SEW EURODRIVE

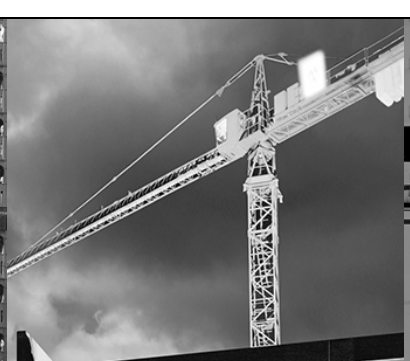
Assembly and Operating Instructions

Gear Units for Electrified Monorail Systems

HW.., HS.., HK..

Edition 12/2011

17080819 / EN

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Contents

1 General Information

1.1 How to use this documentation

The documentation is an integral part of the product and contains important information on operation and service. The documentation is written for all employees who assemble, install, startup, and service this product.

The documentation must be accessible and legible. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

1.2 Structure of the safety notes

1.2.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes, warnings regarding potential risks of damage to property, and other notes.

Signal word	Meaning	Consequences if disregarded
⚠ **DANGER**	Imminent danger	Severe or fatal injuries
⚠ **WARNING**	Possible dangerous situation	Severe or fatal injuries
⚠ **CAUTION**	Possible dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the drive system or its environment
INFORMATION	Useful information or tip: Simplifies the handling of the drive system.	

1.2.2 Structure of the section-related safety notes

Section-related safety notes do not apply to a specific action, but to several actions pertaining to one subject. The used symbols indicate either a general or a specific hazard.

This is the formal structure of a section-related safety note:

⚠ SIGNAL WORD

Type and source of danger.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the danger.

1.2.3 Structure of the embedded safety notes

Embedded safety notes are directly integrated in the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

- ⚠ **SIGNAL WORD** Nature and source of hazard.

  Possible consequence(s) if disregarded.

  – Measure(s) to prevent the danger.

1.3 Rights to claim under warranty

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the documentation. Read the documentation before you start working with the unit!

1.4 Exclusion of liability

You must comply with the information contained in this documentation to ensure safe operation of the units and to achieve the specified product characteristics and performance requirements. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of the documentation. In such cases, any liability for defects is excluded.

1.5 Copyright

1.6 Product names and trademarks

The brands and product names contained within this publication are trademarks or registered trademarks of the titleholders.

2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation or if you require further information, please contact SEW-EURODRIVE.

2.1 Preliminary information

The following safety notes are primarily concerned with the use of the following components: Gear Units for Electrified Monorail Systems HW.., HS.., HK... If using gearmotors, please also refer to the safety notes in the corresponding operating instructions for:

- Motors

Also observe the supplementary safety notes in the individual sections of this documentation.

2.2 General information

⚠ WARNING

During operation, the motors and gearmotors can have live, bare (in the event of open connectors/terminal boxes) and movable or rotating parts as well as hot surfaces, depending on their enclosure.

Severe or fatal injuries.

- All work related to transportation, storage, installation, assembly, connection, startup, maintenance and repair may only be carried out by qualified personnel, in strict observance of:
  - The relevant detailed operating instructions
  - The warning and safety signs on the motor/gearmotor
  - All other project planning documents, operating instructions and wiring diagrams related to the drive
  - The specific regulations and requirements for the system
  - The national/regional regulations governing safety and the prevention of accidents
- Never install damaged products
- Immediately report any damage to the shipping company

Removing the required protection cover or the housing without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property.

This documentation provides additional information.

2.3 Target group

Any mechanical work may only be performed by adequately qualified personnel. Qualified staff in the context of this documentation are persons familiar with the design, mechanical installation, troubleshooting and servicing of the product who possess the following qualifications:

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately qualified electricians. Qualified electricians in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting and servicing of the product who possess the following qualifications:

- Training in electrical engineering, e.g. as an electrician, electronics or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in further areas of transportation, storage, operation and waste disposal must only be carried out by persons who are trained appropriately.

All qualified personnel must wear appropriate protective clothing.

2.4 Designated use

The are intended for industrial systems.

When installed in machines, startup (i.e. start of designated operation) is prohibited until it is determined that the machine complies with the local laws and directives. In the individual area of application, you must especially observe the Machinery Directive 2006/42/EC as well as the EMC Directive 2004/108/EC. The EMC test specifications EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6 and EN 61000-6-2 form the basis for this.

Use in potentially explosive atmospheres is prohibited unless specifically designated otherwise.

Air-cooled motors/gearmotors are dimensioned for ambient temperatures of -20 °C to +40 °C and installation altitudes ≤ 1000 m above sea level. Any differing specifications on the nameplate must be observed. The ambient conditions must comply with all the specifications on the nameplate.

2.5 Other applicable documentation

2.5.1 Gear units for electrified monorail systems

Observe the following additional documentation:

- Catalog "Gear Units for Electrified Monorail Systems HW..., HS..., HK..."
- Operating instructions of the applicable options
- Operating instructions "AC motors DR.71 -225, 315" for gearmotors
- Operating instructions for installed MOVIMOT®, if applicable

2.6 Transport/storage

Inspect the shipment for any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately. It may be necessary to preclude startup.

Tighten the eyebolts securely. They are designed to only carry the weight of the motor/gearmotor; do not attach any additional loads.

The built-in lifting eyebolts comply with DIN 580. Always observe the loads and regulations listed in this standard. If the gearmotor is equipped with two eyebolts, then both should be used for transportation. In this case, the tension force vector of the slings must not exceed a 45° angle according to DIN 580.

Use suitable, sufficiently rated handling equipment if required. Reattach these in the case of further transportation.

Store the motor/gearmotor in a dry, dust-free environment if it is not to be installed straight away. You must not store the motor/gearmotor outdoors or on the fan guard. The motor/gearmotor can be stored for up to 9 months without requiring any special measures before startup.

2.7 Installation

Make sure that the supports are even, the foot and flange mounting is correct and if there is direct coupling, align with precision. Resonances between the rotational frequency and the double network frequency caused by the structure are to be avoided. Release the brake (if installed), turn rotor manually, check for unusual grinding noise. Check the direction of rotation in decoupled status.

Only install or remove belt pulleys and couplings using suitable devices (heat up) and cover with a touch guard. Avoid improper belt tension.

Make the pipe connections that may eventually be required. Mounting positions with shaft ends pointing upwards should be equipped with a cover to prevent foreign objects from falling into the fan. Ensure that ventilation openings are not obstructed and that used air, including air from adjacent units, cannot be drawn in again straight away.

Observe the notes in the "Mechanical Installation" section.

2.8 Startup/operation

Check the oil level before startup as described in chapter Inspection/Maintenance (page 26).

Check the correct direction of rotation. Listen out for unusual grinding noises as the shaft rotates.

Secure keys for test mode without output elements. Do not deactivate monitoring and protection equipment even in test mode.

Switch off the gearmotor if in doubt whenever changes occur in relation to normal operation (e.g. increased temperature, noise, vibration). Determine the cause and contact SEW-EURODRIVE, if required.

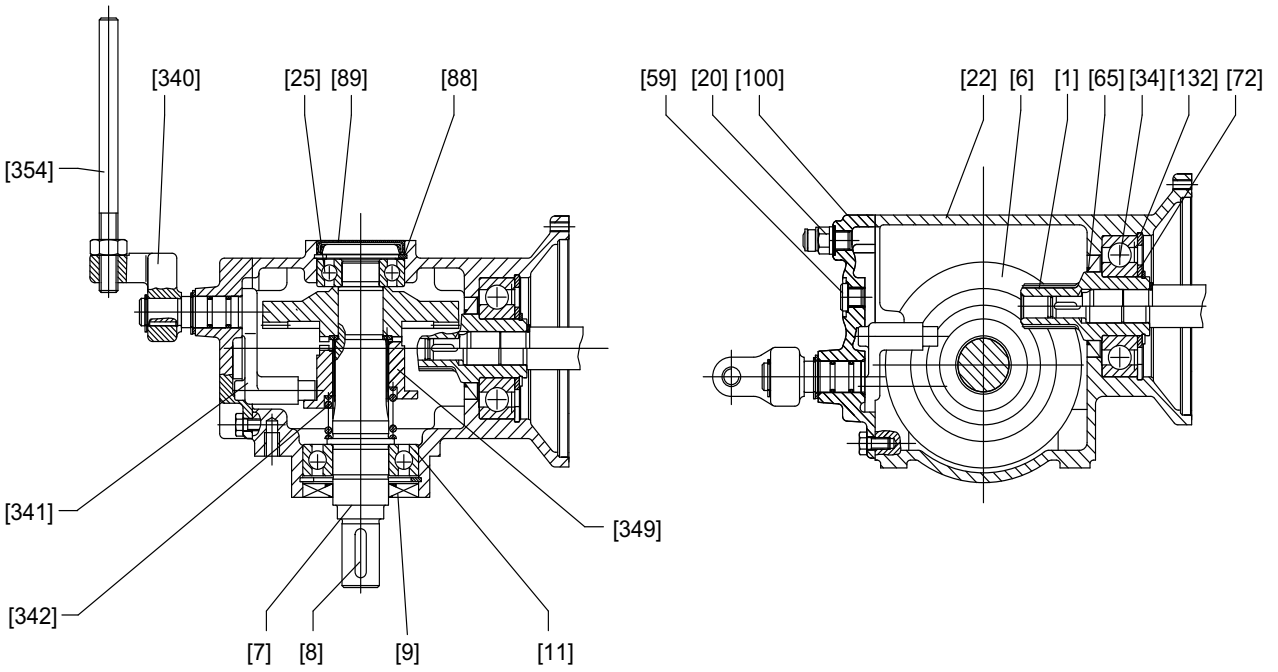
3 Gear Unit Structure

INFORMATION

The following figures are block diagrams. They help you to assign components to the spare parts list. Discrepancies may occur depending on the gear unit size and version.

3.1 Basic structure of SPIROPLAN® gear units HW10 and HW30

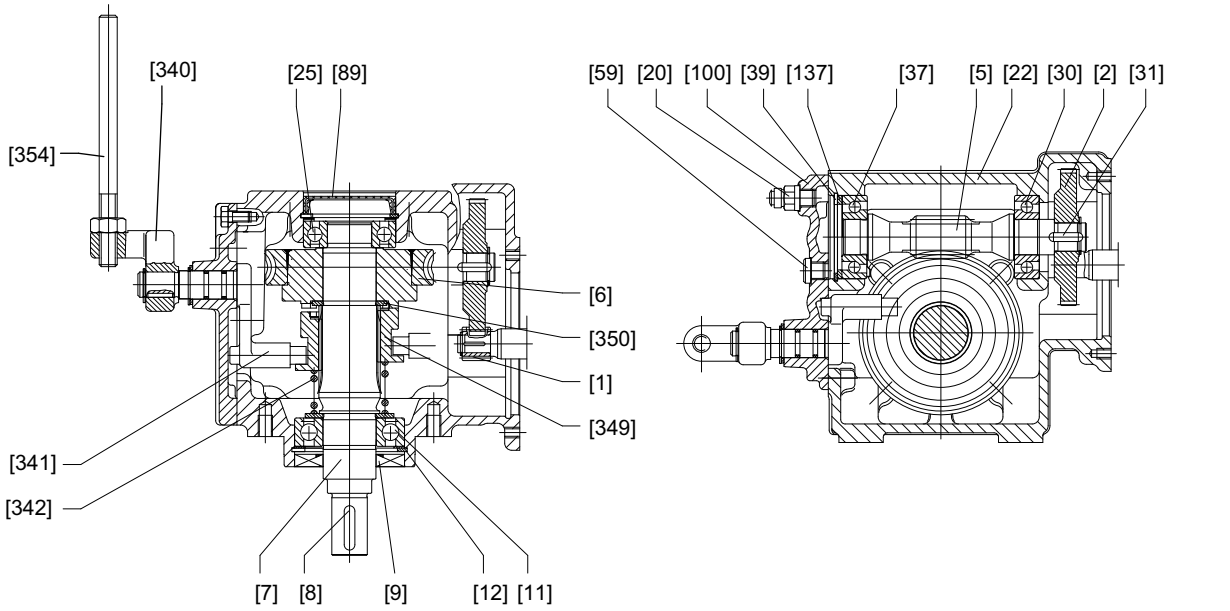
The following figure illustrates the structure of a SPIROPLAN® gear unit:



[1] Pinion
[6] Gear
[7] Output shaft
[8] Key
[9] Oil seal
[11] Grooved ball bearing
[20] Breather valve (only HW30)
[22] Gear unit housing
[34] Deep groove ball bearing (only HW30)
[59] Screw plug (only HW30)
[65] Oil seal
[72] Supporting ring (only HW30)
[88] Retaining ring
[89] Closing cap
[100] Inspection cover
[132] Retaining ring (only HW30)
[340] Operating lever (only HW30)
[341] Release lever (only HW30)
[342] Compression spring
[349] Driver
[354] Actuating rod

3.2 Basic structure helical-worm gear units HS40 – HS60

The following figure illustrates the structure of a helical-worm gear unit:



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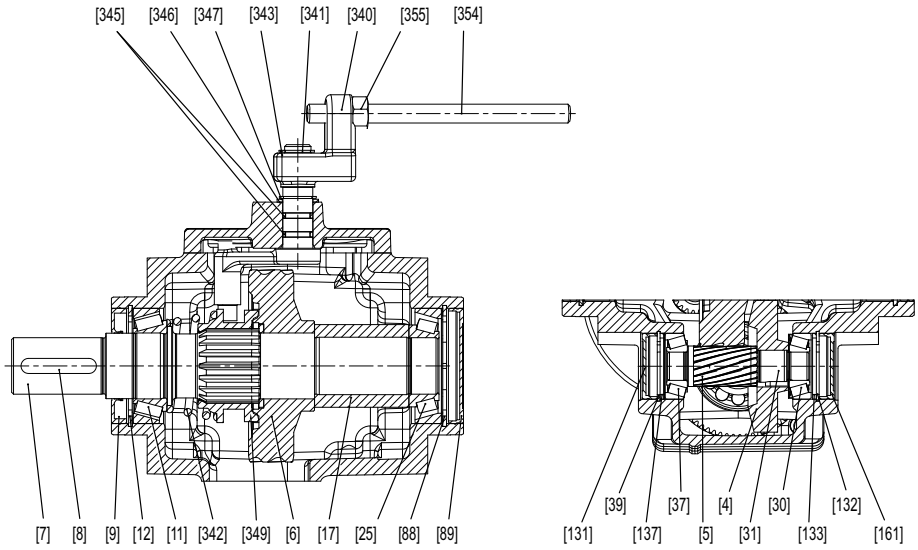
[1] Pinion
[2] Gear
[5] Worm gear
[6] Worm gear
[7] LSS
[8] Key
[9] Oil seal
[11] Grooved ball bearing
[12] Retaining ring
[20] Breather valve
[22] Gear unit housing
[25] Grooved ball bearing
[30] Angular contact ball bearing
[31] Key
[37] Angular contact ball bearing
[39] Retaining ring
[59] Screw plug
[89] Closing cap
[100] Inspection cover
[137] Supporting ring
[340] Operating lever
[341] Release lever
[342] Compression spring
[349] Driver
[350] Supporting ring
[354] Actuating rod

3.3 Basic structure of helical-bevel gear units HK37

The following figure illustrates the structure of a helical-bevel gear unit:

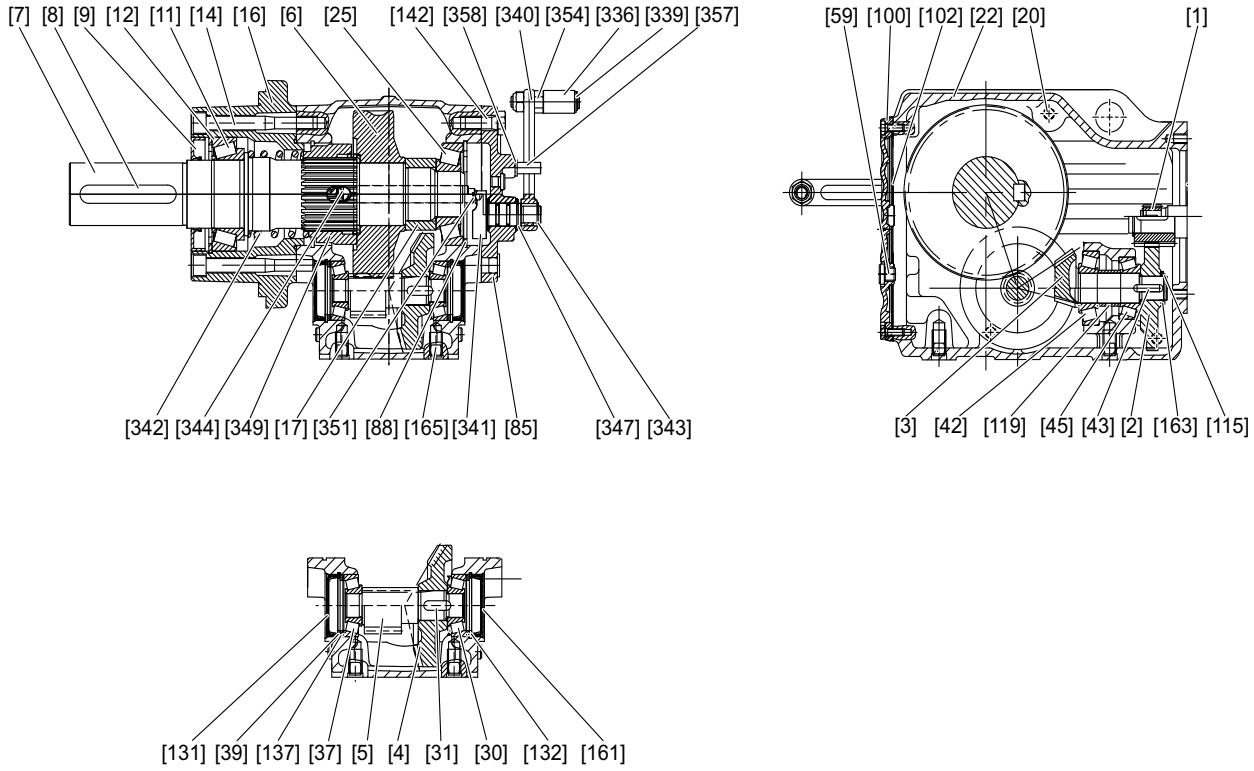


4886539147

[4] Gear
[5] Pinion shaft
[6] Gear
[7] Output shaft
[8] Key
[9] Oil seal
[11] Taper roller bearings
[12] Retaining ring
[17] Spacer tube
[25] Taper roller bearings
[30] Taper roller bearings
[31] Key
[37] Taper roller bearings
[39] Retaining ring
[88] Retaining ring
[89] Closing cap
[131] Closing cap
[132] Retaining ring
[133] Supporting ring
[137] Supporting ring
[161] Closing cap
[340] Operating lever
[341] Release lever
[342] Compression spring
[343] Retaining ring
[345] O-ring
[346] Supporting ring
[347] Retaining ring
[349] Driver
[354] Actuating rod
[355] Hex nut

3.4 Basic structure helical-bevel gear units HK40 – HK60

The following figure illustrates the structure of a helical-bevel gear unit:



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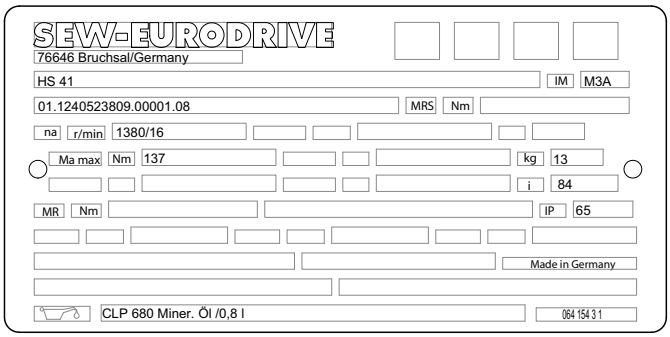
[1] Pinion
[2] Gear
[3] Pinion shaft
[4] Gear
[5] Pinion shaft
[6] Gear
[7] Output shaft
[8] Key
[9] Oil seal
[10] Oil seal
[11] Taper roller bearings
[12] Retaining ring
[14] Cap screw
[16] Output flange
[17] Spacer tube
[20] Breather valve
[22] Gear unit housing
[25] Taper roller bearings
[30] Taper roller bearings
[31] Key
[37] Taper roller bearings
[39] Retaining ring
[42] Taper roller bearings
[43] Key
[45] Taper roller bearings
[59] Screw plug
[85] Sealing flange
[88] Retaining ring
[100] Inspection cover
[102] Seal
[115] Retaining ring
[119] Spacer tube
[131] Closing cap
[132] Retaining ring
[137] Supporting ring
[142] Hexagon screw
[161] Closing cap
[163] Supporting ring
[336] Actuating roller
[339] Retaining ring
[340] Operating lever
[341] Trigger cam
[342] Compression spring
[343] Retaining ring
[344] Switch pin
[347] Retaining ring
[349] Driver
[351] Switch pin
[354] Stud bolt
[357] Setscrew
[358] Closing plug

3.5 Nameplate/unit designation

3.5.1 Nameplate

The following figure shows an example of a nameplate for helical-worm gear units:



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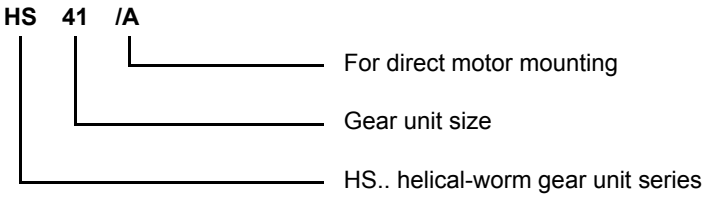
i		= Gear unit reduction ratio
IM		= Mounting position
IP..		= Enclosure
n_a	[rpm]	= output speed
M_a	[Nm]	= Output torque

3.5.2 Type designation

The following diagram shows a type designation example:



4 Mechanical Installation

4.1 Required tools/resources

- Set of wrenches
- Mounting device
- Compensation elements (shims, spacing rings)
- Fasteners for input and output elements
- Lubricant (e.g. NOCO® Fluid)

Standard parts are not included in the delivery

4.1.1 Installation tolerances

Shaft end	Flanges
Diameter tolerance in accordance with DIN 748 • ISO k6 for solid shafts with Ø ≤ 50 mm • ISO m6 for solid shafts with Ø > 50 mm • ISO H7 for hollow shafts • Center bore in accordance with DIN 332, shape DR	Centering diameter according to DIN 42948 • ISO j6 with b1 ≤ 230 mm • ISO h6 with b1 > 230 mm

4.2 Installation requirements

⚠ CAUTION

Risk of injury due to protruding gear unit parts.

Minor injuries.

- Keep a sufficient safety distance to the gear unit/gearmotor.

NOTICE

Damage to the gear unit/gearmotor due to improper installation.

Possible damage to property

- Do closely observe the notes in this chapter.

Check that the following conditions have been met:

- The entries on the nameplate of the gearmotor match the voltage supply system.
- The drive has not been damaged during transportation or storage.
- Ensure that the following requirements have been met:

  For standard gear units:

  – Ambient temperature according to the technical documentation, nameplate and lubricant table in section "Lubricants" (page 46).

  – No harmful oils, acids, gases, vapors, radiation etc. in the vicinity

  For special designs:

  – The drive is designed in accordance with the ambient conditions. Observe the information on the nameplate.

  For HS.. helical-worm gear units / SPIROPLAN® HW.. gear units:

  – No large external mass moments of inertia which could exert a retrodriving load on the gear unit.

    [for η' (retrodriving) = 2 – 1/η < 0.5 self-locking]

    (See also section "Self-locking" (page 25)
- You must clean the output shafts and flange surfaces thoroughly to ensure they are free of anti-corrosion agents, contamination or similar. Use a commercially available solvent. Do not expose the sealing lips of the oil seals to the solvent – damage to the material.
- When the drive is installed in abrasive ambient conditions, protect the output end oil seals against wear.

4.3 Installing the gear unit

The gear unit or gearmotor is only allowed to be installed in the specified mounting position. Observe the information on the nameplate.

The support structure must have the following characteristics:

- Level
- Vibration damping
- Torsionally rigid

For the maximum permitted flatness defect for flange mounting, refer to the following list (approximate values with reference to DIN ISO 1101):

- HW10: max. 0.2 mm
- HW30: max. 0.2 mm

- HS40/41: max. 0.2 mm
- HS50: max. 0.4 mm
- HS60: max. 0.4 mm

- HK30: max. 0.2 mm
- HK37: max. 0.2 mm
- HK40: max. 0.4 mm
- HK50: max. 0.4 mm
- HK60: max. 0.4 mm

Do not tighten the housing legs and mounting flanges against one another and ensure that you comply with the permitted overhung and axial loads! Observe chapter "Project Planning" in the Gear unit/gearmotor catalog for calculating the permitted overhung and axial loads.

Secure gearmotors using quality 8.8 screws.

INFORMATION

When installing the gear unit, make sure that the oil level and drain plugs as well as the breather plugs are easily accessible!

At the same time, also check that the oil fill corresponds to the specifications for the intended mounting position (chapter "Lubricant fill quantities" (page 49) or refer to the information on the nameplate). The gear units are filled with the required oil volume at the factory. There may be slight deviations at the oil level plug as a result of the mounting position, which are permitted within the manufacturing tolerances.

Adjust the lubricant fill volumes and the position of the breather valve accordingly in the event of a change of mounting position. Observe chapter "Lubricant fill quantities" (page 49) and chapter "Mounting positions" (page 37).

Please contact our SEW customer service if you change the mounting position of size HS40 – HS60 helical-worm gear units to mounting position M2 or M3.

Use plastic inserts (2 – 3 mm thick) if there is a risk of electrochemical corrosion between the gear unit and the driven machine. The material used must have an electrical leakage resistance < 10^9 Ω. Electrochemical corrosion can occur between various metals, for example, cast iron and high-grade steel. Also fit the bolts with plastic washers. Ground the housing additionally – use the grounding bolts on the motor.

