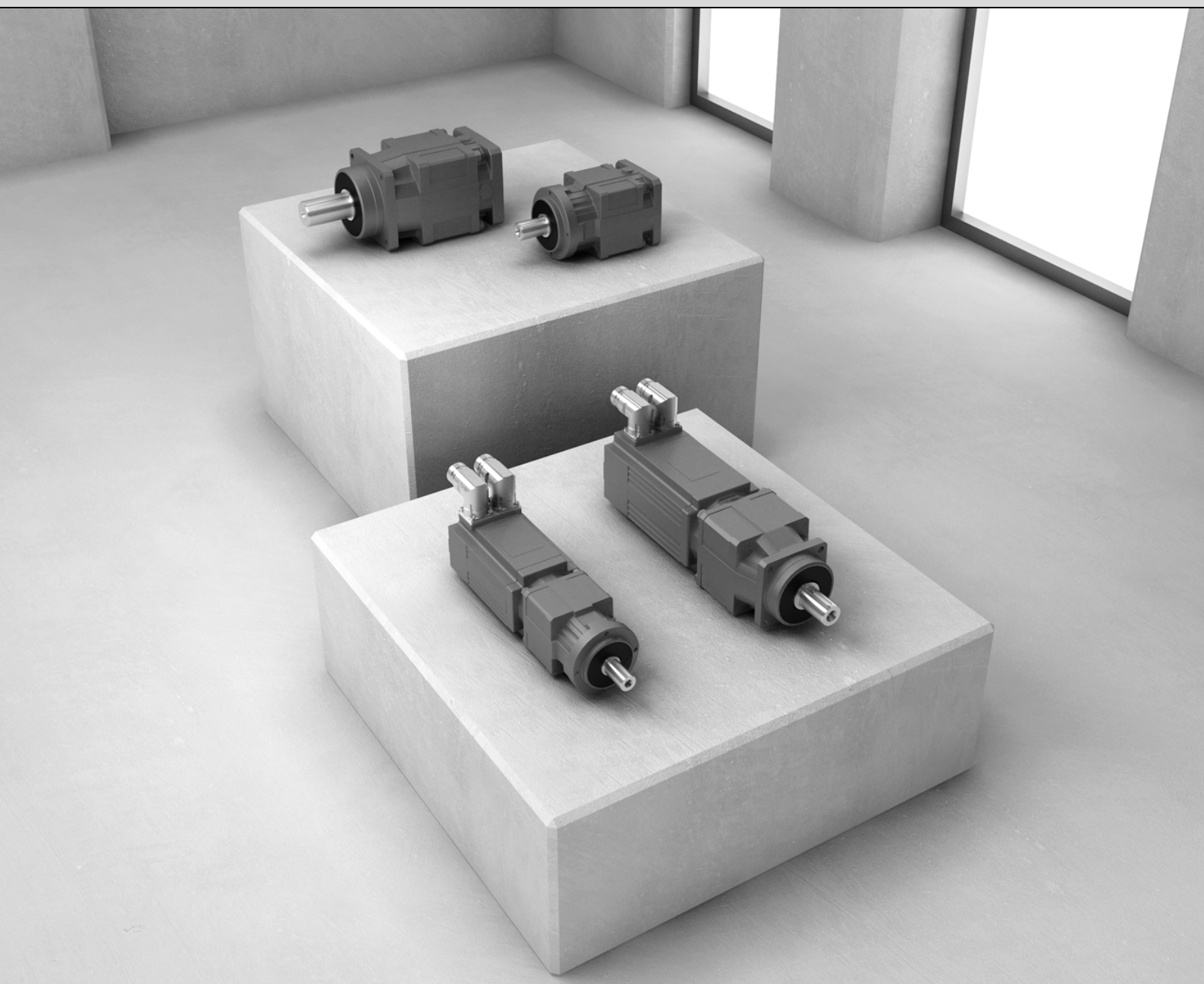




**SEW**  
**EURODRIVE**



## **PS.C.. Planetary Servo Gear Units**

Edition 12/2007

11621419 / EN

# Operating Instructions





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## 1 General Information

### 1.1 Structure of the safety notes

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

Pictogram	 <b>SIGNAL WORD!</b>
	<p>Type and source of danger.</p> <p>Possible consequence(s) if the safety notes are disregarded.</p> <ul style="list-style-type: none"> <li>Measure(s) to prevent the danger.</li> </ul>

Pictogram	Signal word	Meaning	Consequences in case of disregard
<p>Example:</p>  <p>General danger</p>  <p>Specific danger, e.g. electric shock</p>	<p> <b>DANGER!</b></p> <p> <b>WARNING!</b></p> <p> <b>CAUTION!</b></p>	<p>Imminent danger</p> <p>Possible dangerous situation</p> <p>Possible dangerous situation</p>	<p>Severe or fatal injuries</p> <p>Severe or fatal injuries</p> <p>Minor injuries</p>
	<b>STOP!</b>	Possible damage to property	Damage to the drive system or its environment
	<b>NOTE</b>	Useful information or a tip Simplifies the handling of the drive system	

### 1.2 Right to claim under limited 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 operating instructions. Therefore, read the operating instructions before you start working with the unit!

Make sure that the operating instructions are available to persons responsible for the plant 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 PS.C.. planetary servo gear unit 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 operating instructions. In such cases, any liability for defects is excluded.

**1.4 Waste disposal**

**Please follow the current national regulations.**

Dispose of the following materials separately in accordance with the country-specific regulations in force, as:

- Steel scrap
  - Housing parts
  - Gears
  - Shafts
  - Rolling element bearings
  - Cast parts
- Aluminum scrap
  - Housing parts
  - Adapter parts
- Collect waste oil and dispose of it according to the regulations in force.



## **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, or if you require further information, please contact SEW-EURODRIVE.

### **2.1 General information**

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

During or after operation, gearmotors, gear units and motors have:

- Live parts
- Moving parts
- Hot surfaces (may be the case)

Only qualified personnel may carry out the following work:

- Installation/assembly
- Connection
- Startup
- Maintenance
- Servicing

The following information and documents must be observed during these processes:

- Relevant operating instructions and wiring diagrams
- Warning and safety signs on the gear unit/gearmotor
- System-specific regulations and requirements
- National/regional regulations governing safety and the prevention of accidents

**Serious injuries and property damage may result from:**

- Improper use
- Incorrect installation or operation
- Unauthorized removal of necessary protection covers or housing

### **2.2 Target group**

PS.C.. planetary servo gear units represent a potential hazard for persons and material. Consequently, assembly, installation, startup and service work may only be performed by trained personnel who are aware of the potential hazards.

The personnel must be appropriately qualified for the task in hand and must be familiar with the assembly, installation and operation of the product. They must read the operating instructions, in particular the safety notes section, carefully and ensure that they understand and comply with them.

All persons involved in any other work, such as transportation, storage, operation and disposal, must have suitable training.



### **2.3 Designated use**

The designated use refers to the procedure specified in the operating instructions.

The PS.C.. planetary servo gear units are devices run by motors for industrial and commercial systems. Gear unit loads other than the permitted values, or the operation of PS.C.. planetary servo gear unit in areas of application other than industrial and commercial systems, are only permitted after consultation with SEW-EURODRIVE.

In compliance with the EC Machinery Directive 98/37/EC, PS.C.. planetary servo gear units are components for installation in machinery and systems. In the scope of the EC directive, you must not take the machinery into operation in the designated fashion until you have established that the end product complies with the Machinery Directive 98/37/EC.

### **2.4 Transportation, putting into 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. Do not operate the gear unit if it is damaged.**

The screwed-in transport eyebolts are only designed to hold the weight of the gearmotor / gear unit. Do not attach any additional loads.

If the gearmotor has two suspension eye lugs or lifting eyebolts, then you should also use both suspension eye lugs for attaching transport ropes. In this case, the tension force vector of the slings must not exceed a 45° angle in accordance with DIN 580.

Use suitable, sufficiently rated handling equipment if necessary.

#### **Possible damage caused by incorrect storage!**

Store the gear unit in a dry, dust-free room if it is not to be installed straight away.

### **2.5 Installation**

Adhere to the instructions in section 4, "Mechanical Installation."





## 2.6 Startup / operation


Ensure that the following requirements have been met before startup:

- Monitoring and protection devices may not be deactivated. This requirement also applies to the test run.
- Do **not** operate the gear units under the following ambient conditions:
  - Potentially-explosive atmosphere
  - Oils
  - Acids
  - Gases
  - Vapors
  - Radiation
- The ambient temperature must be between -20 °C and +40 °C. It is essential that you contact SEW-EURODRIVE if ambient temperatures exceed this range.
- Only operate the gear units when there is sufficient ventilation to prevent heat build-up.

## 2.7 Inspection/maintenance

Comply with the instructions in section 5, "Inspection and Maintenance."

## 2.8 Removing the motor for gear units with direct motor mounting

	<p><b>STOP!</b></p>
	<p>If customers remove the motor from planetary servo gear units with direct motor mounting, this can cause the unit to malfunction.</p> <p>Never remove the motor from planetary servo gear units yourself. The PS.C.. planetary servo gear unit may not function correctly once customers have disassembled the unit. In this case, any rights to claim under limited warranty become invalid.</p>

## 2.9 Unit temperature

Gear units can get very hot during operation.

Touching the gear unit when it has not been cooled will result in burns. The gear unit can have a surface temperature of up to 110 °C.

Never touch the gear unit during operation or in the cool down phase once the unit has been switched off.



### 3 Delivery Scope and Unit Design

	<b>NOTE</b>
	Refer to the "Geared Servomotors – DS, CM, CMP Motors in Combination with PS.C.. Gear Units" catalog and the operating instructions of the motor in use for information on the scope of delivery and project planning.

The above publications are available for download on the Internet at "[www.sew-eurodrive.de](http://www.sew-eurodrive.de)".

