

ROTATRAC

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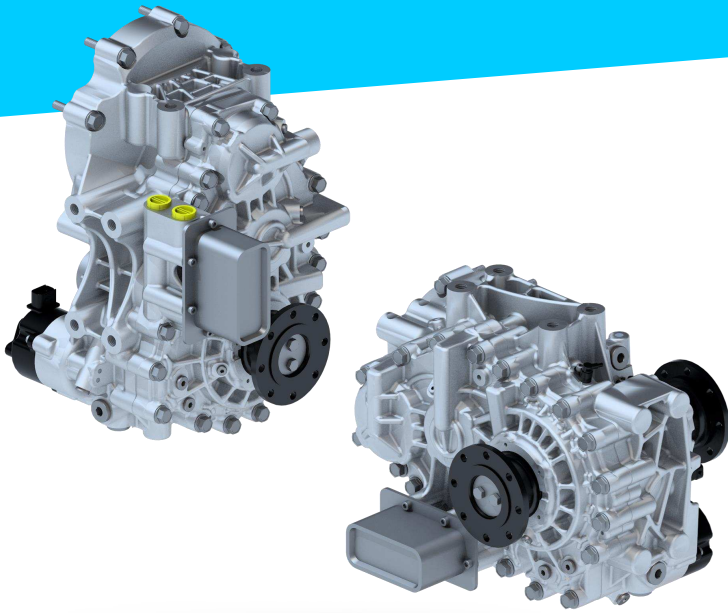
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ROTATRAC

eGFZ9100 series 10

1-speed spur gear drive



The mobile machinery market has a growing need to increase productivity and performance, lower operating costs through improving efficiency, and reduce exhaust and noise emissions. Electric drives are an important element in achieving this goal. The central component of an electric drive train is the gearbox technology. This is why Bosch Rexroth has developed the highly efficient gearbox eGFZ9100 based on many years of experience and comprehensive know-how. This central drive is an ideal solution for both 2-wheel and 4-wheel drive configurations.

CUSTOMER BENEFITS

- Drive with high power density for off-highway vehicles
- Plug and drive system – all necessary components integrated
- Efficient monitoring
- Flexibility with e-motor connection
- Versatile output solutions

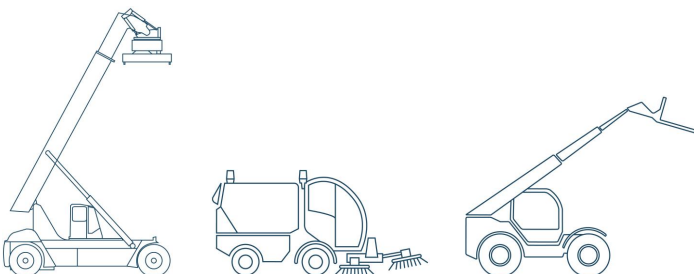
FUNCTION AND BENEFITS

Drive with high power density for off-highway vehicles
Developed specifically for high-speed electric motors, eGFZ9100 combines high power density with an efficiency of up to 98 % while optimizing noise. This enables the integration of a zero-emission drive into existing installation space requirements for off-highway applications like reach stackers, telehandlers or municipal vehicles. Compared to electric direct drives without gearboxes, two axes can also be driven with only one electric motor without having to accept disadvantages in terms of efficiency and acoustics (see Figure "Application solutions").

Plug and drive system

Due to the components already in the gearbox, like heat exchanger and oil pump, eGFZ9100 can be integrated easily into the existing cooling circuit of the electric drives (like the inverter and e-motor). A separate cooling circuit is thus not required.