4.3.1 Tightening torques for retaining screws

Mount the gearmotors with the following tightening torques:

Screw/nut	Tightening torque screw / nut Strength class 8.8 [Nm]
M5	6
M6	10
M8	25
M10	48
M12	86
M16	210

4.3.2 Gear unit mounting and tightening torques

Gear unit with B14 flange

The following table shows the thread sizes with respective tightening torques of the gear units with B14 flange depending on the gear unit type and size:

Gear unit type	Flange Ø [mm]	Screw	Tightening torque [Nm]
HW10	80	M6	10
HW30	85 x 85	M8	25
HS40/41	115		
HK30	120	M8	25
HK37	120	M8	25
HK40	200	M10	48
	250	M12	86
HS50	200	M10	48
	250	M12	86
HS60	250	M12	86
HK50	250	M16	210
HK60	250	M16	210

4.3.3 Installation in damp locations or in the open

Drives are supplied in corrosion-resistant versions with an according surface protection coating for use in damp areas or outdoors. Repair any damage to the paint work (e.g. on the breather valve or the eyebolts).

4.3.4 Gear unit venting

The following gear units do not require a breather:

- SPIROPLAN® HW10, HW30 gear units in mounting positions M3, M4 and M5
- HS40/41 helical-worm gear units in mounting positions M5

SEW-EURODRIVE supplies all other gear units with the breather valve installed and activated according to the particular mounting position.

Exceptions:

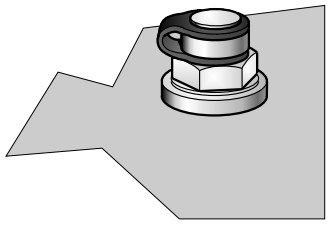
1. SEW-EURODRIVE supplies the following gear units with a screw plug on the breather hole provided:
   - Pivoted mounting positions, if possible
   - Gear units for mounting on a slant

   The breather valve is located in the motor terminal box. Before startup, you must replace the highest screw plug with the provided breather valve.
2. **Enclosed gear units** are supplied without a breather valve.

Activating the breather valve

Check whether the breather valve is activated. If the breather valve has not been activated, you must remove the transport fixture from the breather valve before starting up the gear unit!

1. Breather valve with transport fixture



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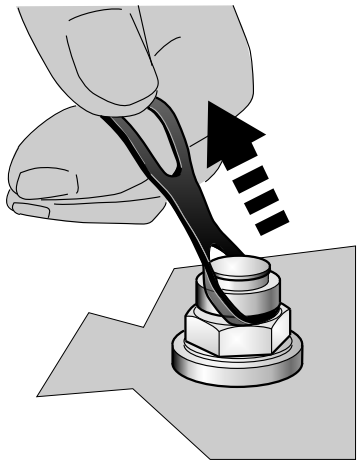
2. Remove transport fixture



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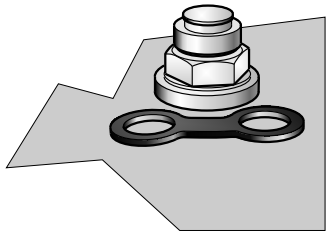
3. Activated breather valve



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4.3.5 Painting gear units

Observe the following points when painting the gear units:

NOTICE

Breather valves and oil seals may be damaged during painting or re-painting.

Potential damage to property.

- Thoroughly cover the breather valves and the sealing lip of the oil seals with strips prior to painting.
- Remove the strips after painting.

4.4 Assemble gear unit

4.4.1 Assembling input and output elements

NOTICE

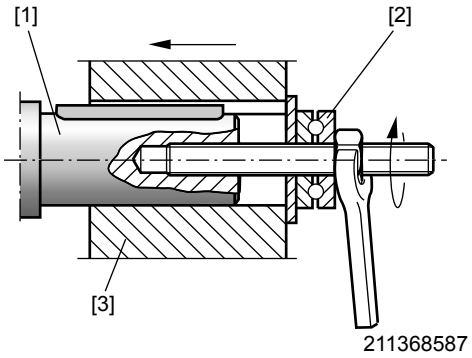
Bearing, hosing or shaft may be damaged due to improper assembly.

Possible damage to property

- Only assemble the input and output components such as carrying wheels with a mounting device. Use the center bore and the thread on the shaft end for positioning.
- Never force carrying wheels onto the shaft end by hitting them with a hammer.

Assembly with mounting device

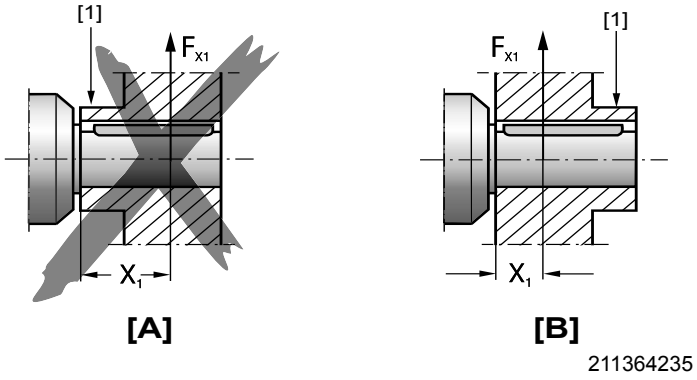
The following figure shows a mounting device for installing couplings or hubs on gear unit or motor shaft ends. Should you be able to tighten the screw without any problems, you may not need the thrust bearing on the mounting device.



[1] Gear shaft end
[2] Thrust bearing
[3] Coupling hub

Optimal use of overhung loads

In order to use the maximum possible overhung load/wheel load of the gear unit, assemble the carrying wheels according to figure **B** if possible.



[1] Hub

[A] Incorrect
[B] Correct

INFORMATION

Applying lubricant to the output element makes assembly easier.

⚠ CAUTION

Input and output components such as carrying wheels are in fast motion during operation.

Risk of jamming and crushing.

- Cover input and output components with a touch guard.

Mechanical coupling

By actuating the clutch, it is possible to mechanically separate the drive from the motor which continues to turn.

NOTICE

Destruction of the clutch.

Possible damage to the unit.

- Engage the clutch at low output speeds when using pole-changing motors and motors controlled by a frequency inverter.
- Disengage the clutch of electrified monorail systems for heavy loads only without load and not under strain.

4.4.2 Assembling the actuating rod

Screw the enclosed actuating rod of SPIROPLAN® gear units HW10, HW30, helical-bevel gear unit HK37, as well as helical worm gear units HS40/41 into the operating lever and secure it with a lock nut.

5 Startup

5.1 Checking the oil level

Before startup, make sure that the oil level corresponds to the mounting position. Observe section "Checking the oil level and changing the oil" (page 28).

5.2 HS.. helical-worm and SPIROPLAN® HW.. gear units

INFORMATION

Note: The direction of rotation of the output shaft in series HS40/41 helical-worm gear units has been changed from CW to CCW; this is different from the SHB4 series. Change in direction of rotation: Swap two motor feeder cables.

5.2.1 Run-in period

SPIROPLAN® HW.. and HS.. helical-worm gear units require a run-in period of at least 48 h before reaching their maximum efficiency. A separate run-in period applies for each direction of rotation if the gear unit is operated in both directions of rotation. The table shows the average power reduction during the run-in period.

HS.. helical-worm gear unit

HS.. helical-worm gear unit		
	i range	**η reduction**
1-start	About 55 ... 220	About 12 %
2-start	About 20 ... 75	About 6 %
5-start	About 6 ... 25	About 3 %

SPIROPLAN® HW.. gear units

SPIROPLAN® HW.. gear units		
	i range	**η reduction**
1-start	approx. 39 ... 75	About 15 %
2-start	approx. 19.5 ... 32.5	About 10 %
3-start	About 14.33 ... 16.33	About 8 %
4-start	About 10.25	About 5 %
5-start	About 8.2	About 3 %

5.2.2 Self-locking

SPIROPLAN® HW.. gear units (1 and 2-start, i > 16.5) and the HS.. helical-worm gear unit (1-start, i > 55) are statically self-locking. (1-start, i > 55) are statically self-locking. This means that the drive cannot be moved when the clutch is engaged even if the brake is released. In the event of a malfunction, positioning or moving the trolley is only possible when the clutch is disengaged.

5.3 HK.. helical-bevel gear unit

No special startup instructions apply for HK.. helical-bevel gear units providing the gear units have been installed in accordance with chapter 'Mechanical Installation' (page 16).

5.4 Clutch

The integrated, positive clutch enables the power flow between the gear unit final gear and the output shaft to be separated.

The clutch can be engaged

- when the motor and the output shaft are stationary
- when the motor is running in positioning or trailing mode (gear unit final gear and output shaft are turning approximately synchronously)
- at small output speeds
  - when pole-changing motors are operated with a high number of poles
  - at low frequencies (10 – 15 Hz) when using a frequency inverter

NOTICE

Destruction of the clutch.

Possible damage to the unit.

- Engage the clutch at low output speeds when using pole-changing motors and motors controlled by a frequency inverter.
- Disengage the clutch of electrified monorail systems for heavy loads only without load and not under strain.

6 Inspection/maintenance

The following gear unit is lubricated for life:

- SPIROPLAN® HW.. gear units

Depending on external factors, the surface/corrosion protection might have to be repaired or renewed.

The following inspection and maintenance intervals apply for all the other gear units.

6.1 Preliminary work regarding gear unit inspection/maintenance

Observe the following notes before you start with the inspection/maintenance work.

⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Disconnect the gearmotor from the power supply before starting work and protect it against unintentional re-start.

⚠ WARNING

Danger of burns due to hot gear unit and hot gear unit oil.

Severe injuries.

- Let the gear unit cool down before you begin with your work.
- Only remove the oil level and oil drain plug very carefully.

NOTICE

Filling in the wrong oil may result in significantly different lubricant characteristics.

Potential damage to property

- Do not mix different synthetic lubricants and do not mix synthetic with mineral lubricants.
- The standard lubricant is mineral oil, except for SPIROPLAN® HW.. gear units. .

INFORMATION

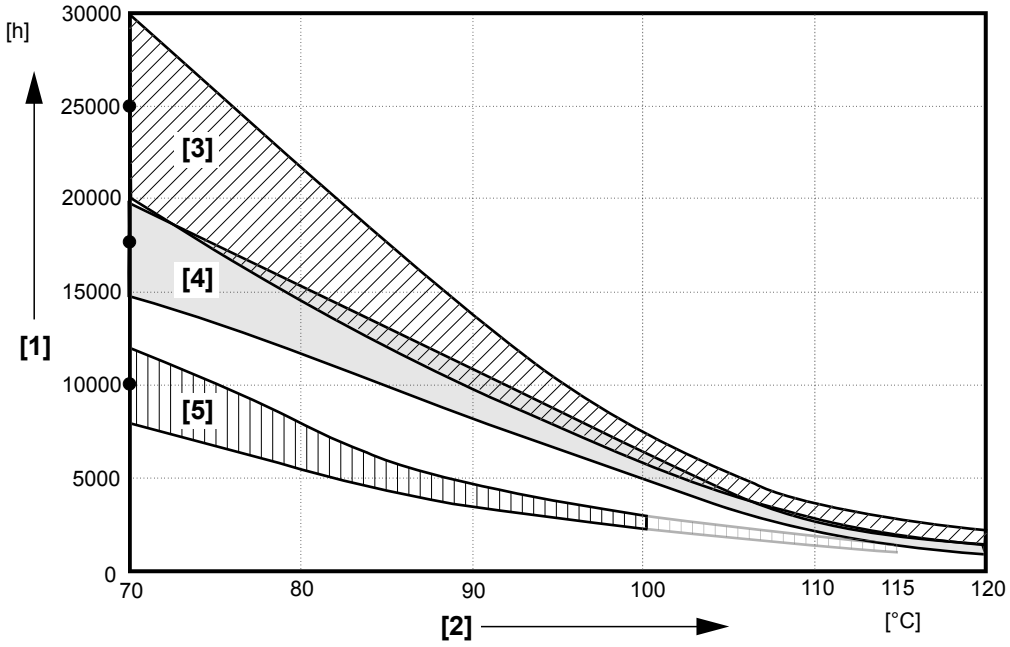
The position of the oil level plug, oil drain plug and the breather valve depends on the mounting position. Refer to the diagrams of the "mounting positions" (page 37).

6.2 Inspection and maintenance intervals

Time interval	Required maintenance/inspection steps
• Every 3000 operating hours, at least every 6 months	• Check oil and oil level • Check running noise for possible bearing damage • Visually check the seals for leakage • For gear units with a torque arm: Check and replace the rubber buffers, if necessary
• Depending on the operating conditions (see illustration below), every 3 years at the latest • according to oil temperature	• Change mineral oil
	• Replace anti-friction bearing grease (recommendation) • Replace oil seal (do not install it in the same track)
• Depending on the operating conditions (see illustration below), every 5 years at the latest • according to oil temperature	• Change synthetic oil
	• Replace anti-friction bearing grease (recommendation) • Replace oil seal (do not install it in the same track)
• Varying (depending on external factors)	• Touch up or renew the surfaces/anticorrosion coating

6.3 Lubricant change intervals

The following figure shows the change intervals for standard gear units under normal environmental conditions. Change the oil more frequently when using special versions subject to more severe / aggressive environmental conditions!



[1] Operating hours

[2] Sustained oil bath temperature

- Average value per oil type at 70° C

[3] CLP PG

[4] CLP HC / HCE

[5] CLP / HLP / E

6.4 Inspection and maintenance work on the gear unit

6.4.1 Checking the oil level and changing the oil

The procedure when checking the oil level and changing the oil depends on the following factors:

- Gear unit type
- Size
- Mounting position

Observe the references to the respective sections as well as the following table. Refer to chapter "Mounting Positions (page 37)" for notes on the mounting positions. You cannot check the oil level of gear units in pivoted mounting position. The gear units are delivered with the correct oil level. Observe the designations and fill quantities on the nameplate if you have to change the oil.

