

Operating instructions



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Helical geared motors



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

General information

Overview

Geared motor
identification

Motor identification

Conventions

Overview of helical geared motor

Connections



Machine connections



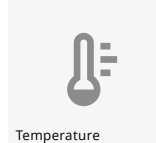
Brakes



Feedback



Cooling



Extensions



General information

Overview

Geared motor
identification

Motor identification

Conventions

Type code of helical geared motor

G

50

A¹

H

045²

M³

V⁴

A⁵

R⁶

2⁷

C⁸

1A⁹

1

Product generation

A	Generation 1
B	Generation 2

2

Output torque

	[Nm]
045	45
110	100
114	140
121	210
132	320
145	450
160	600
185	850
215	1500
230	3000
250	5000
280	8000
314	14000

3

Design

M	Geared motor
N	Gearbox

4

Shafts

V	Solid shaft with featherkey
G	Solid shaft without featherkey

5

Housing

A	Foot mounting and centering
B	Foot mounting
C	With centering

6

Flange

R	Without flange
K	Flange with through holes
P	Reinforced 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 motor mounting via adapter

1A ... 3H	
08 ... 82	

General information

Overview

Geared motor
identification

Motor identification

Conventions

Motor type code

M

55¹

B²

H³

063⁴

S⁵

04⁶

5⁷

E⁸

0⁹

0¹⁰

C¹¹

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 G50AH045Mxxxxxx, G50BH110Mxxxxxx, and G50BH114Mxxxxxx geared motors, the eye bolt may be screwed into the output shaft.
 - For all other geared motors, the corresponding lifting eyes or the eye bolt in the housing must be used.
- Thread for the eye bolt:

		
Geared motor	Eye bolt on the shaft	Eye bolt on the housing
G50AH045Mxxxxxx	M5 ... M6	-
G50BH110Mxxxxxx	M6	-
G50BH114Mxxxxxx	M10	-
G50BH121Mxxxxxx	-	M8
G50BH132Mxxxxxx	-	M10
G50BH145Mxxxxxx	-	M12
G50BH160Mxxxxxx	-	M12
G50BH185Mxxxxxx	-	M16
G50BH215Mxxxxxx	-	M16
G50BH230Mxxxxxx	-	M20
G50BH250Mxxxxxx	-	M20
G50BH280Mxxxxxx	-	M24
G50BH314Mxxxxxx	-	M24

- 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
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
Solid shaft

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

	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-H45	300	400	600	700	800	900	1100	1400	1500	1500
g500-H100	800	1000	1200	1500	1800	2100	2600	2700	2700	2700
g500-H140	1000	1440	1800	2200	2500	3000	3300	3700	4100	4200
g500-H210	1100	1600	2000	2400	2800	3400	3900	4100	4400	4800
g500-H320	1760	2090	2480	3000	3520	4190	5000	5700	5700	5700
g500-H450	2440	2820	3340	4020	4660	5540	6500	7100	7100	7100
g500-H600	3820	4480	5250	6100	7260	8450	9500	9500	9500	9500
g500-H850	4700	5510	6430	7500	8860	10400	11500	11500	11500	11500
g500-H1500	6300	7440	8790	10300	12200	14500	17000	17000	17000	17000
g500-H3000	7510	8880	10100	12400	14600	17200	20000	20000	20000	20000
g500-H5000				11000	13000	16400	21600	26000	27000	
g500-H8000				23000	25000	29500	35000	42000	50000	
g500-H14000				41000	43000	50000	60200	70100		

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-H45	300	400	600	700	800	900	1100	1400	1500	1500
g500-H100	800	1000	1200	1500	1700	1700	1700	1700	1700	1700
g500-H140	1000	1400	1800	2200	2500	2600	2600	2600	2600	2600
g500-H210	1100	1600	2000	2400	2800	3000	3000	3000	3000	3000
g500-H320	1760	2090	2480	3000	3520	3600	3600	3600	3600	3600
g500-H450	2440	2820	3340	4020	4400	4400	4400	4400	4400	4400
g500-H600	3820	4480	5250	6100	7260	8450	8500	8500	8500	8500
g500-H850	4700	5510	6430	7500	8860	10000	10000	10000	10000	10000
g500-H1500	6300	7440	8790	10300	12200	14000	14000	14000	14000	14000
g500-H3000	7510	8880	10100	12400	14600	17000	17000	17000	17000	17000
g500-H5000				11000	13000	13500	13500	13500	13500	
g500-H8000				23000	25000	25000	25000	25000	25000	
g500-H14000				35100	35100	35100	35100	35100		

