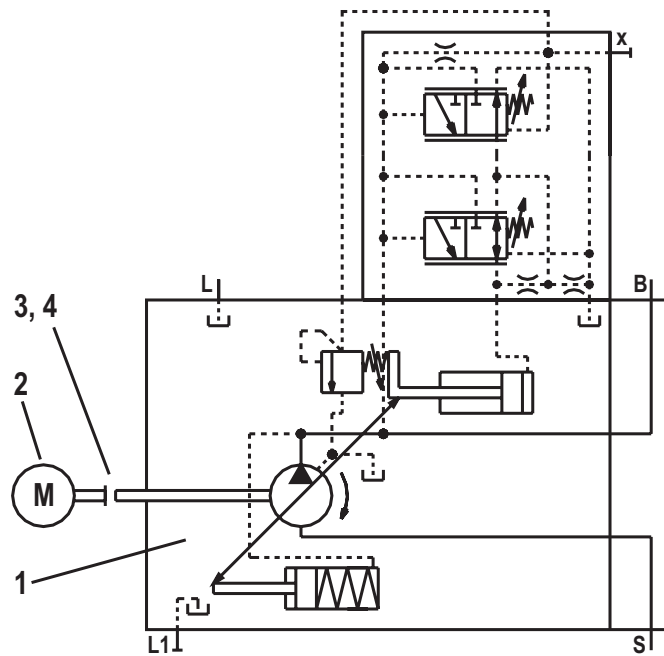
Circuit diagrams

Axial piston pump with flow controller, hydraulic (basic design), type ABAPG...DRS



- 1 Axial piston pump A10VSO
- 2 Electric motor
- 3 Pump carrier
- 4 Coupling

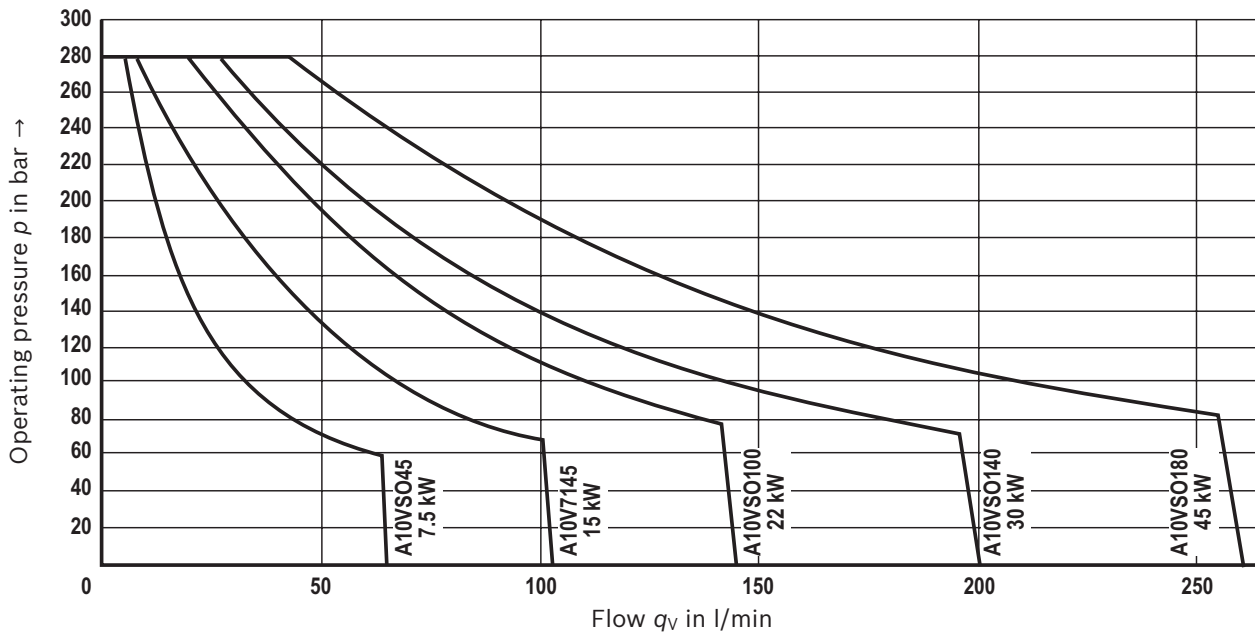
Axial piston pump with power controller with pressure cut off, type ABAPG...LA6DS



- 1 Axial piston pump A10VSO
- 2 Electric motor
- 3 Pump carrier
- 4 Coupling

Performance characteristic

Axial piston pump with power controller, type ABAPG...LA6DS measured at $n = 1450 \text{ min}^{-1}$
 (factory setting)



 For the project planning, please use the performance characteristic from data sheet 92714.

Standard program incl. preferred types ABAPG-A10VSO, series 32

Frequency	50 Hz 1450 min ⁻¹		50 Hz 1450 min ⁻¹	Electric motor size	ABHPG material no. (Motor B5)			
Pump	q _{V max} in l/min	p _{max} in bar	Power in kW		HOY	MKZ ¹⁾	SIE	MKZ ¹⁾
A10VSO 45 ... 32	62	78	11.0	160M	R901398187	A3	R901398240	A3
		118	15.0	160L	R901398188	A3	R901398241	A3
		157	18.5	180M	R901398192	A3	R901398248	A3
		193	22.0	180L	R901398189	A3	R901398242	A3
		276	30.0	200L	R901398190	A3	R901398245	A3
		280	37.0	225S	R901398191	A3	R901398247	A3
A10VSO 71 ... 32	98	68	15.0	160L	R901398193	A3	R901398249	A3
		88	18.5	180M	R901398200	A3	R901398257	A3
		112	22.0	180L	R901398194	A3	R901398250	A3
		158	30.0	200L	R901398195	A3	R901398252	A3
		198	37.0	225S	R901398196	A3	R901398253	A3
		244	45.0	225M	R901398198	A3	R901398254	A3
A10VSO100 ... 32	138	280	55.0	250M	R901398199	A3	R901398256	A3
		57	18.5	180M	R901398211	A3	R901398270	A3
		72	22.0	180L	R901398201	A3	R901398260	A3
		101	30.0	200L	R901398203	A3	R901398261	A3
		129	37.0	225S	R901398204	A3	R901398262	A3
		160	45.0	225M	R901398205	A3	R901398265	A3
		196	55.0	250M	R901398207	A3	R901398266	A3
		273	75.0	280S	R901398208	A3	R901398267	A3
A10VSO140 ... 32	193	280	90.0	280M	R901398209	A3	R901398269	A3
		52	22.0	180L	R901398212	A3	R901398271	A3
		75	30.0	200L	R901398213	A3	R901398272	A3
		95	37.0	225S	R901398214	A3	R901398289	A3
		119	45.0	225M	R901398216	A3	R901398290	A3
		148	55.0	250M	R901398217	A3	R901398291	A3
		204	75.0	280S	R901398219	A3	R901398292	A3
		246	90.0	280M	R901398220	A3	R901398293	A3
A10VSO180 ... 32	248	280	110.0	315S	R901398221	A3	R901398294	A3
		62	30.0	200L	R901398223	A3	R901398295	A3
		77	37.0	225S	R901398224	A3	R901398297	A3
		95	45.0	225M	R901398225	A3	R901398298	A3
		120	55.0	250M	R901398226	A3	R901398299	A3
		167	75.0	280S	R901398228	A3	R901398300	A3
		203	90.0	280M	R901398229	A3	R901398301	A3
		251	110.0	315S	R901398231	A3	R901398302	A3
A10VSO 45LA6	62		7.5	132M	R901398233	A3	R901398304	A3
			15.0	160L	R901398235	A3	R901398305	A3
			22.0	180L	R901398236	A3	R901398306	A3
			30.0	200L	R901398237	A3	R901398307	A3
			45.0	225M	R901398238	A3	R901398308	A3

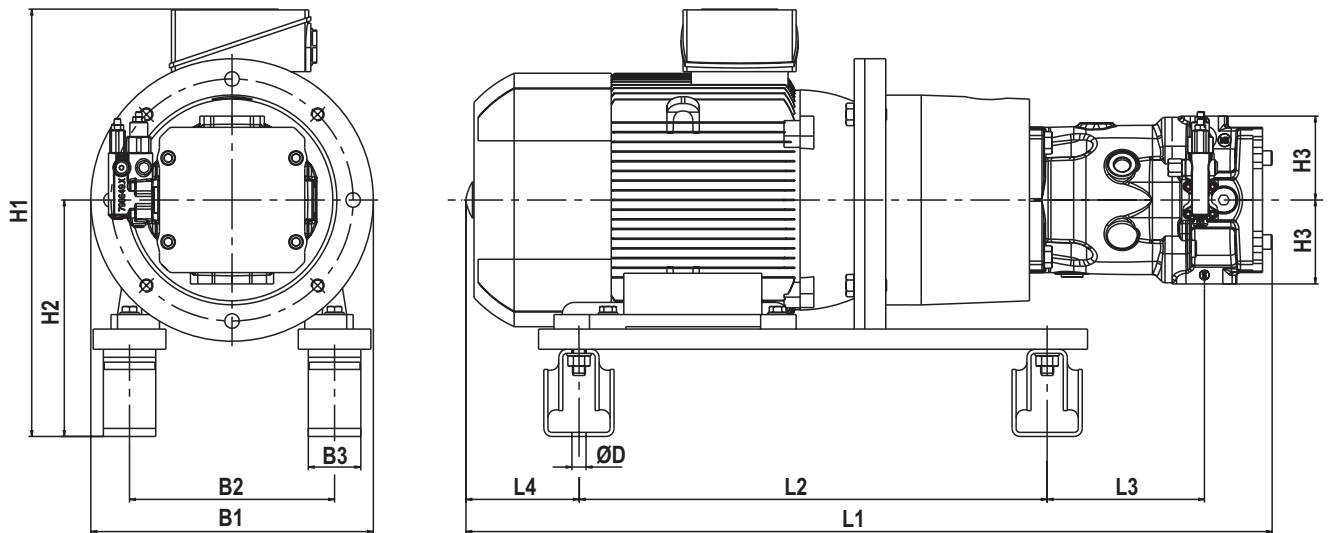
1) MKZ = material mark

A2 = preferred delivery range

A3 = Standard delivery range dimensions see page 9 ... 11

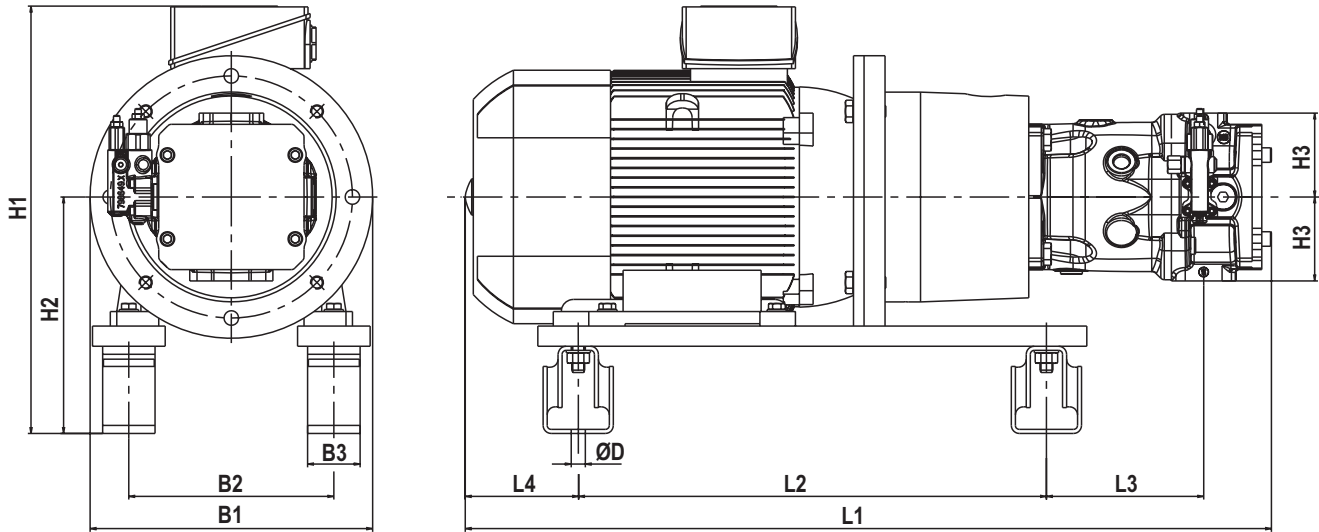
Dimensions: Type ABAPG A10VSO HOYER-MOTORS

(dimensions in mm)



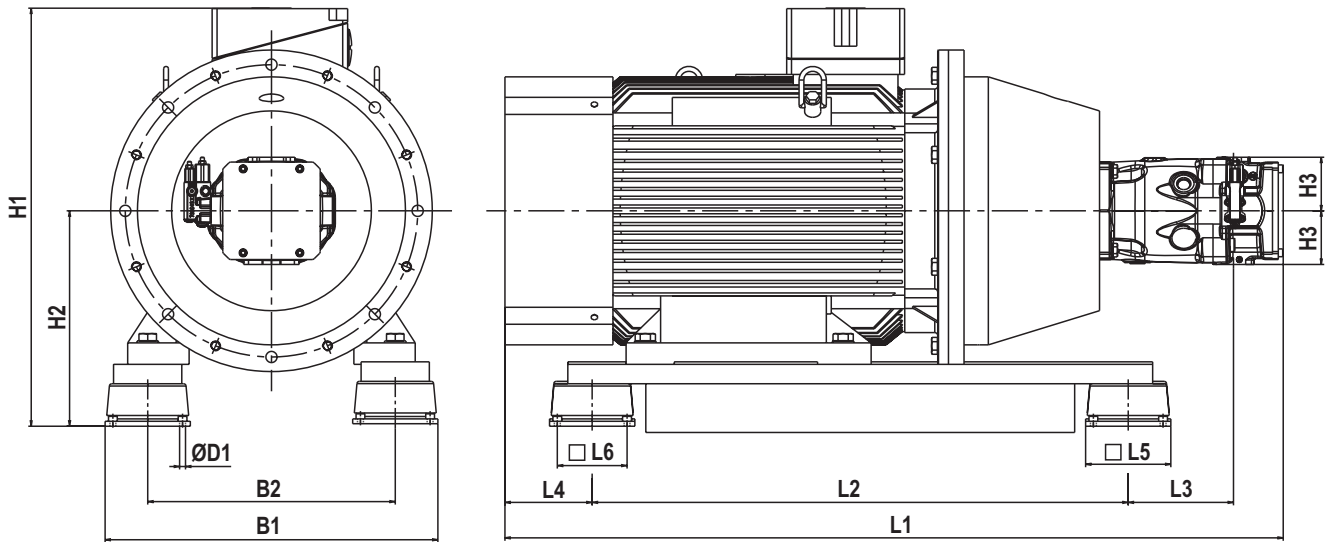
Pump	E-motor KW / frame size	Dimensions											Weight in kg
		B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	
A10VSO 45 DRS	11 / 160M	350	254	50	13.5	539	263	91	954	580	190	102	168
	15 / 160L	350	254	50	13.5	569	263	91	998	580	190	146	190
	18.5 / 180M	350	279	65	17.5	605	313	91	1045.5	620	204	139.5	234
	22 / 180L	350	279	65	17.5	605	313	91	1083.5	620	204	177.5	273
	30 / 200L	400	318	65	17.5	673	338	91	1129	700	171	176	341
	37 / 225S	450	356	80	17.5	721	385	91	1182.5	800	127	173.5	478
A10VSO 71 DRS	15 / 160L	350	254	65	17.5		293	104	1049	580	239	146	210
	18.5 / 180M	350	279	65	17.5	605	313	104	1080.5	620	237	139.5	249
	22 / 180L	350	279	65	17.5	605	313	104	1118.5	620	237	177.5	288
	30 / 200L	400	318	80	17.5	673	360	104	1164	700	204	176	358
	37 / 225S	450	356	80	17.5	721	385	104	1211.5	800	154	173.5	494
	45 / 225M	450	356	80	17.5	721	385	104	1236.5	800	154	198.5	502
	55 / 250M	550	406	80	17.5	794	420	104	1298	850	172	192	580
A10VSO100 DRS	18.5 / 180M	350	279	65	17.5	605	313	100	1139.5	620	295	139.5	269
	22 / 180L	350	279	65	17.5	605	313	100	1177.5	620	295	177.5	308
	30 / 200L	400	318	80	17.5	673	360	100	1223	700	262	176	364
	37 / 225S	450	356	80	17.5	721	385	100	1276.5	800	218	173.5	518
	45 / 225M	450	356	80	17.5	721	385	100	1301.5	800	218	198.5	526
	55 / 250M	550	406	80	17.5	794	420	100	1377	850	250	192	605
A10VSO140 DRS	22 / 180L	350	279	65	17.5	605	313	110	1218.5	620	319	177.5	313
	30 / 200L	400	318	80	17.5	673	360	110	1264	700	286	176	383
	37 / 225S	450	356	80	17.5	721	385	110	1307.5	800	232	173.5	521
	45 / 225M	450	356	80	17.5	721	385	110	1332.5	800	232	198.5	529
	55 / 250M	550	406	80	17.5	794	420	110	1394	850	250	192	610
A10VSO180 DRS	30 / 200L	400	318	80	17.5	673	360	110	1274	700	296	176	388
	37 / 225S	450	356	80	17.5	721	385	110	1317.5	800	242	173.5	526
	45 / 225M	450	356	80	17.5	721	385	110	1342.5	800	242	198.5	534
	55 / 250M	550	406	80	17.5	794	420	110	1404	850	260	192	615
A10VSO 45 LA6S	7.5 / 132M	300	216	50	13.5	422	235	91	875	480	196	117	209
A10VSO 71 LA6S	15 / 160L	350	254	65	17.5	569	293	104	1049	580	239	146	210
A10VSO100 LA6S	22 / 180L	350	279	65	17.5	605	313	100	1177.5	620	295	177.5	308
A10VSO140 LA6S	30 / 200L	400	318	80	17.5	673	360	110	1264	700	286	176	383
A10VSO180 LA6S	45 / 225M	450	356	80	17.5	721	385	110	1342.5	800	242	198.5	534