Code letter	Section "Checking the oil level and changing the oil"	Reference
A:	• Helical-bevel gear units HK30 – HK60 • Helical-worm gear units HS50/60 **With oil level plug** • SPIROPLAN® HW30 gear unit **In mounting positions M1, M2, M3, M5 and M6 with oil level plug** • Helical-worm gear units HS40/41 **In mounting positions M1, M2, M3, M5 and M6 with oil level plug**	(page 29)
B:	• Helical-worm gear units HS40/41 • SPIROPLAN® HW30 gear unit **In mounting position M4 with oil level plug**	(page 31)
C:	• SPIROPLAN® HW10 gear unit **In mounting positions M1, M2, M3, M5 and M6 with cover plate**	(page 33)

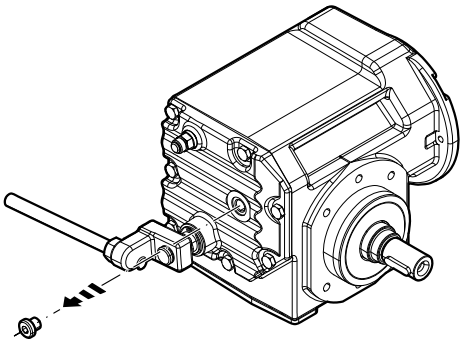
Series	Gear units	Code letter for section "Checking the oil level and changing the oil"					
		M1	M2	M3	M4	M5	M6
HK	**HK30 – HK60**	A				–	
HS	**HS40/HS41**	A			B	A	
	HS50/HS60	A				–	
HW	**HW10**	C					
	HW30	A			B	A	

6.4.2 A: HK.., HS50/60, HW30 in mounting position M1, M2, M3, M5 and M6 and HS40/41 in mounting position M1, M2, M3, M5 and M6 with oil level plug

Checking the oil level via the oil level plug

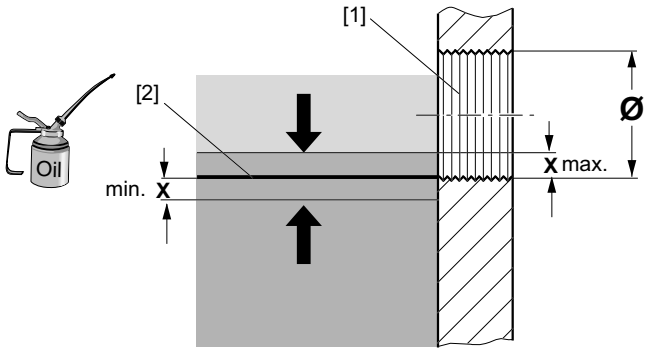
Proceed as follows to check the oil level of the gear unit:

1. Observe the notes in section "Preliminary work regarding gear unit inspection/maintenance" (page 26).
2. Set up the gear unit in M1 mounting position.
3. Slowly remove the oil level plug (see following figure). Small amounts of oil may leak out.



1599831563

4. Check the oil level according to the following figure.



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[1] Oil level bore
[2] Ideal oil level

Ø oil level bore	Min and max fill level = x [mm]
M10 x 1	1.5

5. If the oil level is too low, fill in new oil of the same type via the oil level bore until the oil level reaches the lower edge of the bore.
6. Re-insert the oil level plug.

Checking the oil via the oil level plug

Proceed as follows to check the oil of the gear unit:

1. Observe the notes in section "Preliminary work regarding gear unit inspection/maintenance" (page 26).
2. Remove a little oil at the oil level plug.
3. Check the oil consistency.
   - Viscosity
   - If you can see that the oil is heavily contaminated, we recommend that you change the oil even if this is outside the service intervals specified in "Inspection and maintenance intervals" (page 27).
4. Check the oil level. See previous section.

Changing the oil via the oil level plug

⚠ WARNING

Danger of burns due to hot gear unit and hot gear unit oil.

Severe injuries.

- Let the gear unit cool down before you begin with your work.
- However, the gear unit must still be warm otherwise the high viscosity of excessively cold oil will make it harder to drain the oil properly.

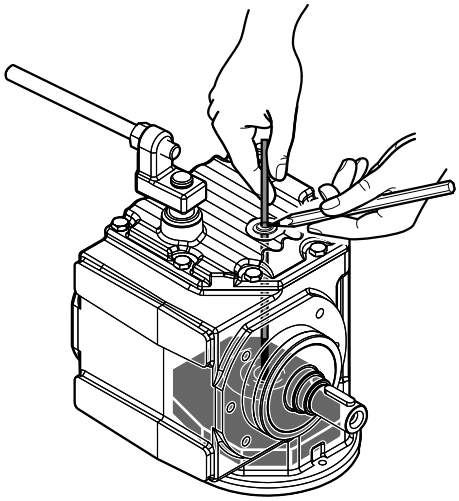
1. Observe the notes in section "Preliminary work regarding gear unit inspection/maintenance" (page 26).
2. Set up the gear unit in M5 or M6 mounting position. See section "Mounting positions (page 37)".
3. Place a container underneath the oil level plug.
4. Remove the oil level plugs on the A and B side of the gear unit.
5. Drain all the oil.
6. Re-insert the lower oil level plug.
7. Fill in new oil of the same type via the upper oil level plug bore (otherwise consult the customer service). Do not mix different synthetic lubricants.
   - Observe the oil fill quantities according to the specifications on the nameplate or according to the mounting position. See sect "Lubricant fill quantities" (page 49).
   - Check the oil level according to chapter "Checking the oil level via the oil level plug".
8. Re-insert the upper oil level plug.

6.4.3 B: HS40/41 and HW30 in mounting position M4 with oil level plug

Checking the oil via the screw plug

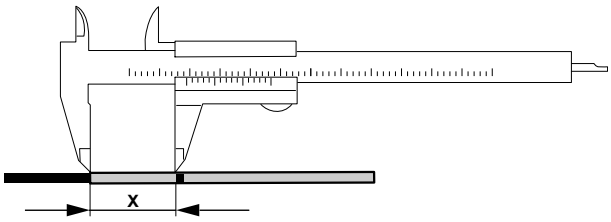
The HW30 gear unit is not equipped with an oil level plug or a cover plate. This is why the oil level is checked via the inspection bore.

1. Observe the notes in section "Preliminary work regarding gear unit inspection/maintenance" (page 26).
2. Set up the gear unit in M2 mounting position.
3. Remove the screw plug.
4. Insert the dipstick vertically via the control bore all the way to the bottom of the gear unit housing. Mark the point of the dipstick where it exits the gear unit. Pull out the dipstick vertically (see following figure).



1599381131

5. Determine the section "x" between the wetted part and the marking using a caliper (see following figure).



1625633035

6. Compare the determined value "x" to the min. value depending on the mounting position specified in the following table. Correct the fill level if required.

Gear unit type	Oil level = wetted section x [mm] of the dipstick Mounting position during the check M2
HS40/41 in mounting position M4	22 ± 1
HW30 in mounting position M4	44 ± 1

7. Re-insert and tighten the screw plug.

Checking the oil via the screw plug

Proceed as follows to check the oil of the gear unit:

1. Observe the notes in section "Preliminary work regarding gear unit inspection/maintenance" (page 26).
2. Remove a little oil at the oil screw plug.
3. Check the oil consistency.
   - Viscosity
   - If you can see that the oil is heavily contaminated, we recommend that you change the oil even if this is outside the service intervals specified in "Inspection and maintenance intervals" (page 27).
4. Check the oil level. See previous section.

Changing the oil via the screw plug

⚠ WARNING

Danger of burns due to hot gear unit and hot gear unit oil.

Severe injuries.

- Let the gear unit cool down before you begin with your work.
- However, the gear unit must still be warm otherwise the high viscosity of excessively cold oil will make it harder to drain the oil properly.

1. Observe the notes in section "Preliminary work regarding gear unit inspection/maintenance" (page 26).
2. Set up the gear unit in M4 mounting position. see chapter "Mounting positions" (page 37).
3. Place a container underneath the screw plug.
4. Remove the screw plugs on the A and B side of the gear unit.
5. Drain all the oil.

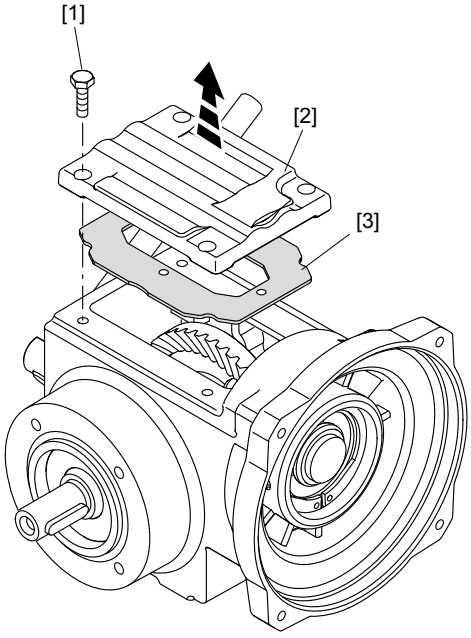
6. Re-insert the lower screw plug.
7. Fill in new oil of the same type via the upper screw plug bore (otherwise consult the customer service). Do not mix different synthetic lubricants.
   – Observe the oil fill quantities according to the specifications on the nameplate or according to the mounting position. See sect "Lubricant fill quantities" (page 49).
   – Check the oil level according to chapter "Checking the oil level via the oil level plug".
8. Re-insert the upper screw plug.

6.4.4 C: SPIROPLAN® gear units in mounting positions M1, M2, M3, M5 and M6 with cover plate

Checking the oil level via the cover plate

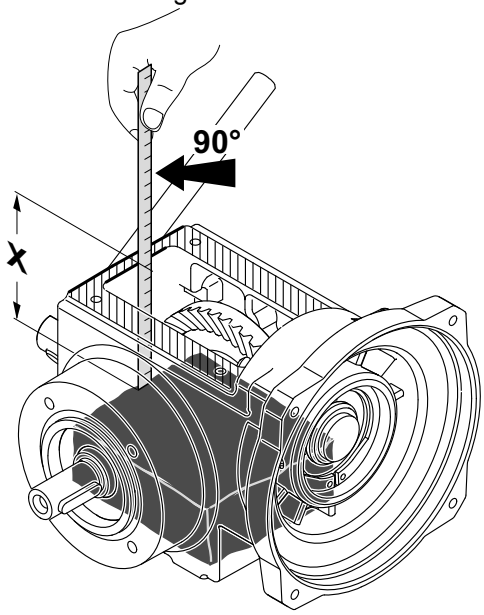
For gear units without oil level bore, the oil level is checked via the cover plate opening. Proceed as follows:

1. Observe the notes in section "Preliminary work regarding gear unit inspection and maintenance" in the corresponding operating instructions.
2. For the cover plate to be on top, you have to set up the gear unit in the following mounting position.
   – HW10 in mounting position M1
3. Loosen the screws [1] of the cover plate [2] and remove the cover plate [2] and the corresponding seal [3] as illustrated in the following figure:



4916162955

4. Determine the vertical distance "x" between oil level and sealing surface of the gear unit housing as illustrated in the following figure:



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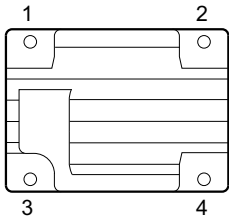
5. Compare the determined value "x" to the mounting position-specific max. distance between oil level and sealing surface of the gear unit housing specified in the following table. Adjust the fill level if required.

Gear unit type	Max. distance x [mm] between oil level and sealing surface of the gear unit housing for mounting position M1 to M6
HW10	23 ± 1

6. Close the gear unit after the oil level check:
   - Re-attach the seal of the cover plate. Make sure that the sealing surfaces are clean and dry.
   - Screw on the cover plate. Tighten the cover screws with the rated tightening torque according to the following table from the inside to the outside in the order illustrated in the figure. Repeat the tightening procedure until the screws are properly tightened. Only use impulse drivers or torque wrenches in order to prevent the cover plate from being damaged (no impact drivers).



1770211211

Gear unit type	Retaining thread	Rated tightening torque T_N [Nm]	Minimum tightening torque T_{min} [Nm]
HW10	M5	6	4

Checking the oil via the cover plate

Proceed as follows to check the oil of the gear unit:

1. Observe the notes in section "Preliminary work regarding gear unit inspection and maintenance" in the corresponding operating instructions.
2. Open the cover plate of the gear unit according to section "Checking the oil via the cover plate".
3. Take an oil sample via the cover plate opening.
4. Check the oil consistency.
   - Viscosity
   - If you can see that the oil is heavily contaminated, we recommend that you change the oil even if this is outside the service intervals specified in "Inspection and maintenance intervals" (see corresponding operating instructions).
5. Check the oil level according to chapter "Checking the oil level via the cover plate".
6. Screw on the cover plate. Observe the order and the tightening torques according to section "Checking the oil level via the cover plate"

Checking the oil via the cover plate

⚠ WARNING

Danger of burns due to hot gear unit and hot gear unit oil.

Severe injuries.

- Let the gear unit cool down before you begin with your work.
- However, the gear unit must still be warm otherwise the high viscosity of excessively cold oil will make it harder to drain the oil properly.