Mechanical installation

General information

Mounting
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Preparation and installation

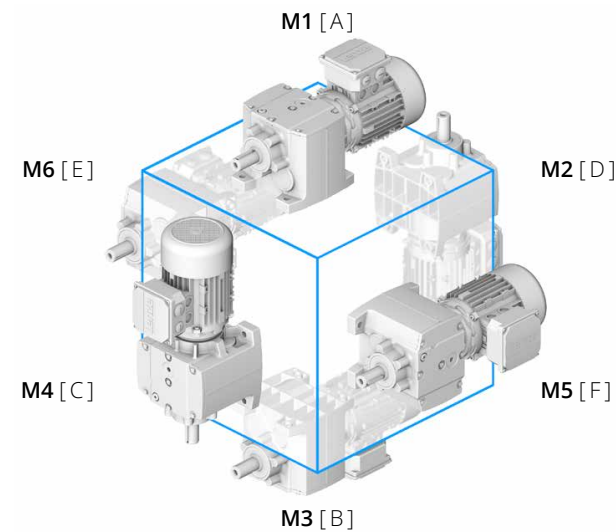
Preparation

- 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 G50AH045Mxxxxxxx	Mounting G50BH110Mxxxxxxx	Mounting G50BH114Mxxxxxxx	Mounting G50BH121Mxxxxxxx	Mounting G50BH132Mxxxxxxx	Mounting G50BH145Mxxxxxxx	Mounting G50BH160Mxxxxxxx	Mounting G50BH185Mxxxxxxx	Mounting G50BH215Mxxxxxxx
Mounting G50BH230Mxxxxxxx	Mounting G50BH250Mxxxxxxx	Mounting G50BH280Mxxxxxxx	Mounting G50BH314Mxxxxxxx						



Mounting of G50AH045Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H45	2.6 ... 59.4	14 x 28 20 x 40	120, 140, 160

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

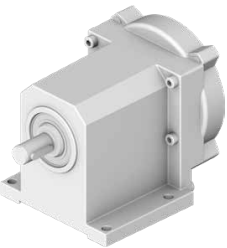
Fastening:

- 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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
14 x 28	M5	5.9	120	M6	10.1	M6	10.1
20 x 40	M6	10.1	140	M8	24.6	M6	10.1
-	-	-	160	M8	24.6	M6	10.1

Ventilation and maintenance:

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



Mechanical installation

General information

Mounting
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH110Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H100	2.1 ... 519.2	20 x 40	120, 140, 160

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

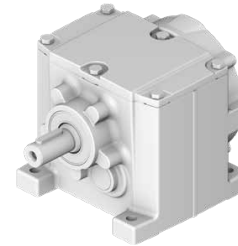
Fastening:

- 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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
20 x 40	M6	10.1	120	M6	10.1	M8	24.6
-	-	-	140	M8	24.6	M8	24.6
-	-	-	160	M8	24.6	M8	24.6

Ventilation and maintenance:

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



Mechanical installation

General information

Mounting
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH114Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H140	2.05 ... 577.7	25 x 50	120, 140, 160

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

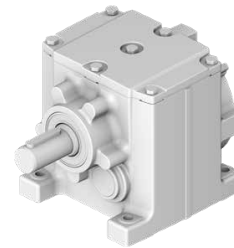
Fastening:

- 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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
25 x 50	M10	48	120	M6	10.1	M8	24.6
-	-	-	140	M8	24.6	M8	24.6
-	-	-	160	M8	24.6	M8	24.6

Ventilation and maintenance:

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



Mechanical installation

General information

Mounting
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH121Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts Solid shafts	Flange
		[mm]	[mm]
g500-H210	3.4 ... 2532.3	25 x 50	120, 140, 160, 200

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
25 x 50	M10	48	120	M6	10.1	M8	24.6
-	-	-	140	M8	24.6	M8	24.6
-	-	-	160	M8	24.6	M8	24.6
-	-	-	200	M10	48	M8	24.6

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 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
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH132Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H320	3.4 ... 2464.7	30 x 60	160, 200

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
30 x 60	M10	48	160	M8	24.6	M10	48
-	-	-	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:

