SEW EURODRIVE

Explosion-Proof AC Motors – DRS/DRE/DRP 315

Edition 10/2007
11631015 / EN

Operating Instructions

SEW EURODRIVE

Contents

1 General Information

1.1 Structure of the safety notes

The safety notes in these operating instructions are structured as follows:

Symbol	SIGNAL WORD
	Nature and source of hazard. Possible consequence(s) if disregarded. • Measure(s) to avoid the hazard.

Symbol	Signal word	Meaning	Consequences if disregarded
Example:  General hazard  Specific hazard, e.g. electric shock	**HAZARD!**	Imminent hazard	Severe or fatal injuries
	WARNING!	Possible hazardous situation	Severe or fatal injuries
	CAUTION!	Possible hazardous situation	Minor injuries
	**NOTE ON EXPLOSION PROTECTION**	Important note on explosion protection	Suspension of explosion protection and resulting dangers
	**STOP!**	Possible damage to property	Damage to the drive system or its environment
	**NOTE**	Useful information or tip. Simplifies handling of the drive system.	

1.2 Rights to claim under limited warranty

Adhering to the operating instructions is a prerequisite for fault-free operation and the fulfillment of any right to claim under warranty. Read the operating instructions before you start working with the unit.

Make sure that the operating instructions are available to persons responsible for the system and its operation as well as to persons who work independently on the unit. You must also ensure that the documentation is legible.

1.3 Exclusion of liability

You must comply with the information contained in these operating instructions to ensure safe operation of the explosion-proof electric motors 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 these operating instructions. In such cases, any liability for defects is excluded.

2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must make sure that the basic safety notes are read and observed. Make sure that persons responsible for the plant 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, please contact SEW-EURODRIVE.

2.1 Preliminary information

The following safety notes are concerned with the use of motors. If using **gearmotors**, also refer to the safety notes for gear units in the corresponding operating instructions.

Please also consider the supplementary safety notes in the individual sections of these operating instructions.

2.2 General information

Never install damaged products or take them into operation. Submit a complaint to the shipping company immediately in the event of damage.

Low-voltage machines have dangerous, live and rotating parts as well as hot surfaces.

All work related to transportation, putting into storage, setup/mounting, connection, start-up, maintenance and repair may only be carried out by qualified personnel observing

- The relevant detailed operating instruction(s) and wiring diagrams
- The warning and safety signs on the motor/gearmotor
- The specific regulations and requirements for the system
- The national/regional regulations governing safety and the prevention of accidents

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to machinery.

Consult the documentation for additional information.

2.3 Designated use

The electric motors are intended for industrial systems. They fulfill the applicable standards and regulations:

- Low Voltage Directive 73/23/EEC
- Directive 94/9/EC
- EN 61241-0 Electrical apparatus for use in atmospheres containing combustible dust: General requirements
- EN 61241-1 Electrical apparatus for use in atmospheres containing combustible dust: Protection through housing "tD"
- EN 60079-0 electrical apparatus for potentially explosive atmospheres: General requirements
- EN 60079-15 electrical apparatus for potentially explosive atmospheres: Design, testing and designation of electric equipment in protection type "n".
- EN 60034 Rotating electrical machines

Technical data and information on the permitted conditions are given on the nameplate and in the documentation; they have to be observed under all circumstances.

2.4 Other applicable documentation

The following publications and documents have to be observed as well:

- Operating instructions "Explosion-Proof Gear Units R..7, F..7, K..7, S..7 Series, Spiroplan® W" for gearmotors
- Operating instructions of the frequency inverter for motors powered by inverters
- Operating instructions of installed options, if applicable
- Corresponding wiring diagrams

2.5 Transport

Immediately upon receipt, inspect the shipment for any damage that may have occurred during transportation. Inform the shipping company immediately. It may be necessary to preclude startup.

Tighten the eyebolts securely. They are only intended for 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 of these 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 when necessary. Remove any transportation fixtures prior to startup. Reattach these in the case of further transportation. When storing low voltage machines, make sure to keep it in a dry, dust-free environment with minimum vibration ($v_{eff} \leq 0.2$ mm/s) (damage to stalled bearings). Measure the insulation resistance prior to startup. Dry the winding if values ≤ 1 kΩ per volt of the rated voltage.

2.6 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. Turn the rotor manually and listen for unusual noises. 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 section "Mechanical Installation" (see page 14)!

2.7 Electrical connection

All work may only be carried out by qualified personnel. During work, the low-voltage machine must be on standstill, enabled, and safeguarded against an accidental restart. This also applies to auxiliary circuits (e.g. anti-condensation heating).

Check that the motor is de-energized.

Exceeding the tolerances in EN 60034-1 (VDE 0530, part 1) – voltage + 5%, frequency + 2%, curve shape, symmetry – increases the heating and influences electromagnetic compatibility. Observe nameplate data and the wiring diagram in the terminal box.

Pay attention to the wiring information and different data on the nameplate, as well as observing the wiring diagram.

The connection should be a continuous secure electrical connection (no protruding wire ends); use the cable end equipment intended for this purpose. Establish a secure protective earth connection. When the motor is connected, the distances to non-insulated and live parts must not be shorter than the minimum values according to EN 60079-15 and national regulations. With low voltage, the distances should be no shorter than the following values, in compliance with EN 60079-15:

Rated voltage V_N	Distance
≤ 500 V	5 mm
≤ 690 V	5.5 mm

The terminal box must be free of foreign objects, dirt and humidity. Unused cable entry openings and the box itself must be closed so that they are dust and water proof. Secure keys for test mode without output elements. Assure yourself of the flawless operability prior to starting up low-voltage machines.

Observe the notes in chapter "Electrical Installation" (see page 17)!

2.8 Operation

Whenever changes occur in relation to normal operation, such as increased temperatures, noise, oscillation, determine the cause and contact the manufacturer, if required. Never bypass or disable protection devices, not even in test mode. If you are in doubt, switch off the motor.

Regularly clean air ducts in dusty or dirty environments.