1. Observe the notes in section "Preliminary work regarding gear unit inspection and maintenance" in the corresponding operating instructions.
2. Open the cover plate of the gear unit according to section "Checking the oil via the cover plate".
3. Completely drain the oil in to a vessel via the cover plate opening.
4. Fill in new oil of the same type via the cover plate opening (otherwise consult the customer service). Do not mix different synthetic lubricants.
   - Pour in the oil in accordance with the mounting position or as specified on the nameplate. See chapter "Permitted lubricant fill quantities" in the corresponding operating instructions.
5. Check the oil level.
6. Screw on the cover plate. Observe the order and the tightening torques according to section "Checking the oil level via the cover plate"

6.4.5 Replacing the oil seal

NOTICE

Oil seals with a temperature below 0° C may get damaged during installation.

Potential damage to property.

- Store oil seals at ambient temperatures over 0° C.
- Warm up the oil seals prior to installation if required.

1. When changing the oil seal, ensure that there is a sufficient grease reservoir between the dust lip and protective lip, depending on the type of gear unit.
2. If you use double oil seals, fill one-third of the gap with grease.

6.4.6 Painting gear units

NOTICE

Breather valves and oil seals may be damaged during painting or re-painting.

Potential damage to property.

- Thoroughly cover the breather valves and the sealing lip of the oil seals with strips prior to painting.
- Remove the strips after painting.

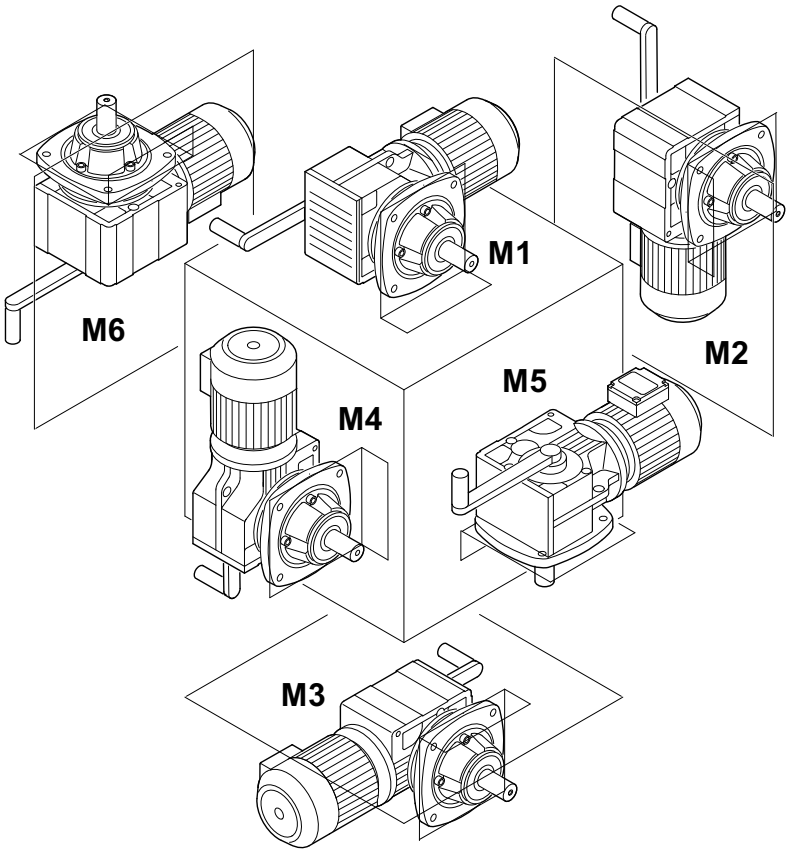
7 Mounting Positions

7.1 Designation of the mounting positions

In the case of gear units for electrified monorail systems, SEW-EURODRIVE distinguishes between four mounting positions M1 – M4.

Mounting positions M5 and M6 are available for electrified monorail drives HW10, HW30 and HS40 as well as mounting position M5 for electrified monorail drive HS41.

The following figure shows the mounting positions M1 – M6 for electrified monorail drives:



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INFORMATION

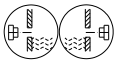
Notes on the displayed motors:

Motors are only represented symbolically on the mounting position sheets.

7.2 Key

7.2.1 Symbols used

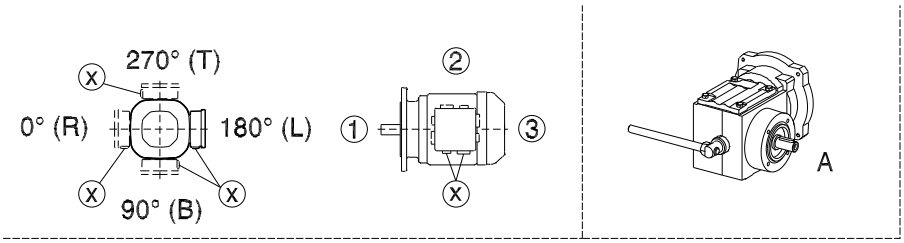
The following table shows the symbols used in the mounting position sheets and what they mean:

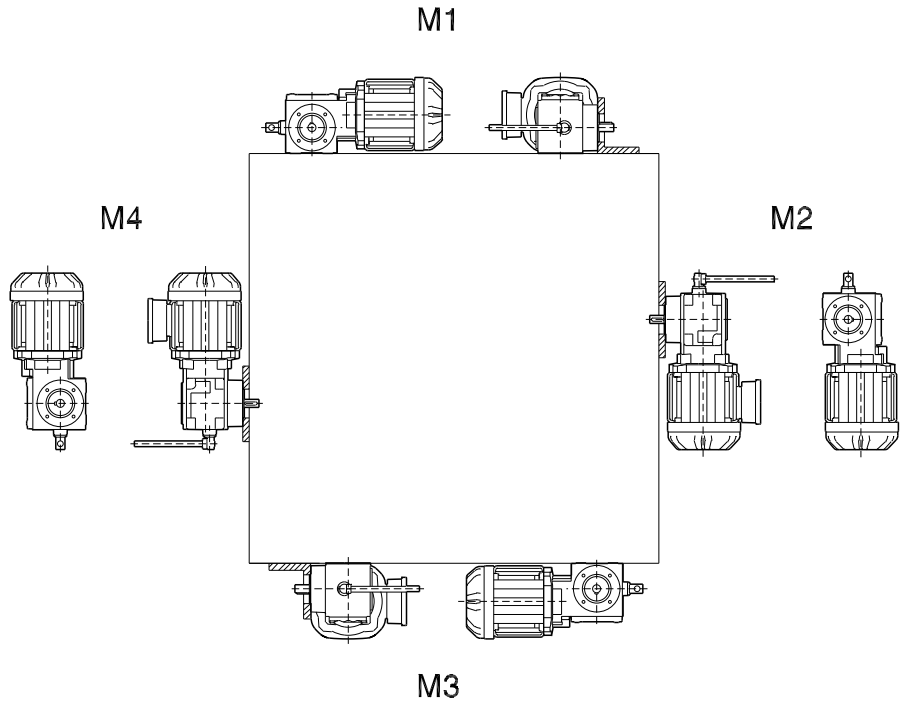
	Meaning
	Breather valve
	Oil level plug
	Oil drain plug

7.3 SPIROPLAN® HW.. gear units

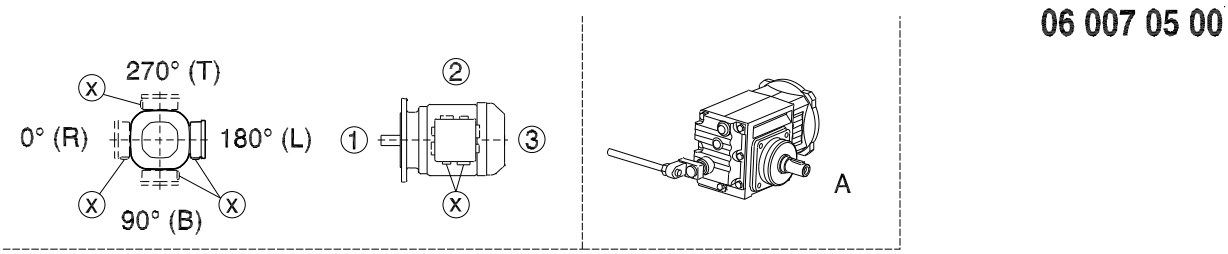
7.3.1 HW10 DR..