APPLICATIONS



ROTATRAC eGFZ9100 series 10

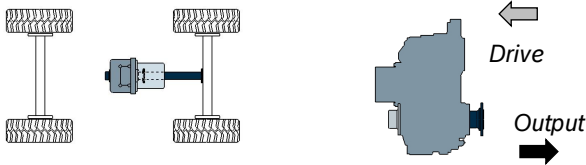
1-speed spur gear drive

TECHNICAL DATA

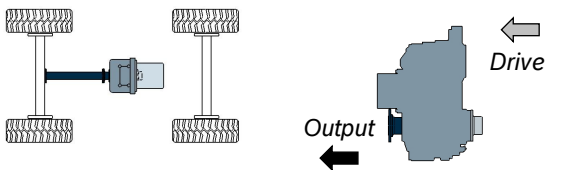
1-speed spur gear drive ROTATRAC eGFZ9100

Gear ratio:	4...6
Max. output torque:	3800 Nm
Max. input speed:	16000 min ⁻¹
For continuous performance:	120 kW
Ambient temperature:	-20 °C to +70 °C
Cooling:	Water glycol mixture / optional oil
Oil pump:	Integrated
Heat exchanger:	Integrated

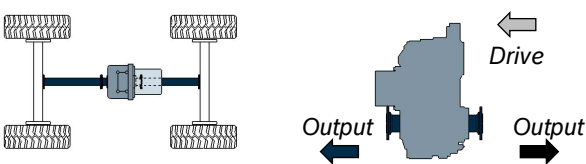
2-wheel-drive (U-shape)



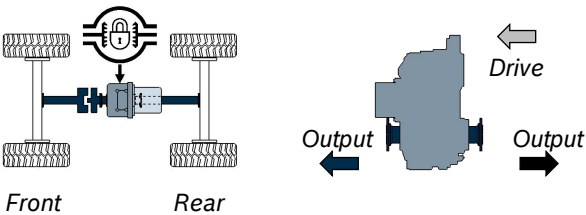
2-wheel-drive (S-shape)



4-wheel-drive (Z-shape)



Optional 2-wheel or 4-wheel drive (Z-shape)



Application solutions

Efficient monitoring

Sensors integrated in the standard version, for instance for the temperature, as well as optional connections for speed measurement in combination with CAN bus communication of common standards ensure the required safety during operation.

Flexibility with e-motor connection

eGFZ9100 is optimized for mounting various electric motors, especially high-speed, high-efficiency, compact permanently excited synchronous motors like the Rexroth EMS1H and Bosch SMG, but also motors with similar power from other manufacturers.

Versatile output solutions

Different strategies of voltage supply and battery storage requirements have a direct effect on the installation space in the vehicle frame.

The variability of the mounting position (horizontal and vertical) of the eGFZ as well as the wide range of options for the output-side flange versions according to DIN ISO give the manufacturer a great deal of design freedom.

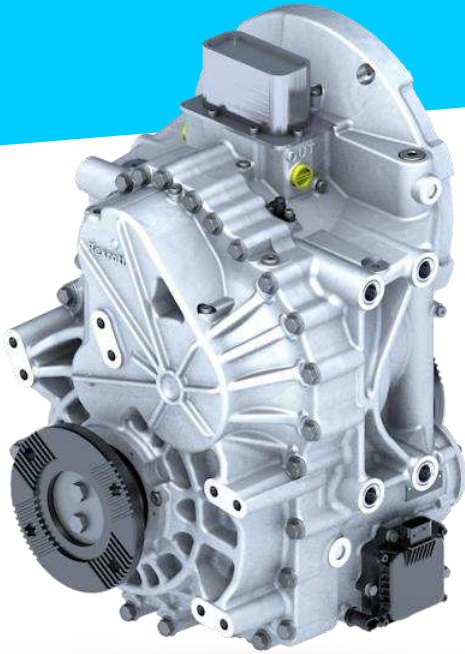
Depending on the requirements in the drive train, the output can be designed as a U-, S- or Z-shape gearbox version.

In addition to a rigid four-wheel drive, the eGFZ9100 offers the option of axle disengagement or permanent four-wheel drive with compensation via a lockable center differential (see Figure "Application solutions").

ROTATRAC

eGFZ9200 series 10

2-speed spur gear drive



The mobile machinery market has a growing need to increase productivity and performance, lower operating costs through improving efficiency, and reduce exhaust and noise emissions. Electric drives are an important element in achieving this goal. The central component of an electric drive train is the gearbox technology. In addition to high demands of the drive in terms of climbing and tractive force, constant and slow driving is also a challenge in many applications. At the same time, a high final speed of the vehicle is to be achieved. This is why Bosch Rexroth has developed the highly efficient 2-speed gearbox eGFZ9200 based on many years of experience and comprehensive know-how. This central drive is an ideal solution for both two- and four-wheel drives.

