

Operating instructions



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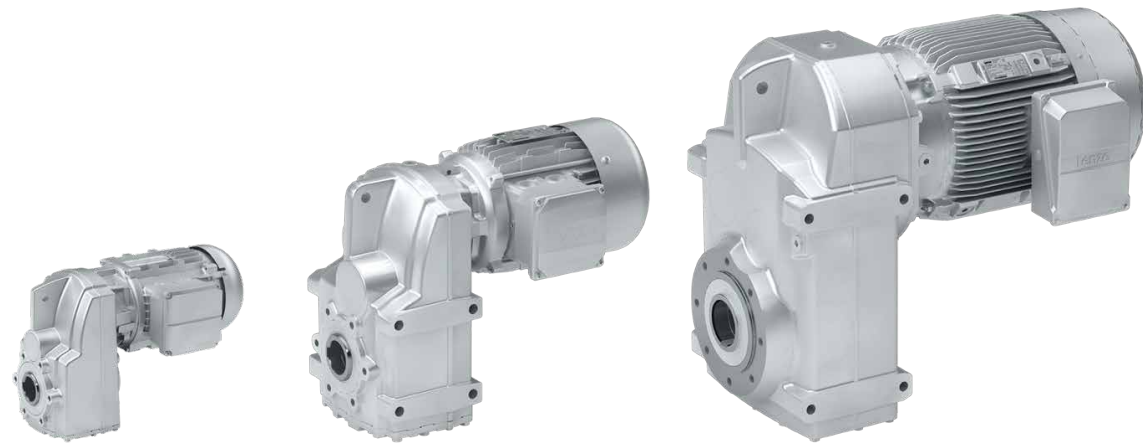
Electrical installation

Commissioning

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Shaft-mounted helical geared motors



g500-S + m500-H/P
0.12 ... 55 kW
IE2/IE3

General information

Overview

Geared motor
identification

Motor identification

Conventions

Overview of shaft-mounted helical geared motor

Connections



M23 connector

Han connector

i550 motec



Machine connections



Solid shaft

Shrink disc

Flange

Rubber buffers

Foot

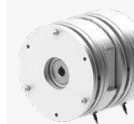
Brakes



Holding brake



Application brake



Double brake



Manual release lever
with/without lock



Microswitch for
wear/air gap

Feedback



Resolver



HTL incremental en-
coder IG128-24V-H
(+0)



TTL incremental
encoder



SinCos absolute
value encoder



Shaft for encoder
mounting

Cooling



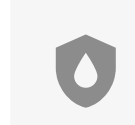
Blower



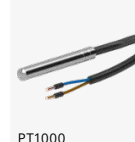
Blower
heavy duty



Temperature
0°C ... -40°

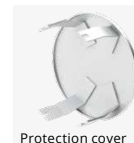


Protection class
IP65/66



PT1000

Extensions



Protection cover



Handwheel



2nd shaft end

General information

- Overview
- Geared motor identification
- Motor identification
- Conventions

Type code of shaft-mounted helical geared motor

G

50

B¹

S

130²

M³

V⁴

A⁵

R⁶

2⁷

C⁸

1A⁹

1

Product generation	
A	Generation 1
B	Generation 2

2

Output torque	
	[Nm]
113	130
122	220
140	400
166	660
195	950
221	2100
231	3100
245	4500
280	8000
314	14000
319	19000

3

Design	
M	Geared motor
N	Gearbox

4

Shafts	
V	Solid shaft with featherkey
H	Hollow shaft with keyway
S	Hollow shaft with shrink disk

5

Housing	
A	Foot mounting and centering
B	Foot mounting
C	With centering
D	Threaded pitch circle

6

Flange	
R	Without flange
K	Flange with through holes

7

Number of stages of the gearbox	
2	2-stage
3	3-stage
4	4-stage

8

Motor mounting	
C	Integrated motor
N/T	IEC adapter with jaw coupling
H	IEC adapter with plug-in hollow shaft
A	NEMA adapter with jaw coupling
B	NEMA adapter with plug-in hollow shaft
S	Servo motor adapter with plug-in hollow shaft
E/D/G	Servo motor adapter with jaw coupling

9

Drive size for N gearbox	
1A ... 3H	
08 ... 82	

General information

- Overview
- Geared motor identification
- Motor identification
- Conventions

Motor type code

M

55¹

B¹

H¹

063²

S³

04⁴

5⁵

E⁶

0⁷

0⁸

C⁹

1

Product family	
54	m540
55	m550

2

Product generation	
A	Generation 1
B	Generation 2

3

Efficiency class	
H	IE2
P	IE3

4

Frame size	
	063
	071
	080
	090
	100
	112
	132
	160
	180
	200
	225
	250

5

Motor length	
S	Short
M	Medium
L	Long

6

Number of pole pairs	
04	4-pole

7

Degree of protection	
5	IP54/IP55
6	IP65/IP66

8

Cooling	
E	Self-cooled
F	Externally cooled

9

Brake	
0	Without
F	Holding brake, application brake, or double brake

10

Feedback	
0	Without
A	Absolute value encoder
E	Incremental encoder
R	Resolver

11

Approvals	
N	None
C	CE
3	CE, CCC
L	CE, cULus
S	CE, cULus, CCC
V	CE, cURus
W	CE, cURus, CCC

General information

Overview

Geared motor
identification

Motor identification

Conventions

Numeric notation

As a rule, a period is used as a decimal separator in this documentation.

Example: 1234.56

Design of safety instructions

Safety instructions protect against injury to persons or damage to property. The measures described for the prevention of hazards must be complied with.

DANGER!

Indicates an extremely hazardous situation. Failure to comply with this instruction will result in severe irreparable injury and even death.

WARNING!

Indicates an extremely hazardous situation. Failure to comply with this instruction may result in severe irreparable injury and even death.

CAUTION!

Indicates a hazardous situation. Failure to comply with this instruction may result in slight to medium injury.

NOTICE

Indicates a material hazard. Failure to comply with this notice may result in material damage.

Further information

This document only includes the most frequently asked questions and presents them in a simplified form for a better overview.

Observe the detailed product documentation.

Online support: www.lenze.com/product-information



Safety instructions

Safety instructions

Residual hazards

Application as directed

Transport & storage

General safety instructions

DANGER!

Disregarding the following basic safety instructions and safety information may lead to severe personal injury and damage to property!