Dimensions: Type ABAPG A10VSO SIEMENS
(dimensions in mm)



Pump	E-motor	Dimensions											Weight in kg
	KW / frame size	B1	B2	B3	ØD	H1	H2	H3	L1	L2	L3	L4	
A10VSO 45 DRS	11 / 160M	350	254	50	13.5	500	263	91	948	580	190	96	134
	15 / 160L	350	254	50	13.5	500	263	91	1008	580	190	156	131
	18.5 / 180M	350	279	65	17.5	575	313	91	1028	620	204	122	226
	22 / 180L	350	279	65	17.5	575	313	91	1058	620	204	152	261
	30 / 200L	400	318	65	17.5	638	338	91	1112.5	700	171	159.5	311
	37 / 225S	450	356	80	17.5	713	385	91	1123	800	127	114	385
A10VSO 71 DRS	15 / 160L	350	254	65	17.5	530	293	104	1059	580	239	156	151
	18.5 / 180M	350	279	65	17.5	575	313	104	1063	620	237	122	241
	22 / 180L	350	279	65	17.5	575	313	104	1093	620	237	152	276
	30 / 200L	400	318	80	17.5	660	360	104	1147.5	700	204	159.5	328
	37 / 225S	450	356	80	17.5	713	385	104	1152	800	154	114	401
	45 / 225M	450	356	80	17.5	713	385	104	1237	800	154	199	421
	55 / 250M	550	406	80	17.5	812	420	104	1276	850	172	170	552
A10VSO100 DRS	18.5 / 180M	350	279	65	17.5	575	313	100	1122	620	295	122	261
	22 / 180L	350	279	65	17.5	575	313	100	1152	620	295	152	296
	30 / 200L	400	318	80	17.5	660	360	100	1206.5	700	262	159.5	334
	37 / 225S	450	356	80	17.5	713	385	100	1217	800	218	114	425
	45 / 225M	450	356	80	17.5	713	385	100	1302	800	218	199	445
	55 / 250M	550	406	80	17.5	812	420	100	1355	850	250	170	577
A10VSO140 DRS	22 / 180L	350	279	65	17.5	575	313	110	1193	620	319	152	301
	30 / 200L	400	318	80	17.5	660	360	110	1247.5	700	286	159.5	353
	37 / 225S	450	356	80	17.5	713	385	110	1248	800	232	114	428
	45 / 225M	450	356	80	17.5	713	385	110	1333	800	232	199	448
	55 / 250M	550	406	80	17.5	812	420	110	1372	850	250	170	582
A10VSO180 DRS	30 / 200L	400	318	80	17.5	660	360	110	1257.5	700	296	127	358
	37 / 225S	450	356	80	17.5	713	385	110	1258	800	242	114	433
	45 / 225M	450	356	80	17.5	713	385	110	1343	800	242	199	453
	55 / 250M	550	406	80	17.5	812	420	110	1382	850	260	170	587
A10VSO 45 LA6S	7.5 / 132M	300	216	50	13.5	437	235	91	889	480	196	131	133
A10VSO 71 LA6S	15 / 160L	350	254	65	17.5	530	293	104	1059	580	239	156	151
A10VSO100 LA6S	22 / 180L	350	279	65	17.5	575	313	100	1152	620	295	152	296
A10VSO140 LA6S	30 / 200L	400	318	80	17.5	660	360	110	1247.5	700	286	159.5	353
A10VSO180 LA6S	45 / 225M	450	356	80	17.5	713	385	110	1343	800	242	199	453

Dimensions: Type ABAPG A10VSO HOYER-MOTORS, SIEMENS from 75 kW
(dimensions in mm)



ABAPG with motor supplier HOYER-MOTORS

Pump	E-motor KW / frame size	Dimensions											Weight in kg	
		B1	B2	ØD1	H1	H2	H3	L1	L2	L3	L4	L5		L6
A10VSO100 DRS	75 / 280S	590	457	11.9	783	380	100	1438	900	283	170	133	108	805
	90 / 280M	590	457	11.9	783	380	100	1490	900	283	222	133	108	905
A10VSO140 DRS	75 / 280S	590	457	11.9	783	380	110	1472	900	300	177	133	108	817
	90 / 280M	590	457	11.9	783	380	110	1524	900	300	222	133	108	917
	110 / 315S	683	508	13.5	989	442	110	1779	1100	201	376	175	143	1292
A10VSO180 DRS	75 / 280S	590	457	11.9	783	380	110	1482	900	310	170	133	108	822
	90 / 280M	590	457	11.9	783	380	110	1534	900	310	222	133	108	922
	110 / 315S	683	508	13.5	989	442	110	1789	1100	211	376	175	143	1297
	132 / 315M	683	508	13.5	989	442	110	1899	1100	211	486	175	143	1570

ABAPG with motor supplier Siemens

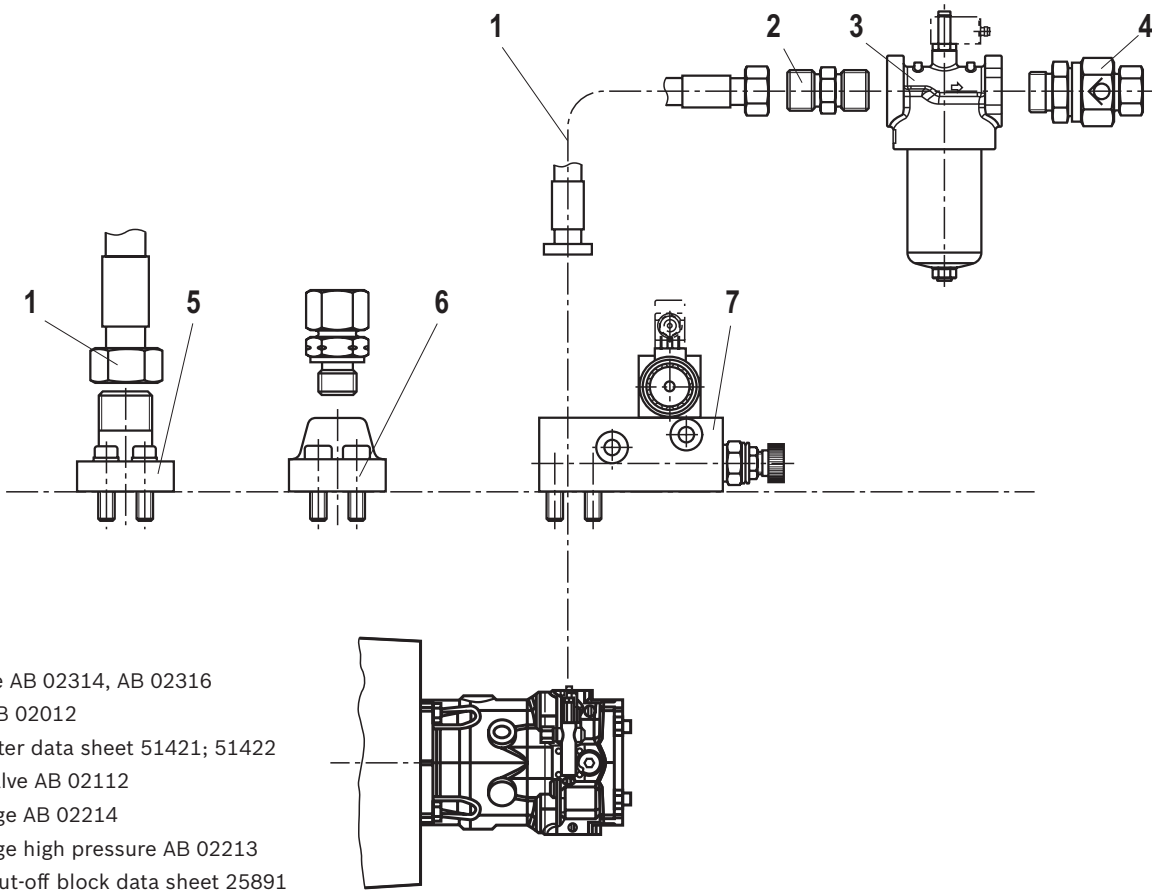
Pump	E-motor KW / frame size	Dimensions											Weight in kg	
		B1	B2	ØD1	H1	H2	H3	L1	L2	L3	L4	L5		L6
A10VSO100 DRS	75 / 280S	590	457	11.9	812	380	100	1429	900	283	161	133	108	747
	90 / 280M	590	457	11.9	812	380	100	1539	900	283	271	133	108	747
A10VSO140 DRS	75 / 280S	590	457	11.9	812	380	110	1463	900	300	161	133	108	759
	90 / 280M	590	457	11.9	812	380	110	1573	900	300	271	133	108	759
	110 / 315S	683	508	13.5	942	442	110	1584	1100	201	181	175	143	1030
A10VSO180 DRS	75 / 280S	590	457	11.9	812	380	110	1473	900	310	161	133	108	764
	90 / 280M	590	457	11.9	812	380	110	1583	900	310	271	133	108	764
	110 / 315S	683	508	13.5	942	442	110	1594	1100	211	181	175	143	1035
	132 / 315M	683	508	13.5	942	442	110	1759	1100	211	346	175	143	1085

Pressure line connections

Pump type	Line connections			
	Pressure connection P(B)	Suction port S	Leakage oil connection L / L1	Pilot oil port X
A10VSO 45	DIN/ISO 6162-1 1"	DIN/ISO 6162-1 1 1/2"	DIN 3852 – M22x1.5	DIN 3852 – M14x1.5
A10VSO 71	DIN/ISO 6162-1 1"	DIN/ISO 6162-1 2"	DIN 3852 – M22x1.5	DIN 3852 – M14x1.5
A10VSO100	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M33x2	DIN 3852 – M14x1.5
A10VSO140	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M33x2	DIN 3852 – M14x1.5
A10VSO180	DIN/ISO 6162-2 1 1/4"	DIN/ISO 6162-1 2 1/2"	DIN 3852 – M33x2	DIN 3852 – M14x1.5

Standard pressure SAE flange figure with metric mounting screws
 High pressure SAE flange figure with metric mounting screws

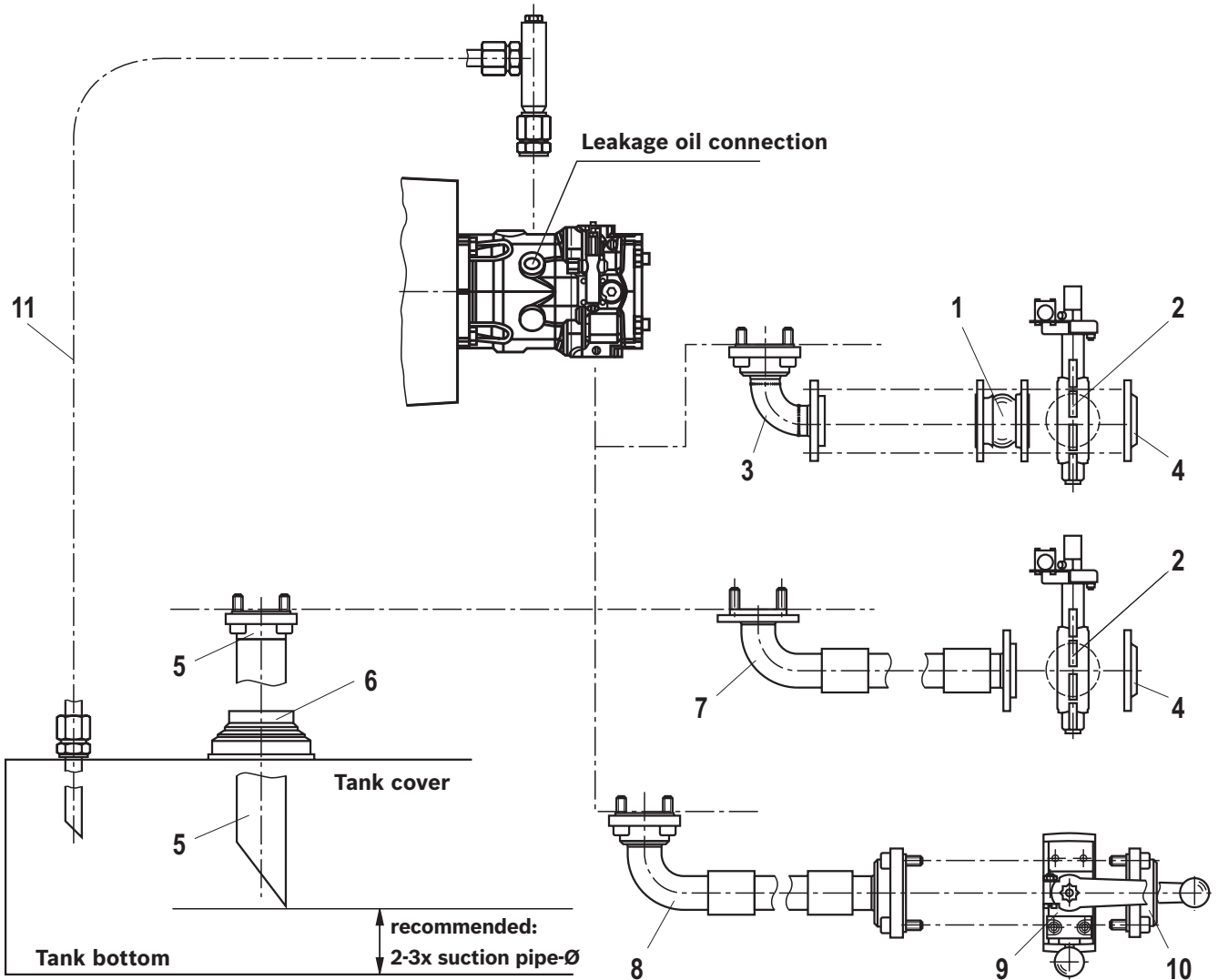
Optional accessories at the pressure connection



- 1 Hose line AB 02314, AB 02316
- 2 Fitting AB 02012
- 3 In-line filter data sheet 51421; 51422
- 4 Check valve AB 02112
- 5 SAE flange AB 02214
- 6 SAE flange high pressure AB 02213
- 7 Pump shut-off block data sheet 25891

Items 1 to 7 as optional accessories upon request

Optional accessories at the suction port and leakage oil connection

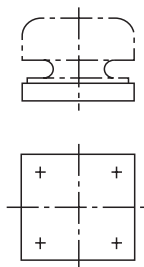


- 1 Compensator DIN AB 02231
- 2 Shut-off valve DIN AB 02129
- 3 Flange bend SAE-DIN AB 02229
- 4 DIN flange AB 02204
- 5 Suction pipe AB 02303
- 6 Elastic pipe fitting AB 01203

- 7 Suction tube SAE-DIN AB 02315
 - 8 Suction tube SAE-SAE AB 02315
 - 9 Shut-off valve SAE (on request)
 - 10 SAE flange AB 02215
 - 11 Drain line
- Items 1 to 11 as optional accessories upon request

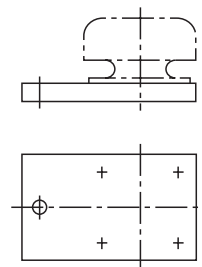
Optional accessories for damping bearing according to AB33-11 (from 75 kW)

Accessories: plate



Weld-on plate

Accessories: clip



Clip for foundation installation

Instructions for transport, installation, commissioning, operation and maintenance

1. General safety instructions

⚠ WARNING!