2.9 Disposal

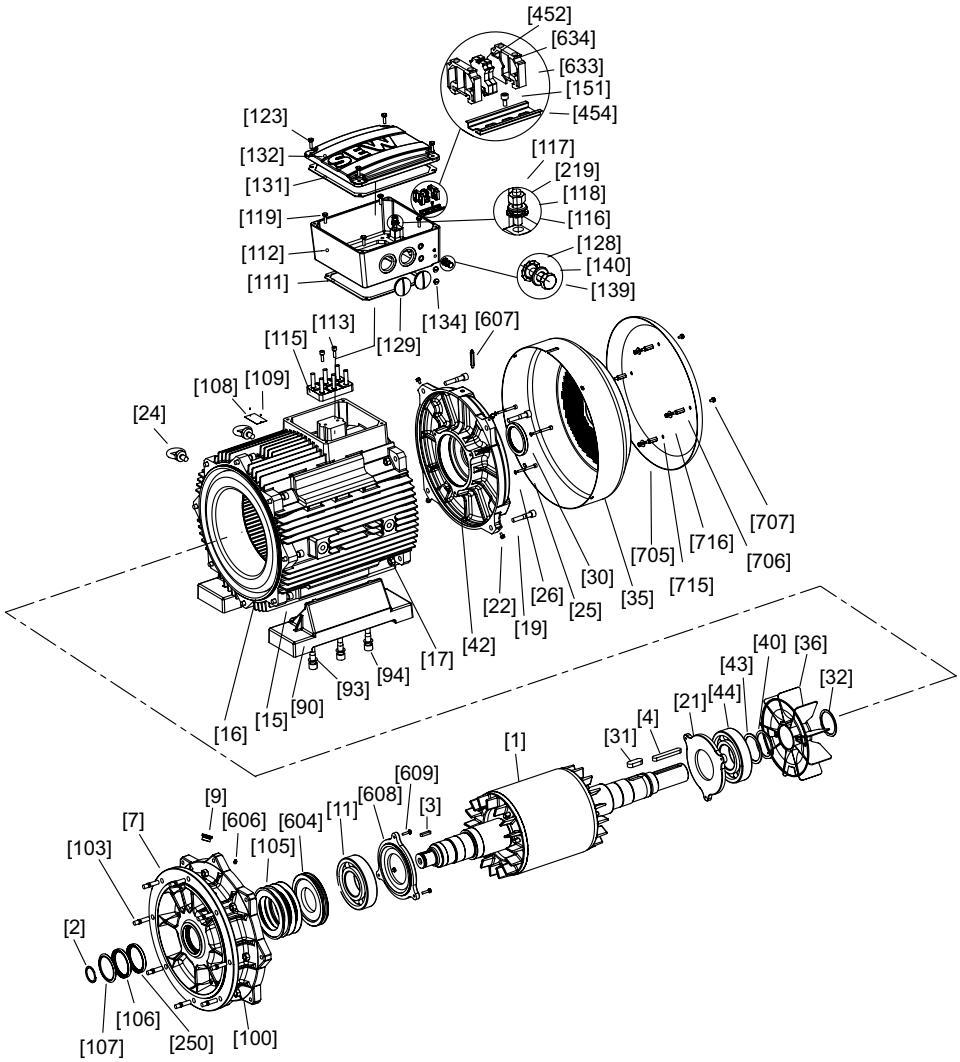
Dispose of the motors in accordance with the material structure and the regulations in force:

- Iron
- Aluminum
- Copper
- Plastics
- Electronic components

3 Motor Design

3.1 Basic design of the DR.315

The following figure illustrates the general structure. Its only purpose is to facilitate the assignment of components to the spare parts lists. Deviations are possible depending on the motor size and version!



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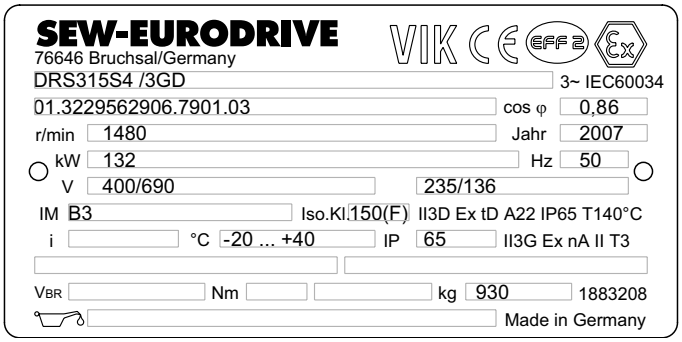
[1] Rotor
[2] Circlip
[3] Key
[4] Key
[7] Flange
[9] Screw plug
[11] Deep groove ball bearing
[15] Machine screw
[16] Stator
[17] Hexagonal nut
[19] Machine screw
[21] Oil seal flange
[22] Hex head bolt
[24] Eyebolt
[25] Machine screw
[26] Sealing washer
[30] Oil seal
[31] Key
[32] Circlip
[35] Fan guard
[36] Fan
[40] Circlip
[42] B-side endshield
[43] Supporting ring
[44] Deep groove ball bearing
[90] Foot
[94] Machine screw
[100] Hexagonal nut
[103] Stud
[105] Spring washer
[106] Oil seal
[107] Oil flinger
[108] Nameplate
[109] Grooved pin
[111] Gasket for lower part
[112] Terminal box lower part
[113] Machine screw
[115] Terminal board
[116] Serrated lock washer
[117] Stud
[118] Disc
[119] Hex head bolt
[123] Hex head bolt
[129] Screw plug
[131] Gasket for cover
[132] Terminal box cover
[134] Screw plug
[139] Hex head bolt
[140] Disc
[151] Machine screw
[219] Hex head bolt
[452] Terminal strip
[454] DIN rail
[604] Lubrication ring
[604] Relubrication ring
[606] Greasing nipple
[607] Greasing nipple
[608] Oil seal flange
[609] Hex head bolt
[633] End bracket
[634] End plate
[705] Protective canopy
[706] Spacer bolt
[707] Hex head bolt
[715] Hexagonal nut
[716] Disc

3.2 Nameplate, unit designation

3.2.1 Nameplate

Example: Ac motor for category 3GD



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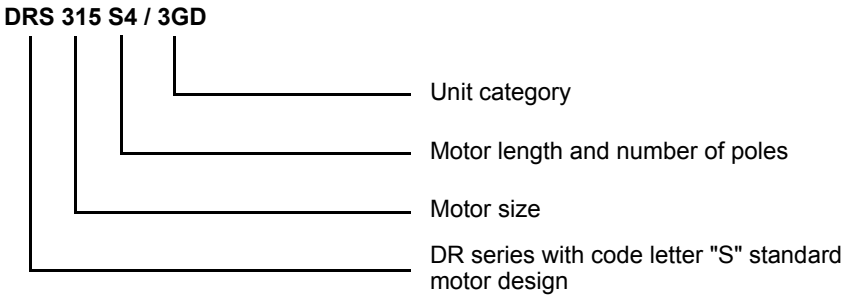
3.2.2 Unit designation

Example: AC motor category 3GD



4 Mechanical Installation

	**NOTE**
	Do observe the safety notes in chapter 2 (see page 7) for when installing the unit!

4.1 Before you start

The drive may only be installed when

- the specifications on the drive's nameplate and the output voltage of the frequency inverter match the voltage supply system
- The drive is undamaged (no damage caused by transportation or storage).
- you are certain that the following requirements have been fulfilled:
  - Ambient temperature between -20 °C and 40 °C [1)]
  - No oil, acid, gas, vapors, radiation, etc.
  - Installation altitude max. 1000 m above sea level
  - Note the restrictions for encoders
  - Special versions: Drive configured in accordance with the ambient conditions

	**STOP**
	The mounting position for installation must correspond to the specifications on the nameplate.

4.2 Mechanical installation

4.2.1 Preliminary work

Motor shaft ends must be thoroughly cleaned of anti-corrosion agents, contamination or similar (use a commercially available solvent). Do not allow the solvent to penetrate the bearings or shaft seals – this could damage the material.

Motors with reinforced bearing

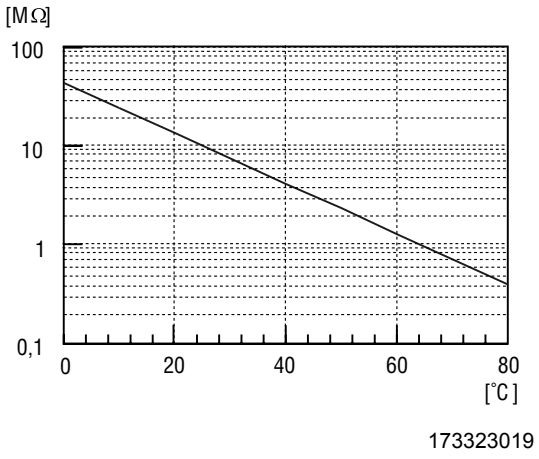
	**STOP**
	Motors with a reinforced bearing must not be operated without an overhung load. Otherwise you risk damaging the bearings.