- Only use the product as directed.
- Never commission the product in the event of visible damage.
- Never modify the product technically.
- Never commission the product before assembly has been completed.
- Never operate the product without the required covers.
- Connect/disconnect all pluggable connections only in deenergized state!
- Only remove the product from the installation in a deenergized state.
- The product can - depending on their degree of protection - have live, movable or rotating parts during or after operation. Surfaces can be hot. Surfaces can be hot.
- Observe the specifications of the documentation supplied with the device. This is the condition for safe and trouble-free operation and the achievement of the specified product features.
- The procedural notes and circuit details given in the associated documentation are suggestions and their transferability to the respective application must be checked. The manufacturer of the product does not take responsibility for the suitability of the process and circuit proposals.
- All work with and on the product may only be carried out by qualified personnel. IEC 60364 and CENELEC HD 384 define the qualifications of these persons:
 - They are familiar with installing, mounting, commissioning, and operating the product.
 - They have the corresponding qualifications for their work.
 - They know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

WARNING!

Functional safety

Certain software functions or components support safety functions according to the requirements of 2006/42/EC: Machinery Directive [UKCA: 2008 No. 1597 – The Supply of Machinery (Safety) Regulations 2008]. Be sure to observe the instructions in the documentation regarding the integrated safety technology.

These components may only be repaired or replaced by the Lenze Service or its authorized persons.

Safety instructions

Safety instructions

Residual hazards

Application as directed

Transport & storage

Residual hazards



Dangerous electrical voltage

Defects in the product can lead to overvoltages in the system.

For products according to EN 61800-5-1:

- During operation and up to 20 minutes after power-off, hazardous electrical voltages may be present at the connections of the product.
- The leakage current to earth (PE) is $> 3.5 \text{ mA AC}$ or $> 10 \text{ mA DC}$.

Possible consequences

- Death or severe injury from electric shock.

Protective measures

- Any work on the product must only be carried out in a deenergized state.
- Check that no voltage is present!
- Observe the warning signs on the product.
- After switching off, wait until the drive is at a standstill.
- Implement the measures required by EN 61800-5-1 and EN 60204-1, i.e. fixed installation and standards-compliant PE connection.

Warning signs on the product

Dangerous electrical voltage

Before starting work on the product, check that all power connections are de-energized!



The power connections carry dangerous electrical voltage for the time indicated by the symbol after the mains voltage has been switched off!



Electrostatic sensitive devices

Before starting work on the product, the staff must ensure to be free of electrostatic charge.



High leakage current

Carry out fixed installation and PE connection in accordance with EN 61800-5-1 and EN 60204-1 standards



Hot surface

Use personal protective equipment or wait until the device has cooled down!

Safety instructions

Safety instructions

Residual hazards

Application as directed

Transport & storage

Application as directed

- The product is a piece of professional equipment intended for use by trades, specific professions or industry, and not for sale to the general public. IEC 60050 [IEV 161-05-05]
- The product is a part or component for further processing/integration in complex industrial production systems.
- To prevent personal injury and damage to property, higher-level safety and protection systems must be used!
- The product may only be operated under the specified operating conditions and in the specified mounting positions.
- The product must not be operated in private areas, in potentially explosive atmospheres and in areas with harmful gases, oils, acids and radiation.
- All transport locks must be removed.
- Mounted eye bolts on the motor are not suitable for transporting geared motors.

Safety instructions

- Safety instructions
- Residual hazards
- Application as directed
- Transport & storage



Transport & storage

Internal transport:

- Transport weight of the products are specified in the shipping documents.
- Staying under suspended loads is prohibited!
- Eye bolts on the gearbox can be used for transport.
 - For all other geared motors, the corresponding lifting eyes or the eye bolt in the housing must be used.
- Lifting eye available on all gearboxes.

	
Geared motor	Lifting eye on the housing
G50BS113Mxxxxxx	
G50BS122Mxxxxxx	
G50BS140Mxxxxxx	
G50BS166Mxxxxxx	
G50BS195Mxxxxxx	
G50BS221Mxxxxxx	
G50BS231Mxxxxxx	
G50BS245Mxxxxxx	
G50BS280Mxxxxxx	
G50BS314Mxxxxxx	
G50BS319Mxxxxxx	

- Alternatively, the geared motor can also be transported with a carrying strap. Make sure that the carrying strap is attached at the center of gravity of the geared motor so that it cannot slip and thus be damaged.

Storage:

- Observe climatic conditions according to the technical data.
 - Store in dry, low-vibration environment ($V_{eff} < 0.2 \text{ mm/s}$) without aggressive atmosphere inside.
 - Protect from dust, shock and sunlight.
 - Avoid temperature changes with condensate formation.
 - Store geared motors with ventilation in such a way that the ventilation element is on top.
 - Do not activate the ventilation element to prevent air exchange with the ambient air.
 - Retreat damaged corrosion protection on shafts and bare surfaces.
- In addition, when stored for one to two years:
- Apply a long-term corrosion protection agent (e.g. Anticorit BW 366 from Fuchs) to shafts and bare surfaces before storage.
 - Fill the geared motor in mounting position M1 (A) with the filled lubricant type (see nameplate) up to the filling/venting hole and store it.

Technical data

- Standards and operating conditions
- Radial forces
Hollow shaft
- Radial forces
Solid shaft



Standards and operating conditions

Market approvals		CE (European Union)	For further information and certificates of approval see Internet
		UKCA (Great Britain)	
		INMETRO (Brazil)	
		CSA, NrCAN (Canada)	
		UL, DOE (USA)	
		CCC (China)	
		NEA (Singapore)	
		KEA (South Korea)	
Environment		RoHS	
Energy efficiency		High Efficiency up to 0.55 kW	
		Premium Efficiency from 0.75 kW	
Degree of protection		IP54/IP55 IP65/IP66	Information applies to the mounted and ready-for-use state
Climate	Operation	-30 ... +10 °C	Depending on the temperature package - see nameplate
		-30 ... +40 °C	
Temperature class		B (130 °C)	Utilization
		F (155 °C)	Insulation
Installation altitude		0 ... 1000 m amsl	1000 ... 4000 m amsl: Current reduction 5 %/1000 m
Air humidity		Average relative humidity 85 %	Without condensation
Vibration resistance		Acceleration resistant up to 2 g	

Further standards and operating conditions can be found in the project planning documents.