Risk of injury and property damage due to improper handling of the product

If the module is not properly installed, used and maintained, personal injury and damage can occur to the module or system.

- ▶ Installation, adjustment, maintenance and repair of the module may only be performed by authorized, trained and qualified personnel.

Please note:

- ▶ The module may only be used in accordance with the data described in the product documentation!
- ▶ Unauthorized modifications or changes which affect the safety and proper function are not permitted!
- ▶ Existing protective devices must not be removed.
- ▶ The general safety and accident prevention regulations must be observed!

2. Transportation and storage

Transport

⚠ WARNING!

Risks of injury caused by tumbling, falling or uncontrolled movement of the module!

The module can lose its stability in cases of improper transport and thereby tip over, fall or move in an uncontrolled manner.

- ▶ Be aware of the module weight.
- ▶ Place the product on a suitable foundation/ ground.
- ▶ Before removing the existing auxiliary structure make additional suitable measures (e.g. by fasteners or with the help of cranes) for the adequate stability of the module.
- ▶ Only the intended attachment points should be used for fastening or lifting the module (see Fig.).
- ▶ Modules are never to be attached or raised on the established components (pipes, hoses, control blocks, accumulator, etc.).
- ▶ Observe the maximum load-bearing capacity of the attachment devices and floor conveyors.
- ▶ Ensure that no unauthorized persons are within the danger zone.
- ▶ The module must not be raised on the fan cover of the motor.
- ▶ The eye bolts of the motor must not be used for lifting the module. They are only intended for lifting the motor without additional attachments.
- ▶ Auxiliary eyelets e.g. on fan covers and cooler attachments, are also suitable for lifting the corresponding items must not be used for the transport of the module.

stability of the module.

- ▶ Only the intended attachment points should be used for fastening or lifting the module (see Fig.).
- ▶ Modules are never to be attached or raised on the established components (pipes, hoses, control blocks, accumulator, etc.).
- ▶ Observe the maximum load-bearing capacity of the attachment devices and floor conveyors.
- ▶ Ensure that no unauthorized persons are within the danger zone.



Instructions for transport, installation, commissioning, operation and maintenance

Storage

In general it is recommended that the modules are stored as follows until actual installation date:

- ▶ in the original packaging
- ▶ dry and dust-free
- ▶ at room temperature
- ▶ free of vibrations and oscillations
- ▶ protected from light and direct sunlight

3. Assembly and installation

- ▶ Position the module as indicated in the dimensions.
- ▶ Attach the product to the designated locations as specified in the dimensions .
- ▶ Always depressurize and deenergize the relevant plant part before assembling the module.
- ▶ Ground the module before connecting and establish equipotential bonding using an equalization strip.
- ▶ Always ensure absolute cleanliness.

WARNING!

Risk of death by electric shock! Working in the areas of live parts is extremely dangerous.

Work at the electric system may only be performed by a specialized electrician. Electricians tools (VDE tools) are strictly required.

- ▶ Using a suitable measuring device, check before the beginning of the work whether parts of the system are still under residual voltage (e.g. with capacitors). Wait until they have discharged.

- ▶ Electrical wiring work must be performed by trained specialist personnel in accordance with local regulations!
- ▶ Before starting work, make sure that all electrical connections are switched off and cannot be switched back on again. This also applies to auxiliary circuits such as space heaters.
- ▶ The connections must be made such that a continuous and safe electrical connection is ensured. This applies equally to power and ground connections.
- ▶ Wiring diagrams for the power and accessory connections (e.g. PTC thermistors, heating) are located in the terminal box.
- ▶ Make sure that the terminal box is clean and dry.
- ▶ Unused cable entry glands must be closed off.
- ▶ Check the terminal box seal before refitting.

Instructions for transport, installation, commissioning, operation and maintenance

4. Commissioning

- ▶ Before initial operation the pump must be vented and primed in order to protect internal components from damage.
- ▶ When commissioning or re-commissioning machinery or a system, you should ensure that the tank, as well the suction line and the pressure line of the module are

filled with oil according to the manufacturer's instructions and remain filled during operation.

- ▶ Check the direction of rotation of the motor.
- ▶ Ensure that the suction pressure does not fall below the specified minimum.

Notice:

The module will be damaged by polluted oil!

Polluted oil could result in wear and malfunctions.

In particular, foreign matter in the suction line such as welding globules and metallic swarf can damage the module.

- ▶ During commissioning, absolute cleanliness must be ensured.

- ▶ When connecting the measuring terminals ensure that no contaminants infiltrate the module.
- ▶ In order to guarantee functional safety, at least cleanliness class 20/18/15 in accordance with ISO 4406 is necessary.
Brand-name hydraulic oils are recommended.

CAUTION!

Commissioning an incorrectly installed product!

Risk of injury and damage to property!

- ▶ Make sure that all electrical and hydraulic connections

are either connected or closed.

- ▶ Only take a fully installed product with original accessories from Bosch Rexroth into operation.

5. Operation

The product is a module which does not require any settings or modifications during operation. As a result, this chapter of the instructions does not contain any information on adjustment options.

Only use the product within the performance range provided in the technical data. The machine manufacturer is responsible for the correct project planning of the module and its control.

6. Maintenance

Maintenance

- ▶ Only genuine spare parts from Bosch Rexroth are permitted.

Cleaning and care

- ▶ Always ensure absolute cleanliness when working at the product.
- ▶ Do not use high-pressure washers for cleaning.
- ▶ Tightly seal openings such as inspection holes with suitable protective devices and verify that all gaskets and seals on electrical connections are secure so that

no detergent can penetrate into the product.

- ▶ Never use solvents or aggressive cleaning agents.
- ▶ Cleaning intervals depend on the degree of contamination occurring locally.

Necessary and amending documentation

▶ Axial piston-variable displacement pump A4VSO, A10VO, A10VSO, ...	Operating instructions	92714-01-B
▶ Axial piston variable displacement pumps A10VSO series 32	Data sheet	92714
▶ Pump control block PSBD 02	Data sheet	62300
▶ Pump safety block type DBA, DBAW	Data sheet	25880
▶ Pump control block PSBD 02	Data sheet	62300
▶ Pump safety block type DBA, DBAW	Data sheet	25880
▶ Motor-pump groups -IE2- A10VSO series 31/52	Data sheet	51170
▶ Motor-pump groups -IE2- PV7	Data sheet	51171
▶ Motor-pump groups -IE2- A4VSO series 10/30	Data sheet	51172
▶ Motor-pump groups -IE2- A10VSO series 32	Data sheet	51174
▶ Motor-pump groups -IE2- PGZ	Data sheet	51175
▶ Motor-pump groups -IE3- A10VSO series 31/52	Data sheet	51180
▶ Motor-pump groups -IE3- PV7	Data sheet	51181
▶ Motor-pump groups -IE3- A4VSO series 10/30	Data sheet	51182
▶ Motor-pump groups -IE3- A10VSO series 32	Data sheet	51184
▶ General Operating Instructions for Hydraulic Power Units and Assemblies	Operating instructions	07009-B

Accumulator stations

Type ABSBG

RE 50135

Edition: 2016-07

Replaces: 01.15



H7860_d

- ▶ Component series 1X
- ▶ With diaphragm type accumulator according to data sheet 50150

Features

- ▶ Accumulator station with shut-off block
- ▶ Diaphragm type accumulator
- ▶ Shut-off block with integrated shut-off valve, safety valve (type-examination tested) and drain valve
- ▶ Drain valve can be operated manually or electrically
- ▶ Glycerin-filled pressure gauge with red indication of the maximum admissible operating pressure on the dial
- ▶ Console for weld or screw connection
- ▶ Assembly prepared for external equipotential bonding

Contents

Features	1
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Technical data	4, 5
Symbols	6
Spare parts and accessories	6
Standard program including preferred types	7, 8
Dimensions	9 ... 11
Commissioning, maintenance and operating instructions	12 ... 14

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15					
ABSBG	-	1X	/	M		N	-		/				G24	V	/	K	6		

01	Accumulator station (with diaphragm type accumulator according to directive 2014/68/EU)	ABSBG
02	Component series 10 to 19 (10 to 19: unchanged installation and connection dimensions)	1X

Hydraulic accumulator

03	Design	
	Diaphragm type accumulator according to data sheet 50150	M

Accumulator volume in liters (design)

04	Diaphragm type accumulator	
	0.7 liters	0.7
	1.4 liters	1.4
	2.0 liters	2.0
	2.8 liters	2.8
	3.5 liters	3.5

Bladder/diaphragm material

05	e.g. Acrylonitrile-butadiene rubber (NBR)	N
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Country acceptance for hydraulic accumulator

06	Short symbol for country acceptance in Europe, Russia and China from the manufacturer's type key e.g.	
	Acceptance according to 2014/68/EU	CE
	Acceptance according to SELO (China)	88/CHN
	Acceptance according to GOST (Russia)	71/GOST
	Operating instructions	BA

Accumulator shut-off block according to data sheet 50131

07	ABZSS 10 pressure relief valve 6E	10
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Unloading

08	manual and electro-magnetic	E
	manual	M

Set pressure at the pressure relief valve

09	100 bar	100
	140 bar	140
	210 bar	210
	330 bar	330

Voltage type

10	Direct voltage 24 V	G24
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Seal material

11	FKM	V
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Mounting construction kit

12	Mounting using assembly kit K (console K)	K
----	---	---

ABZMM pressure gauge according to data sheet 50205

13	DN63	6
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Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15			
ABSBG	-	1X	/	M		N	-		/		G24	V	/	K	6		

Pressure gauge scale

14	bar/MPa	M
	bar/psi	P

Accumulator manufacturer

15	Bosch Rexroth	DC
	Parker Olaer	OL

Order example:**ABSBG-1X/M0,7N-CE/10E140G24V/K6MDC**

Technical data

(For applications outside these parameters, please consult us!)

Accumulator		
Design		Diaphragm type accumulator
Installation position		Any, preferably with the fluid connection socket at the bottom
Ambient temperature range	°C	-15 ... +65
Line connection		Screw-in thread
Hydraulic fluid		Hydraulic oil according to DIN 51524; other liquids on request
Hydraulic fluid temperature range (others on request)	°C	-10 ... +80 (NBR diaphragm) -35 ... +80 (ECO diaphragm)
Acceptance specification for the accumulator	CE/BA	Acceptance according to 2014/68/EU or the operating instructions
	China	SELO
	Russia	GOST

hydraulic, diaphragm type accumulator								
Nominal volume	V_{rated}	l	0.7	1.4	2.0	2.8	3.5	
Effective gas volume	V_{eff}	l	0.75	1.4	1.95	2.7	3.5	
Maximum flow	q_{max}	l/min	40	40	60	60	60	
Maximum operating pressure	p_{max}	bar	350	350	350	350	350	
Max. adm. pressure fluctuation range	Δp_{dyn}	bar	130	130	130	130	130	

pneumatic		
Charging gas		Nitrogen, cleanliness class 4.0, N ₂ = 99.99 vol. %
Gas filling pressure	p_0	bar 2 (Exception: diaphragm type accumulators with SELO acceptance are not prestressed)

Technical data

(For applications outside these parameters, please consult us!)

Shut-off block		
Seal material		FKM seals (NBR seals on request)
Operating temperature range	°C	-15 ... +80
Maximum operating pressure	bar	350
Block material		Steel
Direct operated pressure relief valve		DBDS...K1X/...VB or DBDS...K1X/...E according to data sheet 25402
Cartridge seat valve		KSDER1PB/HN9V according to data sheet 18136-20
Protection class according to VDE 0470-1 – version "K4" (DIN EN 60529), DIN 40050-9		IP 65 with mating connector mounted and locked
Voltage type	V	24 (in case of electro-magnetic unloading "E")
Maximum admissible degree of contamination of the hydraulic fluid; Cleanliness class according to ISO 4406 (c)		Class 20/18/15

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oils	HL, HLP	NBR, FKM	DIN 51524
Bio-degradable	- insoluble in water	HETG	VDMA 24568
		HEES	
	- soluble in water	HEPG	VDMA 24568

Important information on hydraulic fluids!

- ▶ For more information and data on the use of other hydraulic fluids, please refer to data sheet 90220 or contact us!
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- ▶ The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.

- ▶ **Flame-resistant – containing water:** The maximum pressure differential per control edge is 50 bar. Pressure pre-loading at the tank port > 20% of the pressure differential; otherwise, increased cavitation. The pressure peaks should not exceed the maximum operating pressures!
- ▶ **Bio-degradable:** When using bio-degradable hydraulic fluids that are zinc-solvent, zinc may accumulate in the fluid (700 mg zinc per pole tube).

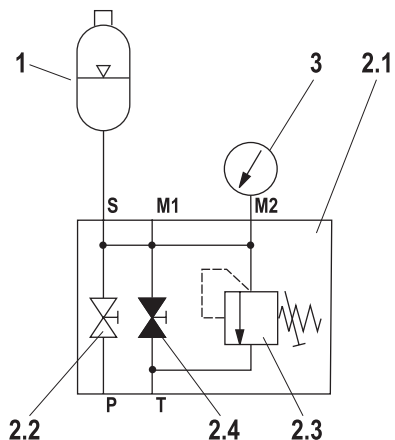
Pressure gauge		
Size	bar	63
Pressure gauge		Glycerin
Double scale		bar/MPa

Surface treatment

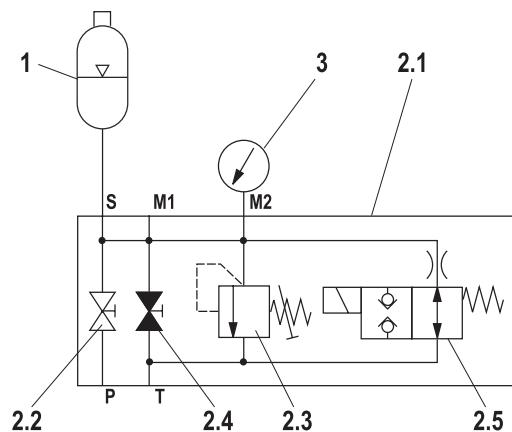
All steel components and components without protective coating are coated prior to installation (minimum corrosion protection time of 12 h in salt spray test). Then, the devices, components and the piping are installed. All components, assemblies, controls, pipes, fittings and standard parts keep the supplied surface protection and are not additionally coated. The corrosion protection is determined by the least protected element in the assembly.