CUSTOMER BENEFITS

- Optimum utilization of engine spread for off-highway vehicles
- Plug and drive system – all necessary components integrated
- Efficient monitoring
- Flexibility with e-motor connection
- Versatile flange output solutions

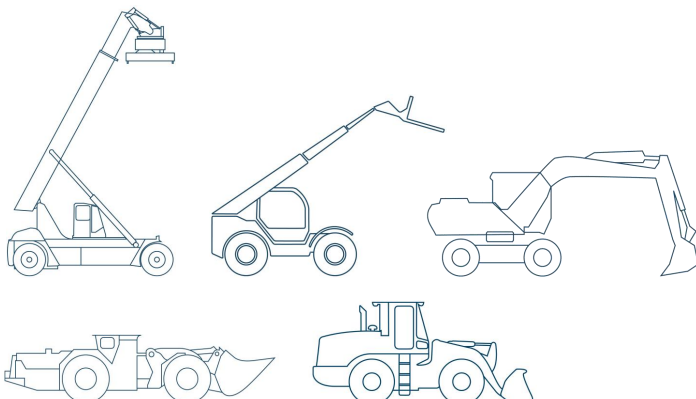
FUNCTION AND BENEFITS

Optimum utilization of engine spread for off-highway vehicles

Developed specifically for high-speed electric motors, eGFZ9200 combines high power density with an efficiency of up to 98 % while optimizing noise at the same time. The choice of three different transmission variants for the 1st and 2nd gear always guarantee maximum climbing and tractive force of the vehicle on the one hand, and maximum final speed in transport travel on the other hand.

Compared to electric direct drives without gearboxes, two axles can also be powered with only one electric motor without having to accept the disadvantages in terms of efficiency and acoustics. (See Figure “Application solutions”.)

APPLICATIONS



TECHNICAL DATA

2-speed spur gear drive ROTATRAC eGFZ9200

Gear ratio:	1 st gear / 2 nd gear
Variant 1	11.9 / 5.0
Variant 2	9.6 / 4.0
Variant 3	8.4 / 3.5
Max. output torque:	7650 Nm
Max. input speed:	14000 min ⁻¹
For continuous performance:	180 kW
Ambient temperature:	-20 °C to +70 °C
Cooling:	Water glycol mixture / optional oil
Oil pump:	Integrated
Oil filter:	Integrated
Heat exchanger:	Integrated

Plug and drive system

Due to the components already in the gearbox, like heat exchanger and oil pump, eGFZ9200 can be integrated easily into the existing cooling circuit of the electric drives (like the inverter and e-motor). A separate cooling circuit is thus not required. An integrated oil filter cartridge is easily accessible and can be replaced without much effort during the usual vehicle intervals.

Efficient monitoring

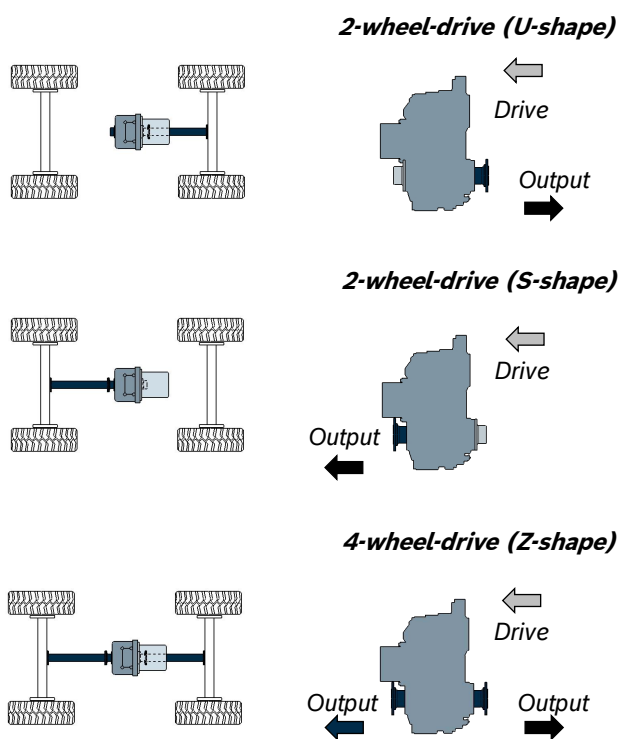
Sensors integrated in the standard version, for instance for the temperature, as well as connections for speed measurement in combination with CAN bus communication of common standards ensure the required safety during operation. Position sensors guarantee clean and precisely synchronized switching operations. This shifting system, which is integrated in the gearbox, is controlled electronically by software. In addition, the eGFZ9200 has connections for the attachment of an external brake caliper and for the installation of an optional heating rod.