1) Note that the temperature range of the gear unit may also be restricted (see gear unit operating instructions).

Extended storage of motors

- Note that the service life of the lubricant in the ball bearings is reduced by 10% per year after the first year of storage.
- You should re-lubricate the lubrication devices on motors that have been in storage for longer than 5 years before startup. Observe the information on the motor lubricant plate.
- Check whether the motor has absorbed moisture as a result of being stored for a long time. Measure the insulation resistance for this purpose (measuring voltage 500 V).

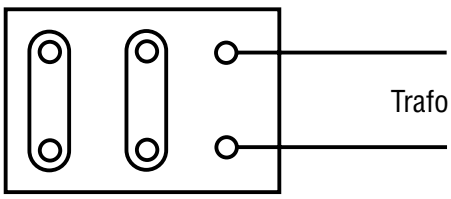
The insulation resistance (see following figure) varies greatly depending on the temperature. The motor must be dried if the insulation resistance is not adequate.



Drying motor

Heat the motor:

- with warm air or
- via isolation transformer
  - Connect windings in series (see following figure)
  - Auxiliary alternating current max. 10% of the rated voltage with max. 20% of the rated current



The drying process is finished when the minimum insulation resistance has been exceeded.

Check the terminal box for the following:

- dry and clean inside
- Connection and fastening elements corrosion free
- Gasket and sealing surfaces OK
- Cable glands are sound, otherwise clean or replace them

4.2.2 Installing the motor

- The motor or gearmotor may only be mounted or installed in the specified mounting position on a level, vibration-proof and torsionally rigid support structure.
- Clean the output shafts thoroughly to ensure they are free of anti-corrosion agents (use a commercially available solvent). Do not allow the solvent to penetrate the bearings and shaft seals – this could damage the material.
- Carefully align the motor and the driven machine to avoid placing any unacceptable strain on the motor shafts (observe permitted overhung load and axial load!).
- Do not butt or hammer the shaft end.
- Ensure there is sufficient clearance around the unit to allow for adequate cooling. Furthermore, the unit must be positioned in such a way that it does not reuse the air warmed by other devices.
- Balance components for subsequent mounting on the shaft with a half key (output shafts are balanced with a half key).

	NOTE ON EXPLOSION PROTECTION
	• If using belt pulleys: – Only use belts that do not build up an electrostatic charge. – Do not exceed the maximum permitted overhung load. • Use an appropriate cover to protect motors in vertical mounting positions from objects or fluids entering (protection cowl C)!

Installation in damp locations or in the open

- Use suitable cable glands for the incoming cable (use reducing adapters if necessary) according to the installation instructions.
- Coat the threads of cable glands and screw plugs with sealant and tighten them well – then coat them again.
- Seal the cable entry well.
- Clean the sealing surfaces of the terminal box and the terminal box cover carefully before re-assembly; gaskets have to be glued in on one side. Replace brittle gaskets.
- Restore the anticorrosion coating if necessary
- Check enclosure according to nameplate.

4.2.3 Installation tolerances

Shaft end	Flanges
Diameter tolerance according to EN 50347 • ISO j6 with ∅ ≤ 28 mm • ISO k6 with ∅ ≥ 38 mm up to ≤ 48 mm • ISO m6 with ∅ ≥ 55mm • Center bore in accordance with DIN 332, shape DR..	Centering shoulder tolerance according to EN 50347 • ISO j6 with ∅ ≤ 250 mm • ISO h6 with ∅ ≥ 300 mm

5 Electrical Installation

	NOTES
	• Do observe the safety notes in chapter 2 (see page 7) during installation! • Use switch contacts in utilization category AC-3 according to EN 60947-4-1 for switching the motor.

5.1 General information

5.1.1 Additional regulations for potentially explosive atmospheres

In addition to the generally applicable installation regulations for low-voltage equipment (e.g. in Germany: DIN VDE 0100, DIN VDE 0105), it is also necessary to comply with the special regulations for setting up electrical machinery in potentially explosive atmospheres (operating safety regulations in Germany: EN 60079-14; EN 61241-14 and system-specific regulations).

5.1.2 Cable entries

The terminal boxes have metric threaded holes according to EN 50262 or NPT threaded holes according to ANSI B1.20.1-1983. All metric cable entries are supplied with ATEX certified closing plugs.

To establish the correct cable entry, the sealing plugs must be replaced by ATEX approved cable glands with strain relief. Select the cable screw fitting according to the outer diameter of the cable used. The IP enclosure of the cable entry must be at least as high as the IP enclosure of the motor.

All cable entries that are not required must be sealed off with an ATEX certified closing plug after completion of the installation (→ maintaining the enclosure).

5.1.3 Equipotential bonding

In accordance with EN 60079-14 and EN 61241-14, it might be necessary to establish a connection to an equipotential bonding system. Observe section "Improving the grounding (EMC)" (see page 19).

5.2 Using wiring diagrams and terminal assignment diagrams

Connect the motor only as shown in the wiring diagram(s) included with the motor. **Do not connect or start up the motor if the wiring diagram is missing.** You can obtain the valid wiring diagrams free of charge from SEW-EURODRIVE.

5.3 Wiring instructions

Comply with the safety notes during startup.

5.3.1 Protecting motor protection devices against interference

In order to protect SEW motor protection devices (temperature sensors TF) against interference:

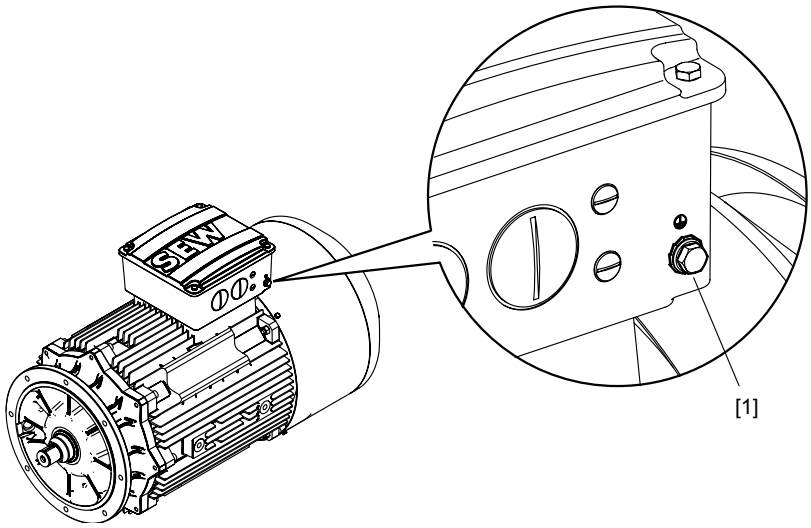
- You may route separately shielded supply cables together with switched-mode power lines in one cable.
- You must not route unshielded supply cables together with switched-mode power lines in one cable.

5.4 Improving the grounding (EMC)

For improved, low-impedance grounding at thigh frequencies, we recommend using the following connection:

5.4.1 Size DR.315:

- 1 x hex head bolt ISO 4017 M12 x 30
- 1 x washer ISO 7090
- 1 x serrated lock washer DIN 6798



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[1] Use the grounding screw at the terminal box

5.5 Environmental conditions during operation

5.5.1 Ambient temperature

The temperature range of -20 °C to 40 °C must be ensured unless specified otherwise on the nameplate. Motors intended for use in higher or lower ambient temperatures have the appropriate designation on the nameplate.