Technical data

- Standards and operating conditions
- Radial forces
Hollow shaft
- Radial forces
Solid shaft

Maximum permissible radial forces, geared motors with hollow shaft

	At the following output speeds (rpm):									
	1000	630	400	250	160	100	63	40	25	16
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1000	1100	1300	1500	1650	2200	2750	3450	4200	4500
g500-S220	2100	2300	2800	3200	3800	4600	5500	6300	7000	7000
g500-S400	2200	2500	3000	3400	4100	5000	6000	7100	8000	8000
g500-S660	2500	2900	3500	4000	5000	6600	8500	10800	12000	12000
g500-S950	3400	4000	4300	5000	6000	8000	10300	11500	12500	13000
g500-S2100	4500	5100	6200	6500	7500	10000	12000	15700	15700	16000
g500-S3100	5200	5700	7000	8000	9000	12500	15000	17000	19800	19800
g500-S4500	11100	12900	15000	17500	19000	20000	23000	30000	30000	30000
g500-S8000				23000	27000	30000	38000	48000	55000	65000
g500-S14000				34000	41000	44000	55000	65000	73500	73500
g500-S19000					55000	61000	74000	91000	100000	111000

Technical data

Standards and operating conditions

Radial forces
Hollow shaft

Radial forces
Solid shaft

Maximum permissible radial forces, geared motors with solid shaft

	At the following output speeds (rpm):									
	1000	630	400	250	160	100	63	40	25	16
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1000	1100	1300	1500	1650	2200	2750	3450	4200	4500
g500-S220	1700	1900	2300	2700	3200	3600	3600	3600	3600	3600
g500-S400	1700	1900	2300	2700	3200	4000	4800	5800	6200	6200
g500-S660	2300	2600	3100	3600	3900	5100	6500	8400	9000	9000
g500-S950	6100	6800	8200	9500	10300	10300	10300	10300	10300	10300
g500-S2100	7500	8200	10000	11500	13600	15700	15700	15700	15700	15700
g500-S3100	9400	10300	12600	14500	16500	18000	19800	19800	19800	19800
g500-S4500	12000	13100	16100	18500	20000	22000	25000	30000	30000	30000
g500-S8000				27000	31000	35000	43000	52000	59000	65000
g500-S14000				36000	42000	47000	57000	66000	73500	73500
g500-S19000					49000	54000	65000	79000	100000	111000

Maximum permissible radial forces, geared motors with solid shaft and flange

	At the following output speeds (rpm):									
	1000	630	400	250	160	100	63	40	25	16
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1000	1100	1300	1500	1650	2200	2750	3450	4200	4500
g500-S220	2400	2600	3200	3700	4400	4600	4600	4600	4600	4600
g500-S400	3300	3600	4400	5100	5900	6800	7000	7000	7000	7000
g500-S660	4500	5000	6100	7000	7800	9600	10000	10000	10000	10000
g500-S950	4900	5300	6500	7500	8500	10300	10300	10300	10300	10300
g500-S2100	7400	8200	10000	11500	13600	15700	15700	15700	15700	15700
g500-S3100	12800	14100	17200	19800	19800	19800	19800	19800	19800	19800
g500-S4500	17500	19200	23500	27000	28000	30000	30000	30000	30000	30000
g500-S8000				27000	31000	35000	43000	52000	59000	71500
g500-S14000				36000	42000	47000	57000	66000	77000	81000
g500-S19000					49000	54000	65000	79000	100000	118000

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Preparation and installation

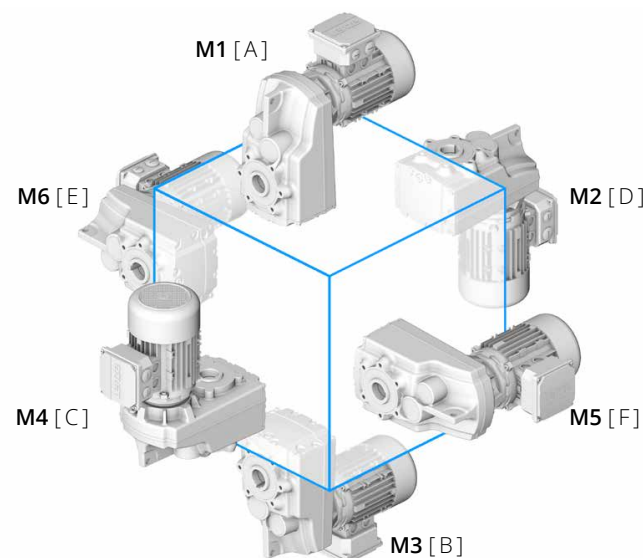
Preparation

- Remove the protective caps from the shafts.
- Thoroughly remove anti-corrosion agent from shaft and flange surfaces.
- Protect shaft sealing rings from contact with solvents.
- Mount the transmission elements on the output shaft using the existing centering thread only.
- Align output shaft and transmission elements accurately to avoid distortion.
- Mount belt pulleys, sprockets or gears as close to the shaft shoulder as possible to keep the bending stress on the shaft and the bearing forces low.
- Tighten all screw connections to the specified torques and secure them with commercially available screw locking adhesive.
- Check paint for damage and repair professionally.
- Surfaces can be hot. If necessary, protect against contact.

Installation and mounting position:

- The mounting surfaces must be plane, torsionally stiff and vibration-free.
- The mounting surfaces must be suitable for absorbing the forces and torques occurring during operation.
- Ensure unobstructed air circulation.
- For cooling by the integral fan or blower, maintain a minimum distance of 10% from the outer diameter of the fan cover in the intake direction.
- The lubricant quantity and ventilation of the gearboxes are adapted to the mounting position. It is essential to observe the mounting position specified on the nameplate in order to avoid damage to the gearbox.
- Keep the drive disconnected from the mains and secure it against movement.
- For commissioning, see chapter "Electrical installation".

Mounting positions



Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS113Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	
g500-S130	3.6 ... 825.8	25 x 50	25	25	160

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws of at least strength class 8.8.
- Secure against unintentional loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
25 x 50	M10	48	25	M5	6	160	M8	24.8	M10	48

Ventilation and maintenance:

The geared motors do not have a vent valve and are lubricated for life.



Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS122Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	[mm]
g500-S220	3.8 ... 2741.6	25 x 50	25, 30	25, 30	160

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws of at least strength class 8.8.
- Secure against unintentional loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
25 x 50	M10	48	25	M6	14	160	M8	24.8	M10	48
-	-	-	30	M6	14	-	-	-	-	-

Ventilation and maintenance:

The geared motors do not have a vent valve and are lubricated for life.
A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

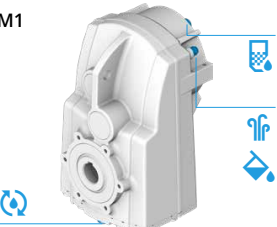
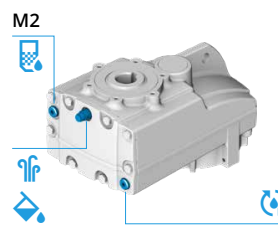
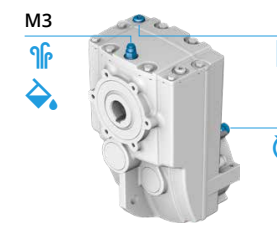
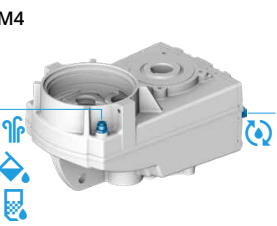
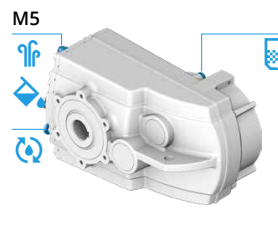
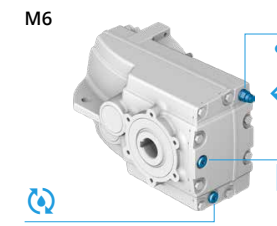
- Remove transport locking device.
- Tighten with 8 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection using an auxiliary tool, top up oil if necessary.
- Tighten oil-level plug again with 10 Nm or ventilation element with 8 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 10 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