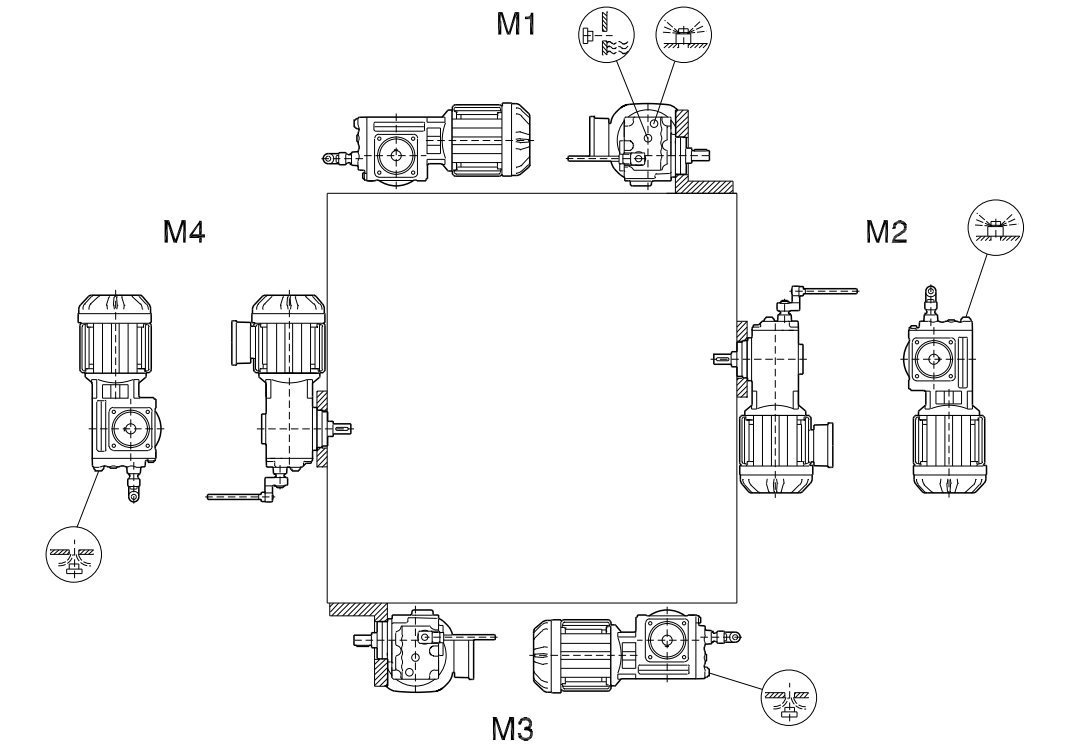
06 005 00 11

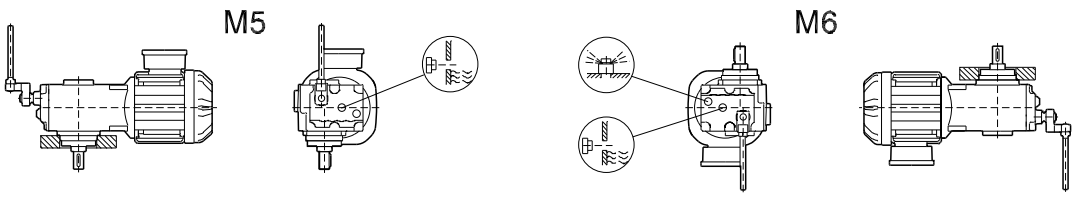




7.3.2 HW30 DR..







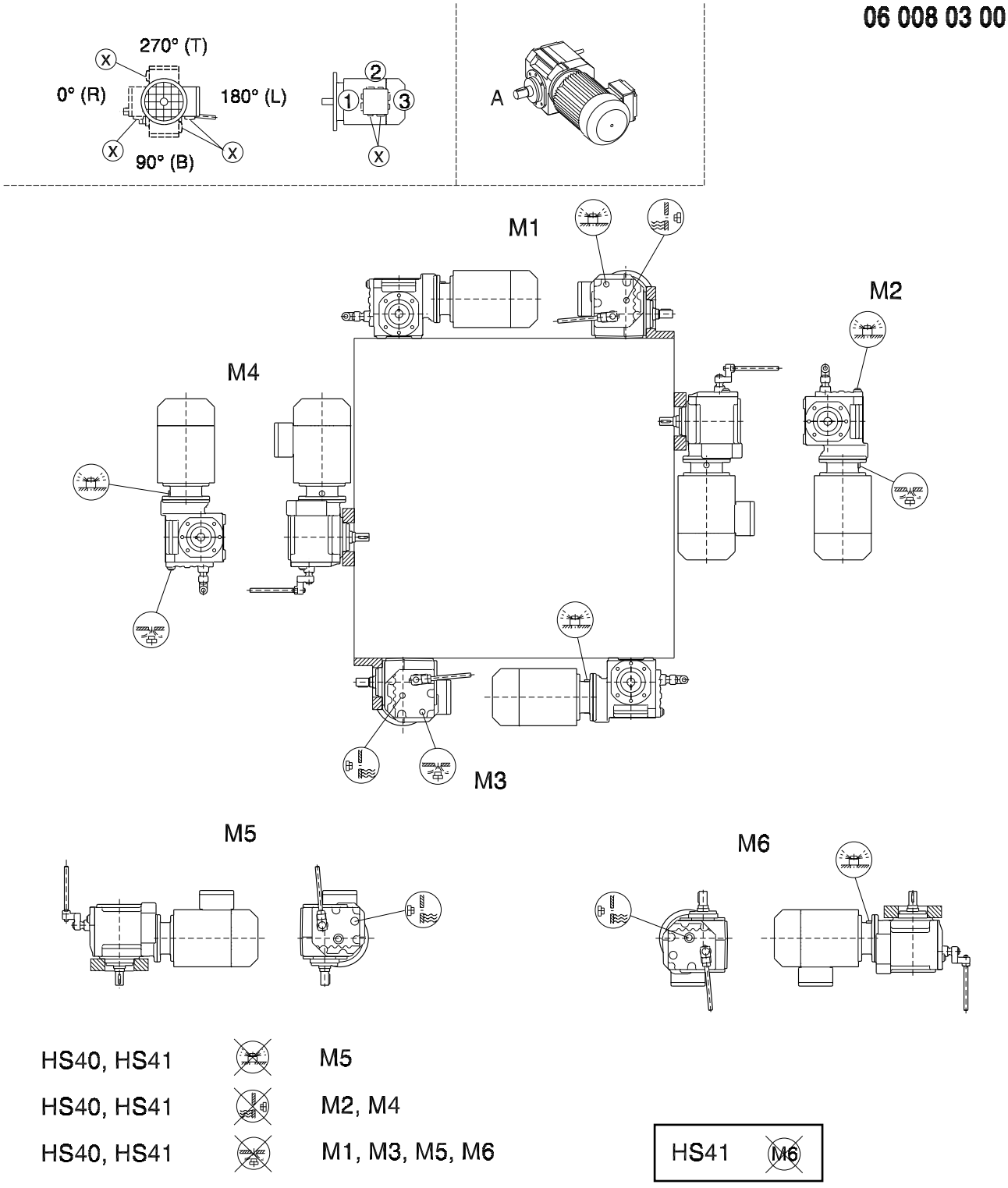
M3, M4, M5

M2, M3, M4

M1, M2, M5, M6

7.4 HS.. helical-worm gear units

7.4.1 HS40/41



HS40, HS41	⊗	M5
HS40, HS41	⊗	M2, M4
HS40, HS41	⊗	M1, M3, M5, M6

HS41	⊗ M6

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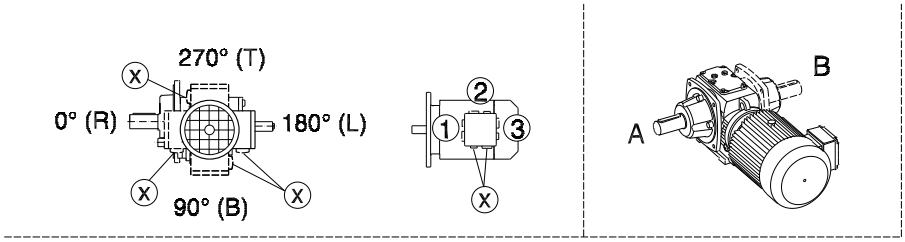
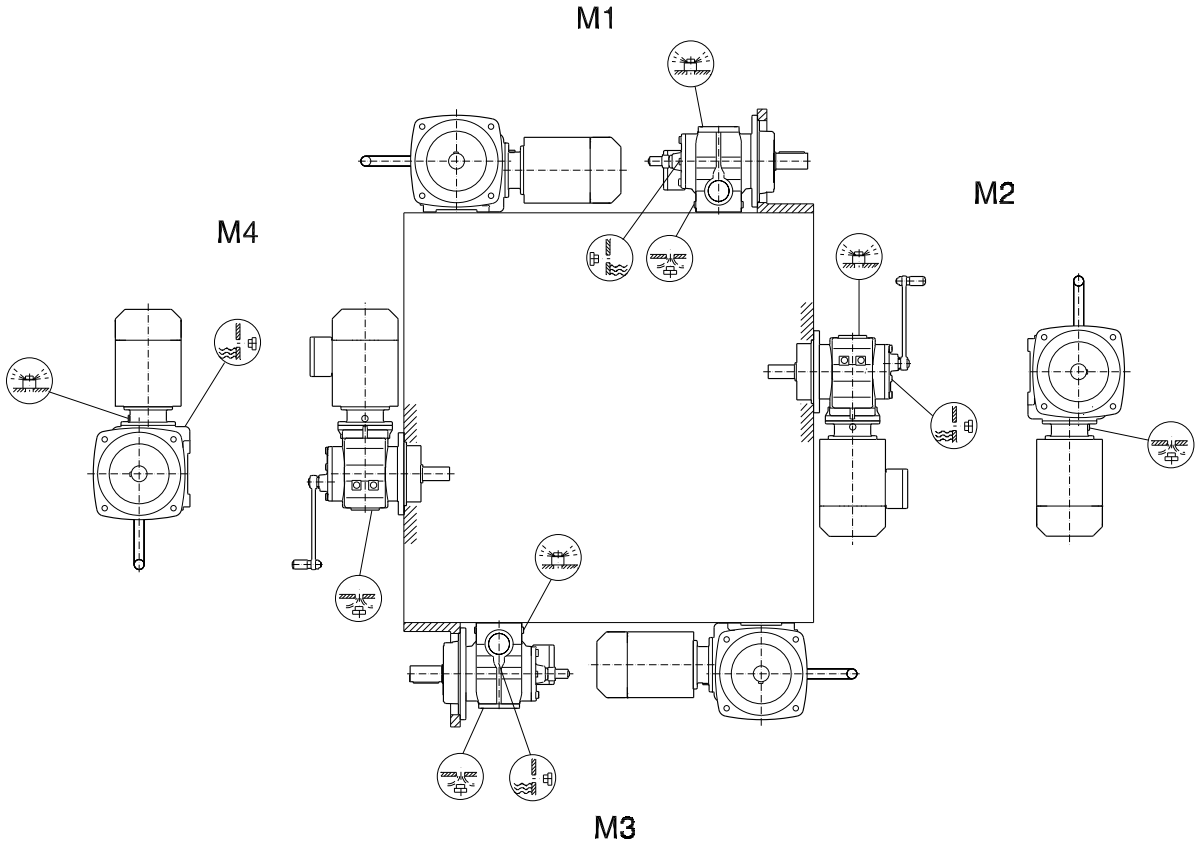
7.4.2 HS50 – HS60





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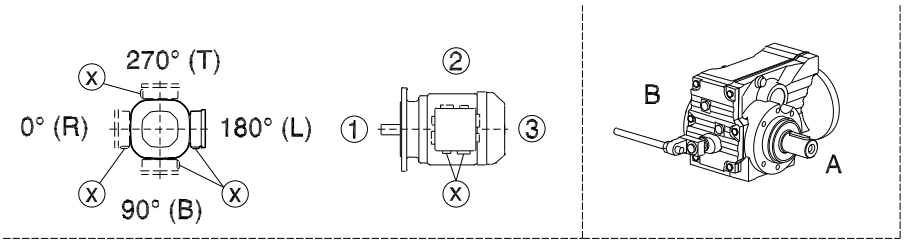
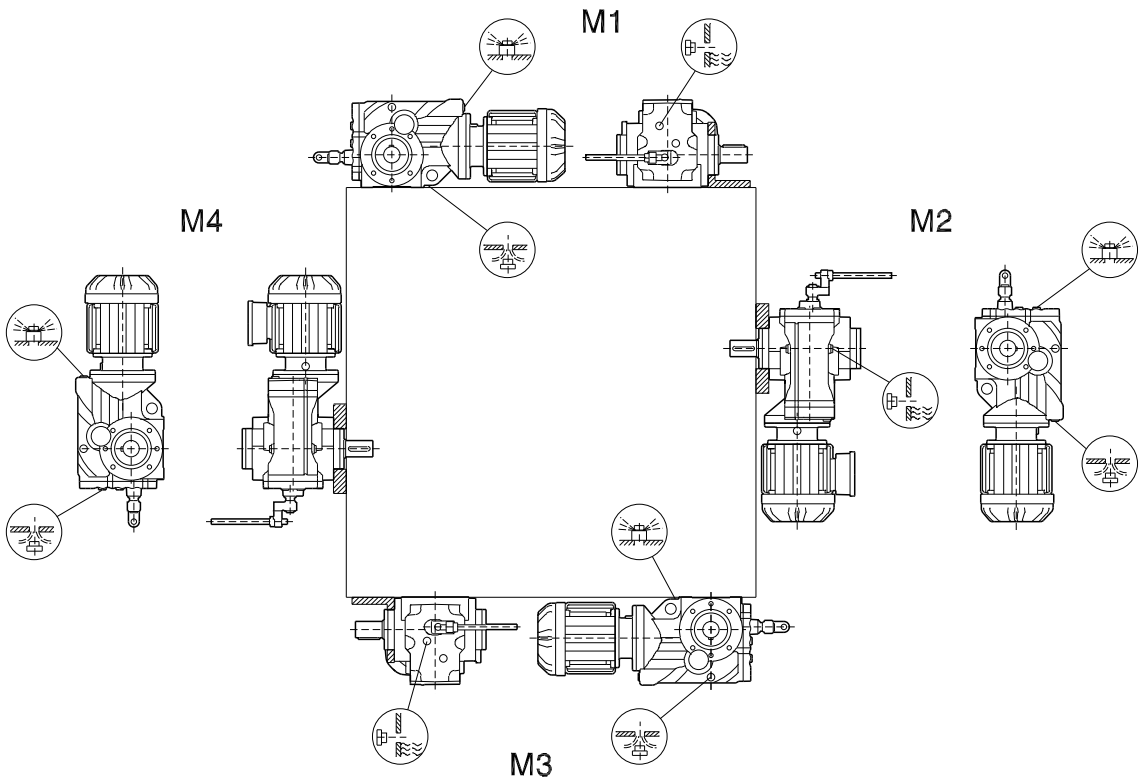
7.5 HK.. helical-bevel gear units

7.5.1 HK37 DR..

06 006 00 11

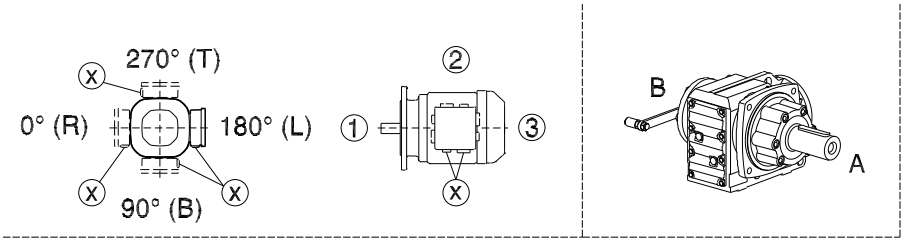


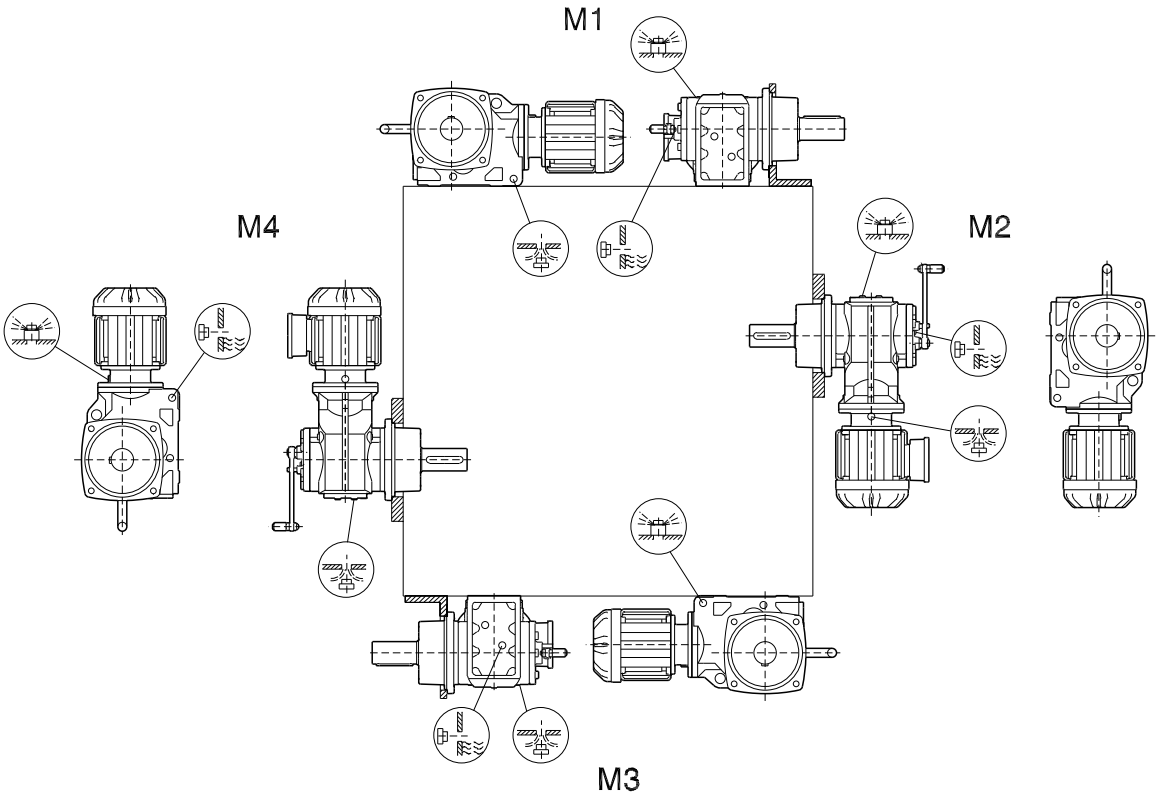


M4

7.5.2 HK40, HK50, HK60 DR..

06 009 05 00





8 Technical Data

8.1 Extended storage

INFORMATION

For storage periods longer than 9 months, SEW-EURODRIVE recommends the "Extended storage" variant. Gear units in this design are designated with a corresponding label.