#### 3.1 Types and options

PS.C.. planetary servo gear units		Description
Type		
	PS.C..	Planetary servo gear unit with B5 output flange and solid shaft
	PSKC..	Planetary servo gear unit with B5 output flange and solid shaft with key
	PS.CZ..	Planetary servo gear unit with B14 output flange and solid shaft
	PSKCZ..	Planetary servo gear unit with B14 output flange and solid shaft with key



## 3.2 Unit designation and nameplate

### 3.2.1 Example: Unit designation for PS.C.. planetary servo gear units with ECH.. or EPH.. adapters

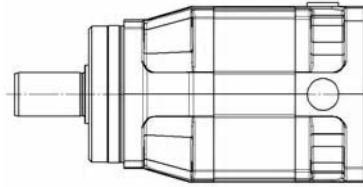


Figure 1: Example of a PS.C.. planetary servo gear unit with ECH.. adapter

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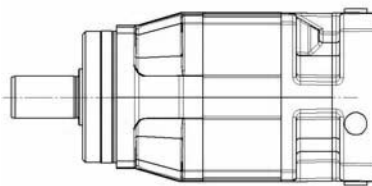
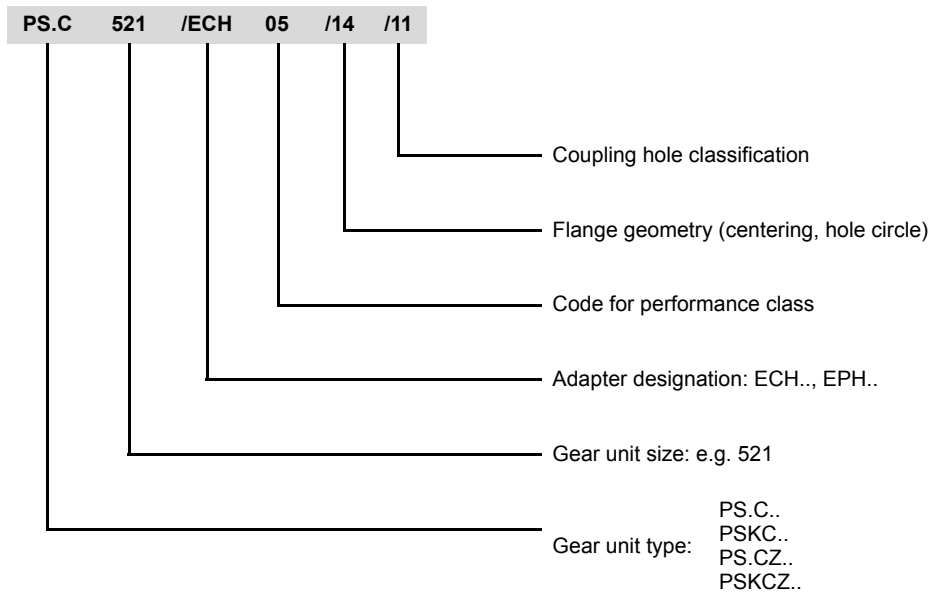


Figure 2: Example of a PS.C.. planetary servo gear unit with EPH.. adapter

62823axx

The unit designation of the PS.C.. planetary servo gear unit with adapter begins with the series of the gear unit.





**Example: Nameplate for a PS.C.. planetary servo gear unit with adapter**

<b>SEW-Eurodrive</b>						i	10
76646 Bruchsal/Germany						kg	5,9
PSC321 ECH03/13/11						IP	65
201.3123755201.0001.04				IM	MO		
n <sub>apk</sub>	1/min	650	n <sub>epk</sub>	1/min	6500		
M <sub>apk</sub>	Nm	81	Made in Germany				
Betriebsanleitung muss beachtet werden							
		CLP PG220	0,091 L		01178997		

62863ade

Figure 3: Sample nameplate

i		Gear unit reduction ratio
IM		Mounting position
IP		Enclosure
n <sub>epk</sub>	[1/min]	Maximum permitted input speed
n <sub>apk</sub>	[1/min]	Maximum permitted output speed
M <sub>apk</sub>	[Nm]	Maximum permitted output torque

### 3.2.2 Example: Order code for PS.C.. planetary servo gearmotor

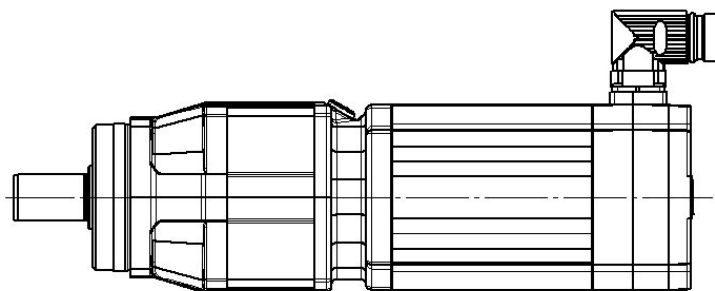
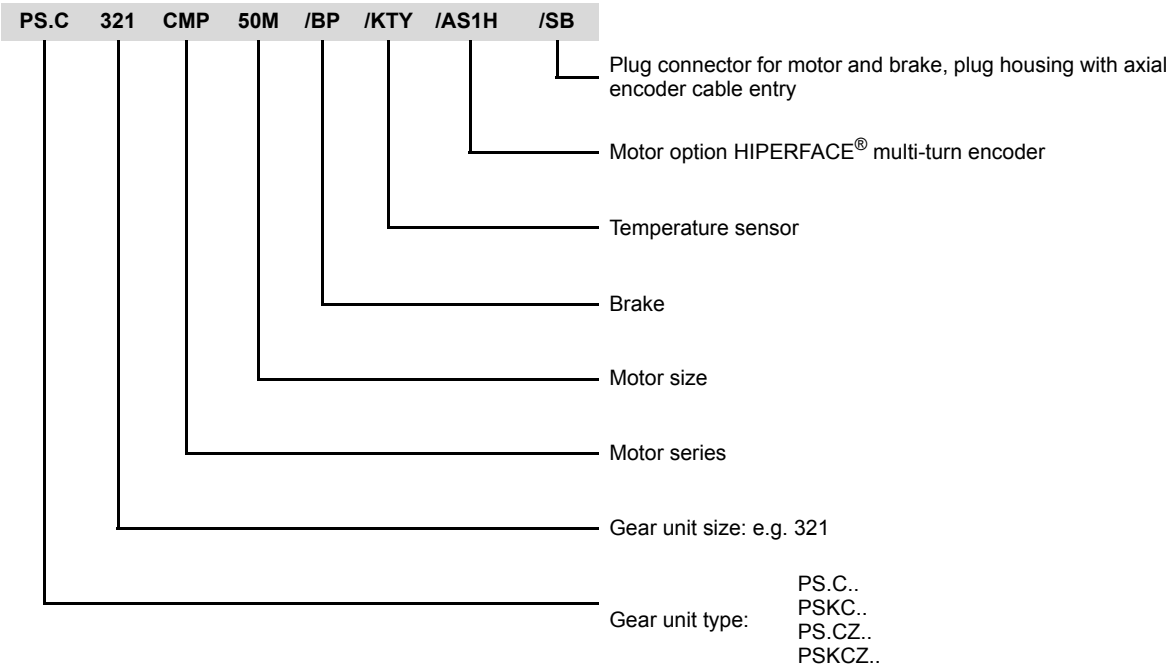


Figure 4: Example of a PS.C.. planetary servo gearmotor

62824axx



A planetary servo gearmotor with brake, manual brake, positive temperature coefficient thermistor and plug connector with a connection cross section of 1.5 mm<sup>2</sup> has, for example, the following unit designation:



Example: Nameplate for a PS.C.. planetary servo gearmotor

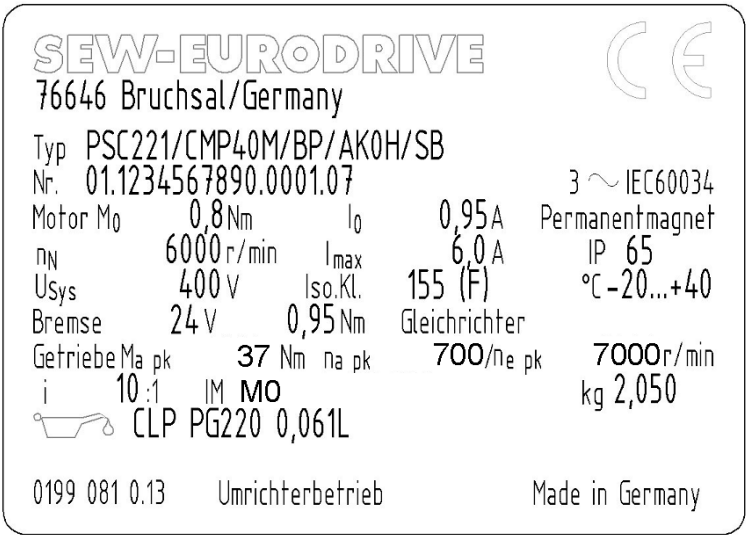


Figure 5: Nameplate for a PS.C.. planetary servo gearmotor

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	<b>NOTE</b>
	The nameplate of the PS.C.. planetary servo gearmotor is fixed to the servomotor.



### 3.3 Gear unit design



#### NOTE

The following illustrations are intended to explain the general structure. Their purpose is only to make it easier to assign components to the spare parts lists. Discrepancies may occur depending on the gear unit size and version!

#### 3.3.1 Basic design of a single-stage planetary servo gear unit

PSKC..

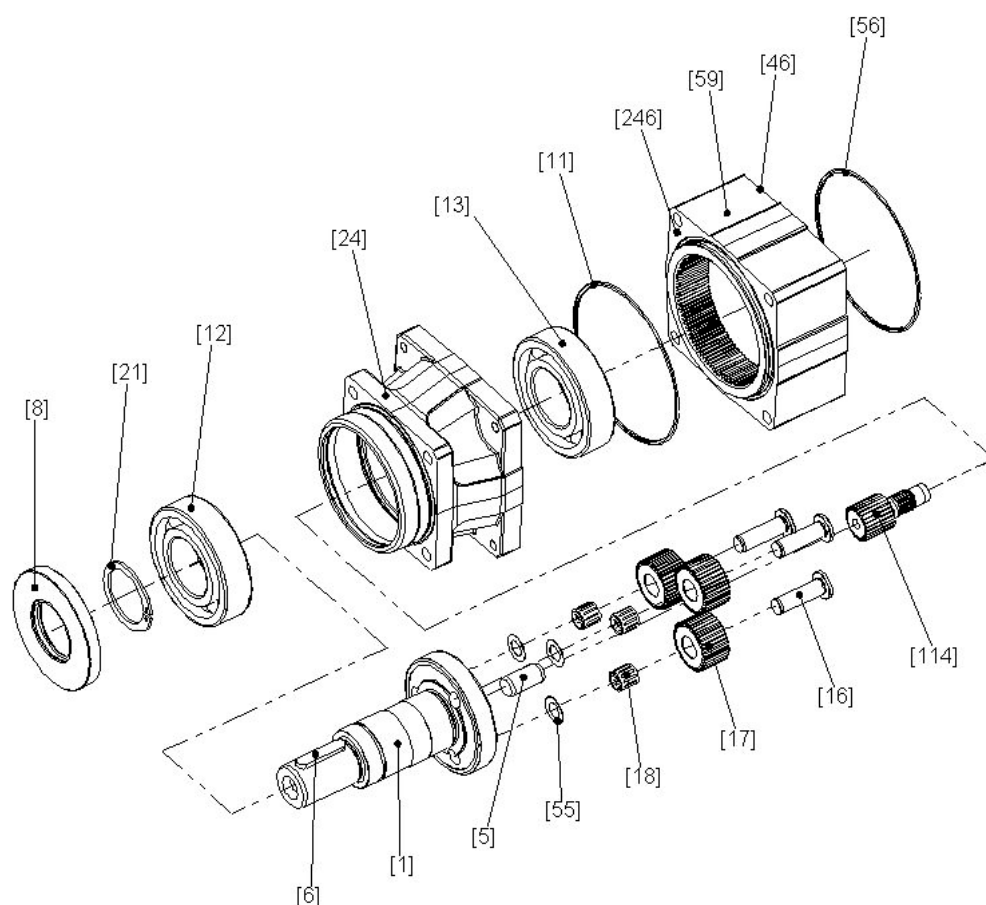


Figure 6: Basic design of a servo planetary gear unit PSKC121 to PSKC621

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[1]	Planet carrier for output	[13]	Grooved ball bearing	[46]	Adhesive and sealing compound
[5]	Hardened cylindrical pin	[16]	Planetary gear axle	[55]	Thrust plate
[6]	Key <sup>1)</sup>	[17]	Planet wheel	[56]	O-ring
[8]	Oil seal	[18]	Needle roller	[59]	Annulus
[11]	O-ring	[21]	Circlip	[114]	Sun wheel
[12]	Grooved ball bearing	[24]	Drive flange	[246]	Adhesive and sealing compound