 Ventilation	 Oil change	 Fill oil	 Oil level
M1 	M2 	M3 	
M4 	M5 	M6 	

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS140Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	[mm]
g500-S400	3.3 ... 3417.9	30 x 60	30, 35	35	200

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws of at least strength class 8.8.
- Secure against unintentional loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
30 x 60	M10	48	35	M6	14	200	M10	48	M10	48

Ventilation and maintenance:

Change the oil at the end of the changing intervals.
A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

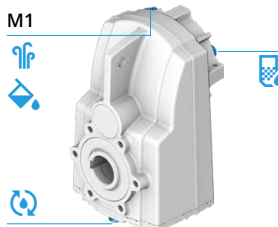
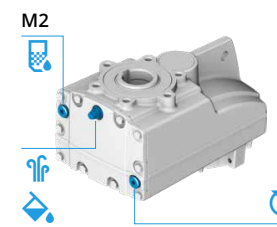
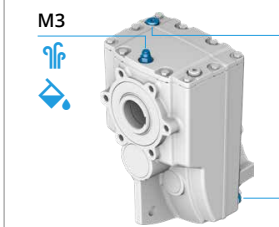
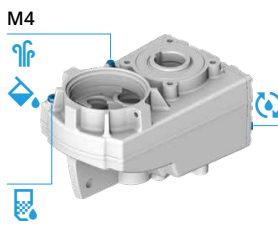
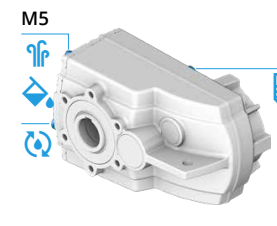
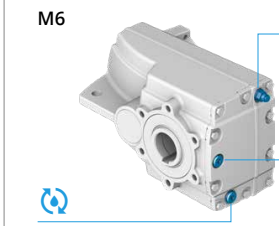
- Remove transport locking device.
- Tighten with 14 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection using an auxiliary tool, top up oil if necessary.
- Tighten oil-level plug again with 20 Nm or ventilation element with 14 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 20 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

 Ventilation	 Oil change	 Fill oil	 Oil level
M1 	M2 	M3 	M4 
M5 	M6 		

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS166Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	
g500-S660	3.9 ... 3635.4	35 x 70 40 x 80	40, 45	40	200, 250

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws of at least strength class 8.8.
- Secure against unintentional loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
35 x 70	M12	84	40	M6	14	200	M10	48	M10	48
40 x 80	M16	206	-	-	-	250	M12	84	-	-

Ventilation and maintenance:

Change the oil at the end of the changing intervals.
A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

- Remove transport locking device.
- Tighten with 14 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection using an auxiliary tool, top up oil if necessary.
- Tighten oil-level plug again with 20 Nm or ventilation element with 14 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 20 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

🔧 Ventilation	🔄 Oil change	🚰 Fill oil	📏 Oil level
M1	M2	M3	M4
M5	M6	M7	M8

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS195Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	
g500-S950	4.3 ... 4527.2	40 x 80	40	40	250

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws with at least strength class 8.8 for foot and 10.9 for flange.
- Secure against self-loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
40 x 80	M16	206	40	M8	34	250	M12	84	M16	206

Ventilation and maintenance:

Change the oil at the end of the changing intervals.

A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

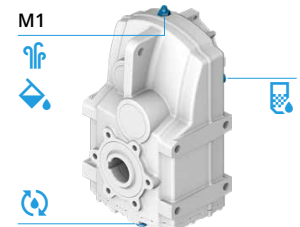
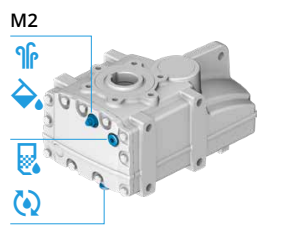
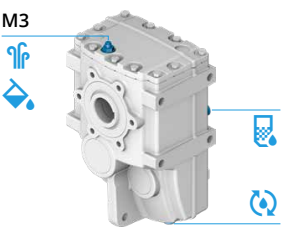
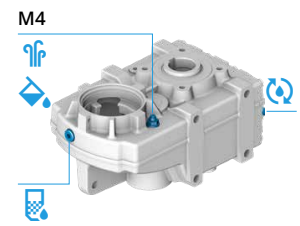
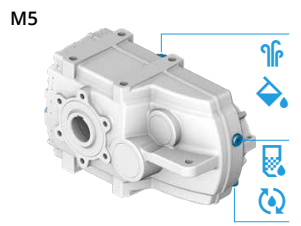
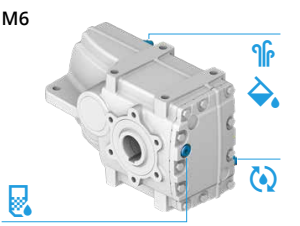
- Remove transport locking device.
- Tighten with 18 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection, top up oil if necessary.
- Tighten oil-level plug again with 34 Nm or ventilation element with 18 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 34 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

 Ventilation	 Oil change	 Fill oil	 Oil level
M1 	M2 	M3 	M4 
	M5 	M6 	

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS221Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	
g500-S2100	4.5 ... 4882.7	50 x 100	50, 55	50	250, 300

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws with at least strength class 8.8 for foot and 10.9 for flange.
- Secure against self-loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
50 x 100	M16	206	50	M8	34	250	M12	84	M16	204
-	-	-	-	-	-	300	M12	84	-	-

Ventilation and maintenance:

Change the oil at the end of the changing intervals.