Symbols

Accumulator station with manually operated drain valve



Accumulator station with electro-mechanically operated drain valve



- 1** Hydraulic accumulator
- 2.1** Accumulator shut-off block with:
- 2.2** System shut-off cock
- 2.3** Pressure relief valve (type-examination tested)
- 2.4** Manual unloading
- 2.5** Electro-magnetic unloading (only version E)
- 3** Pressure gauge with red indication of the maximum admissible operating pressure

Spare parts and accessories

- ▶ Diaphragm type accumulator with CE/BA acceptance according to data sheet 50150
- ▶ Shut-off block manual/electrical according to data sheet 50131
- ▶ Pressure gauge according to data sheet 50205
- ▶ Warning sign according to RNI 17506-001

Consoles contained in the assembly kit are intended for mounting by means of screws and nuts or for welding to suitable frames or design components.

Standard program including preferred types: Accumulator stations

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	$\sim qv_{max}$ DBDS in l/min	CE/BA acceptances				Acceptance China		Acceptance Russia		
					Description	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾
Diaphragm type accumulator	0.7	100	10	25	ABSBG-1X/M 0,7N-BA /10M100 V/K6M DC	R901301879	11	A3		R901302149	A3	R901302248	A3
		140	10	52	ABSBG-1X/M 0,7N-BA /10M140 V/K6M DC	R901301881	11	A3		R901302150	A3	R901302250	A3
		210	10	52	ABSBG-1X/M 0,7N-BA /10M210 V/K6M DC	R901280011	11	A3	K	R901302151	A3	R901302251	A3
	1.4	330	10	52	ABSBG-1X/M 0,7N-BA /10M330 V/K6M DC	R901280012	11	A3		R901302152	A3	R901302252	A3
		100	10	25	ABSBG-1X/M 1,4N-CE /10M100 V/K6M DC	R901301884	14	A3		R901302157	A3	R901302259	A3
		140	10	52	ABSBG-1X/M 1,4N-CE /10M140 V/K6M DC	R901280013	14	A2		R901290489	A3	R901302261	A3
	2	210	10	52	ABSBG-1X/M 1,4N-CE /10M210 V/K6M DC	R901301885	14	A3	K	R901302158	A3	R901302262	A3
		330	10	52	ABSBG-1X/M 1,4N-CE /10M330 V/K6M DC	R901280014	14	A3		R901302159	A3	R901302263	A3
		100	10	25	ABSBG-1X/M 2,0N-CE /10M100 V/K6M DC	R901280015	16	A3		R901302167	A3	R901302269	A3
	2.8	140	10	52	ABSBG-1X/M 2,0N-CE /10M140 V/K6M DC	R901301889	16	A3		R901302168	A3	R901302270	A3
		210	10	52	ABSBG-1X/M 2,0N-CE /10M210 V/K6M DC	R901301890	16	A3	K	R901302169	A3	R901302271	A3
		330	10	52	ABSBG-1X/M 2,0N-CE /10M330 V/K6M DC	R901280016	16	A3		R901302170	A3	R901302272	A3
3.5	100	10	25	ABSBG-1X/M 2,8N-CE /10M100 V/K6M DC	R901301893	21	A3		R901302175	A3	R901302277	A3	
	140	10	52	ABSBG-1X/M 2,8N-CE /10M140 V/K6M DC	R901301894	21	A3		R901302176	A3	R901302278	A3	
	210	10	52	ABSBG-1X/M 2,8N-CE /10M210 V/K6M DC	R901301895	21	A3	K	R901302177	A3	R901302279	A3	
3.5	330	10	52	ABSBG-1X/M 2,8N-CE /10M330 V/K6M DC	R901280017	21	A3		R901302178	A3	R901302281	A3	
	100	10	25	ABSBG-1X/M 3,5N-CE /10M100 V/K6M DC	R901301900	24	A3		R901302186	A3	R901302286	A3	
	140	10	52	ABSBG-1X/M 3,5N-CE /10M140 V/K6M DC	R901301901	24	A3		R901302187	A3	R901302287	A3	
3.5	210	10	52	ABSBG-1X/M 3,5N-CE /10M210 V/K6M DC	R901301902	24	A3	K	R901302188	A3	R901302289	A3	
	330	10	52	ABSBG-1X/M 3,5N-CE /10M330 V/K6M DC	R901280018	24	A3		R901302189	A3	R901302290	A3	

¹⁾ MKZ = material mark; A2 = preferred delivery range; A3 = standard delivery range

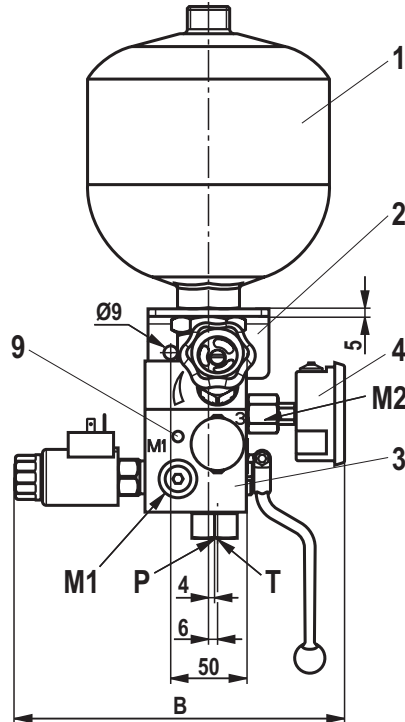
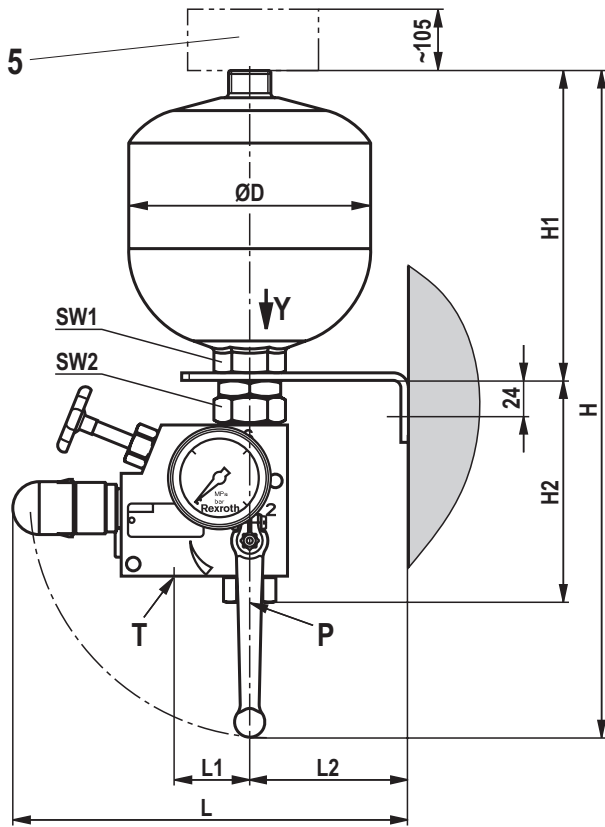
Standard program including preferred types: Accumulator stations

Standard program including preferred types with electrically operated drain valve (other versions on request)													
Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	~ q _{v max} DBDS in l/min	Description	CE/BA acceptances				Acceptance China		Acceptance Russia	
						Material no.	Weight in kg	MKZ 1)	Type of mounting	Material no.	MKZ 1)	Material no.	MKZ 1)
Diaphragm type accumulator	0.7	100	10	25	ABSBG-1X/M 0,7N-BA /10E100G 24V/K6M DC	R901301882	11	A3		R901302153	A3	R901302254	A3
		140	10	52	ABSBG-1X/M 0,7N-BA /10E140G 24V/K6M DC	R901301883	11	A3	K	R901302154	A3	R901302255	A3
		210	10	52	ABSBG-1X/M 0,7N-BA /10E210G 24V/K6M DC	R901280001	12	A3		R901302155	A3	R901302256	A3
		330	10	52	ABSBG-1X/M 0,7N-BA /10E330G 24V/K6M DC	R901280002	11	A3		R901302156	A3	R901302258	A3
	1.4	100	10	25	ABSBG-1X/M 1,4N-CE /10E100G 24V/K6M DC	R901301886	14	A3		R901302160	A3	R901302264	A3
		140	10	52	ABSBG-1X/M 1,4N-CE /10E140G 24V/K6M DC	R901280003	14	A2	K	R901302161	A3	R901302265	A3
		210	10	52	ABSBG-1X/M 1,4N-CE /10E210G 24V/K6M DC	R901301887	14	A3		R901302163	A3	R901302266	A3
		330	10	52	ABSBG-1X/M 1,4N-CE /10E330G 24V/K6M DC	R901280004	14	A3		R901302164	A3	R901302267	A3
	2.0	100	10	25	ABSBG-1X/M 2,0N-CE /10E100G 24V/K6M DC	R901280005	16	A3		R901302171	A3	R901302273	A3
		140	10	52	ABSBG-1X/M 2,0N-CE /10E140G 24V/K6M DC	R901301891	17	A3	K	R901302172	A3	R901302274	A3
		210	10	52	ABSBG-1X/M 2,0N-CE /10E210G 24V/K6M DC	R901301892	17	A3		R901302173	A3	R901302275	A3
		330	10	52	ABSBG-1X/M 2,0N-CE /10E330G 24V/K6M DC	R901280006	16	A3		R901302174	A3	R901302276	A3
2.8	100	10	25	ABSBG-1X/M 2,8N-CE /10E100G 24V/K6M DC	R901301896	22	A3		R901302181	A3	R901302282	A3	
	140	10	52	ABSBG-1X/M 2,8N-CE /10E140G 24V/K6M DC	R901301898	22	A3	K	R901302182	A3	R901302283	A3	
	210	10	52	ABSBG-1X/M 2,8N-CE /10E210G 24V/K6M DC	R901301899	22	A3		R901302183	A3	R901302284	A3	
	330	10	52	ABSBG-1X/M 2,8N-CE /10E330G 24V/K6M DC	R901280007	22	A3		R901302185	A3	R901302285	A3	
3.5	100	10	25	ABSBG-1X/M 3,5N-CE /10E100G 24V/K6M DC	R901301903	24	A3		R901302190	A3	R901302291	A3	
	140	10	52	ABSBG-1X/M 3,5N-CE /10E140G 24V/K6M DC	R901301904	24	A3	K	R901302191	A3	R901302292	A3	
	210	10	52	ABSBG-1X/M 3,5N-CE /10E210G 24V/K6M DC	R901301905	25	A3		R901302192	A3	R901302293	A3	
	330	10	52	ABSBG-1X/M 3,5N-CE /10E330G 24V/K6M DC	R901280008	24	A3		R901302193	A3	R901302294	A3	

1) MKZ = material mark; A2 = preferred delivery range; A3 = standard delivery range

Dimensions: Mounting with bracket K (dimensions in mm)

Accumulator station with diaphragm type accumulator 0.7 to 3.5 liters

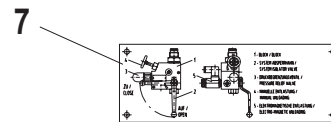
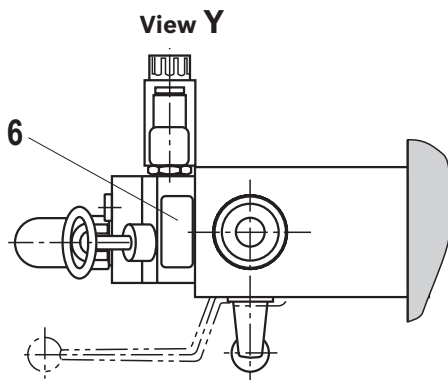


- 1 Hydraulic accumulator
- 2 Bracket
- 3 Shut-off block
- 4 Pressure gauge with red indication of the maximum admissible operating pressure
- 5 Space required for filling device
- 6 Name plate of the accumulator station
- 7 Functional sign (loose)
- 8 Warning sign (loose)
- 9 Threaded connection M8 for equipotential bonding

Connection designations:

- M1** Measuring port G 1/4
- M2** Pressure gauge connection G 1/4
- P** Pump connection G 1/2
- T** Tank port G 3/8

The gas filling pressure of the accumulators upon delivery is 2 bar.



ABSBG-... assembly kit	ØD	H	H1	H2	L	L1	L2	B	SW1	SW2
M0,7/10	128.5	402.5	171	132.5	262	50	105	217	SW 41	SW 41
M1,4/10	156	427.5	196						SW 50	SW 60
M2,0/10		512.5	281						SW 50	
M2,8/10	180	501.5	270						SW 55	
M3,5/10		541.5	310							

Commissioning, maintenance and operating instructions

General Information

- ▶ Observe the documentation for the machinery.
- ▶ Also observe the documentation pertaining to the other components, assemblies and partly completed machinery, which form part of the complete machinery.
- ▶ Observe the generally applicable, legal or otherwise binding European and national regulations as well as the relevant legislation for your country pertaining to the prevention of accidents and protection of the environment.
- ▶ Operating instructions according to data sheet of the accumulator
- ▶ Depending on the country of installation, national pressure vessel regulations need to be complied with.
- ▶ In the standard, the country acceptance is effected according to BA, CE as well as for China and Russia Other acceptances on request.
- ▶ Please indicate the country of installation in the order.
- ▶ Keep all documents included in the delivery in a safe place; they will be required by the expert in recurring tests.
- ▶ The machine end-user will have sole responsibility for complying with existing provisions.
- ▶ The accumulator stations in this edition are assemblies in the sense of directive 2014/68/EU, article 2, section 6 (Pressure Equipment Directive). However, they are not intended for exclusive commissioning. They are installed as a component of a larger assembly or system.
- ▶ The accumulator stations described here contain the entire equipment which is required for safety reasons according to DIN EN ISO 4413.
- ▶ The accumulator stations must not be modified; otherwise, the operating license according to directive 2014/68/EU will be lost and the dealer and/or manufacturer warranty will be forfeited.
- ▶ The accumulator stations may only be operated within the admissible limit values.
- ▶ Repairs may only be carried out by the manufacturer or their authorized dealers and agencies. Repairs performed by third parties invalidate the approval and release the manufacturer from all claims resulting from an unauthorized intervention.
- ▶ Assembly and maintenance must be implemented by authorized, instructed persons only.

Commissioning, maintenance and operating instructions

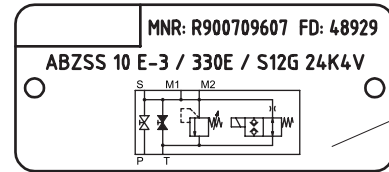
- ▶ The accumulator stations are provided with signs: **1**
 - 1. Name plate** specifying the pressure rating, identifies the device
 - 2. Functional sign**, identifies the components and elementary lever positions
 - 3. Warning sign**, has to be clearly visible and attached at the device or next to it.

Usually, the warning sign is in the languages according to the country acceptance. Other languages on request. **2**

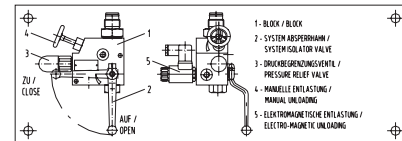
For hydraulic systems with one or several hydraulic accumulators whose warning signs are not visible after installation into the machine, an additional warning sign has to be attached visibly to the system, stating: **3**

"CAUTION - system contains hydraulic accumulators."