Flexibility with e-motor connection

eGFZ9200 is optimized for mounting various electric motors, especially high-speed, high-efficiency, compact permanently excited synchronous motors like the Rexroth EMS1H and Bosch SMG, but also motors with similar power from other manufacturers.

Versatile flange output solutions

Different strategies of voltage supply and battery storage requirements have a direct effect on the installation space in the vehicle frame. The wide range of options for output-side flange versions to DIN ISO gives manufacturers a great deal of design freedom. Depending on the requirements in the drive train, the output can be designed as a U-, S- or Z-shape gearbox version. (See figure "Output solutions".)



Application solutions

Planetary gearboxes for mobile applications

ROTATRAC eGFT 8000

Series 40



- ▶ Sizes 8120 to 8150
- ▶ Output torques from 15000 to 42000 Nm

Features

- ▶ Compact, space-saving three- or four-stage planetary gearbox
- ▶ Suitable for high-speed electric motors
- ▶ Robust design
- ▶ Integrated static hydraulic operated multiple-disk parking brake
- ▶ Easy assembly
- ▶ Disconnect mechanism (optional)
- ▶ Wheel studs (optional)

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Description

The electromechanical compact drive series 40 consists of a three- or four-stage planetary gearbox with connections for the required external oil cooling. In combination with a high-speed electric motor, the planetary gearbox forms a space-saving drive unit and is preferably used as a drive component for wheel- or chain-driven vehicles and other mobile applications.

Application conditions

The planetary gearboxes are designed for use in environmental temperatures between -25°C and +40°C. Environmental factors such as salt water, salt air, sand, dust, pressure, severe shocks, extreme shock loads and environmental temperatures, aggressive media, etc. affect the function. Such influences must be pre-announced in order for a secure gearbox design.

Technical data

Size eGFT	Nominal output torque Nm	Ratio <i>i</i>	Brake torque static Nm	Appr. weight without motor kg	Compatible electric motors
8120 F	15000	59.4 • 75.2 • 81.8 • 100.3 • 113.9 • 122.4 ¹⁾	480	85	SMG180 (other motors on request)
8130 F	20000	81.3 • 101.1 • 122.6 • 158.3 ¹⁾	480 608 ²⁾	110	SMG180 (other motors on request)
8140 G ³⁾	30000	283.1 • 321.7 • 376.9 • 429.1	480	tbd	SMG180 (other motors on request)
8150 F	42000	102.5 • 112.4 • 131.4 • 160.6	608	230	SMG220 (other motors on request)

Other performance variants on request

Technical data electric motor (compatible electric motor on request)