5.5.2 Installation altitude

The maximum installation altitude of 1000 m above sea level must not be exceeded.

5.5.3 Hazardous radiation

Motors must not be subjected to hazardous radiation (such as ionizing radiation). Contact SEW-EURODRIVE if necessary.

5.5.4 Hazardous gases, vapors and dusts

If used according to their designated use, explosion-proof motors are incapable of igniting explosive gases, vapors or dusts. However, explosion-proof motors may not be subjected to gases, vapors or dusts that endanger operational safety, for example through

- Corrosion
- Damage to the protective coating
- Damage to the sealing material

etc.

5.6 Motors in category 3GD

5.6.1 General information

The explosion-proof/dust explosion-proof SEW-EURODRIVE motors of the DR.315 series are designed for the following application zones.

Motor category	Area of application
3GD	Application in zone 2 or 22 and compliance with the design requirements for equipment group II, category 3GD.

5.6.2 Degree of protection IP54

The minimum degree of protection for SEW-EURODRIVE motors in category 3GD is IP54.

5.6.3 Operation at high ambient temperatures

If the nameplate indicates that motors are allowed to be operated up to an ambient temperature of > 50 °C (standard: 40 °C), then it is essential that the cables and cable glands used are suited for temperatures ≥ 90 °C.

5.6.4 Temperature class/surface temperature

The motors are designed for temperature class T3. The maximum surface temperature is 120 °C or 140 °C.

5.6.5 Protection against impermissibly high surface temperatures

Explosion-proof motors in category 3GD ensure safe operation under normal operating conditions. The motor must be switched off securely in the case of overload to avoid the risk of impermissibly high surface temperatures.

The motor can be protected with a motor protection switch or a positive temperature coefficient (PTC) thermistor. Pole-changing motors in category 3GD from SEW-EURODRIVE are equipped with PTC thermistors (TF).

5.6.6 Protection exclusively with motor protection switch

Note the following when installing the motor protection switch to EN 60947:

- The motor protection switch must trip immediately in the event of a phase failure.
- The motor protection switch must be set to the rated motor current indicated on the nameplate.

5.6.7 Protection exclusively with PTC thermistor (TF)

The positive coefficient thermistor must be evaluated using a suitable device. Observe the applicable installation regulations.

5.6.8 Protection with motor protection switch and additional PTC thermistor

The conditions stated for exclusive protection with motor protection switches also apply here. Protection with positive temperature coefficient thermistors (TF) only represents a supplementary protection measure which is irrelevant to certification for potentially explosive conditions.

	NOTE ON EXPLOSION PROTECTION
	Proof of the efficacy of the installed protective equipment is required prior to startup.

5.6.9 Connecting the motor

	NOTE
	It is essential to comply with the valid wiring diagram! Do not connect or start up the motor if this wiring diagram is missing. For the wiring diagrams refer to section "Wiring diagrams" (see page 35) or request them from SEW-EURODRIVE stating the order number of the motor (see section "Unit designation, nameplate"):

Checking cross sections

Check the cable cross sections based on the rated motor current, the valid installation regulations and the requirements where the unit is installed.

Checking the winding connections

Check the winding connections in the terminal box and tighten them if necessary.

Motor connection terminal board

The motors are supplied and connected differently depending on the electrical design. Arrange the cables and terminal links as shown in the wiring diagram and screw them on firmly. Observe the tightening torques specified in the following tables.

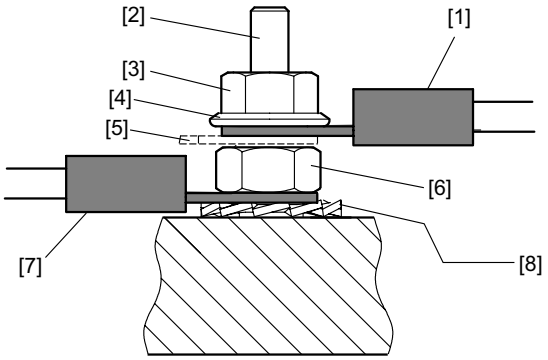
Motor size DR.315				
Terminal stud diameter	**Tightening torque of hex nut**	**Customer connection Cross section**	**Connection type**	**Scope of delivery**
M12	**15.5 Nm**	**≤ 50 mm²**	**Ring cable lug**	**Connection parts pre-assembled**
M16	**30 Nm**	**≤ 95 mm²**		

The versions in bold print apply to S1 operation for the standard voltages and standard frequencies according to the data in the catalog. Other versions may have different connections, for example different terminal stud diameters and/or a different scope of delivery.

Connecting the motor via terminal box

- In accordance with the wiring diagram provided
- check cable cross section
- Arrange terminal links correctly
- Tighten connections and protective earth
- In the terminal box: Check winding connections and tighten them if necessary

Connection with ring cable rug



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[1] External connection with ring cable lug, according to e.g. DIN 4637 or DIN 46234.
[2] Terminal stud
[3] Upper nut
[4] Washer
[5] Terminal link
[6] Lower nut
[7] Winding connection with ring cable lug
[8] Serrated lock washer

Accessory equipment

Connect accessory equipment as shown in the wiring connection diagram(s) provided with the motor. **Do not connect or start up the accessory equipment if the wiring diagram is missing.** You can obtain the valid wiring diagrams free of charge from SEW-EURODRIVE.

TF temperature sensor

	**STOP**
	The temperature sensor TF may not be subjected to voltages > 30 V.

The PTC thermistors comply with DIN 44082.

Resistance measurement (measuring instrument with V ≤ 2.5 V or I < 1 mA):

- Standard measured values: 20...500 Ω, thermal resistance > 4000 Ω

When using the temperature sensor for thermal monitoring, the evaluation function must be activated to maintain reliable insulation of the temperature sensor circuit. If the temperature reaches an excessive level, the thermal protection function must be activated immediately.

6 Startup

6.1 Prerequisites for startup

	NOTE
	• It is essential to observe the safety notes in section 2 (see page 7) during installation. • In case of problems, refer to section "Malfunctions" (see page 38).

6.1.1 Before startup, make sure that

- the drive is undamaged and not blocked,
- The measures stipulated in section "Preliminary work" (see page 14) are performed after extended storage periods.
- all connections have been made properly,
- the direction of rotation of the motor/gearmotor is correct,
  - (motor rotating clockwise: U, V, W to L1, L2, L3)
- all protective covers have been installed correctly,
- all motor protection equipment is active and set for the rated motor current
- there are no other sources of danger present

6.1.2 During startup, make sure that:

- the motor is running correctly (no overload, no speed fluctuation, no loud noises, etc.),
- The correct braking torque is set according to the specific application(see section "Technical Data" (see page 34).

7 Inspection/Maintenance

Only SEW service staff, repair workshops or plants that provide the necessary expertise may repair or modify the motor.

Before re-startup of the motor, make sure that all regulations are complied with and document this with a label on the motor or a written test report.