1) For PSKC121 to PSKC621



### 3.3.2 Basic design of a single-stage planetary servo gear unit PSKCZ..

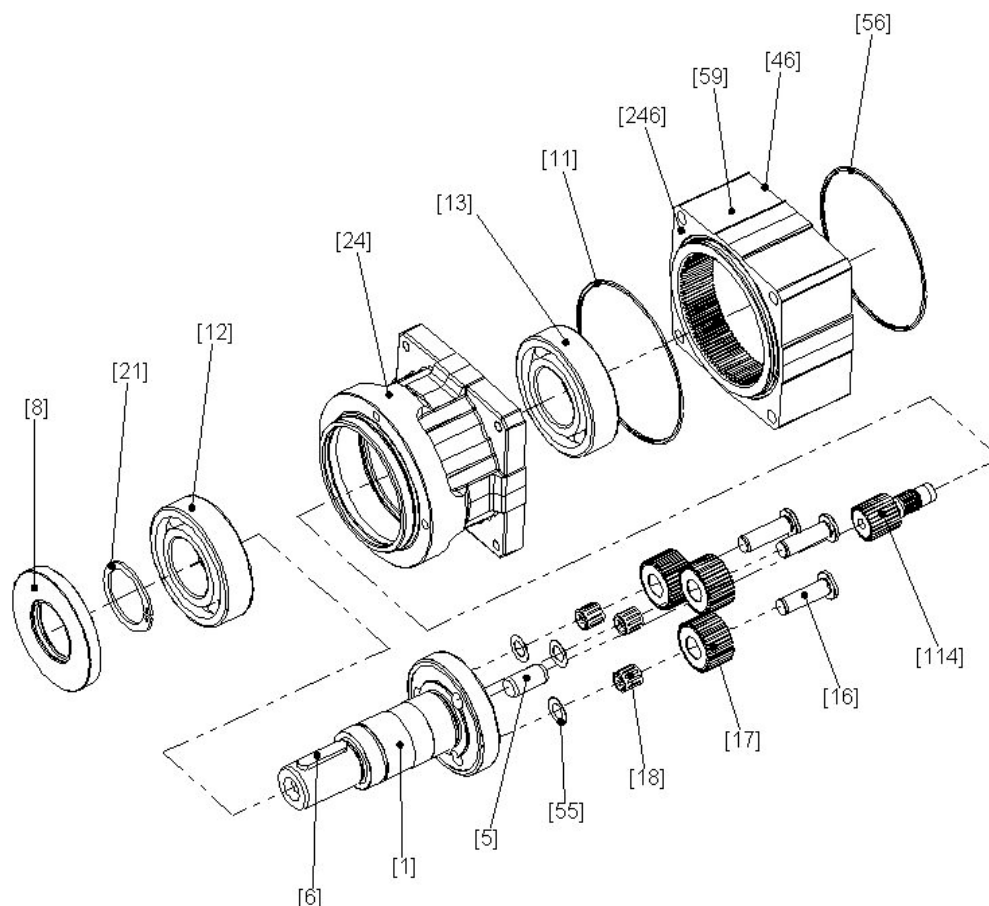


Figure 7: Basic design of a servo planetary gear unit PSKCZ121 to PSKCZ621

62826AXX

[1]	Planet carrier for output	[13]	Grooved ball bearing	[46]	Adhesive and sealing compound
[5]	Hardened cylindrical pin	[16]	Planetary gear axle	[55]	Thrust plate
[6]	Key <sup>1)</sup>	[17]	Planet wheel	[56]	O-ring
[8]	Oil seal	[18]	Needle roller	[59]	Annulus
[11]	O-ring	[21]	Circlip	[114]	Sun wheel
[12]	Grooved ball bearing	[24]	Drive flange	[246]	Adhesive and sealing compound

1) For PSKCZ121 to PSKCZ621

**PSKC..**

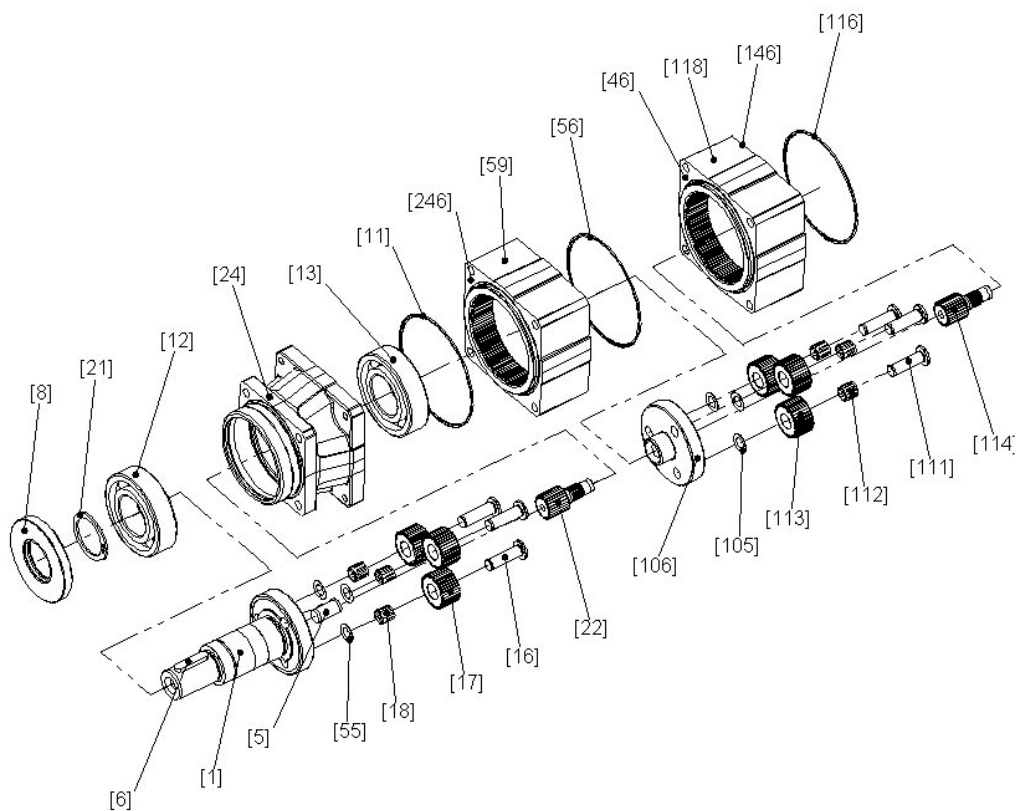


Figure 8: Basic design of a servo planetary gear unit PSKC122 to PSKC622

62827AXX

[1]	Planet carrier for output	[18]	Needle roller	[106]	Preliminary stage planet carrier
[5]	Hardened cylindrical pin	[21]	Circlip	[111]	Planetary gear axle
[6]	Key <sup>1)</sup>	[22]	Sun wheel	[112]	Needle roller
[8]	Oil seal	[24]	Drive flange	[113]	Planet wheel
[11]	O-ring	[46]	Adhesive and sealing compound	[114]	Sun wheel
[12]	Grooved ball bearing	[55]	Thrust plate	[116]	O-ring
[13]	Grooved ball bearing	[56]	O-ring	[118]	Annulus
[16]	Planetary gear axle	[59]	Annulus	[146]	Adhesive and sealing compound
[17]	Planet wheel	[105]	Thrust plate	[246]	Adhesive and sealing compound