The circuit diagram has to contain the same notice. With mounting "B" and "K", the warning signs and functional signs are supplied loosely and must be attached to or close to the accumulator station in a clearly visible position. The attachment of the signs must already be considered in the design.



Example





Vorsicht Druckbehälter	
Druckentlastung vor Beginn der Demontage	
Gasvorfülldruck: _____ bar	
Füllen nur mit Stickstoff _____ bar	
<p>Attention: Pressure vessel Discharge pressure prior to disassembly Gas pre-charge pressure: _____ bar Only fill with nitrogen.</p>	<p>Attenzione! Serbatoio in pressione Scaricare la pressione prima di iniziare lo smontaggio Pressione di precarica del gas: _____ bar Riempiere solo con azoto.</p>
<p>Attention: réservoir sous pression Déchargement avant le démontage Pression de précharge de gaz: _____ bars Seulement remplissage d'azote.</p>	<p>Atención. Recipiente a presión Descargar la presión antes del desmontaje Presión precarga gas: _____ bar Llenar sólo con nitrógeno.</p>
<p>Varning: Tryckbehållare Före demontering måste anläggningen göras trycklös Gas - försladdningstryck: _____ bar Fylls enbart med kväve.</p>	<p>Cuidado: Reservatorio sob presión Descarga antes de desmontar Presión de pre-carga de gas: _____ bar Encher só com nitrogénio.</p>
<p>ADVARSEL TRYKBEHOLDER TRYKFLASTES FOR FÆRDYNDELSE AF DEMONTAGE GAS - FØRSLADDNINGSTRYK: _____ BAR MA KUN FYLDES MED KVÆLSTOF.</p>	<p>Voorzichtig drukvat Druk ontlasten voor aanvang demontage Gas - voorvuldruk: _____ bar Alleen met stikstof vullen.</p>
<p>ADVARSEL TRYKBEHOLDER Trykk skal avlastes før demontasje Gas - Førlastetrykk: _____ bar Ma kun fylles med nitrogen.</p>	<p>HUOMIOI PAINEASTIA PAINENPURKU ENHEN KÖRILAUSTOIDEN ALOITTAMISTA KAASUN ESITÄHTTÖPAINA TÄTTÖ SALLITTU VAIN TYPIKKAASULLA _____ BAR</p>
<p>ΠΡΟΣΟΧΗ ΔΕΞΙΩ ΤΥΠΟ ΠΙΣΤΙΣ ΕΠΙΣΤΡΟΦΗ ΠΡΟΣ ΤΗΝ ΑΣΦΑΛΕΙΑ ΚΑΙ ΤΗΝ ΕΠΙΧΕΙΡΗΣΗ ΤΗΣ ΣΥΣΤΗΜΑΤΟΣ ΕΠΙΣΤΡΟΦΗ ΣΤΗΝ ΑΣΦΑΛΕΙΑ ΚΑΙ ΤΗΝ ΕΠΙΧΕΙΡΗΣΗ ΤΗΣ ΣΥΣΤΗΜΑΤΟΣ ΕΠΙΣΤΡΟΦΗ ΣΤΗΝ ΑΣΦΑΛΕΙΑ ΚΑΙ ΤΗΝ ΕΠΙΧΕΙΡΗΣΗ ΤΗΣ ΣΥΣΤΗΜΑΤΟΣ ΕΠΙΣΤΡΟΦΗ ΣΤΗΝ ΑΣΦΑΛΕΙΑ ΚΑΙ ΤΗΝ ΕΠΙΧΕΙΡΗΣΗ ΤΗΣ ΣΥΣΤΗΜΑΤΟΣ</p>	<p>Vigyazat, nyomastartaly Szétszerelés előtt nyommentesíteni kell Gáz - előtöltőnyomás: _____ bar Csak nitrogénnel tölthető fel.</p>
<p>Uwaga zbiornik ciśnieniowy Przed demontażem należy rozładować gazem Napełniać tylko azotem. _____ bar</p>	<p>Pozor tlakova nadoba Pred demontaz odstavovat Prisic tlak plynu. Plini jen dusikem. _____ bar</p>


MNR - R900751679

Commissioning, maintenance and operating instructions

Commissioning - Operating instructions according to data sheet of the accumulator!

	<p>DANGER Do not charge hydraulic accumulators with oxygen or air. Explosion hazard!</p> <ul style="list-style-type: none"> ▶ Prior to the initial commissioning, the hydraulic accumulator must be filled with nitrogen of class 4.0, pure (N₂ content 99.99 vol. %). The preset gas pressure necessary for the operation is indicated in the circuit diagrams and operating instructions. ▶ Only use suitable filling and testing devices for filling. We recommend using the charging and test devices by Bosch Rexroth according to data sheet 50150.
	<p>WARNING</p> <ul style="list-style-type: none"> ▶ Risk of injury caused by improper assembly. ▶ Hydraulic accumulators are energy stores. They may supply the energy for uncontrolled movements to actuators. ▶ Before beginning any repairs, the system must be depressurized on the oil and gas side and protected against unauthorized re-start. ▶ Do not carry out welding and soldering works or any mechanical processing at the accumulator tank! Any kind of work at the product invalidates the declaration of conformity and the operating license! <ul style="list-style-type: none"> – Explosion hazard due to welding and soldering works! – Danger of bursting during and after mechanical processing. ▶ A warning sign is enclosed to the accumulator station. It is to be attached to or close to the accumulator station in a clearly visible position.

Maintenance

	<p>Attention</p> <ul style="list-style-type: none"> ▶ In case of damage at the accumulator bladder or diaphragm, the accumulator will lose its function immediately. ▶ Loss of the initial gas tension will lead to damage at the accumulator bladder or the accumulator diaphragm if operation of the system is continued nevertheless. ▶ Check the initial gas tension in regular intervals.
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Legal provisions

- ▶ Hydraulic accumulators are pressure vessels and subject to the application national provisions and/or regulations valid at the place of installation.
- ▶ In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- ▶ As a standard, country acceptances are effected according to BA, CE as well as for China and Russia. Other acceptances on request.
- ▶ Special regulations are to be observed in shipbuilding, aircraft construction, mining, etc.
- ▶ Design, production and testing are effected according to the data sheets according to AD 2000. Installation, equipment and operation are controlled by the "Technical rules Pressure vessels" (TRB).

Note pursuant to the EC Machinery Directive 2006/42/EC, according to annex II part 1, section A, manufacturer's declaration:

- ▶ The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100, EN 983, and EN 60204-1.
- ▶ Commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

Accumulator stations

Type ABSBG

RE 50136

Edition: 2019-01

Replaces: 2016-08



- ▶ Component series 2X
- ▶ With bladder-type accumulator according to data sheet 50171

Features

- ▶ Accumulator station with shut-off block
- ▶ Bladder-type accumulator
- ▶ Shut-off block with integrated shut-off valve, safety valve (type-examination tested) and drain valve
- ▶ Drain valve can be operated manually or electrically
- ▶ Glycerin-filled pressure gauge with red indication of the maximum admissible operating pressure on the dial
- ▶ Console for weld or screw connection
- ▶ Assembly prepared for external equipotential bonding

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Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ABSBG	-	2X	/	B		N	-		/		G24	V	/	6

01	Accumulator station	ABSBG
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02	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions)	2X
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Hydraulic accumulator, design

03	Bladder-type accumulator according to data sheet 50171	B
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Accumulator volume in liters

04	1.0 liter	1.0
	2.5 liters	2.5
	4.0 liters	4.0
	6.0 liters	6.0
	10.0 liters	10.0
	20.0 liters	20.0
	24.0 liters	24.0
	32.0 liters	32.0
	50.0 liters	50.0

Bladder material

05	e.g. acrylonitrile butadiene rubber (NBR)	N
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Country acceptance for hydraulic accumulator

06	Short symbol for country acceptance in Europe, Russia and China from the manufacturer's type key	
	Acceptance according to 2014/68/EU	CE
	Acceptance according to SELO (China)	534
	Acceptance according to EAC (Russia)	EAC
	Operating instructions	BA

Accumulator shut-off block according to data sheet 50131

07	ABZSS 10 pressure relief valve 6E	10
	ABZSS 20 pressure relief valve 10E	20
	ABZSS 30 pressure relief valve 20E	30
	ABZSS 30 SO30 pressure relief valve 30E	31

Accumulator shut-off block - Unloading

08	Manual and electro-magnetic	E
	Manual	M

Accumulator shut-off block - Set pressure at the pressure relief valve

09	100 bar	100
	140 bar	140
	210 bar	210
	315 bar	315
	330 bar	330

Accumulator shut-off block - Voltage type

10	Direct voltage 24 V	G24
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Accumulator shut-off block - Seal material

11	FKM	V
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Mounting construction kit

12	Mounting with assembly kit A according to DCCS 10060 (console C)	A
	Mounting with clamp according to DCCS 10060	B

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ABSBG	-	2X	/	B		N	-	/			G24	V	/	6

ABZMM pressure gauge according to data sheet 50205

13	DN 63	6
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Pressure gauge scale

14	bar/MPa	M
	bar/psi	P

Accumulator manufacturer

15	Bosch Rexroth	DC
	Roth Hydraulics	RH

Order example:**ABSBG-2X/B32,0N-CE/30E315G24V/A6MDC**

Technical data

(for applications outside these values, please consult us!)

Accumulators		
Design		Bladder-type accumulator
Installation position		Any, preferably with the fluid connection socket at the bottom
Ambient temperature range	°C	-15 ... +65
Line connection		Screw-in thread
Hydraulic fluid		Hydraulic oil according to DIN 51524; other liquids on request
Hydraulic fluid temperature range (others upon request)	°C	-15 ... +80 (NBR bladder) -32 ... +80 (ECO bladder)
Acceptance specification for the accumulator	CE/BA	Acceptance according to 2014/68/EU or the operating instructions
	China	SELO
	Russia	EAC

Hydraulic, bladder-type accumulator											
Nominal volume	V_{rated}	l	1	2.5	4.0	6.0	10	20	24	32	50
Effective gas volume	V_{eff}	l	1.0	2.4	3.7	5.9	9.2	18.1	24.5	33.4	48.7
Maximum flow	q_{max}	l/min	240	450	450	450	900	900	900	900	900
Maximum operating pressure	p_{max}	bar	350	350	350	350	330	330	330	330	330
Max. adm. pressure fluctuation range	Δp_{dyn}	bar	200	200	200	200	125	125	125	125	125

Pneumatic		
Charging gas		Nitrogen, cleanliness class 4.0, N ₂ = 99.99 vol. %
Gas filling pressure	p_0	bar CE, BA, EAC: 0
	p_0	bar China: >30 l: 2-5

Shut-off block	
Seal material	FKM seals (NBR seals on request)
Operating temperature range	°C -15 ... +80
Maximum operating pressure	bar 350
Block material	Steel
Direct-operated pressure relief valve	DBDS...K1X/...VB or DBDS...K1X/...E according to data sheet 25402
Cartridge seat valve	KSDER1PB/HN9V according to data sheet 18136-20
Protection class according to VDE 0470-1 – type "K4" (DIN EN 60529), DIN 40050-9	IP 65 with mating connector mounted and locked
Voltage type	V 24 (in case of electro-magnetic unloading "E")
Maximum admissible degree of contamination of the hydraulic fluid Cleanliness class according to ISO 4406 (C)	Class 20/18/15

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oils	HL, HLP	NBR, FKM	DIN 51524
Bio-degradable	▶ Insoluble in water	HETG	VDMA 24568
		HEES	
	▶ Soluble in water	HEPG	VDMA 24568

Important notices on hydraulic fluids:

- ▶ For further information and data on the use of other hydraulic fluids, please refer to data sheet 90220 or contact us!
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- ▶ The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.

- ▶ **Flame-resistant – containing water:** The maximum pressure differential per control edge is 50 bar. Pressure pre-loading at the tank port > 20% of the pressure differential; otherwise, increased cavitation. The pressure peaks should not exceed the maximum operating pressures!
- ▶ **Bio-degradable:** When using bio-degradable hydraulic fluids that are zinc-soluble, zinc may accumulate in the fluid (700 mg zinc per pole tube).

Technical data

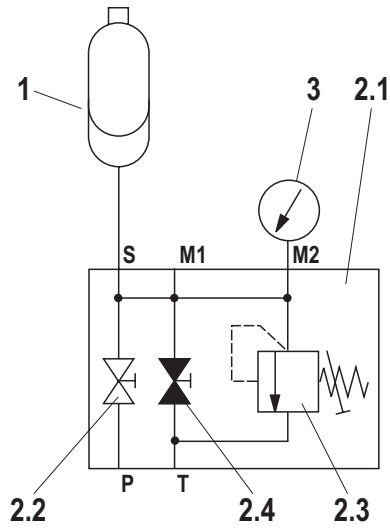
(for applications outside these values, please consult us!)

Pressure gauge		
Size	bar	63
Pressure gauge		Glycerin
Double scale		bar/MPa

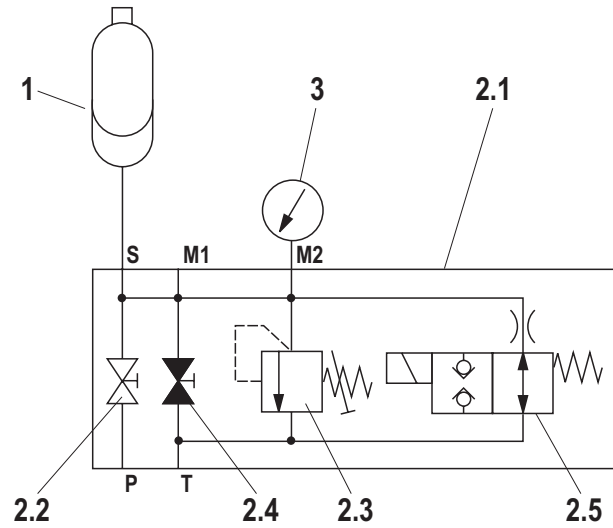
Surface treatment		
All steel components and components without protective coating are coated prior to installation (minimum corrosion protection time of 12 h in salt spray test). Then, the devices, components and the piping are installed. All components, assemblies, controls, pipes, fittings and standard parts keep the supplied surface protection and are not additionally coated. The corrosion protection is determined by the least protected element in the assembly.		

Symbols

Accumulator station with manually operated drain valve



Accumulator station with electro-mechanically operated drain valve



- 1** Hydraulic accumulator
- 2.1** Accumulator shut-off block with:
- 2.2** System shut-off cock
- 2.3** Pressure relief valve (type-examination tested)
- 2.4** Manual unloading
- 2.5** Electro-magnetic unloading (only version E)
- 3** Pressure gauge with red indication of the maximum admissible operating pressure

Spare parts and accessories

- ▶ Bladder-type accumulator according to data sheet 50171
- ▶ Shut-off block manually/electrically according to data sheet 50131
- ▶ Pressure gauge according to data sheet 50205
- ▶ Warning sign according to RNI 17506-001

Consoles contained in the assembly kit are intended for mounting by means of screws and nuts or for welding to suitable frames or design components.