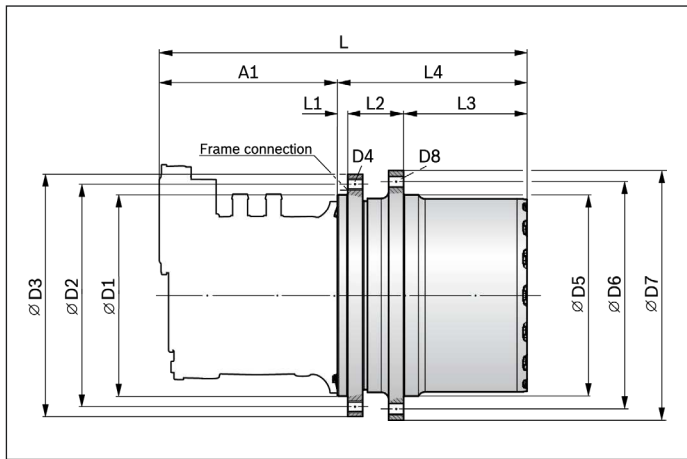
Size SMG	DC-Voltage VDC	Max. power kw	Max. torque Nm	Max. rotation speed rpm	Coolant	Weight kg
180	400	90	200	12800	Water-glycol mixture (SI-OAT)	30
220	400	140	350	16000	Water-glycol mixture (SI-OAT)	63

1) Disconnect mechanism not in the delivery program

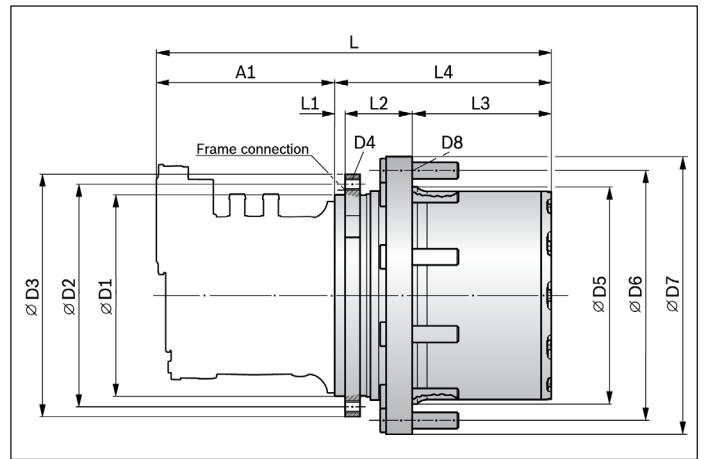
2) Only in the design eGFT8130F/40H

3) On request

Dimensions



Version **T** (with thread hole)
shown with SMG-motor (standardly not included within
Rexroth's scope of supply)



Version **W** (with wheel studs)
shown with SMG-motor (standardly not included within
Rexroth's scope of supply)

Size eGFT	Version	D1	D2	D3	D4	D5	D6 mm	D7	D8	L ⁴⁾	L1	L2	L3	L4	A1 ⁴⁾
8120 F	T	270	300	325	17x M16	270	305	335	16x M16	500.5	22	75	163.5	252.5	240
8120 F	W	270	300	325	17x M16	260	300	335	10x M22x1.5	500.5	22	82	156.5	252.5	240
8120 F	W	270	300	325	17x M16	280	335	372	10x ¹⁾	500.5	22	90	148.5	252.5	240
8130 F	T	270	300	325	17x M16	280	305	330	16x M16	510	22	82	166	262	240
8130 F	W	270	300	325	17x M16	280	335	372	10x ²⁾	510	22	90	158	262	240
8140 G	T	270	300	325	tbd	280	305	330	20x M16	539.5	22	82	195.5	291.5	240
8150 F	T	330	370	410	20x M20	360	400	440	16x M20	736	12	90	254	356	380
8150 F	W	330	370	410	20x M20	365	415	455	12x ³⁾	736	12	90	254	356	380

The values given under „Dimensions“ conform to the standard connecting dimensions.

Other dimensions on request.