	NOTE ON EXPLOSION PROTECTION
	• Maintenance and repair work must always be performed by SEW-EURODRIVE or repair workshops for electrical drives. • Use only original spare parts from the relevant and valid spare parts lists; otherwise, the explosion-poof approval for the motor will become void. • The routine test must be repeated whenever motor parts relating to explosion protection are replaced. • Motors can become very hot during operation – danger of burns! • Prior to any measures, disconnect the motor from and protect it against unintentional re-start! • Ensure that the motor is assembled correctly and all openings have been plugged after service and maintenance work. • Clean motors in explosion-proof areas regularly. Prevent dust from building up higher than 5 mm. • Never rework the surfaces of the ignition gap. • Apply grease with a grease depot (Klüber Patemo GHY133N) to the lip of the oil seal before assembly. • Always perform safety and functional tests following all maintenance and repair work (thermal protection, etc.). • Explosion protection can only be ensured if motors are serviced and maintained correctly.

7.1 Inspection and maintenance intervals

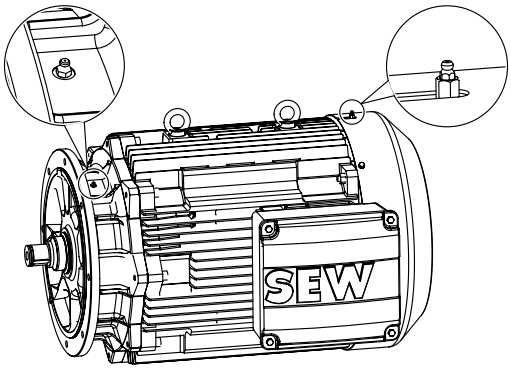
Unit/unit part	Time interval	Action
Motor	• **Every 10,000 operating hours**[1)]	Inspect the motor: • Check ball bearings and replace if necessary • Replace the oil seal • Clean the cooling air passages
Drive	• Varies (depending on external factors)	• Touch up or renew the surfaces/ anticorrosion coating
Air ducts and surfaces of the motor and the forced cooling fan if applicable	• Varies (depending on external factors)	• Clean air ducts and surfaces

1) For the DR.315 with relubrication device, please note the shortened relubrication periods in sec. "Bearing lubrication DR.315".

7.2 Bearing lubrication

7.2.1 Bearing lubrication of the DR.315

Series 315 motors may be equipped with a lubrication device. The following figure shows the positions of the lubrication devices.



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[1] Lubrication device in type A in accordance with DIN 71412

Under normal operating conditions and at an ambient temperature between -20 °C C to 40 °C, SEW-EURODRIVE uses ESSO Polyrex EM (K2P-20 DIN51825), a polyurea-based mineral high-performance, high temperature grease for the initial lubrication.

For motors in the low temperature range up to -40 °C SEW uses SKF GXN, which is also a polyurea-based mineral grease.

Relubrication

You can purchase the lubricants in 400 g cartridges from SEW-EURODRIVE. For order information, refer to the section, "Lubricant tables for roller bearings of SEW motors" .

	NOTE
	Only mix lubricants of the same thickness type, the same base oil and the same consistency (NLGI class).

Grease the motor bearings in accordance with the information on the lubricant plate. The used grease collects inside the motor and should be removed every 6-8 relubrication cycles during an inspection. Each time you re-lubricate, ensure that the bearing is two-thirds full.

After relubricating the motors, you should startup slowly, if possible, so that the grease is distributed evenly.

Relubrication period

The relubrication intervals for the bearing correspond to the following table for the following conditions:

- -20 °C to + 40 °C ambient temperature
- a 4-pole speed
- and a normal load

At greater speeds, higher loads or higher ambient temperatures, the relubrication intervals are shorter.

	Horizontal mounting position		Vertical mounting position	
Motor type	**Duration**	**Quantity**	**Duration**	**Quantity**
DR.315 /NS	5000 h	50 g	3000 h	70 g
DR.315 /ERF /NS	3000 h	50 g	2000 h	70 g

7.3 Reinforced bearing

STOP

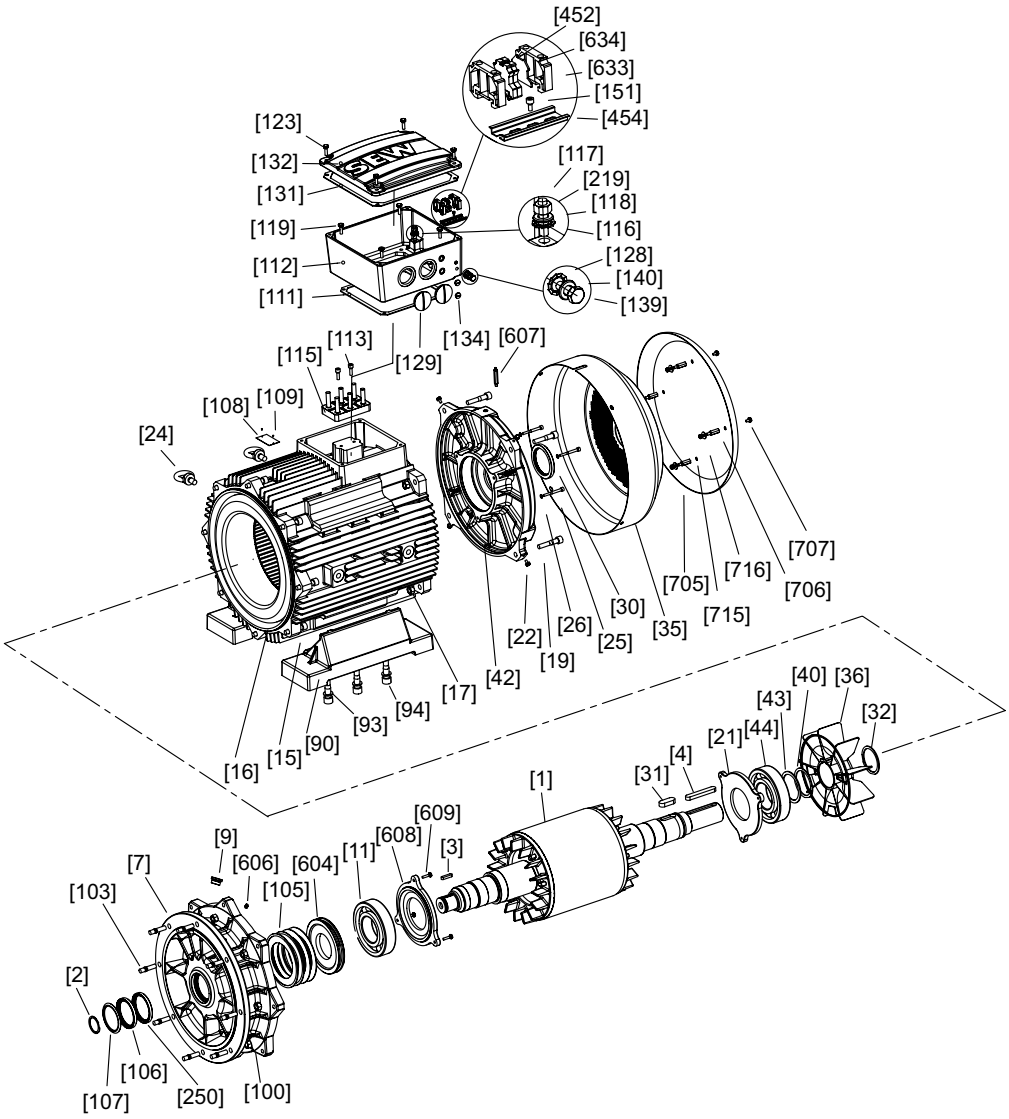
In the /ERF (reinforced bearing) option, cylindrical roller bearings are installed on the A side. These must not be operated without an overhung load, otherwise you risk damaging the bearings.