A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

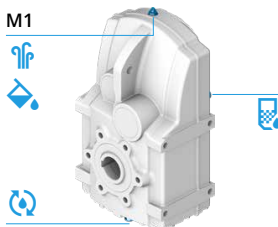
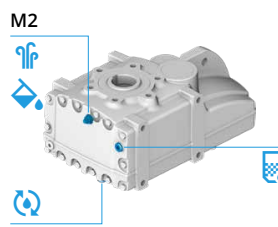
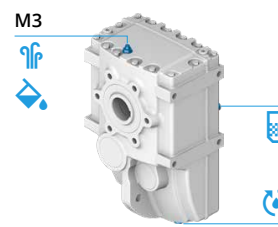
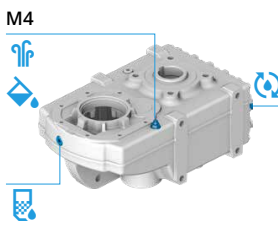
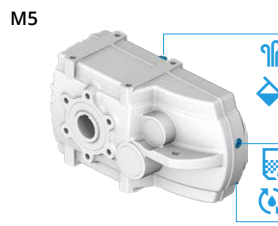
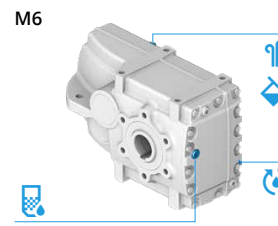
- Remove transport locking device.
- Tighten with 18 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection, top up oil if necessary.
- Tighten oil-level plug again with 34 Nm or ventilation element with 18 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 34 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

 Ventilation	 Oil change	 Fill oil	 Oil level
M1 	M2 	M3 	
M4 	M5 	M6 	

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS231Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	
g500-S3100	4.9 ... 5849.6	60 x 120	60, 70	65	350

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws with at least strength class 8.8 for foot and 10.9 for flange.
- Secure against self-loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
60 x120	M20	415	65	M10	70	350	M16	206	M16	206

Ventilation and maintenance:

Change the oil at the end of the changing intervals.

A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

- Remove transport locking device.
- Tighten with 25 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection, top up oil if necessary.
- Tighten oil-level plug again with 50 Nm or ventilation element with 25 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 50 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

Ventilation	Oil change	Fill oil	Oil level
M1	M2	M3	M4
M5	M6	M7	M8

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS245Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	
g500-S4500	4.9 ... 4641	70 x 140 80 x 160	70, 80	75, 80	400, 450

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws with at least strength class 8.8 for foot and 10.9 for flange.
- Secure against self-loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
70 x 140	M20	415	75	M10	70	400	M16	206	M20	415
80 x 160	M20	415	80	M10	70	450	M16	206	M20	415

Ventilation and maintenance:

Change the oil at the end of the changing intervals.

A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

- Remove transport locking device.
- Tighten with 25 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection, top up oil if necessary.
- Tighten oil-level plug again with 50 Nm or ventilation element with 25 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 50 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

Ventilation	Oil change	Fill oil	Oil level
M1	M2	M3	M4
M5	M6		

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS280Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	[mm]
g500-S8000	4.5 ... 377	90 x 170	90	95	450

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws with at least strength class 8.8 for foot and 10.9 for flange.
- Secure against self-loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
90 x 170	M24	714	95	M12	121	450	16	206	M24	750

Ventilation and maintenance:

Change the oil at the end of the changing intervals.
A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

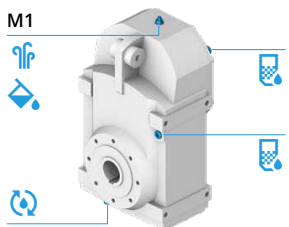
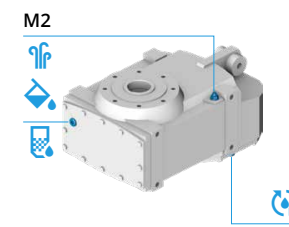
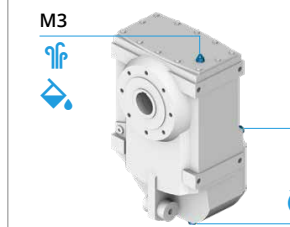
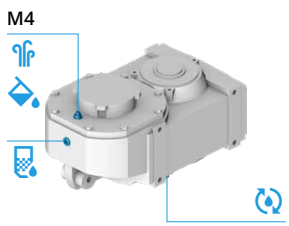
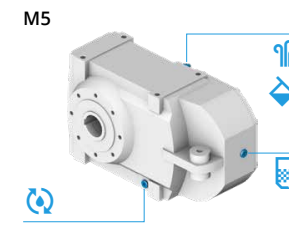
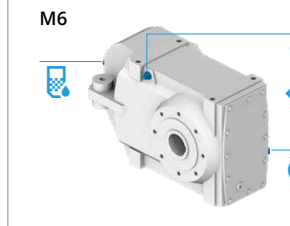
- Remove transport locking device.
- Tighten with 25 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection, top up oil if necessary.
- Tighten oil-level plug again with 50 Nm or ventilation element with 25 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 50 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

 Ventilation	 Oil change	 Fill oil	 Oil level
M1 	M2 	M3 	
M4 	M5 	M6 	

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS314Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	
g500-S14000	4.5 ... 368	110 x 210	100	105	550

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws with at least strength class 8.8 for foot and 10.9 for flange.
- Secure against self-loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
110 x 210	M24	714	105	M14	193	550	M16	206	M30	1500

Ventilation and maintenance:

Change the oil at the end of the changing intervals.

A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

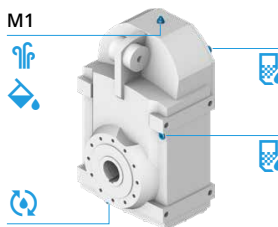
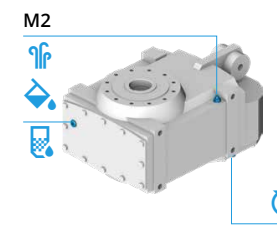
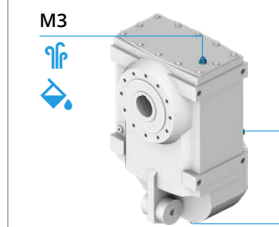
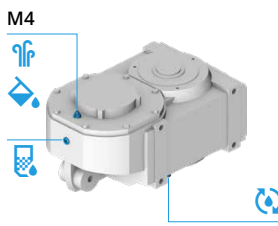
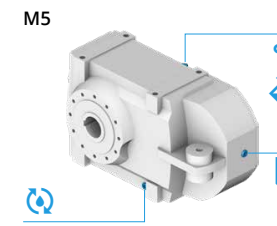
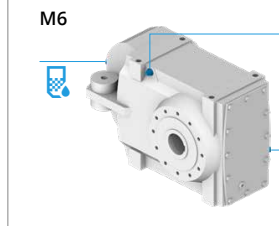
- Remove transport locking device.
- Tighten with 25 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection, top up oil if necessary.
- Tighten oil-level plug again with 50 Nm or ventilation element with 25 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 50 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