The lubricant of those gear units is then mixed with a VCI anti-corrosion agent (volatile corrosion inhibitors). Please note that this VCI corrosion inhibitor is only effective in a temperature range between -25 °C and +50 °C. The flange contact surfaces and shaft ends are also treated with an anti-corrosion agent.

Observe the storage conditions specified in the following table for extended storage:

8.1.1 Storage conditions

The gear units must remain tightly sealed until taken into operation to prevent the VCI corrosion protection agent from evaporating.

The gear units come with the oil fill according to the specified mounting position (M1 – M6). Check the oil level before you start operating the gear unit for the first time.

Climate zone	Packaging[1)]	Storage[2)]	Storage duration
Temperate (Europe, USA, Canada, China and Russia, excluding tropical zones)	Packed in containers, with desiccant and moisture indicator sealed in the plastic wrap.	Under roof, protected against rain and snow, no shock loads.	Up to 3 years with regular checks of the packaging and moisture indicator (rel. humidity < 50 %).
	Open	Under roof, enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 60 °C, relative humidity < 50%). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks.	2 years or more with regular inspections. Check for cleanness and mechanical damage during the inspection. Check corrosion protection.
Tropical (Asia, Africa, Central and South America, Australia, New Zealand excluding temperate zones)	Packed in containers, with desiccant and moisture indicator sealed in the plastic wrap. Protected against insect damage and mildew by chemical treatment.	With roof, protected against rain and shocks.	Up to 3 years with regular checks of the packaging and moisture indicator (rel. humidity < 50 %).
	Open	Under roof, enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 50 °C, relative humidity < 50%). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks. Protected against insect damage.	2 years or more with regular inspections. Check for cleanness and mechanical damage during the inspection. Check corrosion protection.

1) The packaging must be carried out by an experienced company using the packaging materials that have been explicitly specified for the particular application.

2) SEW-EURODRIVE recommends to store the gear units according to the mounting position.

8.2 Lubricants

Unless a special arrangement is made, SEW-EURODRIVE supplies the drives with a lubricant fill adapted for the specific gear unit and mounting position. The mounting position (M1 – M6 section "Mounting positions") must be specified with the order. You must adapt the lubricant fill in case of any subsequent changes made to the mounting position (see "Lubricant fill quantities").

8.2.1 Lubricant table

The lubricant table on the following page shows the permitted lubricants for SEW-EURODRIVE gear units. Observe the following legend with regards to the lubricant table.

Key to the lubricant table

Abbreviations, meaning of shading and notes:

CLP	= Mineral oil
CLP PG	= Polyglycol (W gear units, conforms to USDA-H1)
CLP HC	= Synthetic hydrocarbons
E	= Ester oil (water hazard class 1 (German regulation))
HCE	= Synthetic hydrocarbons + ester oil (USDA - H1 certification)
HLP	= Hydraulic oil
	= Synthetic lubricant (= synthetic-based anti-friction bearing grease)
	= Mineral lubricant (= mineral-based anti-friction bearing grease)
1)	Helical-worm gear units with PG oil: Please coordinate with SEW
2)	Special lubricant for Spiroplan® gear units only
3)	Recommendation: Select SEW $f_B \geq 1.2$
4)	Pay attention to critical starting behavior at low temperatures!
5)	Low-viscosity grease
6)	Ambient temperature
	Lubricant for the food industry (food grade oil)
	Biodegradable oil (lubricant for agriculture, forestry, and fisheries)

Bearing greases

The rolling bearings in gear units and motors are given a factory-fill with the greases listed below. SEW-EURODRIVE recommends regreasing rolling bearings with a grease fill at the same time as changing the oil.

	Ambient temperature	Manufacturer	Type
Gear unit rolling bearings	–40 °C ... +80 °C	Fuchs	Renolit CX-TOM 15
	-40 °C ... +40 °C	Castrol	Obeen FS 2
	-20 °C ... +40 °C	Aral	Aralub BAB EP2

INFORMATION

The following grease quantities are required:

- For fast-running bearings (gear unit input end): Fill the cavities between the rolling elements one-third full with grease.
- For slow-running bearings (gear unit output end): Fill the cavities between the rolling elements two-thirds full with grease.

Lubricant table

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	6) °C -50 0 +50 +100	DIN (ISO)	ISO,NLGI	Mobil®	Shell	bp			Castrol Tribol	Castrol Optimol	FUCHS	TOTAL
R...	Standard -15 +40	CLP (CC)	VG 220	Mobilgear 600 XP 220	Shell Omala S2 G 220	BP Energol GR-XP 220	Klüberoil GEM 1-220 N	Meropa 220	Tribol 1100/220	Optigear BM 220	Renolin CLP 220	Carter EP 220
K...(HK...)	-20 +80	CLP PG	VG 220	Mobil Glygoyle 220	Shell Omala S4 WE 220	BP Enersyn SG-XP 220	Klübersynth GH 6-220	Synlube CLP 220	Tribol 800/220	Optiflex A 220	Renolin PG 220	Carter SY 220
	4) -20 +60	CLP HC	VG 220	Mobil SHC 630	Shell Omala S4 GX 220		Klübersynth GEM 4-220 N	Pinnacle EP 220	Tribol 1510/220	Optigear Synthetic X 220	Renolin Unisyn CLP 220	
F...	4) -40 +40	CLP HC	VG 150	Mobil SHC 629	Shell Omala S4 GX 150		Klübersynth GEM 4-150 N	Pinnacle EP 150		Optigear Synthetic X 150	Renolin Unisyn CLP 150	Carter SH 150
	-20 +25	CLP (CC)	VG 150	Mobilgear 600 XP 150	Shell Omala S2 G 150	BP Energol GR-XP 150	Klüberoil GEM 1-150 N	Meropa 150	Tribol 1100/150	Optigear BM 100	Renolin CLP 150	Carter EP 150
	4) -40 +20	CLP HC	VG 68	Mobil SHC 626	Shell Omala S4 GX 68						Renolin Unisyn CLP 68	
	4) -40 + 0	CLP HC	VG 32	Mobil SHC 624			Klüber-Summit HySyn FG-32	Cetus PAO 46		Optilieb HY 32	Renolin Unisyn OL 32	Dacnis SH 32
S...(HS...)	Standard 0 +40	CLP (CC)	VG 680	Mobilgear 600 XP 680	Shell Omala S2 G 680	BP Energol GR-XP 680	Klüberoil GEM 1-680 N	Meropa 680	Tribol 1100/680	Optigear BM 680	Renolin SEW 680	Carter EP 680
	1) -20 +80	CLP PG	VG 680	Mobil Glygoyle 680	Shell Omala S4 WE 680	BP Enersyn SG-XP 680	Klübersynth GH 6-680	Synlube CLP 680	Tribol 800/680	Optiflex A 680	Renolin PG 680	
	4) -20 +60	CLP HC	VG 460	Mobil SHC 634	Shell Omala S4 GX 460		Klübersynth GEM 4-460 N	Pinnacle EP 460		Optigear Synthetic X 460	Renolin Unisyn CLP 460	
	4) -40 +30	CLP HC	VG 150	Mobil SHC 629	Shell Omala S4 GX 150		Klübersynth GEM 4-150 N	Pinnacle EP 150		Optigear Synthetic X 150	Renolin Unisyn CLP 150	Carter SH 150
	-20 +10	CLP (CC)	VG 150	Mobilgear 600 XP 150	Shell Omala S2 G 150	BP Energol GR-XP 150	Klüberoil GEM 1-150 N	Meropa 150	Tribol 1100/150	Optigear BM 150	Renolin CLP 150	Carter EP 150
	1) -20 +40	CLP PG	VG 220	Mobil Glygoyle 220	Shell Omala S4 WE 220	BP Enersyn SG-XP 220	Klübersynth GH 6-220	Synlube CLP 220	Tribol 800/220	Optiflex A 220	Renolin PG 220	Carter SY 220
	4) -40 +20	CLP HC	VG 68	Mobil SHC 626	Shell Omala S4 GX 68						Renolin Unisyn CLP 68	
	4) -40 0	CLP HC	VG 32	Mobil SHC 624			Klüber-Summit HySyn FG-32	Cetus PAO 46		Alphasyn T32	Renolin Unisyn OL 32	Dacnis SH 32
R...,K...(HK...), F...,S...(HS...)	4) -10 +40	CLPHC NSF H1	VG 460				Klüberoil 4UH1-460 N			Optileb GT 460	Cassida Fluid GL 460	
	-20 +30		VG 220				Klüberoil 4UH1-220 N			Optileb GT 220	Cassida Fluid GL 220	
	-40 0		VG 68				Klüberoil 4UH1-68 N			Optileb HY 68	Cassida Fluid HF 68	
	-20 +40	E	VG 460		Shell Naturelle Gear Fluid EP460		Klüberbio CA2-460				Plantogear 460 S	
W...(HW...)	2) Standard -20 +40	SEW PG	VG 460				Klüber SEW HT-460-5					
	4) -40 +10	API GL5	SAE 75W90 (~VG 100)	Mobil Synth Gear Oil 75 W90								
	2) 3) -20 +60	H1 PG	VG 460				Klübersynth UH1 6-460					
PS.F..	Standard -20 +80	CLP PG	VG 220				Klübersynth GH 6-220					
	2) 3) -20 +60	H1 PG	VG 460				Klübersynth UH1 6-460					
	-40 0	CLP HC	VG 32	Mobil SHC 624								
PS.C..	Standard -10 +40	CLP (CC)	VG 220	Mobilgear 600 XP 220								
	5) -20 +40	DIN 51 818	00	Mobillux EP 004								
	7) -20 +40	DIN 51 818	1				Klübersynth UH1 14-151					
	-40 0	CLP HC	VG 32	Mobil SHC 624								
BS.F..	Standard -20 +60	CLP PG	VG 220				Klübersynth GH 6-220					
	2) 3) -20 +60	H1 PG	VG 460				Klübersynth UH1 6-460					

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8.2.2 Lubricant fill quantities

The specified fill quantities are **guide values**. The precise values vary depending on the number of stages and gear ratio. Check the **oil level plug for the exact oil quantity**.

The following table shows guide values for lubricant fill quantities in relation to the mounting position M1 – M6.

Gear unit type	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
HW10	0.16					
HW30	0.50	0.50	0.50	0.55	0.50	0.50
HS40	1.00	1.00	0.80	1.35	1.35	1.00
HS41	1.00	1.00	0.80	1.35	1.35	–
HS50	1.40	1.40	1.50	1.90	–	–
HS60	2.80	2.70	2.80	3.60	–	–
HK30	1.35	1.20	1.15	1.45	–	–
HK37	1.40	1.00	0.80	1.57	1.10	1.10
HK40	1.60	1.60	1.75	2.20	–	–
HK50	2.40	2.60	2.70	3.40	–	–
HK60	2.70	2.90	3.10	3.90	–	–

9 Malfunctions/Service

NOTICE

Improper handling of the gear unit and the motor may lead to damage.

Possible damage to property

- Any repair work on SEW drives may be performed by qualified personnel only.
- Only qualified personnel is permitted to separate gear unit and motor.
- Consult SEW-EURODRIVE customer service.

9.1 Gear units

Malfunction	Possible cause	Remedy
Unusual, regular running noise	Meshing/grinding noise: Bearing damage	Check the oil →see "Inspection/maintenance for the gear unit" (page 28), change bearings.
	Knocking noise: Irregularity in the gearing	Contact customer service
Unusual, irregular running noise	Foreign bodies in the oil	• Check the oil →see "Inspection/maintenance for the gear unit" (page 28), • Stop the drive, contact customer service
Oil leaking [1)] • From inspection cover • From the motor flange • From the motor oil seal • From the gear unit flange • From the output end oil seal	Rubber seal on the gear cover plate leaking	Tighten the screws on the gear cover plate and observe the gear unit. If oil still leaks: Contact customer service
	Seal defective	Contact customer service
	Gear unit not ventilated	Vent the gear unit → see "Mounting Positions" (page 37)
Oil leaking from breather valve	Too much oil	Correct the oil fill quantity →see "Inspection/maintenance for the gear unit" (page 28),
	Drive operated in incorrect mounting position	• Properly adjust the breather valve see "Mounting Positions" (page 37) • Correct the oil level →see "Inspection/maintenance for the gear unit" (page 28),
	Frequent cold starts (oil foams) and/or high oil level.	Install oil expansion tank.
Output shaft does not turn although the motor is running or the input shaft is rotated	Connection between shaft and hub in gear unit interrupted	• Check the clutch function. • Send in the gear unit/gearmotor for repair, if necessary.

1) Short-term oil / grease leakage at the oil seal is possible in the run-in phase (48 hours running time).