1) For PSKC122 to PSKC622





### 3.3.4 Basic design of a two-stage planetary servo gear unit PSKCZ..

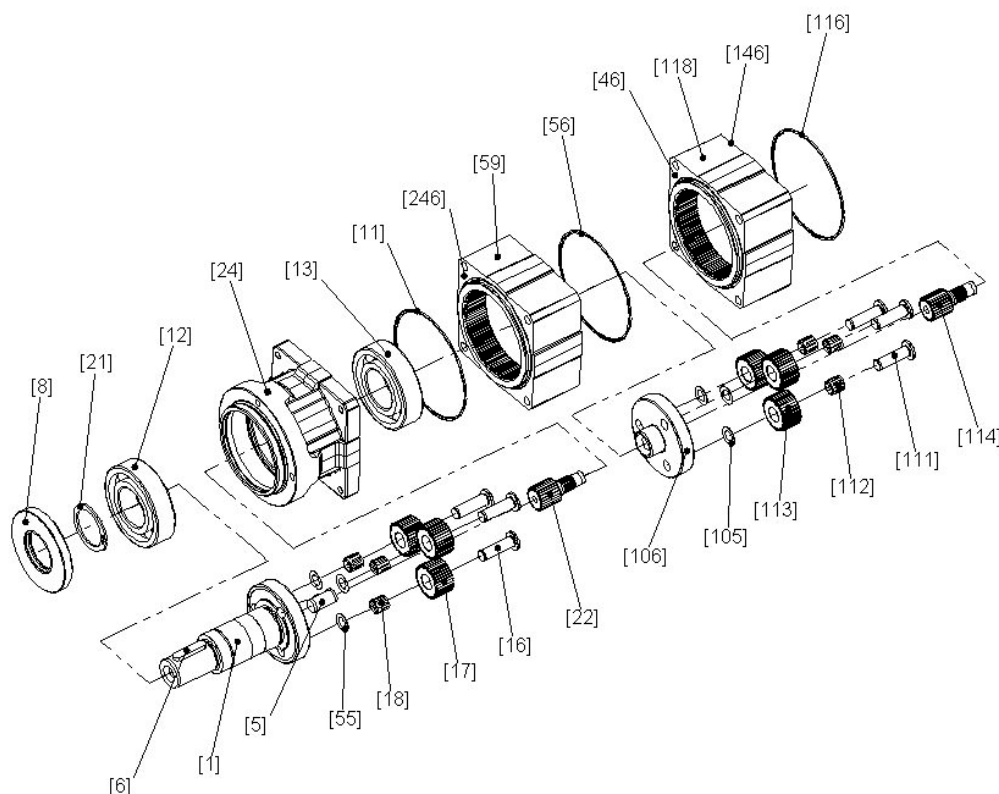


Figure 9: Basic design of a servo planetary gear unit PSKCZ122 to PSKCZ622

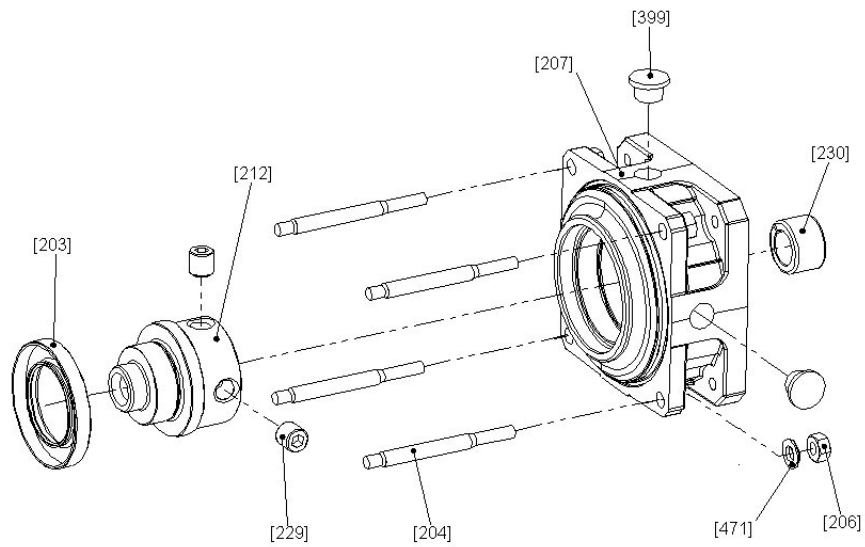
62828AXX

[1]	Planet carrier for output	[18]	Needle roller	[106]	Preliminary stage planet carrier
[5]	Hardened cylindrical pin	[21]	Circlip	[111]	Planetary gear axle
[6]	Key <sup>1)</sup>	[22]	Sun wheel	[112]	Needle roller
[8]	Oil seal	[24]	Drive flange	[113]	Planet wheel
[11]	O-ring	[46]	Adhesive and sealing compound	[114]	Sun wheel
[12]	Grooved ball bearing	[55]	Thrust plate	[116]	O-ring
[13]	Grooved ball bearing	[56]	O-ring	[118]	Annulus
[16]	Planetary gear axle	[59]	Annulus	[146]	Adhesive and sealing compound
[17]	Planet wheel	[105]	Thrust plate	[246]	Adhesive and sealing compound

1) For PSKC122 to PSKC622



#### 3.3.5 Basic design of an ECH.. adapter for planetary servo gear units



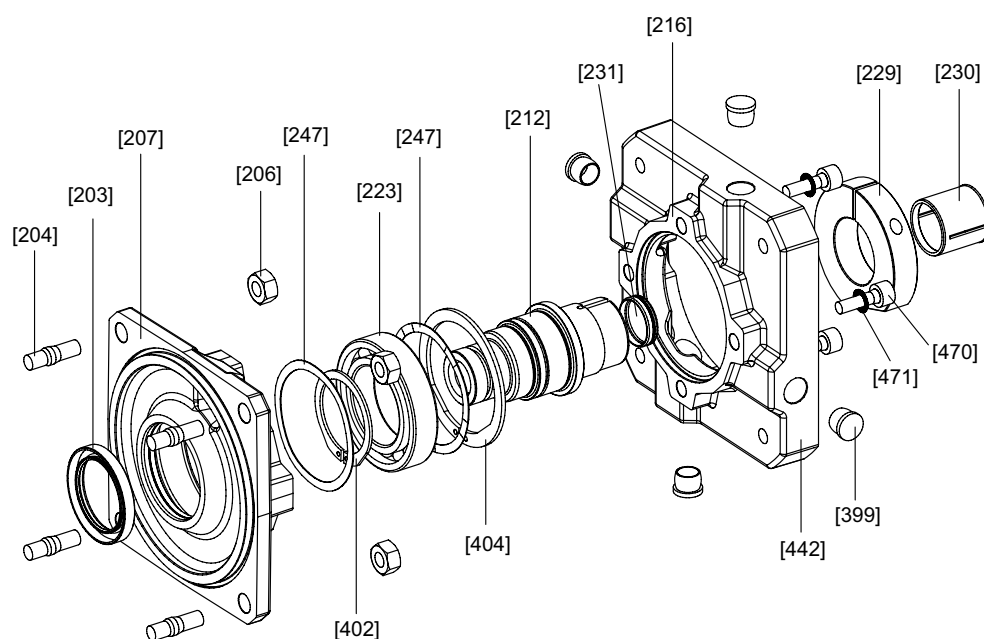
62829AXX

Figure 10: Basic design of the ECH.. adapter

[203]	Oil seal	[207]	Adapter flange	[230]	Motor shaft sleeve
[204]	Stud	[212]	Adapter shaft	[399]	Closing plug
[206]	Hexagonal nut	[229]	Setscrew	[471]	Washer



### 3.3.6 Basic design of an EPH.. adapter for planetary servo gear units



57484AXX

Figure 11: Basic design of the EPH.. adapter

[203]	Oil seal	[223]	Grooved ball bearing	[402]	Circlip
[204]	Stud	[229]	Clamping ring	[404]	Circlip
[206]	Hexagonal nut	[230]	Coupling sleeve	[442]	Adapter flange
[207]	Flange	[231]	Closing cap	[470]	Machine screw
[212]	Adapter shaft	[247]	Equalizing ring	[471]	Washer
[216]	Adhesive and sealing compound	[399]	Closing plug		




## 4 Mechanical Installation

### 4.1 Before you start

Only assembly the drive if it is undamaged (make sure no damage has occurred during transportation or storage).

### 4.2 Prerequisites for installation

- 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.

	<b>STOP!</b>
	<p>Possible material damage!</p> <p>Do not let the solvent come into contact with the sealing lips of the oil seals.</p>

- Do not assemble the drive without having ensured that there will be sufficient ventilation after installation to prevent heat build-up.
- When the drive is installed in harsh ambient conditions, protect the output end oil seals against wear.

### 4.3 Required tools / resources

- Set of wrenches
- Torque wrench
- Mounting device
- Fixing devices for input and output elements
- Set of Allen keys
- Plastic tip hammer

### 4.4 Installing the gear unit

The variable speed gearmotor may be mounted or installed only in the specified position on a level<sup>1)</sup> and torsionally rigid support structure. Otherwise, impermissibly high additional forces may occur that can cause the gear unit to fail prematurely. Vibrations from the environment must be avoided.

Always use **screws of quality 10.9 with washers** for mounting planetary servo gearmotors.

For the PS.CZ.. gear unit version, ensure that there is an engagement depth of 1.6-times the screw diameter in the gear unit's output flange.

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 bleeder resistor  $< 10^9 \Omega$ . Electrochemical corrosion can occur between various metals, for example, cast iron and high-grade steel. Also fit the bolts with plastic washers!

1) Maximum permitted deviation for flange attachment to DIN ISO 1101.



## 4.5 Installation in the machine

### **PS.C.. planetary servo gear unit: Mounting at gear unit end via the mounting flange**

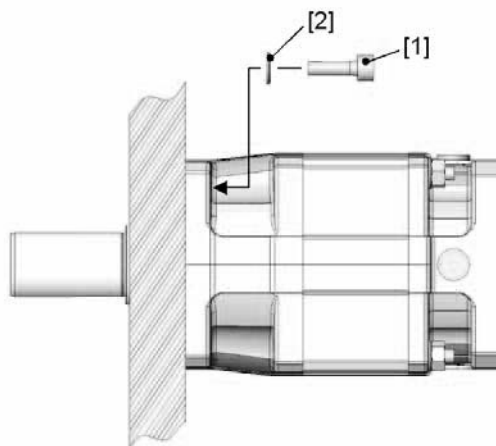


Figure 12: Installing the PS.C.. planetary servo gear unit in the machine

62898axx

[1] Screws of quality 10.9

[2] Washer

### **PS.CZ.. planetary servo gear unit: Mounting at gear unit end via the mounting flange**

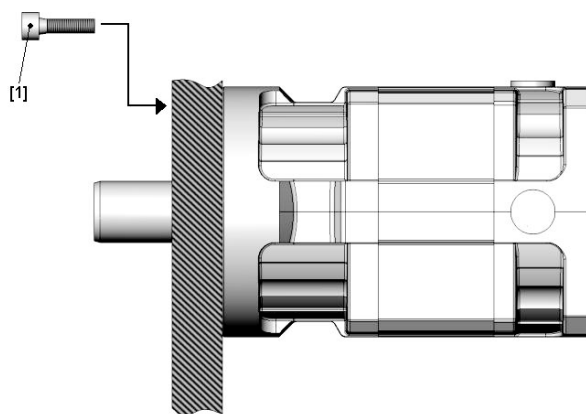


Figure 13: Installing the PS.CZ.. planetary servo gear unit in the machine

62831AXX

[1] Screws of quality 10.9 (observe engagement depth of  $1.6 \times d$ )



## Mechanical Installation

### Mounting output elements onto solid shafts

#### 4.6 Mounting output elements onto solid shafts

	<b>STOP!</b>
	<p>When mounting and removing output elements, be careful not to damage the gear unit shaft as this could damage the planetary servo gear unit, thus invalidating your right to claim under warranty against SEW-EURODRIVE GmbH &amp; Co KG.</p>

##### 4.6.1 Assembly with a key

The following figure shows a sample mounting device for installing couplings [3] or hubs onto motor or gear unit shaft ends. It may be possible to dispense with the thrust bearing [2] on the mounting device.

	<b>NOTE</b>
	<p>With the <b>PS.C.. / PSKC.. / PS.CZ.. / PSKCZ.. series</b>, you can use the <b>shaft shoulder</b> (see position [1]) as a defined <b>stop</b> when mounting input and output elements.</p> <p>The output shafts are coated with an <b>antirust agent</b> on delivery. <b>Remove</b> the antirust agent <b>before assembly</b>, e.g. using a cleaning solvent.</p>

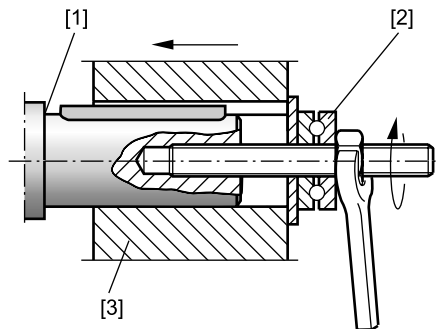


Figure 14: Assembly with a mounting device

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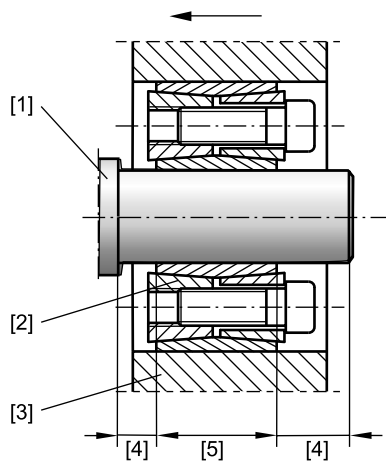
- [1] Shaft shoulder
- [2] Thrust bearing
- [3] Coupling hub



#### 4.6.2 Assembly without a key

The following figure is an example of shaft assembly with a clamping set.