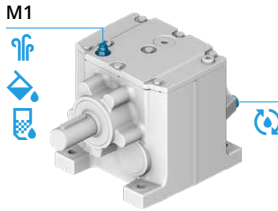
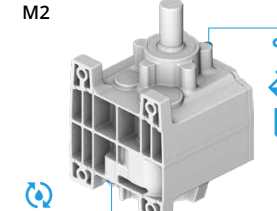
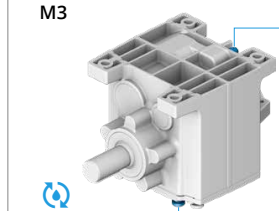
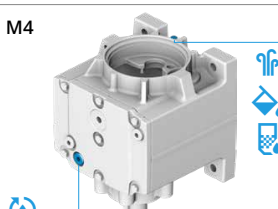
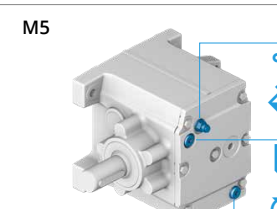
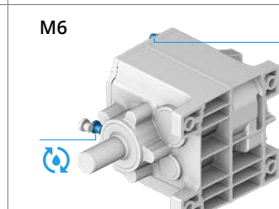
- Remove transport locking device.
- Tighten with 14 Nm according to the mounting position.

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
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH145Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H450	3.4 ... 3190.7	30 x 60 35 x 70	160, 200, 250

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
30 x 60	M10	48	160	M8	24.8	M12	84
35 x 70	M12	84	200	M10	48	M12	84
-	-	-	250	M12	84	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
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH160Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H600	2.9 ... 2522.9	35 x 70 40 x 80	200, 250

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
35 x 70	M12	84	200	M10	71	M12	84
40 x 80	M16	206	250	M12	123	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:

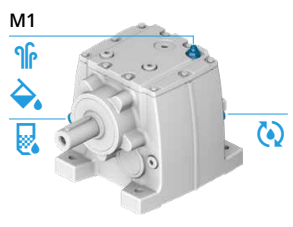
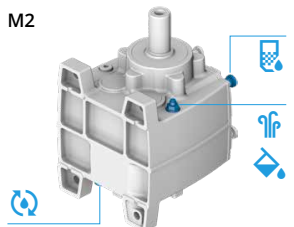
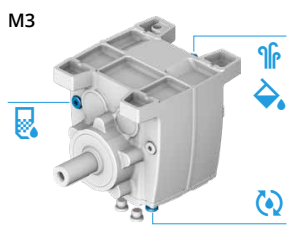
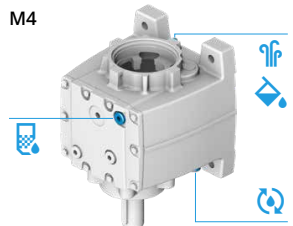
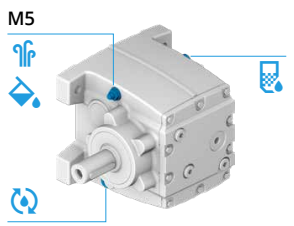
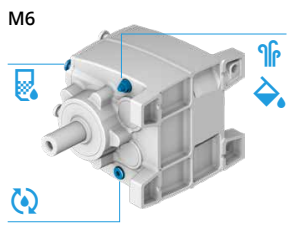
- Remove transport locking device.
- Tighten with 18 Nm according to the mounting position.

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
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH185Mxxxxxxx helical geared motor

Mounting dimensions:

Mounting dimensions:			
	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H850	3.1 ... 2362.3	40 x 80	250, 300

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
40 x 80	M16	206	250	M12	123	M16	206
-	-	-	300	M12	123	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:

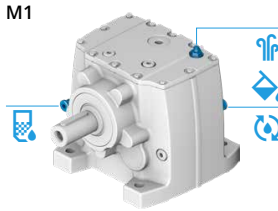
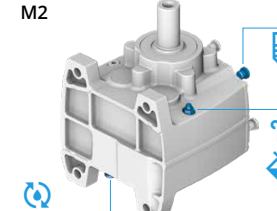
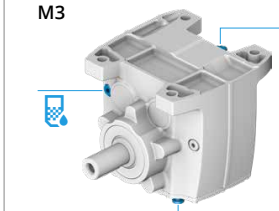
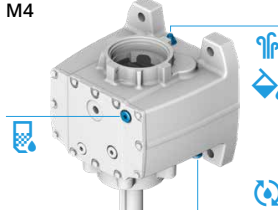
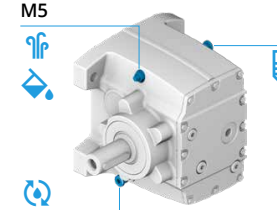
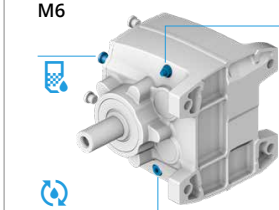
- Remove transport locking device.
- Tighten with 18 Nm according to the mounting position.