9.2 Customer service

Please have the following information available if you require customer service assistance:

- Nameplate data (complete)
- Type and extent of the problem
- Time the problem occurred and any accompanying circumstances
- Assumed cause

A digital photograph if possible

9.3 Disposal

Dispose gear units in accordance with the regulations in force regarding respective materials:

- Steel scrap
  - Housing parts
  - Gears
  - Shafts
  - Roller bearing
- Parts of the worm gears are made of non-ferrous metals. Dispose of the worm gears as appropriate.
- Collect waste oil and dispose of it according to the regulations in force.

10 Address List

Germany			
Headquarters **Production** **Sales**	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 • D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str.10 D-76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Service Competence Center	**Central**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 sc-mitte@sew-eurodrive.de
	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (near Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 sc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 D-08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 sc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 D-85551 Kirchheim (near München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 sc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 D-40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 sc-west@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 sc-elektronik@sew-eurodrive.de
	Drive Service Hotline / 24 Hour Service		+49 180 5 SEWHELP +49 180 5 7394357 14 euro cents/min on the German landline network. Max 42 euro cents/min from a German mobile network. Prices for mobile and international calls may differ.
	Additional addresses for service in Germany provided on request!		

France			
Production **Sales** **Service**	**Haguenau**	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 F-67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	**Forbach**	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex	Tel. +33 3 87 29 38 00
Assembly **Sales** **Service**	**Bordeaux**	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME Parc d'affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15

France			
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles F-44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin F-77390 Verneuil l'Etang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
	Additional addresses for service in France provided on request!		

Algeria			
Sales	**Algiers**	REDUCOM Sarl 16, rue des Frères Zaghnoune Bellevue 16200 El Harrach Alger	Tel. +213 21 8214-91 Fax +213 21 8222-84 info@reducom-dz.com http://www.reducom-dz.com

Argentina			
Assembly **Sales**	**Buenos Aires**	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 sewar@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar

Australia			
Assembly **Sales** **Service**	**Melbourne**	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au

Austria			
Assembly **Sales** **Service**	**Wien**	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at

Belarus			
Sales	**Minsk**	SEW-EURODRIVE BY RybalkoStr. 26 BY-220033 Minsk	Tel.+375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by

Belgium			
Assembly **Sales** **Service**	**Brussels**	**SEW-EURODRIVE n.v./s.a.** Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	**Industrial Gears**	**SEW-EURODRIVE n.v./s.a.** Rue de Parc Industriel, 31 BE-6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be

Brazil			
Production **Sales** **Service**	**São Paulo**	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 152 - Rodovia Presidente Dutra Km 208 Guarulhos - 07251-250 - SP SAT - SEW ATENDE - 0800 7700496	Tel. +55 11 2489-9133 Fax +55 11 2480-3328 http://www.sew-eurodrive.com.br sew@sew.com.br

Bulgaria			
Sales	**Sofia**	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

Cameroon			
Sales	**Douala**	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137 electrojemba@yahoo.fr

Canada			
Assembly **Sales** **Service**	**Toronto**	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
	Additional addresses for service in Canada provided on request!		

Chile			
Assembly **Sales** **Service**	**Santiago**	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMPA RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl

China			
Production **Assembly** **Sales** **Service**	**Tianjin**	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 info@sew-eurodrive.cn http://www.sew-eurodrive.com.cn
Assembly **Sales** **Service**	**Suzhou**	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn

China			
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
	Additional addresses for service in China provided on request!		

Colombia			
Assembly **Sales** **Service**	**Bogotá**	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sewcol@sew-eurodrive.com.co

Croatia			
Sales **Service**	**Zagreb**	KOMPEKS d. o. o. Zeleni dol 10 HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr

Czech Republic			
Sales **Assembly** **Service**	**Prague**	SEW-EURODRIVE CZ s.r.o. Lužná 591 16000 Praha 6 - Vokovice	Tel. +420 255 709 601 Fax +420 220 121 237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline / 24 Hour Service	HOT-LINE +420 800 739 739 (800 SEW SEW)	**Servis:** Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz

Denmark			
Assembly **Sales** **Service**	**Copenhagen**	SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk

Egypt			
Sales **Service**	**Cairo**	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 +1 23143088 Fax +20 2 22594-757 http://www.copam-egypt.com/ copam@datum.com.eg

Estonia			
Sales	**Tallin**	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee

Finland			
Assembly **Sales** **Service**	**Lahti**	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production **Assembly**	**Karkkila**	SEW Industrial Gears Oy Valurinkatu 6, PL 8 FI-03600 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi

Gabon			
Sales	**Libreville**	ESG Electro Services Gabun Feu Rouge Lalala 1889 Libreville Gabun	Tel. +241 741059 Fax +241 741059 esg_services@yahoo.fr

Great Britain			
Assembly **Sales** **Service**	**Normanton**	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate Normanton West Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911

Greece			
Sales	**Athens**	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr

Hong Kong			
Assembly **Sales** **Service**	**Hong Kong**	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

Hungary			
Sales **Service**	**Budapest**	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu

India			
Registered Office **Assembly** **Sales** **Service**	**Vadodara**	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200, +91 265 2831086 Fax +91 265 3045300, +91 265 2831087 http://www.seweurodriveindia.com salesvadodara@seweurodrivein-dia.com
Assembly **Sales** **Service**	**Chennai**	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com

Ireland			
Sales **Service**	**Dublin**	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 info@alperton.ie http://www.alperton.ie

Israel			
Sales	**Tel-Aviv**	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il

Italy			
Assembly **Sales** **Service**	**Solaro**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 799781 http://www.sew-eurodrive.it sewit@sew-eurodrive.it

Ivory Coast			
Sales	**Abidjan**	SICA Société Industrielle & Commerciale pour l'Afrique 165, Boulevard de Marseille 26 BP 1173 Abidjan 26	Tel. +225 21 25 79 44 Fax +225 21 25 88 28 sicamot@aviso.ci

Japan			
Assembly **Sales** **Service**	**Iwata**	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373855 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp

Kazakhstan			
Sales	**Almaty**	ТОО "СЕВ-ЕВРОДРАЙВ" пр.Райымбека, 348 050061 г. Алматы Республика Казахстан	Тел. +7 (727) 334 1880 Факс +7 (727) 334 1881 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz

Latvia			
Sales	**Riga**	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.com info@alas-kuul.com

Lebanon			
Sales Lebanon	**Beirut**	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales Jordan / Kuwait / Saudi Arabia / Syria	**Beirut**	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 info@medrives.com http://www.medrives.com

Lithuania			
Sales	**Alytus**	UAB Irseva Statybininku 106C LT-63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 irmantas@irseva.lt http://www.sew-eurodrive.lt

Luxembourg			
Assembly **Sales** **Service**	**Brussels**	**SEW-EURODRIVE n.v./s.a.** Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.lu info@sew-eurodrive.be

Malaysia			
Assembly **Sales** **Service**	**Johor**	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my

Mexico			
Assembly **Sales** **Service**	**Quéretaro**	SEW-EURODRIVE MEXICO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Quéretaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx

Morocco			
Sales **Service**	**Mohammedia**	SEW EURODRIVE SARL Z.I. Sud Ouest - Lot 28 2ème étage Mohammedia 28810	Tel. +212 523 32 27 80/81 Fax +212 523 32 27 89 sew@sew-eurodrive.ma http://www.sew-eurodrive.ma

Netherlands			
Assembly **Sales** **Service**	**Rotterdam**	SEW-EURODRIVE B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

New Zealand			
Assembly **Sales** **Service**	**Auckland**	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz

Norway			
Assembly **Sales** **Service**	**Moss**	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no

Pakistan			
Sales	**Karachi**	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk

Peru			
Assembly **Sales** **Service**	**Lima**	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe

Poland			
Assembly **Sales** **Service**	**Lodz**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Łódź	Tel. +48 42 676 53 00 Fax +48 42 676 53 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 6765332 / 42 6765343 Fax +48 42 6765346	Linia serwisowa Hotline 24H Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl

Portugal			
Assembly **Sales** **Service**	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt

Romania			
Sales **Service**	**Bucharest**	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

Russia			
Assembly **Sales** **Service**	**St. Petersburg**	ZAO SEW-EURODRIVE P.O. Box 36 RUS-195220 St. Petersburg	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

Senegal			
Sales	**Dakar**	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 senemeca@sentoo.sn http://www.senemeca.com

Serbia			
Sales	**Beograd**	DIPAR d.o.o. Ustanicka 128a PC Košum, IV sprat SRB-11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs

Singapore			
Assembly **Sales** **Service**	**Singapore**	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com

Slovakia			
Sales	**Bratislava**	SEW-Eurodrive SK s.r.o. Rybničná 40 SK-831 06 Bratislava	Tel. +421 2 33595 202 Fax +421 2 33595 200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. Industry Park - PChZ ulica M.R.Štefánika 71 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-974 11 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 SK-040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 sew@sew-eurodrive.sk

Slovenia			
Sales **Service**	**Celje**	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net

South Africa			
Assembly **Sales** **Service**	**Johannesburg**	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 cfoster@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaco Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PTY) LTD. 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za

South Korea			
Assembly **Sales** **Service**	**Ansan**	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate #1048-4, Shingil-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE KOREA Co., Ltd. No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270	Tel. +82 51 832-0204 Fax +82 51 832-0230 master@sew-korea.co.kr

Spain			
Assembly **Sales** **Service**	**Bilbao**	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es

Sweden			
Assembly **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442 00 Fax +46 36 3442 80 http://www.sew-eurodrive.se jonkoping@sew.se

Switzerland			
Assembly **Sales** **Service**	**Basel**	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch

Thailand			
Assembly **Sales** **Service**	**Chonburi**	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn

Turkey			
Assembly **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri Sanayi Ticaret Limited Şirketi Gebze Organize Sanayi Bölgesi 400.Sokak No:401 TR-41480 Gebze KOCAELİ	Tel. +90-262-9991000-04 Fax +90-262-9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

Ukraine			
Assembly **Sales** **Service**	**Dnipropetrovsk**	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua

United Arab Emirates			
Sales **Service**	**Sharjah**	Copam Middle East (FZC) Sharjah Airport International Free Zone P.O. Box 120709 Sharjah	Tel. +971 6 5578-488 Fax +971 6 5578-499 copam_me@eim.ae

USA			
Production **Assembly** **Sales** **Service**	**Southeast Region**	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manufacturing +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly **Sales** **Service**	**Northeast Region**	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Additional addresses for service in the USA provided on request!		

Venezuela			
Assembly **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve ventas@sew-eurodrive.com.ve sewfinanzas@cantv.net

Vietnam			
Sales	**Ho Chi Minh City**	**All sectors except for ports, mining and offshore:** Nam Trung Co., Ltd 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 namtrungco@hcm.vnn.vn truongtantam@namtrung.com.vn khanh-nguyen@namtrung.com.vn
		Ports, mining and offshore: DUC VIET INT LTD Industrial Trading and Engineering Services A75/6B/12 Bach Dang Street, Ward 02, Tan Binh District, 70000 Ho Chi Minh City	Tel. +84 8 62969 609 Fax +84 8 62938 842 totien@ducvietint.com
	Hanoi	Nam Trung Co., Ltd R.205B Tung Duc Building 22 Lang ha Street Dong Da District, Hanoi City	Tel. +84 4 37730342 Fax +84 4 37762445 namtrunghn@hn.vnn.vn

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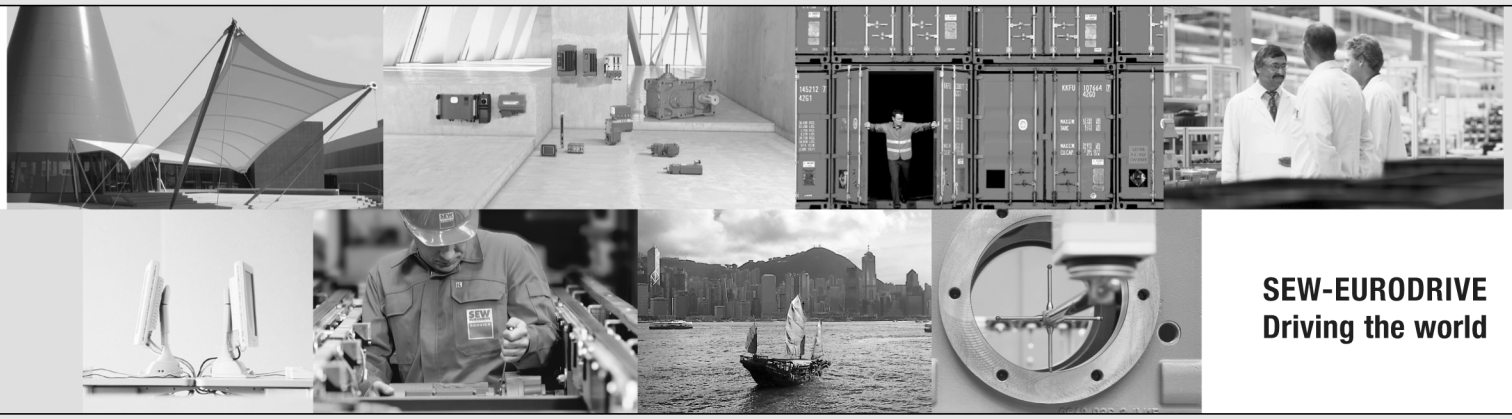

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