 Ventilation	 Oil change	 Fill oil	 Oil level
M1 	M2 	M3 	
M4 	M5 	M6 	

Mechanical installation

General information

Mounting G50BS113Mxxxxxx

Mounting G50BS122Mxxxxxx

Mounting G50BS140Mxxxxxx

Mounting G50BS166Mxxxxxx

Mounting G50BS195Mxxxxxx

Mounting G50BS221Mxxxxxx

Mounting G50BS231Mxxxxxx

Mounting G50BS245Mxxxxxx

Mounting G50BS280Mxxxxxx

Mounting G50BS314Mxxxxxx

Mounting G50BS319Mxxxxxx

Mounting of G50BS319Mxxxxxx shaft-mounted helical geared motor

Mounting dimensions:

	Ratios	Shafts			Flange
		Solid shafts	Hollow shafts	Shrink disk	
		[mm]	[mm]	[mm]	[mm]
g500-S19000	8.4 ... 347.3	120 x 210	120	125	660

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- Only use assembly paste in the area of the contact surfaces for hollow shafts with keyway.
- Do not tighten the clamping screws of the shrink disks until mounting is complete.
- Use the center hole in the shaft for mounting.
- Avoid shocks and impacts and make sure that the mounting is free of tensions.
- For belt drives, tension the belt in a controlled manner according to the manufacturer's instructions (observe radial forces).
- Compensate for small inaccuracies by using suitable flexible couplings.
- Mount the cover after mounting the shrink disk.

Fastening:

- Use screws with at least strength class 8.8 for foot and 10.9 for flange.
- Secure against self-loosening.
- For alternating loads, it is recommended to apply an anaerobic curing adhesive between the flange and the mounting surface.
- Observe the specified tightening torques on the machine:

Shafts						Flange			Foot	
Solid shaft			Shrink disk							
[mm]		[Nm]	[mm]		[Nm]	[mm]		[Nm]		[Nm]
120 x 210	M24	714	125	M14	193	660	M20	415	M36	2500

Ventilation and maintenance:

Change the oil at the end of the changing intervals.

A vent valve and oil-level plug are optionally available.

Ventilation element before initial commissioning:

- Remove transport locking device.
- Tighten with 25 Nm according to the mounting position.

Oil-level inspection:

- Check oil level in cold condition.
- Remove oil-level plug.
- Check oil level by visual inspection, top up oil if necessary.
- Tighten oil-level plug again with 50 Nm or ventilation element with 25 Nm.

For oil change, see diagram in Commissioning/Maintenance chapter:

- Unscrew the oil drain plug and collect the waste oil.
- Tighten the oil drain plug again with 50 Nm.
- Fill new oil according to the specifications on the nameplate and check the oil level.

🔧 Ventilation	🔄 Oil change	🚰 Fill oil	📏 Oil level
M1	M2	M3	M4
M5	M6	M7	M8

Electrical installation

Connection diagram

Terminal box assignment

Terminal box assignment - feedback

Connector assignment

Connector assignment - feedback

Installation instructions

Motor connection

Observe the following for the proper connection of the motor:

- The enclosed mounting sheet in the motor terminal box.
- Direction of rotation of the output shaft when connected in phase (viewing direction of shaft):
 - Clockwise with even number of stages of the gearbox
 - Counterclockwise with uneven number of stages of the gearbox
- The technical data on the motor nameplate.
- When connecting, observe the national regulations regarding cable cross-sections, fuses, protective conductor (PE connection), etc.
- As the manufacturer of the system or machine, you are responsible for compliance with the legal EMC limit values of the overall system.
- If the insulation resistance of the motor is $\leq 1 \text{ k}\Omega$ per volt, the motor must not be switched on.

Connection for high leakage current

If the leakage current is greater than 3.5 mA for AC current or greater than 10 mA for DC current, the standard EN IEC 61800-5-1 requires that at least one or more of the following measures be met:

- Minimum cross-section of the PE connection: 10 mm² at Cu or 16 mm² at Al.
- A second PE connection with the same cross-section.
- Provide automatic disconnection of the mains in case of interruption of the protective earth conductor.



DANGER!

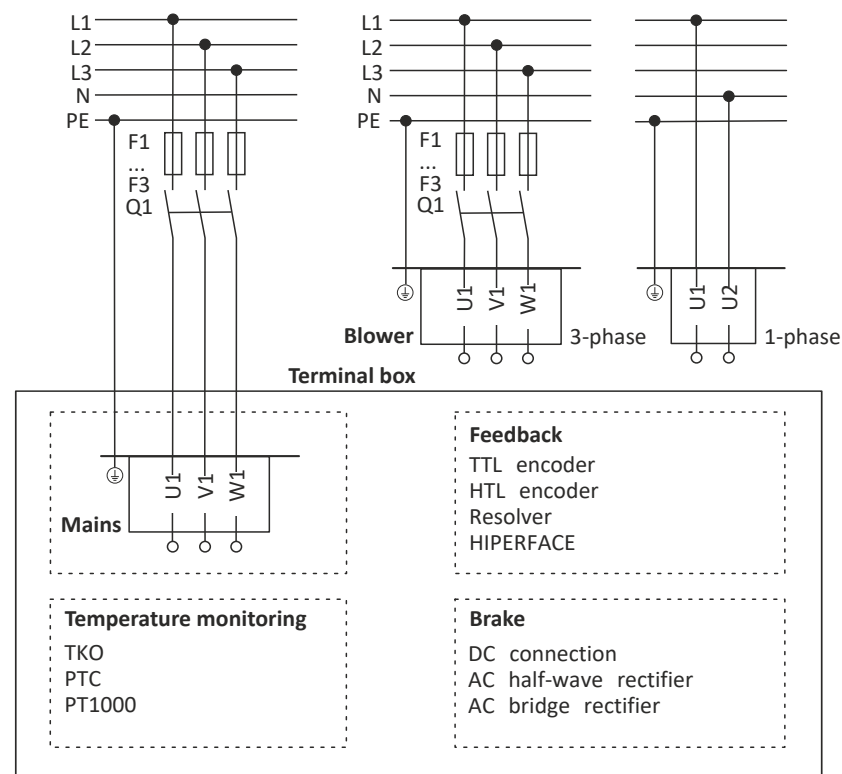
Risk of injury and burns due to dangerous voltage.

Voltage may be present at the power terminals when the power is off or the motor is stopped.

Possible consequences: Life-threatening cardiac arrhythmias and severe burns

Possible remedy: Disconnect the geared motor from the mains and check that the power terminals are voltage-free before starting work.