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
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH215Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H1500	3.7 ... 3529	50 x 100	250, 300, 350

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
50 x 100	M16	206	250	M12	123	M16	206
-	-	-	300	M12	123	M16	206
-	-	-	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:

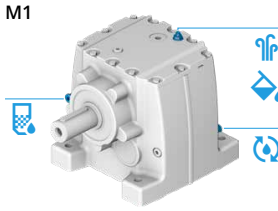
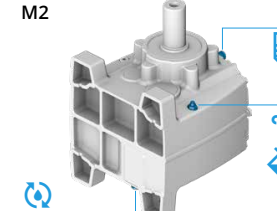
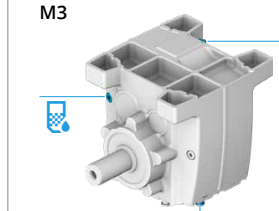
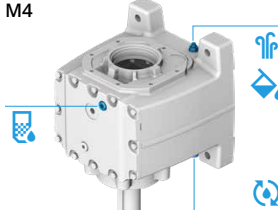
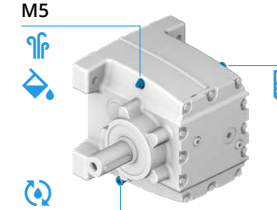
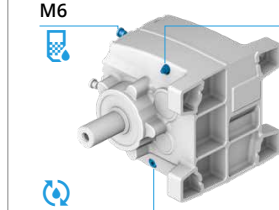
- Remove transport locking device.
- Tighten with 18 Nm according to the mounting position.

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
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH230Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H3000	4.5 ... 2948.9	60 x 120	300, 350, 450

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
60 x 120	M20	415	300	M12	123	M20	415
-	-	-	350	M16	302	M20	415
-	-	-	450	M16	302	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:

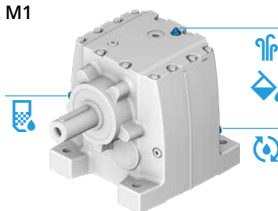
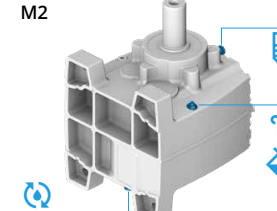
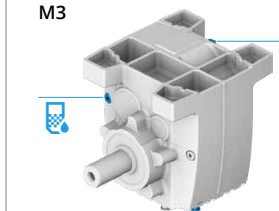
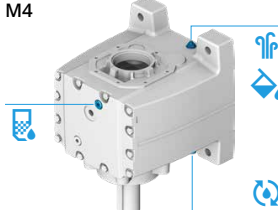
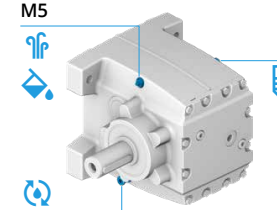
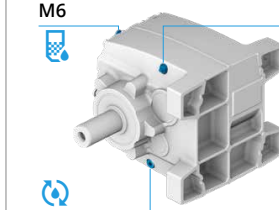
- Remove transport locking device.
- Tighten with 25 Nm according to the mounting position.

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
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH250Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H5000	4.8 ... 372.8	70 x 140	350, 450

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
70 x 140	M20	415	350	M16	302	M24	750
-	-	-	450	M16	302	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:

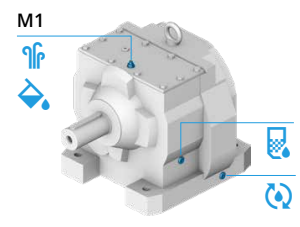
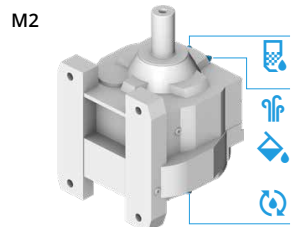
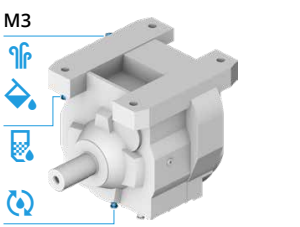
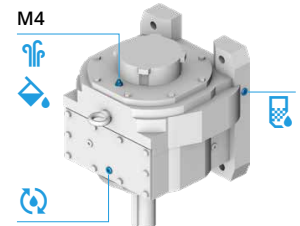
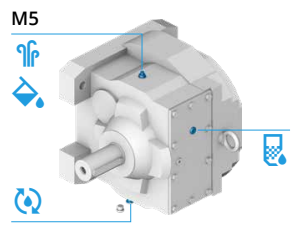
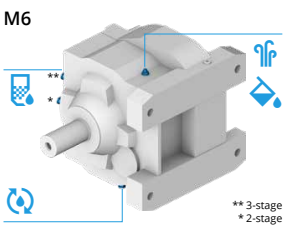
- Remove transport locking device.
- Tighten with 18 Nm according to the mounting position.

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 25 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 25 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 	** 3-stage * 2-stage

Mechanical installation

General information

Mounting
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH280Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H8000	4.1 ... 328.4	90 x 170	450, 550

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
90 x 170	M24	714	450	M16	302	M30	1500
-	-	-	550	M16	302	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:

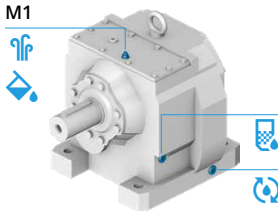
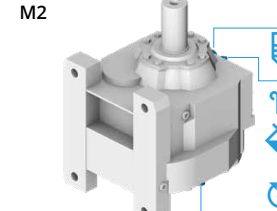
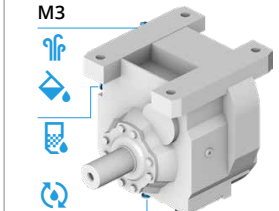
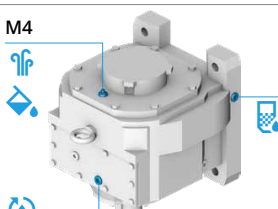
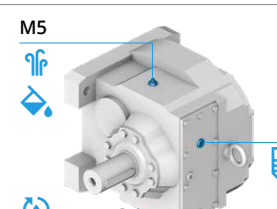
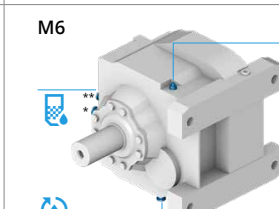
- Remove transport locking device.
- Tighten with 25 Nm according to the mounting position.

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 	** 3-stage * 2-stage

Mechanical installation

General information

Mounting
G50AH045Mxxxxxxx

Mounting
G50BH110Mxxxxxxx

Mounting
G50BH114Mxxxxxxx

Mounting
G50BH121Mxxxxxxx

Mounting
G50BH132Mxxxxxxx

Mounting
G50BH145Mxxxxxxx

Mounting
G50BH160Mxxxxxxx

Mounting
G50BH185Mxxxxxxx

Mounting
G50BH215Mxxxxxxx

Mounting
G50BH230Mxxxxxxx

Mounting
G50BH250Mxxxxxxx

Mounting
G50BH280Mxxxxxxx

Mounting
G50BH314Mxxxxxxx

Mounting of G50BH314Mxxxxxxx helical geared motor

Mounting dimensions:

	Ratios	Shafts	Flange
		Solid shafts	
		[mm]	[mm]
g500-H14000	4.6 ... 327.2	110 x 210	450, 550

Mounting

Transmission elements:

- Only mount or dismount with suitable devices.
- 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.

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							
[mm]		[Nm]	[mm]		[Nm]		[Nm]
120 x 210	M24	714	450	M16	302	M36	2500
-	-	-	550	M16	302	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:

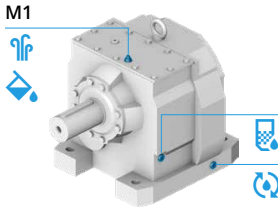
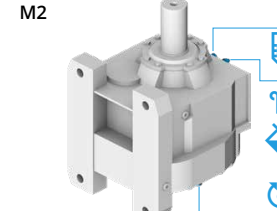
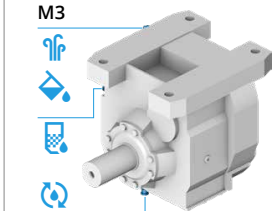
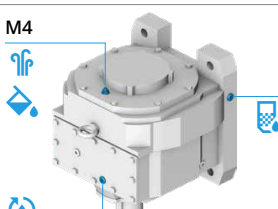
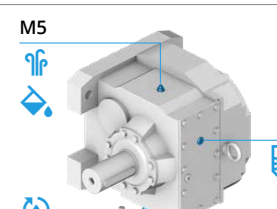
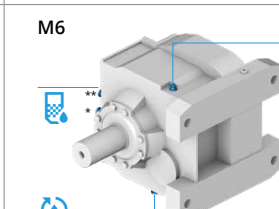
- Remove transport locking device.
- Tighten with 25 Nm according to the mounting position.