The reinforced bearing is only offered with the /NS (relubrication) option so as to facilitate optimal lubrication of the bearing. Please observe the notes on bearing lubrication in section "Bearing lubrication of the DR.315" (see page 29) .

7.4 Inspection and maintenance work on the motor DR315

7.4.1 Basic design of the DR.315

The following figure is a schematic diagram. It is to facilitate assigning components to the spare parts lists. Deviations are possible depending on the motor size and version!



351998603

[1] Rotor
[2] Circlip
[3] Key
[4] Key
[7] Flange
[9] Screw plug
[11] Deep groove ball bearing
[15] Machine screw
[16] Stator
[17] Hexagonal nut
[19] Machine screw
[21] Oil seal flange
[22] Hex head bolt
[24] Eyebolt
[25] Machine screw
[26] Sealing washer
[30] Oil seal
[31] Key
[32] Circlip
[35] Fan guard
[36] Fan
[40] Circlip
[42] B-side endshield
[43] Supporting ring
[44] Deep groove ball bearing
[90] Foot
[94] Machine screw
[100] Hexagonal nut
[103] Stud
[105] Spring washer
[106] Oil seal
[107] Oil flinger
[108] Nameplate
[109] Grooved pin
[111] Gasket for lower part
[112] Terminal box lower part
[113] Machine screw
[115] Terminal board
[116] Serrated lock washer
[117] Stud
[118] Disc
[119] Hex head bolt
[123] Hex head bolt
[129] Screw plug
[131] Gasket for cover
[132] Terminal box cover
[134] Screw plug
[139] Hex head bolt
[140] Disc
[151] Machine screw
[219] Hex head bolt
[452] Terminal strip
[454] DIN rail
[604] Lubrication ring
[604] Relubrication ring
[606] Greasing nipple
[607] Greasing nipple
[608] Oil seal flange
[609] Hex head bolt
[633] End bracket
[634] End plate
[705] Protective canopy
[706] Spacer bolt
[707] Hex head bolt
[715] Hexagonal nut
[716] Disc

7.4.2 Inspection steps DR.315

⚠ HAZARD!

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Disconnect the motor from the power supply before starting work and safeguard against accidental startup.
- Carefully observe the following operation steps.

1. With gearmotors: Remove the motor from the gear unit.
2. Remove fan guard [35] and fan [36].
3. Unfasten machine screws [25] [19] and remove B-side endshield [42].
4. Unfasten machine screws [15] from the flange [7] and remove the complete rotor [1] together with the flange. With gearmotors, pull off the oil flinger [107].
5. Loosen screws [609] and separate the rotor from the flange [7]. Before disassembly, protect the oil seal seat from damage using adhesive tape or a protective sleeve.
6. Visual inspection: Is there any moisture or gear unit oil inside the stator?
   - If not, proceed to step 8
   - If there is condensation, proceed to step 7
   - If there is gear oil, have the motor repaired by a specialist workshop
7. If there is condensation inside the stator:

   Clean the winding, dry it and check it electrically (see section "Preliminary work" (see page 14).
8. Replace the roller bearings [11] [44] with permitted roller bearing types.

   See section "Permitted anti-friction bearing types" (see page 34).

   Fill the bearing with grease until it is two-thirds full.

   See section "Bearing lubrication DR.315" (see page 29).

   Caution: place the oil seal flange, [608] and [21], onto the rotor shaft before installing the bearings.
9. Starting on the A-side, mount the motor vertically.
10. Place the cup springs [105] and lubrication ring [604] into the bearing bore of the flange [7].

    Hang the rotor onto the B-side thread, and guide into the flange [7].

    Fasten the oil seal flange [608] to the flange [7] using the hex head bolts [609].

11. Mount the stator [16].
    - Reseal the stator seat: seal the sealing surface with a duroplastic sealing compound (operating temperature -40 °C [-40 °F]...180 °C [356 °F]), such as "Hylomar L Spezial".

      Caution: Protect the winding overhead from damage.
    - Screw in the stator [16] and flange [7] with screws [15].
12. Before mounting the B-side endshield [42], screw a 200-mm M8 setscrew into the oil seal flange [21].
13. Before mounting the B-side endshield [42], feed the setscrew in through a bore for the screw [25]. Screw in the B-side endshield [42] and stator [16] using machine screws [19] and hex nuts [17]. Lift the oil seal flange [21] with the setscrew, and fasten using 2 screws [25]. Remove the setscrew and screw in the remaining screws [25].
14. Renew oil seals
    - A-side: insert the oil seal [106] and the oil seal [250] for gearmotors.

      With gearmotors, fill the space between the two oil seals approx. two-thirds full with grease (Klüber Petamo GHY133).
    - B-side: insert the oil seal [30], and coat the sealing lip with the same grease.
15. Install the fan [36] and fan guard [35].

8 Technical Data

8.1 Permitted anti-friction bearing types

8.1.1 Anti-friction bearing types for motor size DR.315

Motor type	A-side bearing		B-side bearing	
	IEC motor	Gearmotor	IEC motor	Gearmotor
DR.315K	6319-J-C3	6319-J-C3	6319-J-C3	6319-J-C3
DR.315S				
DR.315M		6322-J-C3		6322-J-C3
DR.315L				

Motor with reinforced bearings

Motor type	A-side bearing	B-side bearing	
		IEC motor	Gearmotor
DR.315K	NU319E	6319-J-C3	6319-J-C3
DR.315S			
DR.315M			6322-J-C3
DR.315L			

8.2 Lubricant table for anti-friction bearings of SEW motors

8.2.1 Lubricant tables for roller bearings

Motor size DR.315 Motors of size DR.315 can be equipped with a relubrication device.

	Ambient temperature	Manufacturer	Type	DIN designation
Motor anti-friction bearings	-20 °C ... 80 °C	Esso	Polyrex EM[1)]	K2P-20
	-40 °C ... 60 °C	SKF	GXN[1)]	K2N-40

1) mineral lubricant (= mineral-based anti-friction bearing grease)

8.3 Order information for lubricants and anti-corrosion agents

Lubricants and anti-corrosion agents may be obtained directly from SEW-EURODRIVE using the following order numbers.

Use	Manufacturer	Type	Quantity	Order number
Lubricant for roller bearings	Esso	Polyrex EM	400 g	09101470
	SKF	GXN	400 g	09101276
Type of lubricant Sealing rings	Klüber	Petamo GHY 133	10 g	04963458
Anti-corrosive and lubricant	SEW-EURODRIVE	NOCO® FLUID	5.5 g	09107819

9 Appendix

9.1 Wiring diagrams

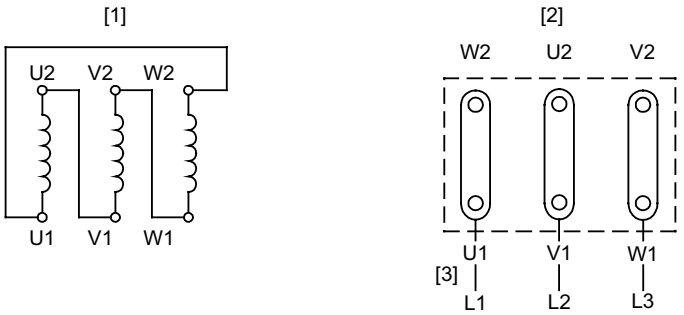
	NOTE
	The motor must only ever be connected as shown in the wiring diagram or terminal assignment diagram included with the motor. The following section merely contains a selection of the most common connection variants. You can obtain the applicable wiring diagrams from SEW-EURODRIVE free of charge.