	<p><b>NOTE</b></p> <p>When using clamping sets on smooth shaft ends, ensure that the shaft is free from residue and that any grease is removed. It is essential to make sure that the <b>clamping area [5] is free from grease</b>. Otherwise the shaft/hub connection may not function properly.</p> <p>To prevent corrosion on the shaft <b>grease</b> any uncovered areas [4] <b>after assembly</b>.</p>
--	---



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*Figure 15: Assembly with clamping sets*

- [1] Shaft shoulder
- [2] Clamping set
- [3] Output element, e. g. gear or sprocket
- [4] Greased shaft areas
- [5] Ungreased clamping area



**4.6.3 Avoiding impermissibly high overhung loads**

The following illustration shows the correct mounting arrangement of a gear or chain sprocket for avoiding impermissibly high overhung loads.

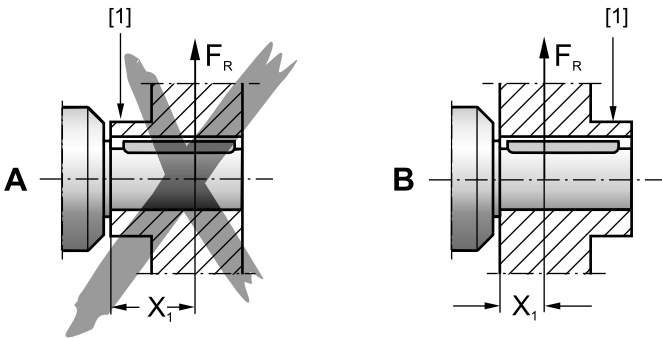


Figure 16: Mounting arrangement of a gear or sprocket wheel

06700AXX

[1] Hub

Illustration A = Not correct

Illustration B = Correct

**4.6.4 Installation notes**

Observe the following installation instructions:

- Only use a mounting device for installing input and output elements. Use the center bore and the thread on the shaft end for positioning.

	<p><b>STOP!</b></p> <ul style="list-style-type: none"> <li>• Never drive belt pulleys, couplings, pinions, etc. onto the shaft end by hitting them with a hammer as this can damage the bearings, housing and shaft.</li> <li>• In the case of belt pulleys, make sure the belt is tensioned correctly in accordance with the manufacturer's instructions.</li> <li>• Power transmission elements should be balanced after installation and must not give rise to excessive radial or axial forces (for permitted values, refer to the "Geared Servomotors – DS, CM, CMP Motor in Combination with PS.C.. gear units" catalog).</li> </ul>
--	--





Only use screws in strength class 12.9 to fasten the output elements onto the output shaft of the planetary servo gear unit; see the following table:

Machine screws with hexagon socket to DIN EN ISO 4762	Strength class	Tightening torque [Nm]
M4	12.9	5.1
M5	12.9	10
M6	12.9	18
M8	12.9	43
M10	12.9	84
M12	12.9	145



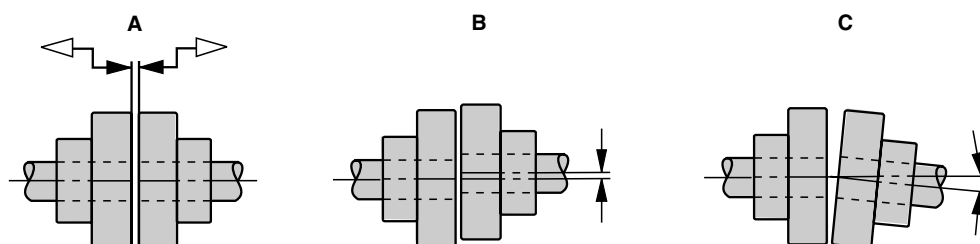
#### NOTE

Mounting is easier if you heat the bore of the output element briefly to between 80 °C and 100 °C.

### 4.7 Installing couplings

Adjust the following misalignments according to the coupling manufacturer's specifications when mounting couplings:

- A Maximum and minimum clearance
- B Axial misalignment
- C Angular misalignment



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Figure 17: Maximum and minimum clearance (A), axial misalignment (B), angular misalignment (C)



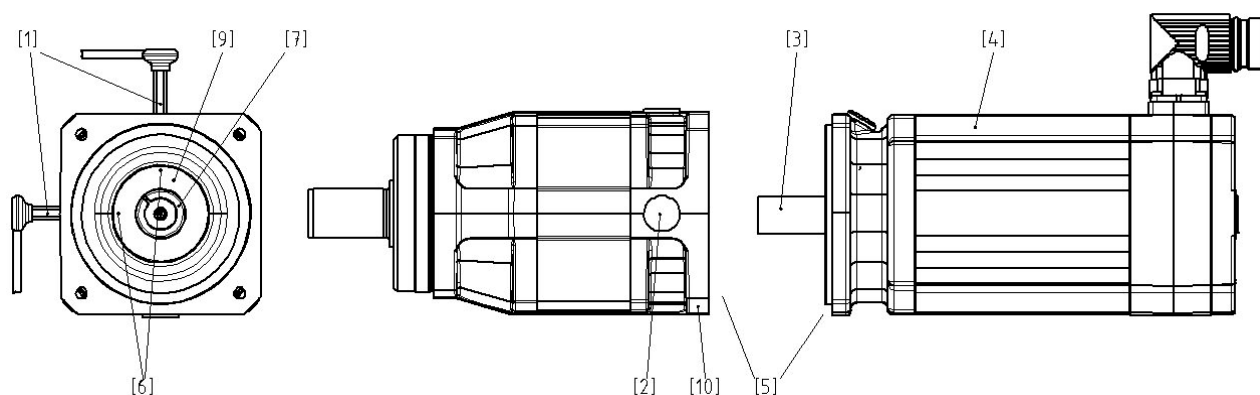
#### WARNING!

##### Caution! Risk of crushing and injury!

Input and output elements such as belt pulleys, couplings, etc. must be covered with a touch guard to prevent injuries.



#### 4.8 Motor mounting with ECH.. adapter



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Figure 18: Motor mounting with ECH.. adapter

- [1] Torque wrench
- [2] Closing plug
- [3] Motor shaft
- [4] Motor
- [5] Face
- [6] Clamping screw
- [7] Motor shaft sleeve
- [9] Adapter shaft
- [10] ECH.. adapter



#### STOP!

Take care not to tilt or jam the ECH.. adapter when installing or removing the servo motor as otherwise the torque may not be transferred properly.

##### 4.8.1 Installation sequence

Observe the following sequence for installation:

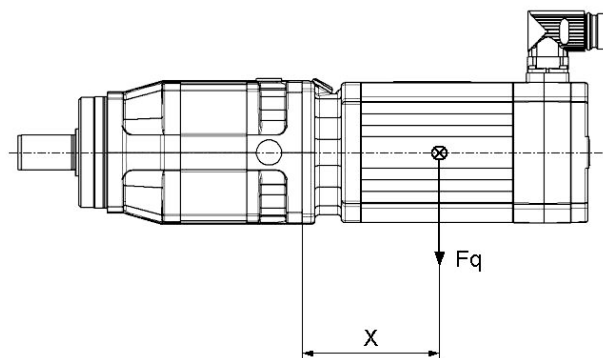
1. A motor [4] with a minimum rotational accuracy to DIN 42955 can be mounted in any position. Protect the encoder and other assemblies.
2. Check the plane surfaces [5] of the motor and adapter for scoring and smooth them if necessary.
3. Clean and degrease the hollow shaft bore in coupling [10], the motor shaft sleeve [7] and motor shaft [3].
4. Remove both closing plugs [2].



5. Loosen the clamping screws [6] until both screws project around 3 threads into the mounting hole of the adapter.
  - For motors with a keyway: Turn the keyway so that it is in alignment with the slot of the motor shaft sleeve [7]. To compensate imbalance, we recommend inserting a half key in the keyway.
6. Make sure that the slot of the motor shaft sleeve [7] is at a 45° angle to the two clamping screws [6].
7. Carefully push the gear unit and motor [4] together.
8. Push the connection screws through the holes of the motor flange. Turn the screws into the threaded holes of the adapter flange and tighten them slightly.
9. Tighten the screws diagonally with even force.
10. Use a suitable torque wrench [1] to first tighten the clamping screws [6] one after the other to 25 % of the stipulated torque. In a second step, tighten them to the full torque.

Adapter type	Motor shaft diameter [mm]	Number of clamping screws	Tightening torque of the clamping screw [Nm]	Wrench size
ECH02	≤ 11	2	10	4
ECH03	≤ 14	2	23	5
ECH05	≤ 19	2	45	6
ECH06	≤ 24	2	100	8

### 4.8.2 Maximum permitted weight of motors



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- ⊗ Motor's center of gravity
- X Distance from adapter flange to the middle of the motor
- F<sub>q</sub> Overhung load



## Mechanical Installation

### Removing the ECH.. adapter from the motor

Gear unit type	Adapter type ECH..	X [mm]	F <sub>q</sub> [N] <sup>1)</sup>
PS.C..221	ECH02/01	90	40
PS.C..222	ECH02/08	130	94
PS.C..321	ECH03/08	130	94
PS.C..322	ECH03/13	155	170
PS.C..521	ECH05/13	155	170
PS.C..522	ECH05/14	200	306
PS.C..621	ECH06/14	200	306
PS.C..622	ECH06/20	235	530

- 1) Maximum load values for connection screws of strength class 8.8. The maximum permitted weight of the attached motor  $F_{qmax}$  must be reduced proportionally as the distance between the adapter flange and the middle of the motor (x) increases. When this distance is reduced,  $F_{qmax}$  cannot be increased.