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 	** 3-stage * 2-stage

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 ≤ 1 k Ω 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.



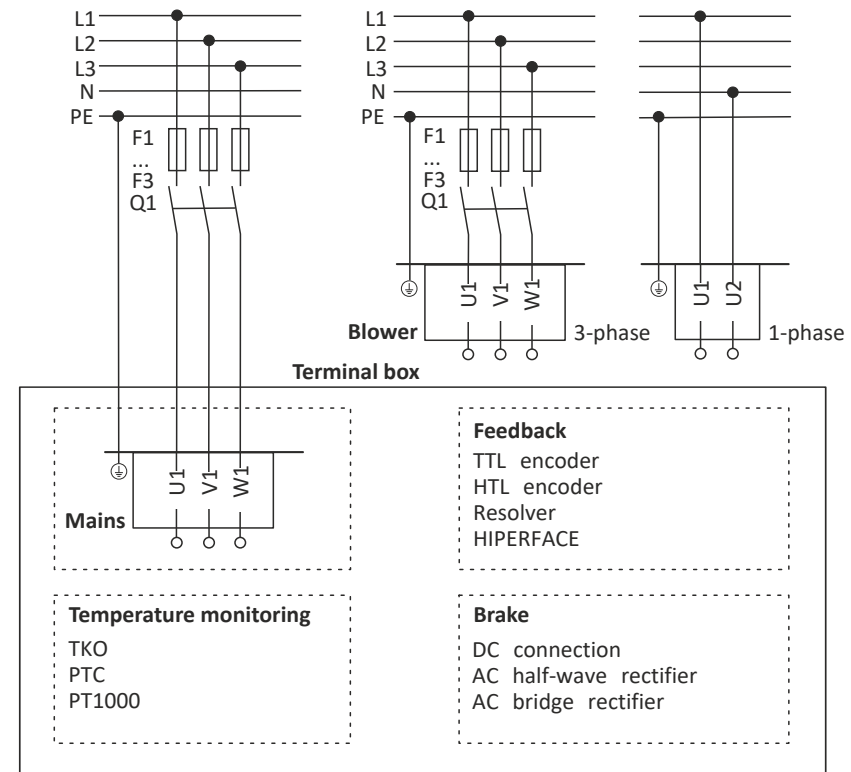
Risk of injury and burns due to dangerous voltage.

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

Connection Terminal	Brake																	
	DC						AC, half-wave rectifier						AC, bridge rectifier					
	+			-			L1			N			L1			N		
	BD1		 [Nm]	BD2		 [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

SinCos incremental encoder										TTL/HTL incremental encoder								
Signal	+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

Resolver									HIPERFACE absolute value encoder								
Signal	+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.

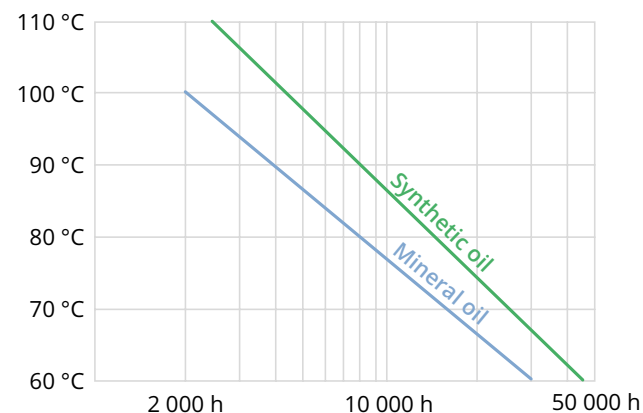
- Only perform any work on the geared motor when it is de-energized.
- Allow surfaces to cool.
- Make geared motor load-free or secure acting loads.
- Protect geared motor from penetrating foreign bodies.

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.
Malfunction of the brake	Cover/flange screws loose	Check that the fixing screws are tight. Continue monitoring gearbox
	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.