9.1.1 Delta and star connection

AC motor

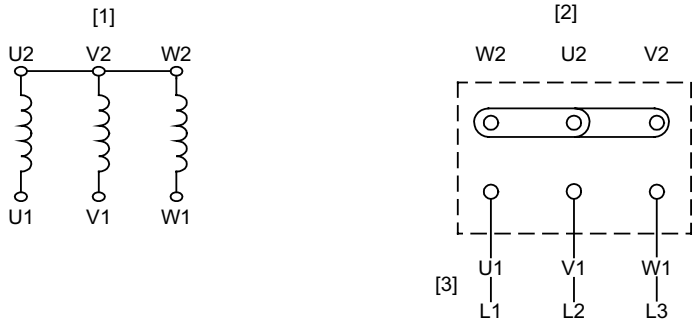
For all motors with single speed, direct switching-on, or ⅄ △ startup

△ *connection* The following figures shows the △ connection for low voltages



[1] Motor winding
[2] Motor terminal board
[3] Incoming cables

⅄ *connection* The following figure shows the ⅄ connection for high voltages



[1] Motor winding
[2] Motor terminal board
[3] Incoming cables

Change in direction of rotation: Exchanging of two incoming cables (L1 - L2)

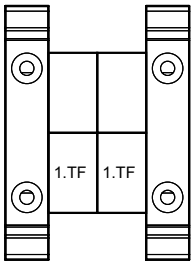
9.1.2 Motor protection with TF for the DR.315

TF

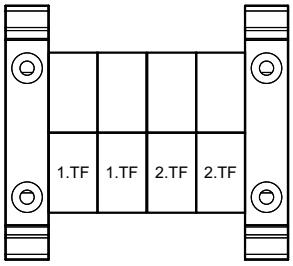
The following illustrations show the connection of the motor protection with TF PTC thermistor sensors or TH bimetallic thermostats.

Depending on the version, an "x-pole" terminal strip is available for connecting to the trip switch.

Example: TF to terminal strip



Example: 2xTF to terminal strip



9.2 Declaration of Conformity

EG-Konformitätserklärung

EC Declaration of Conformity
Déclaration CE de conformité

TÜV CERT DIN EN ISO 9001

SEW EURODRIVE

Nr./*No./N°* 900460107

im Sinne der Richtlinie 94/9/EG, Anhang VIII
according to Directive 94/9/EC, Appendix VIII
au sens de la directive 94/9/CE, Annexe VIII

SEW EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

erklärt in alleiniger Verantwortung die Konformität der folgenden Produkte
declares under sole responsibility conformity of the following products
déclare, sous sa seule responsabilité, que les produits suivants

Motoren der Baureihe: *Motors of the series:* *Moteurs des séries :*	**DR.315**
Kategorie: *category: / Catégories :*	**II 3G & II 3D**
Kennzeichnung: *marking: / Codification :*	**II3G Ex nA II T3** **II3D Ex tD A22 IP5X T120°C** **II3D Ex tD A22 IP5X T140°C** **II3D Ex tD A22 IP6X T120°C** **II3D Ex tD A22 IP6X T140°C**

mit der
with the / respectent la

Richtlinie *Directive / Directive*	**94/9 EG** *94/9 EC / 94/9/CE*
angewandte harmonisierte Normen: *Applied harmonized standards: / Normes harmonisées appliquées :*	**EN 60079-0:2004** **EN 60079-15:2005** **EN 61241-0:2002** **EN 61241-1:2004**

Ort/Datum
Place/date / Lieu et date

Bruchsal, 24.08.07

Geschäftsführer Vertrieb und Marketing
Managing Director Sales and Marketing
Directeur général international commercial et marketing

H. Sondermann

10 Malfunctions

10.1 Motor malfunctions

Malfunctions	possible cause	Remedy
Motor does not start up	Supply cable interrupted	Check the connections and (intermediate) terminal points, correct if necessary)
	Supply cable fuse has blown	Replace fuse
	Motor protection (switch) has triggered	Check that the motor protection (switch) is set correctly; current specification is on the nameplate
	Motor protection does not trip	Check motor protection control
	Malfunction in control or in the control process	Observe the switching sequence; correct if necessary
Motor only starts with difficulty or does not start at all	Motor power designed for delta connection but connected in star	Correct the connection from star to delta; follow the wiring diagram
	Motor power designed for star-star connection but only connected in star	Correct the connection from star to star-star; follow the wiring diagram
	Voltage or frequency deviate considerably from setpoint, at least while being switched on.	Provide better power supply system; reduce the power supply load; Check cross section of supply cable, replace with cable of larger cross section if needed.
Motor does not start in star connection, only in delta connection	Star connection does not provide sufficient torque	If the delta inrush current is not too high (observe the regulations of the power supplier), start up directly in delta; Check the project planning and use a larger motor or special version if necessary (consult with SEW-EURODRIVE)
	Contact fault on star/delta switch	Check the switch, replace if necessary; Check the connections
Incorrect direction of rotation	Motor connected incorrectly	Swap two phases of the motor supply cable
Motor hums and has high current consumption	Winding defective	Send motor to specialist workshop for repair
	Rotor rubbing	
Fuses blow or motor protection trips immediately	Short circuit in the motor supply cable	Repair short circuit
	Supply cables connected incorrectly	Correct the wiring, observe the wiring diagram
	Short circuit in motor	Send motor to specialist workshop for repair
	Ground fault on motor	
Severe speed loss under load	Motor overload	Measure power, check project planning and use larger motor or reduce load if necessary
	Voltage drops	Check cross section of supply cable, replace with cable of larger cross section if needed.

Malfunctions	possible cause	Remedy
Motor heats up excessively (measure temperature)	Overload	Measure power, check project planning and use larger motor or reduce load if necessary
	Insufficient cooling	Provide for cooling air supply or clear cooling air passages, retrofit forced cooling fan if necessary. Check the air filter, clean or replace if necessary
	Ambient temperature is too high	Observe the permitted temperature range, reduce the load if necessary
	Motor in delta connection instead of star connection as provided for	Correct the wiring, observe the wiring diagram
	Loose contact in supply cable (one phase missing)	Tighten loose contact, check connections, observe wiring diagram
	Fuse has blown	Look for and rectify cause (see above); replace fuse
	Supply voltage deviates from the rated motor voltage by more than 5% (range A)/ 10% (range B).	Adjust motor to supply voltage.
	Rated operation type (S1 to S10, DIN 57530) exceeded, e.g. through excessive starting frequency	Adjust the rated operating mode of the motor to the required operating conditions; consult a professional to determine the correct drive if necessary
Excessively loud	Ball bearing compressed, dirty or damaged	Re-align motor and the driven machine, inspect ball bearing (see sec. "Permitted ball bearing types") and replace if necessary
	Vibration of rotating parts	Look for the case, possibly an imbalance; correct the cause, observe method for balancing
	Foreign bodies in cooling air passages	Clean the cooling air passages

10.2 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

11 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
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
	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-EUROCOME 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
	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	**Alger**	Réducom 16, rue des Frères Zaghnoun Bellevue El-Harrach 16200 Alger	Tel. +213 21 8222-84 Fax +213 21 8222-84 reducom_sew@yahoo.fr

Argentina			
Assembly **Sales** **Service**	**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
	Townsville	SEW-EURODRIVE PTY. LTD. 12 Leyland Street Garbutt, QLD 4814	Tel. +61 7 4779 4333 Fax +61 7 4779 5333 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://sew-eurodrive.at sew@sew-eurodrive.at

Belarus			
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Belgium			
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Service Competence Center	**Industrial Gears**	SEW Caron-Vector 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**	**Sao 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 6489-9133 Fax +55 11 6480-3328 http://www.sew.com.br sew@sew.com.br
	Additional addresses for service in Brazil provided on request!		