Connection diagram:



Electrical installation

Connection diagram

Terminal box assignment

Terminal box assignment -
feedback

Connector assignment

Connector assignment -
feedback

Terminal box assignment

Connections and cross-sections of the motor

	Mains connection								
Connection	L1		L2		L3		PE		
Terminal	U1		V1		W1		PE		
		 [Nm]		 [Nm]		 [Nm]	 [mm²]	 [mm]	 [Nm]
063/x4	M4	1.5	M4	1.5	M4	1.5	2.5	10	5.9
071/x4	M4	1.5	M4	1.5	M4	1.5	2.5	10	5.9
080/x4	M4	1.5	M4	1.5	M4	1.5	2.5	10	5.9
090/x4	M5	2.0	M5	2.0	M5	2.0	2.5	10	5.9
100/x4	M5	2.0	M5	2.0	M5	2.0	2.5	10	5.9
112/x4	M5	2.0	M5	2.0	M5	2.0	2.5	10	5.9
132/x4	M6	3.5	M6	3.5	M6	3.5	6	10	10.1
160/x4	M8	6.0	M8	6.0	M8	6.0	10	10	24.6
180/x4	M8	6.0	M8	6.0	M8	6.0	10	10	24.6

Connection Terminal	Temperature monitoring							
	Thermal contact (TCO)		PTC 150		PTC 130		PT1000	
	TB1	TB2	1TP1	1TP2	2TP1	2TP2	R1	R2
	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]
063/x4 ... 180/x4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

	Brake																	
Connection	DC						AC, half-wave rectifier						AC, bridge rectifier					
	+			-			L1			N			L1			N		
Terminal	BD1			BD2			~			~			~			~		
	 [mm²]	 [mm]	 [Nm]	 [mm²]	 [mm]	 [Nm]	 [mm²]	 [mm]	 [Nm]	 [mm²]	 [mm]	 [Nm]	 [mm²]	 [mm]	 [Nm]	 [mm²]	 [mm]	 [Nm]
063/x4 ... 180/x4	1.5	9	-	1.5	9	-	1.5	6	-	1.5	6	-	4	6	0.45	4	6	0.45

Electrical installation

Connection diagram

Terminal box assignment

Terminal box assignment - feedback

Connector assignment

Connector assignment - feedback

Terminal box assignment - feedback

Connections and cross-sections of the motor

Signal	SinCos incremental encoder									TTL/HTL incremental encoder								
	+UB	GND	+COS	Ref COS	+SIN	Ref SIN	0	0 ⁻	Shield	+UB	GND	A	A ⁻	B	B ⁻	0	0 ⁻	Shield
Terminal	B1	B2	B3	B4	B5	B6	B7	B8		B1	B2	B3	B4	B5	B6	B7	B8	
																		
	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]
063/x4 ... 180/x4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Signal	Resolver									HIPERFACE absolute value encoder								
	+Ref	-Ref	+VCC ETS	+COS	-COS	+SIN	-SIN	Shield		+ UB	GND	A	A ⁻	B	B ⁻	Z	Z ⁻	Shield
Terminal	B1	B2	B3	B4	B5	B6	B7			B1	B2	B3	B4	B5	B6	B7	B8	B10
																		
	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]		[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]	[mm²]
063/x4 ... 180/x4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Electrical installation

Connection diagram

Terminal box assignment

Terminal box assignment -
feedback

Connector assignment

Connector assignment -
feedback

Connector assignment

Connection		Mains connection				Brake				Temperature monitoring					
						DC		AC		TCO		PTC		PT1000	
		L1 ⊕ [mm²]	L2 ⊕ [mm²]	L3 ⊕ [mm²]	PE ⊕ [mm²]	+	-	L1 ⊕ [mm²]	N ⊕ [mm²]	⊕ [mm²]	⊕ [mm²]	⊕ [mm²]	⊕ [mm²]	⊕ [mm²]	⊕ [mm²]
M23 connector, 6-pole	PIN	4	5	6	PE	1	2	1	2					see feedback	
	063/x4 ... 112/M4	2.5	2.5	2.5	2.5	1	1	1	1						
M23 connector, 8-pole	PIN	1	4	3	PE	D	C	D	C	A	B			see feedback	
	063/x4 ... 112/M4	2.5	2.5	2.5	2.5	1	1	1	1	1	1				
Han 3A	PIN	1	2	3	PE	9	11			10	12				
	063/x4 ... 112/M4	1.5	1.5	1.5	1.5	1.5	1.5			1.5	1.5				
Han 10E	PIN	1	2	3		4	5	4	5	9	10			9	10
	063/x4 ... 112/M4	4	4	4		4	4	4	4	4	4			4	4
Han-Modular 16/40A	PIN	a1	a2	a3		c2	c3	c4	c5	c1	c6			c1	c6
	063/x4 ... 132/L4	4	4	4		4	4	4	4	4	4			4	4
Wicon	PIN	U1	V1	W1		3	4			1	2				
	063/x4 ... 112/M4	2.5	2.5	2.5		1.5	1.5			1.5	1.5				
M12 power	PIN	1	2	3	4										
	063/x4 ... 112/M4	1.5	1.5	1.5	1.5										
M15 XTec	PIN	1	2	3	4					A	B				
	063/x4 ... 112/M4	2.5	2.5	2.5	2.5					2.5	2.5				

Connection		Mains connection				
		L1	L2	L3	N	PE
		⊕ [mm²]	⊕ [mm²]	⊕ [mm²]	⊕ [mm²]	⊕ [mm²]
M17 connector for blower	PIN	1	3	6	2	PE
	063/x4 ... 180/M4	1	1	1	1	1

Electrical installation

Connection diagram

Terminal box assignment

Terminal box assignment -
feedback

Connector assignment

Connector assignment -
feedback

Connector assignment - feedback

		TTL incremental encoder									Temperature monitoring	
Signal		+UB	GND	+COS	REFCOS	+SIN	REFSIN	0	/0	Shield	PT1000	
		 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]
M23 connector	PIN	4	5	3	2	1	9	7	6	10	11	12
	063/x4 ... 180/M4	1	1	1	1	1	1	1	1	1	1	1

		HTL incremental encoder									Temperature monitoring	
Signal		+UB	GND	A	/A	B	/B	0	/0	Shield	PT1000	
		 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]
M23 connector	PIN	4	5	3	2	1	9	7	6	10	11	12
	063/x4 ... 180/M4	1	1	1	1	1	1	1	1	1	1	1
M12 connector	PIN	1	3	4	-	2	-	-	-	-	-	-
	063/x4 ... 180/M4	0.34	0.34	0.34	-	0.34	-	-	-	-	-	-

		Resolver								Temperature monitoring	
Signal		+REF	-REF	Vcc	+COS	-COS	+SIN	-SIN	Shield	PT1000	
		 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]
M23 connector	PIN	1	2	3	4	5	6	7	10	11	12
	063/x4 ... 180/M4	1	1	1	1	1	1	1	1	1	1

		HIPERFACE absolute value encoder									Temperature monitoring	
Signal		+ UB	GND	A	/A	B	/B	Z	/Z	Shield	PT1000	
		 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]	 [mm²]
M23 connector	PIN	4	5	3	2	1	9	6	7	10	11	12
	063/x4 ... 180/M4	1	1	1	1	1	1	1	1	1	1	1

Commissioning

Initial switch-on

Check during operation

Maintenance

To ensure that the drive performs its tasks safely in the plant, we recommend that you carry out the following checks before switching on the drive:

- Is the drive safely integrated mechanically and electrically?
 - For ventilation elements, remove the additional transport lock.
 - Secure the featherkey during the test run.
 - Always connect the protective earth conductor correctly.
 - Protect rotating parts against contact.
- Avoid overheating of the drive.
 - Ensure free supply and discharge of cooling air.
 - Are protective devices against overheating active?
- Is the inverter parameterized to match the motor?
 - Does the motor connection have the correct phase sequence?
 - Has the basic setting for the drive been performed according to the inverter documentation?