#### 4.9 Removing the ECH.. adapter from the motor

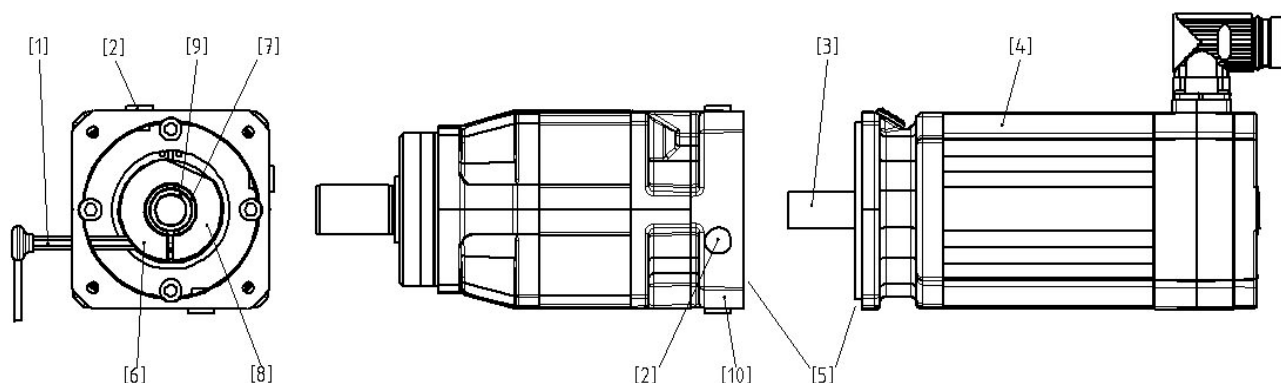
	<b>STOP!</b>
	<p><b>If the customer removes the adapter from the planetary servo gear unit, this can cause the device to malfunction</b></p> <p>Never remove the ECH.. adapter from the PS.C.. planetary gear unit yourself. If a customer removes the PS.C.. planetary servo gear unit themselves, this can cause the unit to malfunction. In this case, the customer's right to claim on warranty is no longer valid.</p>

##### 4.9.1 Sequence for removing the ECH.. adapter from the motor

1. Switch off the drive
2. Secure the load
3. Turn off the power supply to the motor
4. Allow the drive to cool
5. Loosen the clamping screws until they project around 3 threads into the mounting hole of the adapter.
6. Unscrew the connection screws between the motor and adapter
7. Remove the motor without tilting or jamming it



#### 4.10 Motor mounting with EPH.. adapter



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Figure 19: Motor mounting with EPH.. adapter

- [1] Torque wrench
- [2] Closing plug
- [3] Motor shaft
- [4] Motor
- [5] Face
- [6] Clamping screw
- [7] Coupling sleeve
- [8] Clamping ring with socket head screw
- [9] Adapter shaft
- [10] EPH.. adapter



#### **STOP!**

Take care not to tilt or jam the EPH.. adapter when installing or removing the servo-motor as otherwise the torque may not be transferred properly.

##### 4.10.1 Installation sequence

Observe the following sequence for installation:

1. A motor [4] with a minimum rotational accuracy to DIN 42955 can be mounted in any position. Protect the encoder and other assemblies.
2. Check the plane surfaces [5] of the motor and adapter for scoring and smooth them if necessary.
3. Clean and degrease the hollow shaft bore in coupling [10] and motor shaft [3].
4. Remove one of the four closing plugs [2].



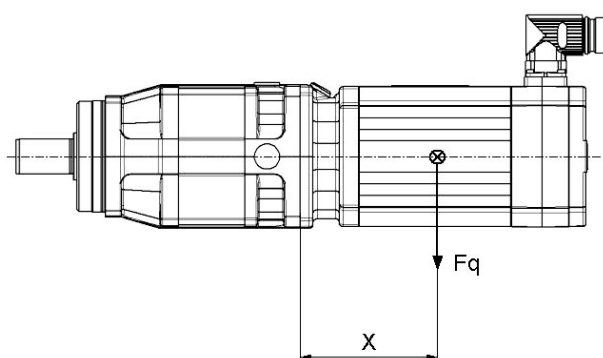
## Mechanical Installation

### Motor mounting with EPH.. adapter

5. Turn the coupling [10] with the clamping ring [8] until the screw head of the clamping screw [6] is in alignment with the mounting hole in the built-on housing. Loosen the clamping screw [6].
  - For motors with a keyway: Turn the key by 90° to the slots in the adapter shaft. To compensate imbalance, we recommend inserting a half key in the keyway.
6. If using coupling sleeves [7], make sure that the slots in the coupling sleeve [7] are in alignment with the slots in the coupling [10] and clamping ring [8].
7. Carefully push the gear unit and motor [4] together.
8. Insert the connecting screws through the holes of the motor flange into the threads of the adapter flange and tighten them slightly.
9. Tighten the screws diagonally with even force.
10. Use a torque wrench [1] to tighten the clamping screws [6] to the prescribed tightening torque.

Adapter type	Motor shaft diameter [mm]	Number of clamping screws	Tightening torque of the clamping screw [Nm]	Wrench size
EPH01	≤ 11	1	10	4
EPH02	≤ 14	1	18	5
EPH03	≤ 14	1	18	5
EPH04	≤ 19	1	18	5
EPH05	≤ 24	1	43	6
EPH06	≤ 35	1	43	6
EPH07	≤ 32	1	43	6
EPH08	≤ 38	1	83	8

#### 4.10.2 Maximum permitted weight of motors



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- ⊗ .. Motor's center of gravity
- X .. Distance from adapter flange to the middle of the motor
- F<sub>q</sub> .. Overhung load



Gear unit type	Adapter type EPH..	X [mm]	Fq [N] <sup>1)</sup>
<b>PS.C221</b> <b>PS.C222</b>	EPH01/01-03	100	120
	EPH02/04-08	120	150
	EPH03/03-14	182	157
	EPH04/03-15	182	157
<b>PS.C321</b> <b>PS.C322</b>	EPH04/03-15	182	157
	EPH05/14-20	290	273
<b>PS.C521</b> <b>PS.C522</b>	EPH04/03-15	182	157
	EPH05/14-20	290	273
	EPH06/19	290	312
	EPH07/20-22	290	312
<b>PS.C621</b> <b>PS.C622</b>	EPH05/14-20	220	273
	EPH06/19	290	312
	EPH07/20-22	290	312
	EPH08/22	351	600

1) Maximum load values for connection screws of strength class 8.8. The maximum permitted weight of the attached motor  $F_{qmax}$  must be reduced proportionally as the distance between the adapter flange and the middle of the motor (x) increases. When this distance is reduced,  $F_{qmax}$  cannot be increased.

#### 4.11 Removing the EPH.. adapter from the motor

	<b>STOP!</b>
	<p><b>If the customer removes the adapter from the planetary servo gear units, this can cause the unit to malfunction!</b></p> <p>Never remove the EPH.. adapter from the PS.C.. planetary gear unit yourself. If a customer removes the PS.C.. planetary servo gear unit themselves, this can cause the unit to malfunction. In this case, the customer's right to claim on warranty is no longer valid.</p>

##### 4.11.1 Removing the EPH.. adapter from the motor .

1. Switch off the drive
2. Secure the load
3. Turn off the power supply to the motor
4. Allow the drive to cool
5. Unscrew the clamping screws
6. Unscrew the connection screws between the motor and adapter
7. Remove the motor without tilting or jamming it




## 5 Inspection and maintenance

### 5.1 Maintenance

The PS.C.. planetary servo gear units are designed for high endurance when operated according to the designated use specified in the catalog. Wearing parts are exceptions, for example, the bearings, oils seals for the specific application and the lubricant.

For the PS.C.. planetary servo gear unit series, the maintenance work specified in the table below must be performed:

Time interval	What to do?
<ul style="list-style-type: none"> <li>Every 3,000 hours of operation, at least every 6 months:</li> </ul>	<ul style="list-style-type: none"> <li>Check running noise for possible bearing damage</li> <li>Check the adapter visually for leakage</li> <li>Check the seals visually for leakage. If you notice a leakage, contact service.</li> </ul>
<ul style="list-style-type: none"> <li>If required (depending on external factors)</li> </ul>	<ul style="list-style-type: none"> <li>Touch up or renew the surface / anticorrosion coating</li> </ul>
<ul style="list-style-type: none"> <li>Depending on the operating conditions, at the latest every 5 years</li> </ul>	<ul style="list-style-type: none"> <li>Touch up or renew the surface / anticorrosion coating</li> <li>Change the oil seal</li> </ul>

	<b>STOP!</b>
	<b>Mixing lubricants!</b> Do not mix the factory-filled lubricant with other lubricants.





## **6 Malfunctions**

### **6.1 Customer service**

Please have the following information to hand if you require the assistance of our customer service:

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

### **6.2 Faults and troubleshooting**

Malfunction	Possible cause	Remedy
Unusual, irregular running noise	<ul style="list-style-type: none"> <li>• Meshing / grinding noise: Bearing damage</li> <li>• Knocking noise: Irregularity in the gearing</li> <li>• Controller setting</li> </ul>	<ul style="list-style-type: none"> <li>• Contact customer service</li> <li>• Check inverter parameters</li> </ul>
Oil is leaking	<ul style="list-style-type: none"> <li>• Defective oil seal or pseudo-leakage<sup>1)</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Contact customer service</li> </ul>
Lubricant leaks from adapter	<ul style="list-style-type: none"> <li>• Defective oil seal or pseudo-leakage<sup>1)</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Contact customer service</li> </ul>
Difference between surface temperature and ambient temperature >70 K	<ul style="list-style-type: none"> <li>• Restricted air supply</li> <li>• Speed/torque is too high</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure air supply is unrestricted and / or contact customer service</li> <li>• Check the configuration and / or contact customer service</li> </ul>

1) A temporary leakage caused by a high grease fill between the sealing lip and protective lip. The superfluous grease appears as a pseudo-leakage.



### 6.3 *Send in for repair*

Please contact SEW-EURODRIVE service if a malfunction cannot be rectified.

**NOTE**

Please provide the following information when sending the drive in for repair:

- Serial number (→ nameplate)
- Unit designation
- Digits of the service code
- Brief description of the application
- Connected motor (motor type, motor voltage, start or delta circuit, rated speed)
- Nature of the error
- Accompanying circumstances
- Your own presumptions as to what has happened
- Any unusual events preceding the problem, etc.