Standard program including preferred types: Accumulator stations

Standard program including preferred types with manually operated drain valve (other versions on request)

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	Q _{Vmax} DBDS in l/min	Acceptance CE/BA				Acceptance China		Acceptance Russia		
					Denomination	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾
Bladder-type accumulator	1.0	100	10	25	ABSBG-2X/B 1,0N-BA /10M100 V/B6M DC	R901450000	14	A3	B	R901450000	A3	R901488461	A3
		140	10	52	ABSBG-2X/B 1,0N-BA /10M140 V/B6M DC	R901450001	14	A3	B	R901450001	A3	R901488462	A3
		210	10	52	ABSBG-2X/B 1,0N-BA /10M210 V/B6M DC	R901450002	14	A3	B	R901450002	A3	R901488463	A3
		330	10	52	ABSBG-2X/B 1,0N-BA /10M330 V/B6M DC	R901450003	14	A2	B	R901450003	A2	R901488464	A3
	2.5	100	10	25	ABSBG-2X/B 2,5N-CE /10M100 V/B6M DC	R901450004	18	A3	B	R901450004	A3	R901488465	A3
		140	10	52	ABSBG-2X/B 2,5N-CE /10M140 V/B6M DC	R901450005	18	A3	B	R901450005	A3	R901488466	A3
		210	10	52	ABSBG-2X/B 2,5N-CE /10M210 V/B6M DC	R901450006	18	A3	B	R901450006	A3	R901488467	A3
		330	10	52	ABSBG-2X/B 2,5N-CE /10M330 V/B6M DC	R901450007	18	A2	B	R901450007	A2	R901488468	A3
	4.0	100	10	25	ABSBG-2X/B 4,0N-CE /10M100 V/A6M DC	R901450008	28	A3	A	R901450008	A3	R901488469	A3
		140	10	52	ABSBG-2X/B 4,0N-CE /10M140 V/A6M DC	R901450009	28	A3	A	R901450009	A3	R901488470	A3
		210	10	52	ABSBG-2X/B 4,0N-CE /10M210 V/A6M DC	R901450010	28	A3	A	R901450010	A3	R901488471	A3
		330	10	52	ABSBG-2X/B 4,0N-CE /10M330 V/A6M DC	R901450011	28	A2	A	R901450011	A2	R901488472	A3
	6.0	330	10	52	ABSBG-2X/B 6,0N-CE /10M330 V/A6M DC	R901454612	31	A2	A	R901454612	A2	R901488391	A3
	10.0	210	20	140	ABSBG-2X/B10,0N-CE /20M210 V/A6M DC	R901450012	49	A3	A	R901450012	A3	R901488473	A3
		330	20	140	ABSBG-2X/B10,0N-CE /20M330 V/A6M DC	R901450013	49	A2	A	R901450013	A2	R901488474	A3
	20.0	210	20	140	ABSBG-2X/B20,0N-CE /20M210 V/A6M DC	R901450014	75	A3	A	R901450014	A3	R901488475	A3
		330	20	140	ABSBG-2X/B20,0N-CE /20M330 V/A6M DC	R901450015	75	A2	A	R901450015	A2	R901488476	A3
	24.0	210	20.0	140	ABSBG-2X/B24,0N-CE /20M210 V/A6M DC	R901450115	83	A3	A	R901450115	A3	R901488479	A3
		330	20.0	140	ABSBG-2X/B24,0N-CE /20M330 V/A6M DC	R901450116	83	A2	A	R901450116	A2	R901488480	A3
	32.0	315	30	165	ABSBG-2X/B32,0N-CE /30M315 V/A6M DC	R901450016	132	A2	A	R901450034	A3	R901488477	A3
50.0	315	30	165	ABSBG-2X/B50,0N-CE /30M315 V/A6M DC	R901450017	170	A2	A	R901450035	A3	R901488478	A3	

¹⁾ MKZ = Material mark: A2 = preferred delivery range; A3 = standard delivery range

Standard program including preferred types: Accumulator stations**Standard program including preferred types with electrically operated drain valve** (other versions on request)

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	$\approx Q_{Vmax}$ DBDS in l/min	Acceptance CE/BA				Acceptance China		Acceptance Russia		
					Denomination	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾
Bladder-type accumulator	1.0	100	10	25	ABSBG-2X/B 1,0N-BA /10E100G 24V/B6M DC	R901450054	14	A3	B	R901450054	A3	R901488364	A3
		140	10	52	ABSBG-2X/B 1,0N-BA /10E140G 24V/B6M DC	R901450055	14	A3		R901450055	A3	R901488365	A3
		210	10	52	ABSBG-2X/B 1,0N-BA /10E210G 24V/B6M DC	R901450056	14	A3		R901450056	A3	R901488366	A3
		330	10	52	ABSBG-2X/B 1,0N-BA /10E330G 24V/B6M DC	R901450057	14	A2		R901450057	A2	R901488368	A3
	2.5	100	10	25	ABSBG-2X/B 2,5N-CE /10E100G 24V/B6M DC	R901450058	18	A3	B	R901450058	A3	R901488369	A3
		140	10	52	ABSBG-2X/B 2,5N-CE /10E140G 24V/B6M DC	R901450059	18	A3		R901450059	A3	R901488370	A3
		210	10	52	ABSBG-2X/B 2,5N-CE /10E210G 24V/B6M DC	R901450060	18	A3		R901450060	A3	R901488371	A3
		330	10	52	ABSBG-2X/B 2,5N-CE /10E330G 24V/B6M DC	R901450061	18	A2		R901450061	A2	R901488372	A3
	4.0	100	10	25	ABSBG-2X/B 4,0N-CE /10E100G 24V/A6M DC	R901450062	28	A3	A	R901450062	A3	R901488374	A3
		140	10	52	ABSBG-2X/B 4,0N-CE /10E140G 24V/A6M DC	R901450063	28	A3		R901450063	A3	R901488375	A3
		210	10	52	ABSBG-2X/B 4,0N-CE /10E210G 24V/A6M DC	R901450064	28	A3		R901450064	A3	R901488376	A3
		330	10	52	ABSBG-2X/B 4,0N-CE /10E330G 24V/A6M DC	R901450065	28	A2		R901450065	A2	R901488377	A3
	6.0	330	10	52	ABSBG-2X/B 6,0N-CE /10E330G 24V/A6M DC	R901467840	31	A2	A	R901467840	A2	R901488390	A3
	10.0	210	20	140	ABSBG-2X/B10,0N-CE /20E210G 24V/A6M DC	R901450066	49	A3	A	R901450066	A3	R901488378	A3
		330	20	140	ABSBG-2X/B10,0N-CE /20E330G 24V/A6M DC	R901450067	49	A2		R901450067	A2	R901488379	A3
	20.0	210	20	140	ABSBG-2X/B20,0N-CE /20E210G 24V/A6M DC	R901450068	75	A3	A	R901450068	A3	R901488380	A3
		330	20	140	ABSBG-2X/B20,0N-CE /20E330G 24V/A6M DC	R901450069	75	A2		R901450069	A2	R901488381	A3
	24.0	210	20.0	140	ABSBG-2X/B24,0N-CE /20E210G 24V/A6M DC	R901450121	83	A3	A	R901450121	A3	R901488384	A3
		330	20.0	140	ABSBG-2X/B24,0N-CE /20E330G 24V/A6M DC	R901450122	83	A2		R901450122	A2	R901488385	A3
	32.0	315	30	165	ABSBG-2X/B32,0N-CE /30E315G 24V/A6M DC	R901450070	132	A2	A	R901450088	A3	R901488382	A3
50.0	315	30	165	ABSBG-2X/B50,0N-CE /30E315G 24V/A6M DC	R901450071	170	A2	A	R901450089	A3	R901488383	A3	

¹⁾ MKZ = Material mark: A2 = preferred delivery range; A3 = standard delivery range

Accumulator stations for advanced flows

Standard program including preferred types with manually operated drain valve (other versions on request)

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	Q _{Vmax} DBDS in l/min	Acceptance CE/BA						Acceptance China		Acceptance Russia	
					Denomination	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾	
Bladder-type accumulator	1.0	330	20	140	ABSBG-2X/B 1,0N-BA /20M330 V/B6M DC	R901448603	17	A3	B	R901448603	A3	-	-	
	2.5	330	20	140	ABSBG-2X/B 2,5N-CE /20M330 V/B6M DC	R901448605	21	A3	B	R901448605	A3	-	-	
	4.0	330	20	140	ABSBG-2X/B 4,0N-CE /20M330 V/A6M DC	R901448607	31	A3	A	R901448607	A3	-	-	
	6.0	330	20	140	ABSBG-2X/B 6,0N-CE /20M330 V/A6M DC	R901495532	40	A3	A	R901495532	A3	-	-	
	10.0	315	30	165	ABSBG-2X/B10,0N-CE /30M315 V/A6M DC	R901448609	63	A3	A	R901448609	A3	-	-	
		315	31	165	ABSBG-2X/B10,0N-CE /31M315 V/A6M DC	R901448612	71	A3	A	R901448612	A3	-	-	
	20.0	315	30	165	ABSBG-2X/B20,0N-CE /30M315 V/A6M DC	R901448615	89	A3	A	R901448615	A3	-	-	
		315	31	300	ABSBG-2X/B20,0N-CE /31M315 V/A6M DC	R901448617	97	A3	A	R901448617	A3	-	-	
	32.0	315	31	300	ABSBG-2X/B32,0N-CE /31M315 V/A6M DC	R901448619	141	A3	A	R901448619	A3	R901488723	A3	
	50.0	315	31	300	ABSBG-2X/B50,0N-CE /31M315 V/A6M DC	R901448621	179	A3	A	R901448624	A3	R901488721	A3	

¹⁾ MKZ = Material mark: A2 = preferred delivery range; A3 = standard delivery range

Accumulator stations for advanced flows

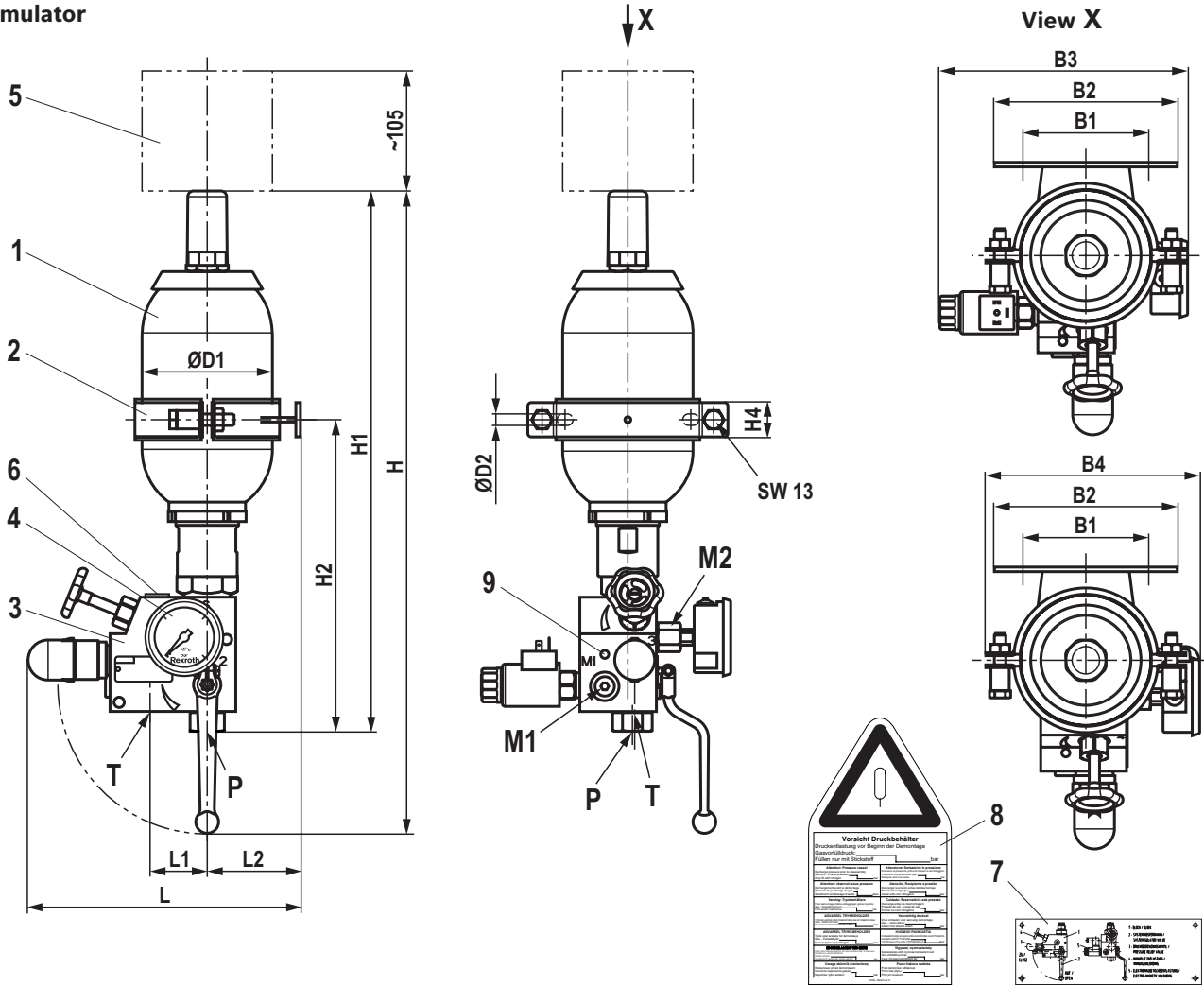
Standard program including preferred types with electrically operated drain valve (other versions on request)

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	Q _{Vmax} DBDS in l/min	Acceptance CE/BA						Acceptance China		Acceptance Russia	
					Denomination	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾	
Bladder-type accumulator	1.0	330	20	140	ABSBG-2X/B 1,0N-BA /20E330G 24V/B6M DC	R901448604	14	A3	B	R901448604	A3	-	-	
	2.5	330	20	140	ABSBG-2X/B 2,5N-CE /20E330G 24V/B6M DC	R901448606	21	A3	B	R901448606	A3	-	-	
	4.0	330	20	140	ABSBG-2X/B 4,0N-CE /20E330G 24V/A6M DC	R901448608	31	A3	A	R901448608	A3	-	-	
	6.0	330	20	140	ABSBG-2X/B 6,0N-CE /20E330G 24V/A6M DC	R901495533	41	A3	A	R901495533	A3	-	-	
	10.0	315	30	165	ABSBG-2X/B10,0N-CE /30E315G 24V/A6M DC	R901448611	63	A3	A	R901448611	A3	-	-	
		315	31	165	ABSBG-2X/B10,0N-CE /31E315G 24V/A6M DC	R901448613	71	A3	A	R901448613	A3	-	-	
	20.0	315	30	165	ABSBG-2X/B20,0N-CE /30E315G 24V/A6M DC	R901448616	89	A3	A	R901448616	A3	-	-	
		315	31	300	ABSBG-2X/B20,0N-CE /31E315G 24V/A6M DC	R901448618	97	A3	A	R901448618	A3	-	-	
	32.0	315	31	300	ABSBG-2X/B32,0N-CE /31E315G 24V/A6M DC	R901448620	141	A3	A	R901488718	A3	R901488716	A3	
	50.0	315	31	300	ABSBG-2X/B50,0N-CE /31E315G 24V/A6M DC	R901448622	179	A3	A	R901488722	A3	R901488720	A3	

¹⁾ MKZ = Material mark: A2 = preferred delivery range; A3 = standard delivery range

Dimensions: Mounting B with clamp
(dimensions in mm)

Accumulator station with 1.0 liter bladder-type accumulator



- 1 Hydraulic accumulator
- 2 Clamp
- 3 Shut-off block
- 4 Pressure gauge with red indication of the maximum admissible operating pressure
- 5 Space required for filling device
- 6 Name plate of the accumulator station
- 7 Functional sign (loose)
- 8 Warning sign (loose)
- 9 Threaded connection M8 for equipotential bonding

Connection designations:

- M1** Measuring port G1/4
- M2** Pressure gauge connection G1/4
- P** Pump port s. table
- T** Tank port s. table

Gas filling pressure of the accumulators upon delivery:

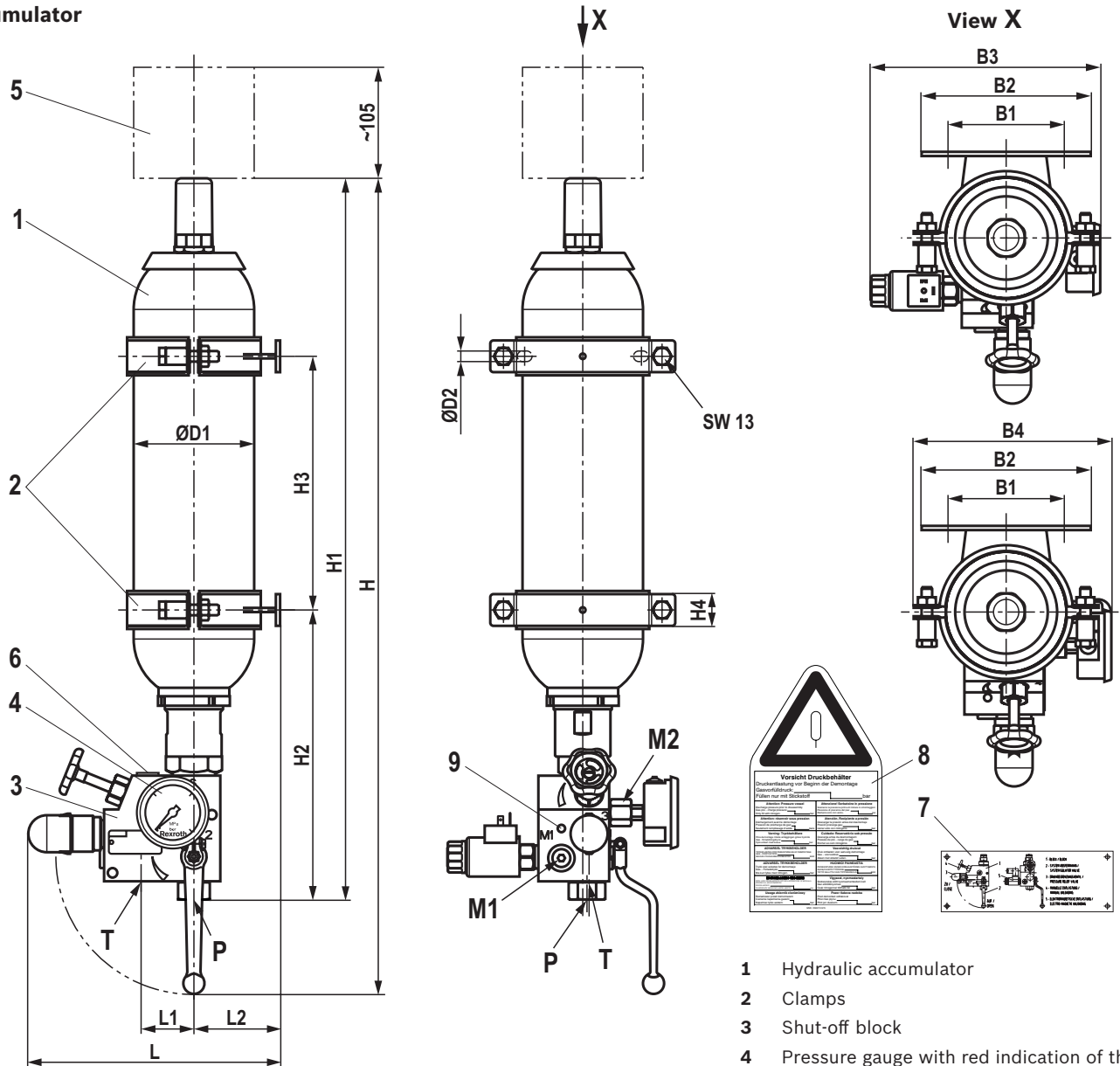
- BA/CE 0 bar
- EAC 0 bar
- China > 30 l 2 ... 5 bar

Assembly kit ABSBG-...	ØD1 _{max}	ØD2	B1	B2	B3	B4	H1	H2	H4	H _{max}	L1	L2	L	P	T
B 1.0.../10M	116	10	110	160	-	178	490	275	30	557	50	82	239	G1/2	G3/8
B 1.0.../10E	116	10	110	160	223	-	490	275	30	557	50	82	239	G1/2	G3/8
B 1.0.../20M	116	10	110	160	-	191	516	301	30	631	56	82	253	G1	G1/2
B 1.0.../20E	116	10	110	160	234	-	516	301	30	631	56	82	253	G1	G1/2

approx. dimensions - for precise dimensions, please refer to the dimensional drawings

Dimensions: Mounting B with clamps
(dimensions in mm)

Accumulator station with 2.5 liters bladder-type accumulator



Connection designations:

M1 Measuring port	G1/4
M2 Pressure gauge connection	G1/4
P Pump port	s. table
T Tank port	s. table

Gas filling pressure of the accumulators upon delivery:

BA/CE	0 bar
EAC	0 bar
China > 30 l	2 ... 5 bar

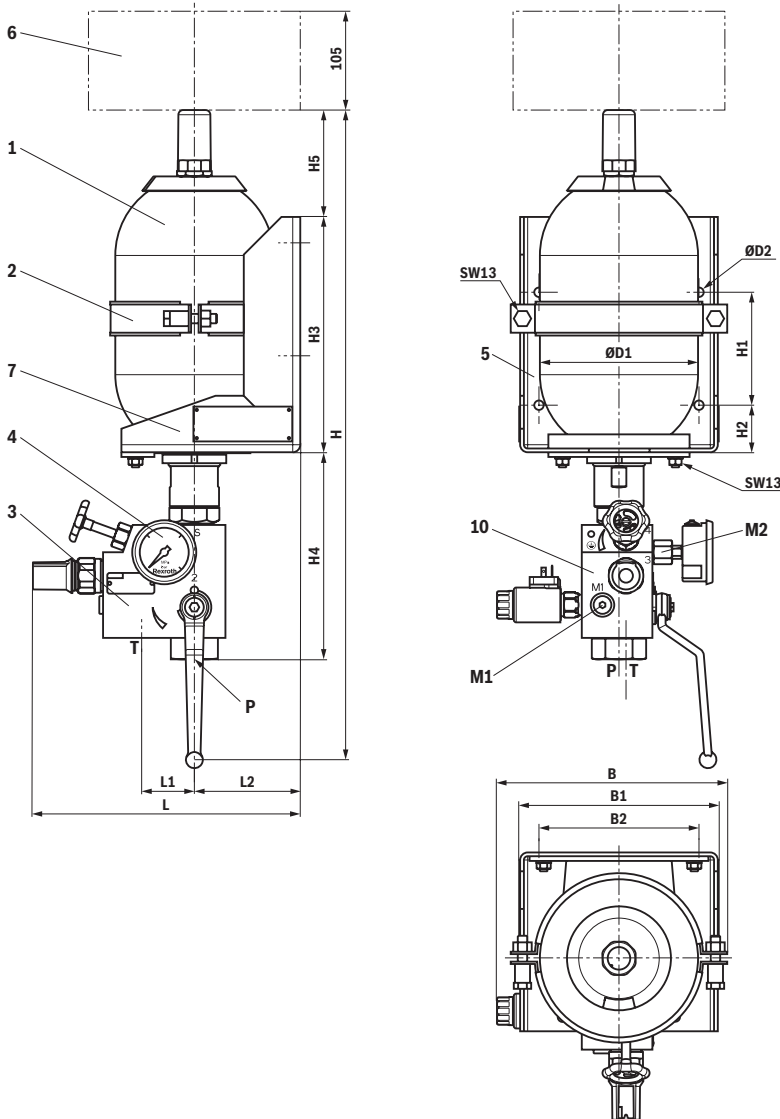
- 1 Hydraulic accumulator
- 2 Clamps
- 3 Shut-off block
- 4 Pressure gauge with red indication of the maximum admissible operating pressure
- 5 Space required for filling device
- 6 Name plate of the accumulator station
- 7 Functional sign (loose)
- 8 Warning sign (loose)
- 9 Threaded connection M8 for equipotential bonding

Assembly kit ABSBG-...	ØD1 _{max}	ØD2	B1	B2	B3	B4	H1	H2	H3	H4	H _{max}	L1	L2	L	P	T
B 2.5.../10M...	116	10	110	160	-	178	699	276	240	30	766	50	82	239	G1/2	G3/8
B 2.5.../10E...	116	10	110	160	223	-	699	276	240	30	766	50	82	239	G1/2	G3/8
B 2.5.../20M...	116	10	110	160	-	191	725	302	240	30	840	56	82	253	G1	G1/2
B 2.5.../20E...	116	10	110	160	234	-	725	302	240	30	840	56	82	253	G1	G1/2

approx. dimensions - for precise dimensions, please refer to the dimensional drawings

Dimensions: Mounting A in console
(dimensions in mm)

Accumulator station with 4.0 ... 50.0 liters bladder-type accumulator



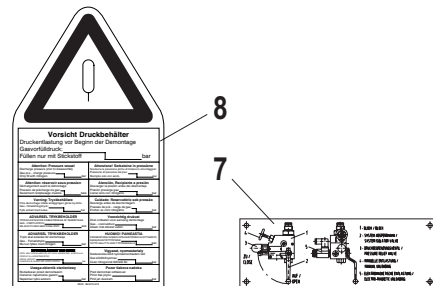
- 1 Hydraulic accumulator
- 2 Clamp
- 3 Shut-off block
- 4 Pressure gauge with red indication of the maximum admissible operating pressure
- 5 Console
- 6 Space required for filling device
- 7 Name plate of accumulator station
- 8 Functional sign (loose)
- 9 Warning sign (loose)
- 10 Threaded connection M8 for equipotential bonding

Connection designations:

M1 Measuring port	G1/4
M2 Pressure gauge connection	G1/4
P Pump port	s. table
T Tank port	s. table

Gas filling pressure of the accumulators upon delivery:

BA/CE	0 bar
EAC	0 bar
China >30 l	2 ... 5 bar



Dimensions: Mounting A in console
(dimensions in mm)

Assembly kit ABSBG-...	ØD1 _{max}	ØD2	B1	B2	B	H1	H2	H3	H4±10	H5	H _{max}	L1	L2	L	P	T
B 4.0.../10M...	170	10	212	170	230	120	50	250	200	112	640	50	113	277	G1/2	G3/8
B 4.0.../10E...	170	10	212	170	243	120	50	250	200	112	640	50	113	277	G1/2	G3/8
B 4.0.../20M...	170	10	212	170	230	120	50	250	220	114	700	56	113	284	G1	G1/2
B 4.0.../20E...	170	10	212	170	245	120	50	250	220	114	700	56	113	284	G1	G1/2
B 6.0.../10M...	170	10	212	170	230	120	50	250	200	240	776	50	113	278	G1/2	G3/8
B 6.0.../10E...	170	10	212	170	243	120	50	250	200	240	776	50	113	278	G1/2	G3/8
B 6.0.../20M...	170	10	212	170	230	120	50	250	220	243	830	56	113	284	G1	G1/2
B 6.0.../20E...	170	10	212	170	245	120	50	250	220	243	830	56	113	284	G1	G1/2
B10.0.../20...	221	10	288	250	-	130	75	280	269	208	872	56	113	284	G1	G1/2
B10.0.../30...	221	10	288	250	-	130	75	280	314	208	972	80	128	361	G1 1/2	G1/2
B10.0.../31...	221	10	288	250	-	130	75	280	336	208	994	111	128	361	G1 1/2	G1 1/2
B20.0.../20...	221	10	288	250	-	360	100	560	269	238	1182	56	126	297	G1	G1/2
B20.0.../30...	221	10	288	250	-	360	100	560	314	238	1282	80	126	359	G1 1/2	G1/2
B20.0.../31...	221	10	288	250	-	360	100	560	336	238	1304	111	126	359	G1 1/2	G1 1/2
B24.0.../20...	221	10	288	250	-	360	100	560	269	373	1317	56	126	297	G1	G1/2
B32.0.../30...	221	12	288	250	-	820	150	1120	314	198	1802	80	127	360	G1 1/2	G1/2
B32.0.../31...	221	12	288	250	-	820	150	1120	336	198	1824	111	127	360	G1 1/2	G1 1/2
B50.0.../30...	221	12	288	250	-	820	150	1120	314	713	2317	80	127	360	G1 1/2	G1/2
B50.0.../31...	221	12	288	250	-	820	150	1120	336	713	2339	111	127	360	G1 1/2	G1 1/2

approx. dimensions - for precise dimensions, please refer to the dimensional drawings

Commissioning, maintenance and operating instructions

General Information

- ▶ Observe the documentation for the machinery.
- ▶ Also observe the documentation pertaining to the other components, assemblies and partly completed machinery, which form part of the complete machinery.
- ▶ Observe the generally applicable, legal or otherwise binding European and national regulations as well as the relevant legislation for your country pertaining to the prevention of accidents and protection of the environment.
- ▶ Operating instructions according to the data sheet of the accumulator
- ▶ Depending on the country of installation, national pressure vessel regulations need to be complied with.
- ▶ In the standard, the country acceptance is effected according to BA, CE as well as for China and Russia. Other acceptances on request.
- ▶ Please indicate the country of installation in the order.
- ▶ Keep all documents included in the delivery in a safe place; they will be required by the expert in recurring tests.
- ▶ The machine end-user will have sole responsibility for complying with existing provisions.
- ▶ The accumulator stations in this edition are assemblies in the sense of directive 2014/68/EU, article 2, section 6 (Pressure Equipment Directive). However, they are not intended for exclusive commissioning. They are installed as a component of a larger assembly or system.
- ▶ The accumulator stations described here contain the entire equipment which is required for safety reasons according to DIN EN ISO 4413.
- ▶ The accumulator stations must not be modified; otherwise, the operating license according to directive 2014/68/EU will be lost and the dealer and/or manufacturer warranty will be forfeited.
- ▶ The accumulator stations may only be operated within the admissible limit values.
- ▶ Repair works may only be carried out by the manufacturer or their authorized dealers and agencies. Repair works performed by third parties invalidate the approval and release the manufacturer from all claims resulting from an unauthorized intervention.
- ▶ Assembly and maintenance must be implemented by authorized, instructed persons only.

Commissioning, maintenance and operating instructions

► The accumulator stations are provided with signs: **1**

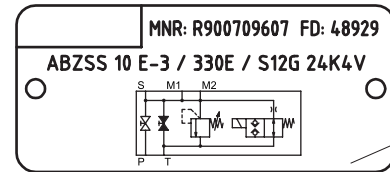
- 1. Name plate** specifying the pressure rating, identifies the device
- 2. Functional sign** identifies the components and elementary lever positions
- 3. Warning sign** has to be clearly visible and attached at the device or next to it, however not at the pressure vessel itself.

Usually, the warning sign is in the languages according to the country acceptance. Further languages at request.

For hydraulic systems with one or several hydraulic accumulators whose warning signs are not visible after installation into the machine, an additional warning sign has to be attached visibly to the system, stating:

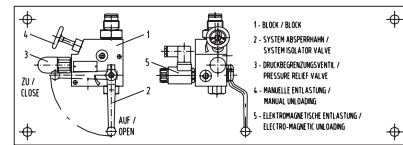
"CAUTION -- system contains hydraulic accumulators."

The circuit diagram has to contain the same notice. With mounting "B" and "K", the warning signs and functional signs are supplied loosely and must be attached to or close to the accumulator station in a clearly visible position. The attachment of the signs must already be considered in the design.