Initial switch-on:

Check the individual functions of the drive:

- Direction of rotation of the output shaft when connected in phase (viewing direction of shaft):
 - Clockwise with even number of stages of the gearbox
 - Counterclockwise with uneven number of stages of the gearbox
- Check torque behavior and current consumption.
- Check the function of the brake and the feedback.

Commissioning

Initial switch-on

Check during operation

Maintenance



Check the geared motor during operation

If the geared motor is permanently integrated in the machine, check the following points during operation or during a regular inspection:

- Unusual running noise
- Irregular running
- Increased vibrations
- Loose fixing elements
- Condition of the electrical wiring
- Deposits on the drive and in the cooling ducts

Commissioning

- Initial switch-on
- Check during operation
- Maintenance



Maintenance

DANGER!

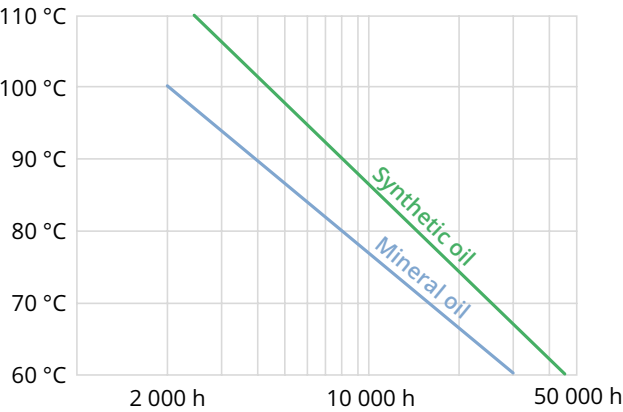
- Risk of injury due to non-compliance with the following safety measures
- Failure to observe the following safety measures may result in serious personal injury and property damage.
- Only perform any work on the geared motor when it is de-energized.
 - Allow surfaces to cool.
 - Make geared motor load-free or secure acting loads.
 - Protect geared motor from penetrating foreign bodies.

Recommended maintenance

Time interval	Measures	Description
After mounting	Check mounting	Check all fixing screws with appropriate tightening torque
	Check operation	Check running noise, vibrations and operating temperature
After three operating hours	Check mounting	Check all fixing screws with appropriate tightening torque
Monthly	Check operation	Check running noise, vibrations and operating temperature
	Check tightness	In case of leakage, check cause and lubricant level
Six-monthly	Clean drive	Remove dirt and dust deposits
	Check torque relief	Check rubber buffer and torque plate for visible wear or damage
Yearly	Check ventilation element	Check ventilation element for air passage
See diagram	Change oil	After three years at the latest, remove old oil and replace it with new oil.

Lubricant change intervals

- Measure lubricant temperature at oil drain plug.
- Add 10 °C.
- Determine change interval from diagram.
- Change oil at least every three years!



Troubleshooting

Fault elimination

Fault elimination

If faults occur during operation of the geared motor:

- First check the possible causes of faults using the following table
- The cause of the fault may only be remedied by qualified personnel.
- If the fault cannot be eliminated by one of the measures listed, please contact Lenze Service.
- Online support: www.lenze.com/product-information



Fault	Cause	Remedy
Drive is not running	Voltage supply interrupted	Check connection
	Incorrect electrical connection	Check conformity of nameplate with power supply
	Overload	Reduce load check assignment of drive to machine
Unusual running noise	Overload	Reduce load check assignment of drive to machine
	Loose fixing elements	Tighten fixing elements
Overtemperature	Overload	Reduce load
	Lack of heat dissipation	Improve cooling air supply, clean gearbox/ motor
	Lack of lubricant	Fill up with lubricant according to instructions
Shrink disk connection slips	Machine shaft and hollow shaft bore not sufficiently degreased	Comply with specifications regarding assembly, dimensions and material
	Correct tightening torque of the screw was not reached	
	Incorrect component dimensions	
	Incorrect material properties	

Oil leaks	Incorrect oil level for the mounting position used	Check mounting position (see nameplate) and oil level
	Initially minor leakage at the shaft sealing ring	Optimum sealing conditions only arise after the running-in phase
	Overpressure due to missing or dirty ventilation	Mount the ventilation element according to the mounting position
	Shaft sealing rings worn out	Change shaft sealing rings, check condition of shaft running surface, repair if necessary.
	Cover/flange screws loose	Check that the fixing screws are tight. Continue monitoring gearbox
Malfunction of the brake	Coil is interrupted	Measure resistance of coil with multimeter
	Coil has interturn fault or ground fault	Measure resistance of coil with multimeter
	Wiring defective or wrong	Check wiring
	Rectifier defective or wrong	Measure rectifier and replace if necessary
	Microswitch wired incorrectly	Check wiring
	Air gap too big	Adjust air gap
	Air gap too small	Adjust air gap

NOTICE

- We recommend having all repairs carried out by Lenze Service.

Disposal

Disposal

If pollutants are disposed off improperly, they may cause a lasting damage to human health and the environment. Thus, electrical and electronic equipment must be collected separately from unsorted municipal waste so that it may be recycled or disposed of properly.

The EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE), which has been transposed into national law by the respective EU member states, applies to the disposal of equipment. As a customer, you have the option of disposing of the electrical and electronic equipment that you have purchased from us and that is subject to WEEE via the Lenze branch in your country.

Lenze addresses in Europe:

<https://www.lenze.com/en-de/company/global-presence>

We offer the following options for contacting us regarding WEEE within the German scope of the EU Waste Electrical and Electronic Equipment Directive (Directive 2012/19/EU) and the EU Battery Directive (2006/66/EC with 2013/56/EU):

✉ service.de@lenze.com

☎ +49 5154 82-1111

The crossed-out wheeled bin symbol is located on the equipment. This information indicates that used electrical and electronic products must not be disposed of with normal household waste.

The packaging of the equipment must be disposed of separately. Paper, cardboard and plastics must be recycled. Information on the country-specific disposal obligations can be obtained from your regional disposal company.