## 7 Appendix

### 7.1 List of abbreviations

Abbreviation	Definition/ meaning
PS.C..	Planetary servo gear unit [ <b>P</b> lanetary <b>S</b> ervo <b>C</b> ompetitive]
DIN	<b>D</b> eutsches <b>I</b> nstitut für <b>N</b> ormung e.V. (German institute for standardization)
EN	<b>E</b> uropäische <b>N</b> orm (European standard)
ISO	International <b>O</b> rganization for <b>S</b> tandardization <ul style="list-style-type: none"> <li>The ISO creates ISO standards that should be adopted unrevised by the member states.</li> </ul>
SW	<b>S</b> chlüssel <b>w</b> eite (Wrench size)



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<b>Assembly Sales Service</b>	<b>Kopenhagen</b>	SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 <a href="http://www.sew-eurodrive.dk">http://www.sew-eurodrive.dk</a> <a href="mailto:sew@sew-eurodrive.dk">sew@sew-eurodrive.dk</a>
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<b>Sales Service</b>	<b>Cairo</b>	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 + 1 23143088 Fax +20 2 22594-757 <a href="http://www.copam-egypt.com/">http://www.copam-egypt.com/</a> <a href="mailto:copam@datum.com.eg">copam@datum.com.eg</a>
<b>Estonia</b>			
<b>Sales</b>	<b>Tallin</b>	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 <a href="mailto:veiko.soots@alas-kuul.ee">veiko.soots@alas-kuul.ee</a>
<b>Finland</b>			
<b>Assembly Sales Service</b>	<b>Lahti</b>	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 <a href="mailto:sew@sew.fi">sew@sew.fi</a> <a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a>
<b>Production Assembly Service</b>	<b>Karkkila</b>	SEW Industrial Gears OY Valurinkatu 6 FIN-03600 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 <a href="mailto:sew@sew.fi">sew@sew.fi</a> <a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a>
<b>Gabon</b>			
<b>Sales</b>	<b>Libreville</b>	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12
<b>Great Britain</b>			
<b>Assembly Sales Service</b>	<b>Normanton</b>	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 <a href="http://www.sew-eurodrive.co.uk">http://www.sew-eurodrive.co.uk</a> <a href="mailto:info@sew-eurodrive.co.uk">info@sew-eurodrive.co.uk</a>
<b>Greece</b>			
<b>Sales Service</b>	<b>Athen</b>	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 <a href="http://www.boznos.gr">http://www.boznos.gr</a> <a href="mailto:info@boznos.gr">info@boznos.gr</a>
<b>Hong Kong</b>			
<b>Assembly Sales Service</b>	<b>Hong Kong</b>	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 <a href="mailto:contact@sew-eurodrive.hk">contact@sew-eurodrive.hk</a>



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<b>Sales Service</b>	<b>Budapest</b>	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			
<b>Assembly Sales Service</b>	<b>Vadodara</b>	SEW-EURODRIVE India Pvt. Ltd. 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
Ireland			
<b>Sales Service</b>	<b>Dublin</b>	Alpertown Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 info@alpertown.ie
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<b>Sales</b>	<b>Tel-Aviv</b>	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			
<b>Assembly Sales Service</b>	<b>Milano</b>	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			
<b>Sales</b>	<b>Abidjan</b>	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			
<b>Assembly Sales Service</b>	<b>Iwata</b>	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			
<b>Assembly Sales Service</b>	<b>Ansan-City</b>	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
	<b>Busan</b>	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			
<b>Sales</b>	<b>Riga</b>	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139253 Fax +371 7139386 http://www.alas-kuul.com info@alas-kuul.com





<b>Lebanon</b>			
<b>Sales</b>	<b>Beirut</b>	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
<b>Lithuania</b>			
<b>Sales</b>	<b>Alytus</b>	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt
<b>Luxembourg</b>			
<b>Assembly Sales Service</b>	<b>Brüssel</b>	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
<b>Malaysia</b>			
<b>Assembly Sales Service</b>	<b>Johore</b>	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
<b>Mexico</b>			
<b>Assembly Sales Service</b>	<b>Queretaro</b>	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
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<b>Sales</b>	<b>Casablanca</b>	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 ali.alami@premium.net.ma
<b>Netherlands</b>			
<b>Assembly Sales Service</b>	<b>Rotterdam</b>	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
<b>New Zealand</b>			
<b>Assembly Sales Service</b>	<b>Auckland</b>	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
	<b>Christchurch</b>	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
<b>Norway</b>			
<b>Assembly Sales Service</b>	<b>Moss</b>	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



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<b>Peru</b>			
<b>Assembly Sales Service</b>	<b>Lima</b>	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 <a href="http://www.sew-eurodrive.com.pe">http://www.sew-eurodrive.com.pe</a> <a href="mailto:sewperu@sew-eurodrive.com.pe">sewperu@sew-eurodrive.com.pe</a>
<b>Poland</b>			
<b>Assembly Sales Service</b>	<b>Lodz</b>	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Łódź	Tel. +48 42 67710-90 Fax +48 42 67710-99 <a href="http://www.sew-eurodrive.pl">http://www.sew-eurodrive.pl</a> <a href="mailto:sew@sew-eurodrive.pl">sew@sew-eurodrive.pl</a>
		<b>24 Hour Service</b>	Tel. +48 602 739 739 (+48 602 SEW SEW) <a href="mailto:serwis@sew-eurodrive.pl">serwis@sew-eurodrive.pl</a>
<b>Portugal</b>			
<b>Assembly Sales Service</b>	<b>Coimbra</b>	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 <a href="http://www.sew-eurodrive.pt">http://www.sew-eurodrive.pt</a> <a href="mailto:infosew@sew-eurodrive.pt">infosew@sew-eurodrive.pt</a>
<b>Romania</b>			
<b>Sales Service</b>	<b>București</b>	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 <a href="mailto:sialco@sialco.ro">sialco@sialco.ro</a>
<b>Russia</b>			
<b>Assembly Sales Service</b>	<b>St. Petersburg</b>	ZAO SEW-EURODRIVE P.O. Box 36 195220 St. Petersburg Russia	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 <a href="http://www.sew-eurodrive.ru">http://www.sew-eurodrive.ru</a> <a href="mailto:sew@sew-eurodrive.ru">sew@sew-eurodrive.ru</a>
<b>Senegal</b>			
<b>Sales</b>	<b>Dakar</b>	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 <a href="mailto:senemeca@sentoo.sn">senemeca@sentoo.sn</a>
<b>Serbia</b>			
<b>Sales</b>	<b>Beograd</b>	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 <a href="mailto:dipar@yubc.net">dipar@yubc.net</a>
<b>Singapore</b>			
<b>Assembly Sales Service</b>	<b>Singapore</b>	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 <a href="http://www.sew-eurodrive.com.sg">http://www.sew-eurodrive.com.sg</a> <a href="mailto:sewsingapore@sew-eurodrive.com">sewsingapore@sew-eurodrive.com</a>
<b>Slovakia</b>			
<b>Sales</b>	<b>Bratislava</b>	SEW-Eurodrive SK s.r.o. Rybničná 40 SK-83554 Bratislava	Tel. +421 2 49595201 Fax +421 2 49595200 <a href="mailto:sew@sew-eurodrive.sk">sew@sew-eurodrive.sk</a> <a href="http://www.sew-eurodrive.sk">http://www.sew-eurodrive.sk</a>
	<b>Žilina</b>	SEW-Eurodrive SK s.r.o. ul. Vojtecha Spanyola 33 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 <a href="mailto:sew@sew-eurodrive.sk">sew@sew-eurodrive.sk</a>