1) GFT 8120 F

10x 3/4" x 16UNF-2A effective length = 40 mm

10x M22 x 1.5 effective length = 55 mm

10x M22 x 1.5 effective length = 77 mm

2) GFT 8130 F

10x M22 x 1.5 effective length = 62 mm

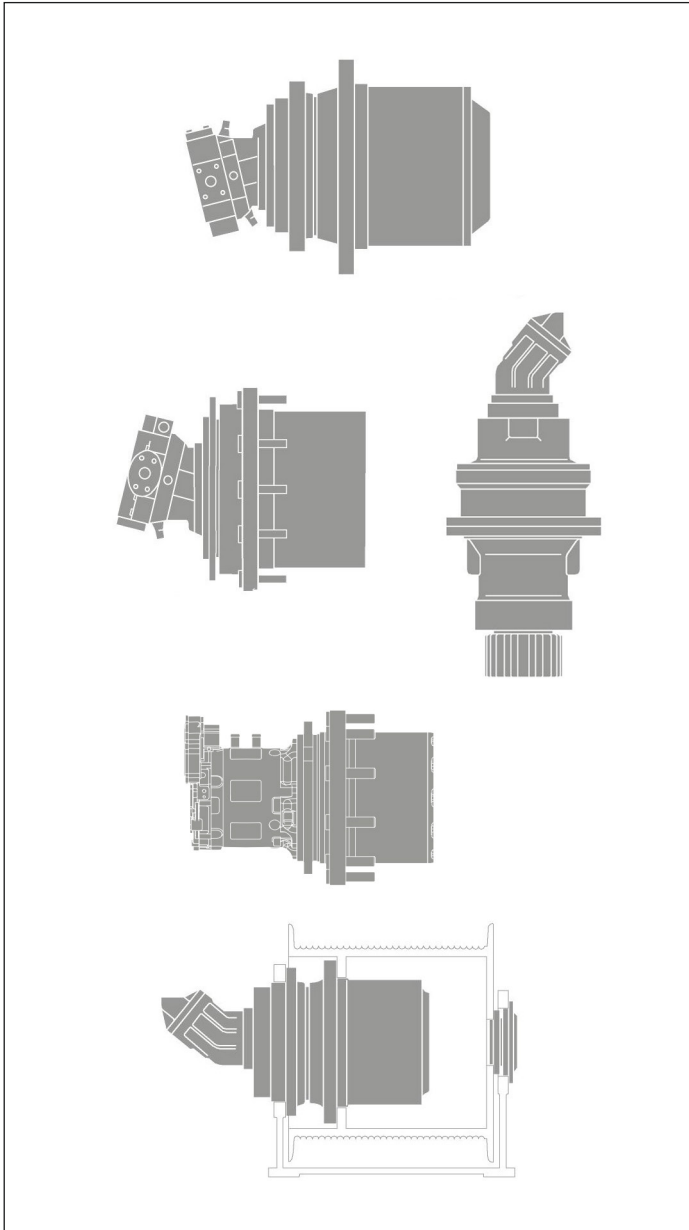
10x M22 x 1.5 effective length = 67 mm

3) GFT 8150 F

12x M22 x 1.5 effective length = 50 mm

4) Measures refers to the compatible SMG sizes.

Overview data sheets Gearbox Technology



Hydrostatic travel drives

- HYDROTRAC GFT, series 20, RE 77110
Output torques from 160 to 620 kNm
- HYDROTRAC GFT 2160, series 20, RE 77125
Output torque max. 42,5 kNm
- HYDROTRAC GFT 8000, series 20, RE 79099
Output torques from 7 to 15 kNm
- HYDROTRAC GFT 8000, series 30, RE 77128
Output torques from 20 to 30 kNm
- HYDROTRAC GFT 8000, series 40, RE 77117
Output torques from 10 to 130 kNm
- HYDROTRAC GFT 8150 with TIS, RE 79093
Output torque max. 42 kNm
- HYDROTRAC GFT 45 T2/T3, RE 77115
Output torque max. 45 kNm
- HYDROTRAC GFT 34, series 20, RE 79062
Output torque max. 34 kNm

Electromechanical travel drives

- ROTATRAC eGFT 8000, series 40, RE 79082
Output torques from 15 to 42 kNm

Hydrostatic swing drives

- MOBILEX GFB, RE 77201
Output torques from 4 to 68,3 kNm
- MOBILEX GFB 2160, series 20, RE 77208
Output torque max. 14,5 kNm
- MOBILEX GFB 8000, series 40, RE 79058
Output torques from 8,5 to 30 kNm

Hydrostatic winch gears

- MOBILEX GFT-W, RE 77502
Output torques from 140 to 325 kNm
- MOBILEX GFW 5000, series 40, RE 77506
Output torques from 7,5 to 105 kNm

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