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

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

Canada			
Assembly **Sales** **Service**	**Toronto**	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca marketing@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 marketing@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 marketing@sew-eurodrive.ca
	Additional addresses for service in Canada provided on request!		

Chile			
Assembly **Sales** **Service**	**Santiago de Chile**	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 25322611 info@sew-eurodrive.cn http://www.sew-eurodrive.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 82267891 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
	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. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr

Czech Republic			
Sales	**Praha**	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Lužná 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 220121234 Fax +420 220121237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz

Denmark			
Assembly **Sales** **Service**	**Kopenhagen**	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 sew@sew.fi http://www.sew-eurodrive.fi
Production **Assembly** **Service**	**Karkkila**	SEW Industrial Gears OY Valurinkatu 6 FIN-03600 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi

Gabon			
Sales	**Libreville**	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12

Great Britain			
Assembly **Sales** **Service**	**Normanton**	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-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

Greece			
Sales **Service**	**Athen**	Christ. Boznos & Son S.A. 12, 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 2 7960477 + 79604654 Fax +852 2 7959129 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 office@sew-eurodrive.hu

India			
Assembly **Sales** **Service**	**Vadodara**	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 2831086 Fax +91 265 2831087 http://www.seweurodriveindia.com sales@seweurodriveindia.com subodh.ladwa@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**	**Milano**	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 Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36

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 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp

Korea			
Assembly **Sales** **Service**	**Ansan-City**	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master@sew-korea.co.kr
	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

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

Lebanon			
Sales	**Beirut**	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com

Lithuania			
Sales	**Alytus**	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt

Luxembourg			
Assembly **Sales** **Service**	**Brüssel**	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.lu info@caron-vector.be

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

Morocco			
Sales	**Casablanca**	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 ali.alami@premium.net.ma

Netherlands			
Assembly **Sales** **Service**	**Rotterdam**	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu

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

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 67710-90 Fax +48 42 67710-99 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
		24 Hour Service	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**	**Bucureşti**	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 195220 St. Petersburg Russia	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

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

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-83554 Bratislava	Tel. +421 2 49595201 Fax +421 2 49595200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. ul. Vojtecha Spanyola 33 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk

Slovakia			
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-97411 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 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 dross@sew.co.za
	Capetown	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 dswanepoel@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 dtait@sew.co.za

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 info@sew-eurodrive.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 5, Rue El Houdaibiah 1000 Tunis	Tel. +216 71 4340-64 + 71 4320-29 Fax +216 71 4329-76 tms@tms.com.tn

Turkey			
Assembly **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419164, 3838014, 3738015 Fax +90 216 3055867 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

Ukraine			
Sales **Service**	**Dnepropetrovsk**	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

USA			
Production **Assembly** **Sales** **Service**	**Greenville**	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 Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly **Sales** **Service**	**San Francisco**	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Philadelphia/PA	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
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@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

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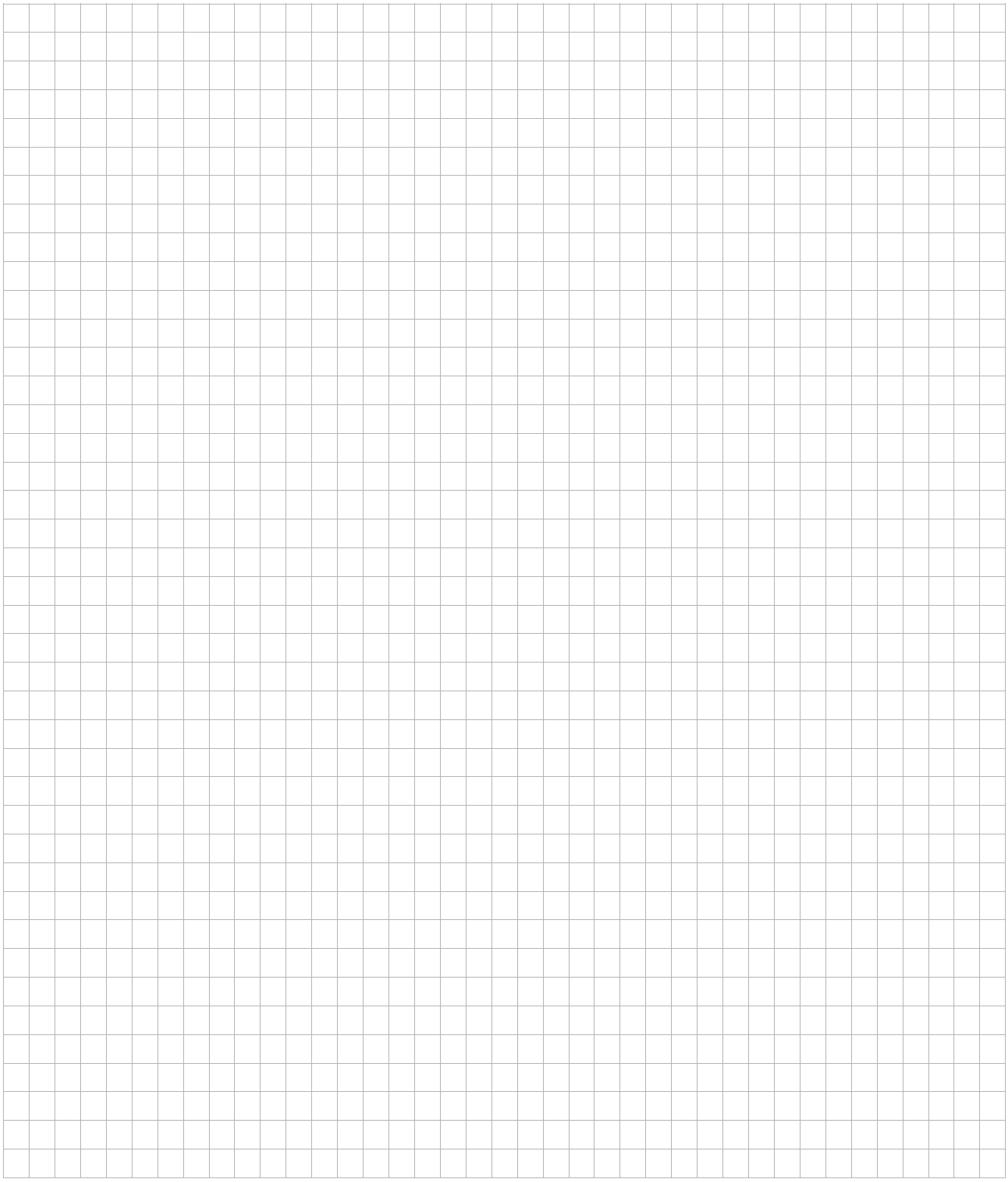

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With drives and controls that automatically improve your productivity.

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With uncompromising quality that reduces the cost and complexity of daily operations.

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With innovative technology that solves tomorrow's problems today.

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