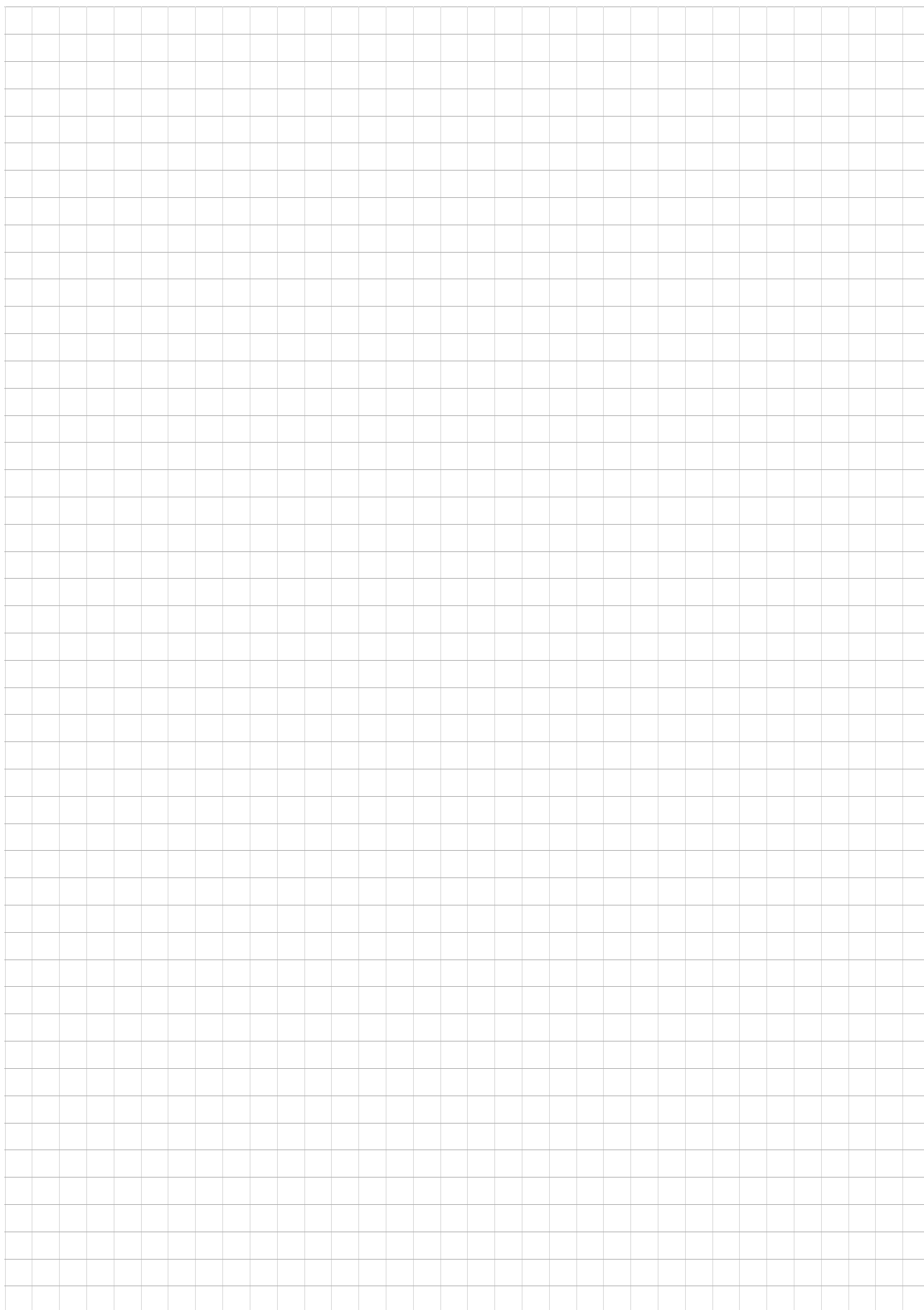


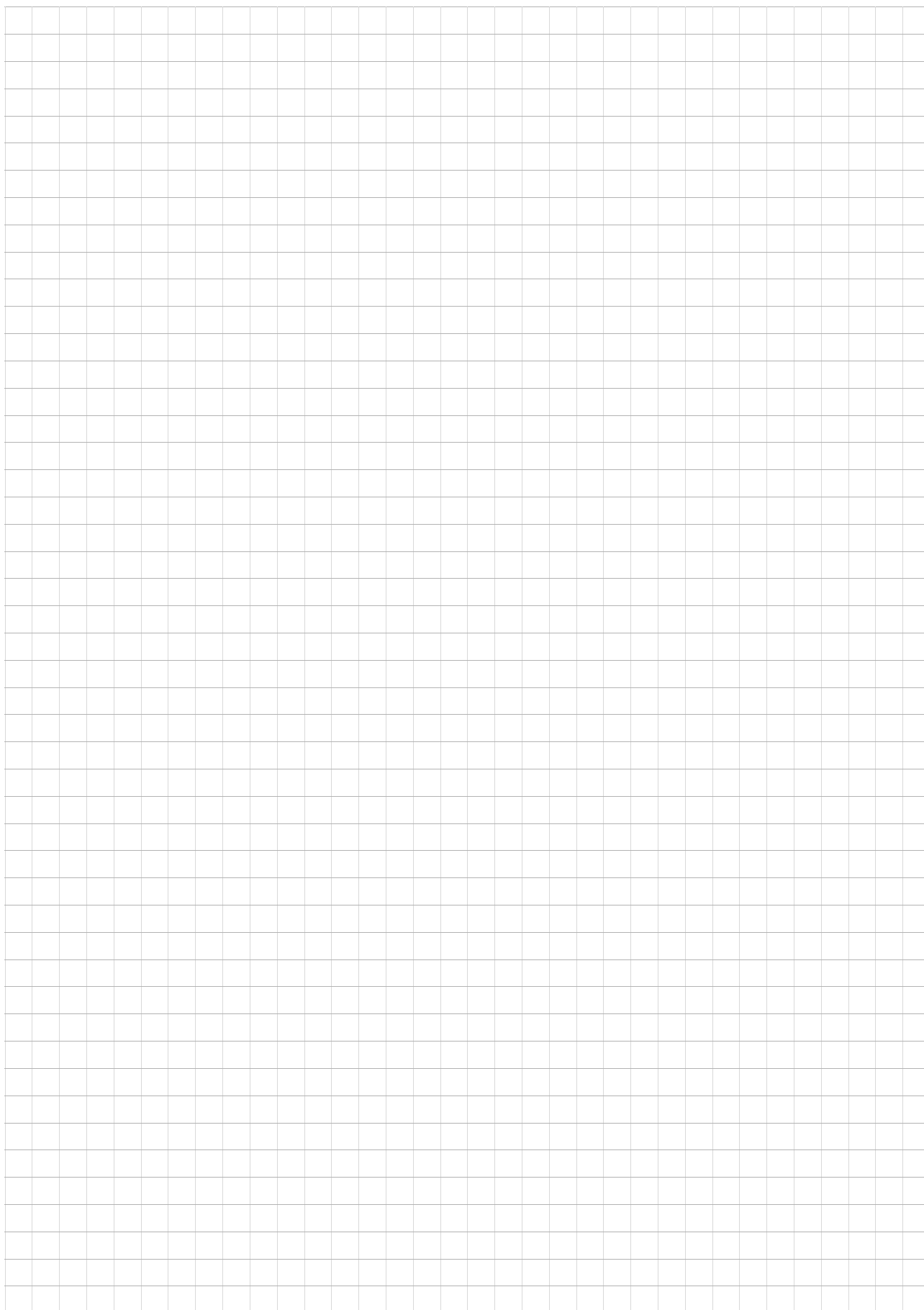
<b>Slovakia</b>			
	<b>Banská Bystrica</b>	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-97411 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
<b>Slovenia</b>			
<b>Sales Service</b>	<b>Celje</b>	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
<b>South Africa</b>			
<b>Assembly Sales Service</b>	<b>Johannesburg</b>	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 <a href="http://www.sew.co.za">http://www.sew.co.za</a> dross@sew.co.za
	<b>Capetown</b>	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
	<b>Durban</b>	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
<b>Spain</b>			
<b>Assembly Sales Service</b>	<b>Bilbao</b>	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 <a href="http://www.sew-eurodrive.es">http://www.sew-eurodrive.es</a> sew.spain@sew-eurodrive.es
<b>Sweden</b>			
<b>Assembly Sales Service</b>	<b>Jönköping</b>	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 <a href="http://www.sew-eurodrive.se">http://www.sew-eurodrive.se</a> info@sew-eurodrive.se
<b>Switzerland</b>			
<b>Assembly Sales Service</b>	<b>Basel</b>	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 <a href="http://www.imhof-sew.ch">http://www.imhof-sew.ch</a> info@imhof-sew.ch
<b>Thailand</b>			
<b>Assembly Sales Service</b>	<b>Chonburi</b>	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
<b>Tunisia</b>			
<b>Sales</b>	<b>Tunis</b>	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

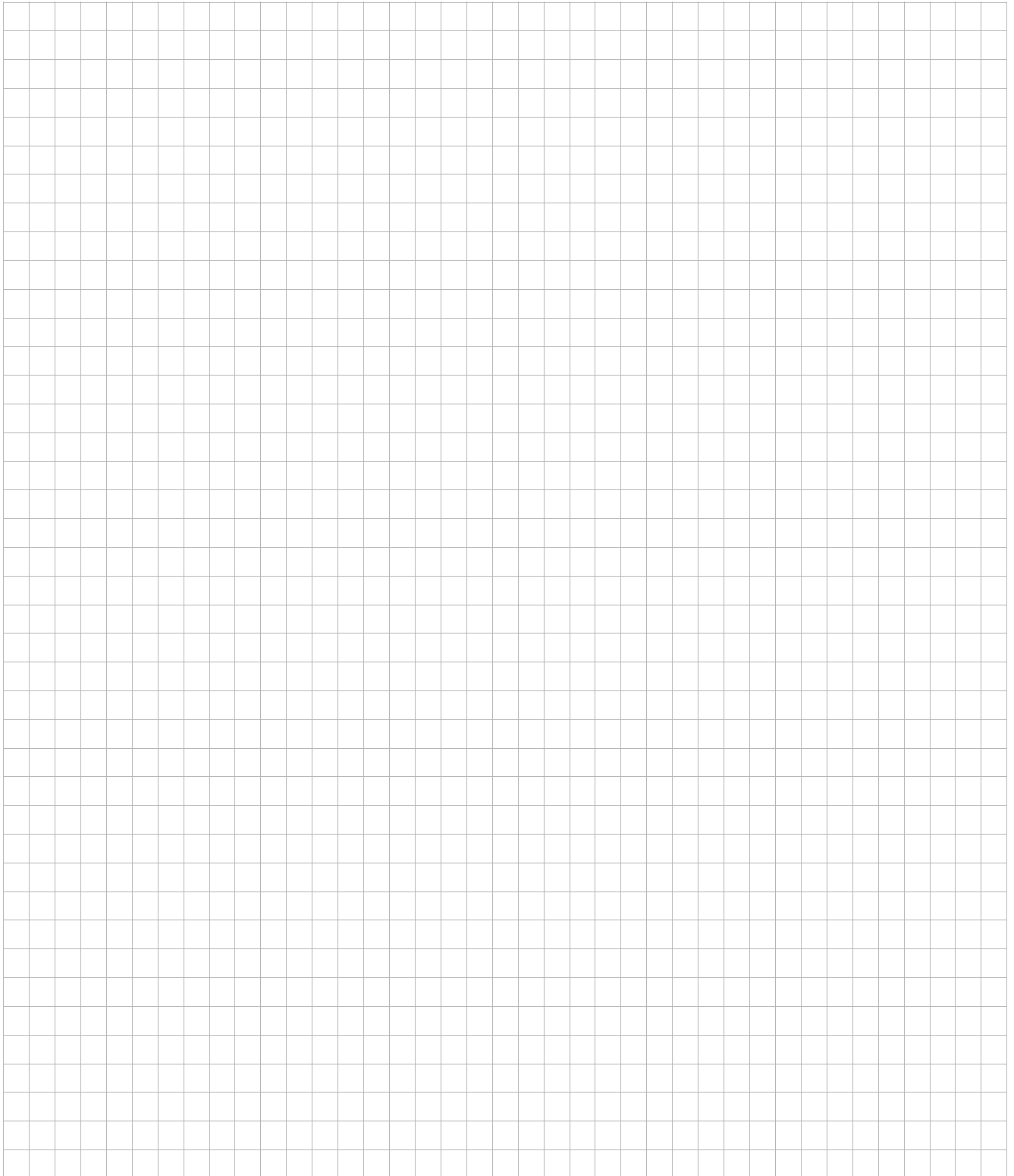


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Turkey			
<b>Assembly Sales Service</b>	<b>Istanbul</b>	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419164, 3838014, 3738015 Fax +90 216 3055867 <a href="http://www.sew-eurodrive.com.tr">http://www.sew-eurodrive.com.tr</a> <a href="mailto:sew@sew-eurodrive.com.tr">sew@sew-eurodrive.com.tr</a>
Ukraine			
<b>Sales Service</b>	<b>Dnepropetrovsk</b>	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 <a href="http://www.sew-eurodrive.ua">http://www.sew-eurodrive.ua</a> <a href="mailto:sew@sew-eurodrive.ua">sew@sew-eurodrive.ua</a>
USA			
<b>Production Assembly Sales Service</b>	<b>Greenville</b>	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 <a href="http://www.seweurodrive.com">http://www.seweurodrive.com</a> <a href="mailto:cslyman@seweurodrive.com">cslyman@seweurodrive.com</a>
<b>Assembly Sales Service</b>	<b>San Francisco</b>	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6433 <a href="mailto:cshayward@seweurodrive.com">cshayward@seweurodrive.com</a>
	<b>Philadelphia/PA</b>	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 <a href="mailto:csbridgeport@seweurodrive.com">csbridgeport@seweurodrive.com</a>
	<b>Dayton</b>	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 <a href="mailto:cstroy@seweurodrive.com">cstroy@seweurodrive.com</a>
	<b>Dallas</b>	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 <a href="mailto:csdallas@seweurodrive.com">csdallas@seweurodrive.com</a>
Additional addresses for service in the USA provided on request!			
Venezuela			
<b>Assembly Sales Service</b>	<b>Valencia</b>	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 <a href="http://www.sew-eurodrive.com.ve">http://www.sew-eurodrive.com.ve</a> <a href="mailto:ventas@sew-eurodrive.com.ve">ventas@sew-eurodrive.com.ve</a> <a href="mailto:sewfinanzas@cantv.net">sewfinanzas@cantv.net</a>







## How we're driving the world

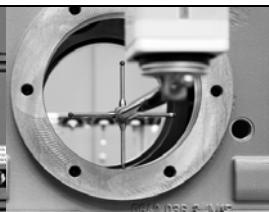
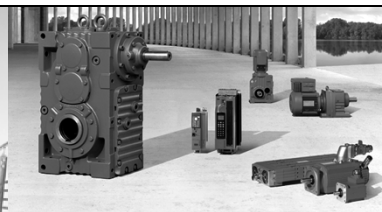
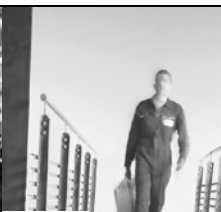
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