Example

2





3


Vorsicht Druckbehälter	
Druckentlastung vor Beginn der Demontage	
Gasvorfülldruck:	
Füllen nur mit Stickstoff _____ bar	
Attention: Pressure vessel Discharge pressure prior to disassembly Gas pre - charge pressure: _____ bar Only fill with nitrogen.	Attenzione! Serbatoio in pressione Scaricare la pressione prima di iniziare lo smontaggio Pressione di precarica del gas: _____ bar Riempire solo con azoto.
Attention: réservoir sous pression Déchargement avant le démontage Pression de précharge de gaz: _____ bars Seulement remplissage d'azote.	Atención, Recipiente a presión Descargar la presión antes del desmontaje Presión precarga gas: _____ bar Llenar solo con nitrógeno.
Warning: Trykbeholdere Førre demontage måste anlaggenen göras trycklös Gas - förinfyllningstryck: _____ bar Fylls enbart med kväve.	Cuidado: Reservatório sob pressão Descarregue antes da desmontagem Pressão de pré - carga de gás: _____ bar Encher só com nitrogênio.
ADVARSEL TRYKBEHOLDER TRYKPLASTES FØR PÅBEGYNDSE AF DEMONTAGE GÅS - FØRINFYLDNING: _____ BAR MÅ KUN FYLDES MED KVÆLSTOF.	Voorzichtig drukvat Druk ontlasten voor aanvang demontage Gas - voorvullruk: _____ bar Alleen met stikstof vullen.
ADVARSEL TRYKBEHOLDER Trykk skal avlastes før demontasje Gass - forinfyllingstrykk: _____ bar Må kun fylles med nitrogen.	HUOMIO! PAINEAESTIA PAINENPURKUN ENNEN KORJAUSTOIDEN ALOITTAAMISTA KAASUN ESTÄTTÄMINEN. TÄTTÖ BALLITTU VAN TYYPKKAASULLA. _____ BAR
IPROBUKAZIE AOXIBIO YIHO IREKZE PRED DEMONTAZOM NE SMENJAJE PRITISKOVANJE GAZ - PREDINFILNINGSKI PRITISJE TREBA NAPUNJIVATI SAMO SA AZOTOM.	Vigyazat, nyomastartaly Szelszereles elott nyommentesiteleni kell Gáz - előinföllyomás. Csak nitrogénnel történő fel. _____ bar
Uwaga zbiornik ciśnieniowy Rozładować przed demontażem Ciśnienie napełnienia gazem. Napełniać tylko azotem.	Pozor tlakova nadoba Pred demontazoi odtlakovat Pritisje tlak olujve. Punit jen dusikom. _____ bar
MNR: R900751679	

Commissioning, maintenance and operating instructions

Commissioning - Operating instructions according to the data sheet of the accumulator!

	<p>DANGER Do not charge hydraulic accumulators with oxygen or air. Explosion hazard!</p> <ul style="list-style-type: none"> ▶ Prior to the initial commissioning, the hydraulic accumulator must be filled with nitrogen of class 4.0, pure (N₂ content 99.99 vol. %). The preset gas pressure necessary for the operation is indicated in the circuit diagrams and operating instructions. ▶ Only use suitable filling and testing devices for filling. We recommend using the charging and test devices by Bosch Rexroth according to data sheet 50150.
	<p>WARNING</p> <ul style="list-style-type: none"> ▶ Risk of injury caused by improper assembly. ▶ Hydraulic accumulators are energy stores. They may supply the energy for uncontrolled movements to actuators. ▶ Before beginning any repairs, the system must be depressurized on the oil and gas side and protected against unauthorized re-start. ▶ Do not carry out welding and soldering works or any mechanical processing on the accumulator tank! Any kind of processing at the product invalidates the declaration of conformity and the operating license! <ul style="list-style-type: none"> – Explosion hazard due to welding and soldering works! – Danger of bursting during and after mechanical processing. ▶ A warning sign is enclosed to the accumulator station. It is to be attached to or close to the accumulator station in a clearly visible position.

Maintenance

	<p>Attention</p> <ul style="list-style-type: none"> ▶ In case of damage at the accumulator bladder or diaphragm, the accumulator will lose its function immediately. ▶ Loss of the initial gas tension will lead to damage at the accumulator bladder or the accumulator diaphragm if operation of the system is continued nevertheless. ▶ Check the initial gas tension in regular intervals.
---	--

Legal provisions

- ▶ Hydraulic accumulators are pressure vessels and subject to the application of national provisions and/or regulations valid at the place of installation.
- ▶ In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- ▶ As a standard, country acceptances are effected according to BA, CE as well as for China and Russia. Other acceptances on request.
- ▶ Special regulations are to be observed in shipbuilding, aircraft construction, mining, etc.
- ▶ Design, production and testing are effected according to the data sheets according to AD 2000. Installation, equipment and operation are regulated by the "Technical rules for pressure vessels" (TRB).

Notes pursuant to the EC Machinery

Directive 2006/42/EC, according to annex II part 1, section A, manufacturer's declaration:

- ▶ The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100, EN 983, and EN 60204-1.
- ▶ Commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

Pulsation damper

RE 29253/06.05
Replaces: 04.04

1/4

Type SYPD



H7189/04

Type SYPD 0001

H7119/03

Type SYPD 0002

Series 2X

Nominal pressure 400 bar (type SYPD 0001)

Nominal pressure 300 bar (type SYPD 0002)

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Features

Application

SYPD pulsation dampers operate according to the reflection principle and are used in hydraulic systems that incorporate displacement pumps, where noise is transmitted predominantly through liquid-borne sound.

Rating

SYPD pulsation dampers are designed for a basic frequency of 450 Hz and, at this frequency, block the transmission of noise > 24 dB. This rating is ideal for pumps of types A10VSO and A4VSO at a drive speed of $n = 1500 \text{ min}^{-1}$.

Installation

The installation position of the damper is optional, with the direction of flow having to be observed. It should be arranged as closely as possible to the pump outlet.

To prevent the transmission of mechanical vibration to the system, it is required to install the pulsation damper so that it is isolated from structure-borne noise and to connect one connection side using a flexible hose.

Ordering code

Pulsation damper for A4VSO

SYPD 0001-2X/400 F450 *

Series 20 to 29 (20 to 29: unchanged technical data and pin assignment) = 2X

Nominal pressure 400 bar = 400

Pump type and size

A4VSO: Sizes 40 and 71 = V071

A4VSO: Sizes 125 and 180 = V180

A4VSO: Sizes 250 and 355 = V355

A4VSO: Sizes 500 and 750 = V750

Pulsation frequency 450 Hz = F450

Further details in clear text

Connection version for V071

01 = Thread to DIN ISO 228 for V180, V355, V750

11 = SAE flange (high-pressure series)

M = NBR seals suitable for mineral oil (HL, HLP) to DIN 51 524

V = FKM seals suitable for phosphate ester (HFD-R)

Pulsation damper for A10VSO

SYPD 0002-2X/300 F450 01 *

Series 20 to 29 (20 to 29: unchanged technical data and pin assignment) = 2X

Nominal pressure 300 bar = 300

Pump type and size

A10VSO: Sizes 18, 28, 45 and 71 = V018

A10VSO: Sizes 100 and 140 = V100

Pulsation frequency 450 Hz = F450

Further details in clear text

Connection version

01 = Thread to DIN ISO 228

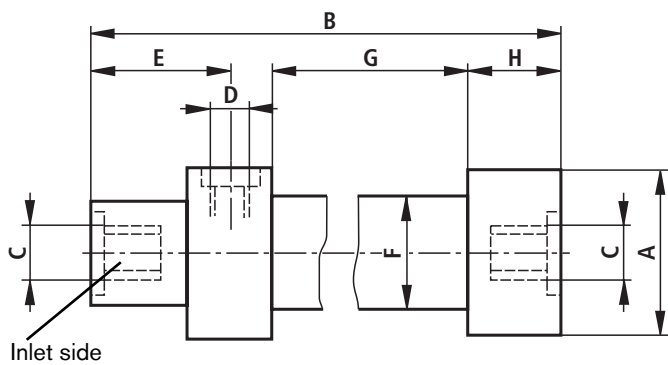
M = NBR seals suitable for mineral oil (HL, HLP) to DIN 51 524

V = FKM seals suitable for phosphate ester (HFD-R)

Unit dimensions (in mm)

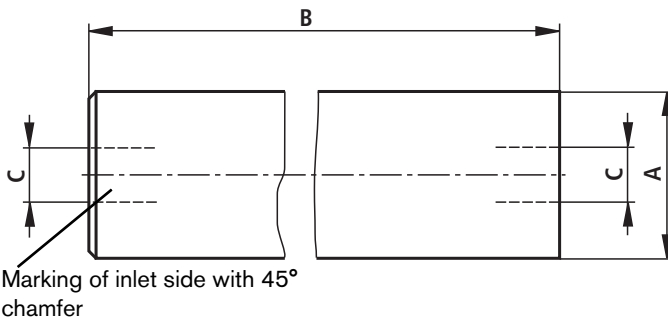
SYPD 0001

for A4VSO size 40 and size 71

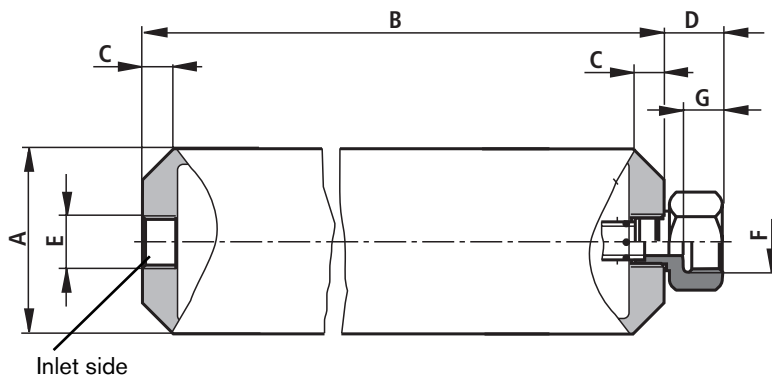


	Pump sizes			
	40, 71	125, 180	250, 355	500, 750
A	∅ 125	∅ 160	∅ 160	∅ 160
B	925	854	854	854
C	G 1 1/4	SAE 1 1/4"	SAE 1 1/2"	SAE 2"
D	G 1 1/4			
E	81			
F	∅ 83			
G	~ 720			
H	~ 75			

for A4VSO sizes 125 to 750



SYPD 0002 für A10VSO



	Pump size	
	18, 28, 45, 71	100, 140
A	∅ 114,3	∅ 114,3
B	794	794
C	25 x 45°	25 x 45°
D	38	39
E	G 1	G 1 1/4
F	G 1 1/4	G 1 1/2
G	26.5	28.5

Pulsation damper for pump types A10VSO NS18 to 140 and A4VSO NS40 to 250

RE 50142/09.09
Replaces: 07.05

1/4

Type PULSDAEMPFER



pulsdämpfer_d

Overview of contents

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Area of application

1 The pulsation damper works to the reflection principle. It is used in hydraulic systems where displacement pumps are used and noise is transmitted via the pressure fluid.

2

2

2

Installation

3

3

3

The damper is screwed directly onto the pump pressure connection. To prevent the transmission of mechanical vibration into the system, it is necessary to fit a hose to the damper outlet port.

Ordering details

PULSDAEMPFER | **300** / **M** | **11** / **... x ...**

Pump type

A10VSO 18/28	= A10-18/28
A10VSO 45/71	= A10-45/71
A10VSO 100/140	= A10-100/140
A4VSO 40	= A4-40
A4VSO 71	= A4-71
A4VSO 125/180	= A4-125/180
A4VSO 250	= A4-250

Pressure

300 bar = **300**

Height in mm
(see page 3)

Diameter in mm
(see page 3)

Connection size (P-port)
(see below)

11 = SAE pressure flange

Seal material

M = NBR seals
suitable for mineral oil HLP to DIN 51524

Ordering example:

PULSDAEMPFER A10-45/71-300/M11/180x270

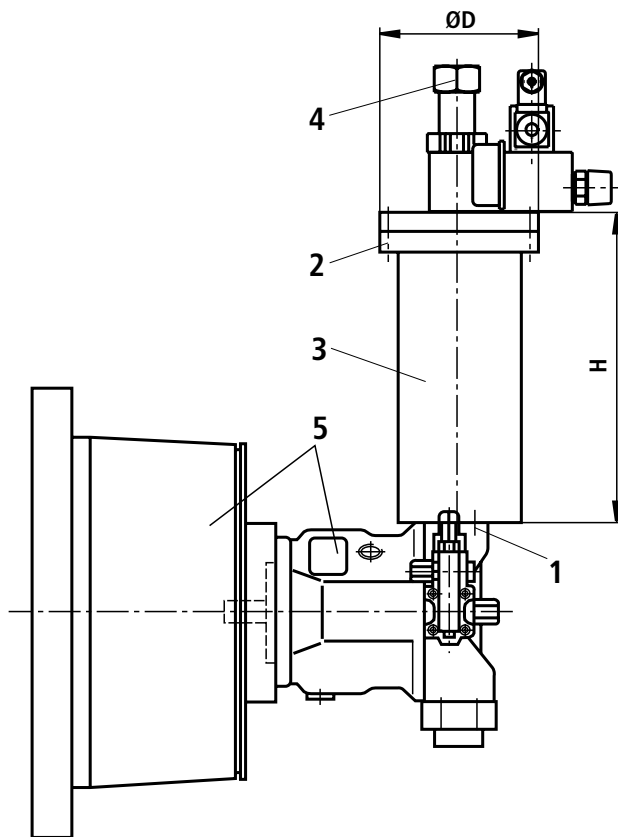
Selection table

Pump type	Max. pressure in bar	Material No.	Weight in kg
A10VSO 18/28	300	R900863597	15
A10VSO 45/71		R900863407	20
A10VSO 100/140		R900863406	26
A4VSO 40		R900863598	20
A4VSO 71		R900863599	20
A4VSO 125/180		R900863406	26
A4VSO 250		R900863405	34

Connection sizes (P-port)

Pump type	Connection	Ordering code
A10VSO 18/28	SAE 3/4 – 3000 PSI	11
A10VSO 45/71	SAE 1 – 3000 PSI	
A10VSO 100/140	SAE 1 1/4 – 6000 PSI	
A4VSO 40	SAE 3/4 – 6000 PSI	
A4VSO 71	SAE 1 – 6000 PSI	
A4VSO 125/180	SAE 1 1/4 – 6000 PSI	
A4VSO 250	SAE 1 1/2 – 6000 PSI	

Unit dimensions (nominal dimensions in mm)



Pump type	Ordering code (e.g. 180x270)	
	ØD	H
A10VSO 18/28	160	270
A10VSO 45/71	180	
A10VSO 100/140	200	
A4VSO 40	180	
A4VSO 71	180	
A4VSO 125/180	200	310
A4VSO 250	220	

- 1 Pulsation damper / pump fixing screws
- 2 Pulsation damper / pulsation damper fixing screws
- 3 Pulsation damper
- 4 P-port
- 5 Pump with pump mounting bracket (separate order)
- 6 Mounting of pump safety block according to RE 25891 is possible

The pulsation damper is suitable for vertical installation only

Fixing screws (nominal dimensions in mm)

Pump type	Position 1			Position 2		
	S.H.C.S. 10.9 ISO 4762			S.H.C.S. 10.9 ISO 4762		
	Dimension	Material No.	M_A in Nm	Dimension	Material No.	M_A in Nm
A10VSO 18/28	M10 x 35	R913000062	68	M12 x 40	R900003243	117
A10VSO 45/71	M10 x 35	R913000062	68	M16 x 50	R900003264	280
A10VSO 100/140	M14 x 40	R913000588	185			
A4VSO 40	M10 x 35	R913000062	68			
A4VSO 71	M12 x 40	R900003243	117			
A4VSO 125/180	M14 x 40	R913000588	185			
A4VSO 250	M16 x 50	R900003264	280			

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