



SEW
EURODRIVE



DLD Asynchronous Linear Motors

Edition 02/2009

16673212 / EN

Operating Instructions





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1 Safety Notes

- Never operate defective or damaged products.
- Read this document thoroughly before you work with the product.
- Always observe the respective safety notes. They are structured as follows:

Always observe the safety and warning instructions in this publication.



Electrical hazard

Possible consequences: Severe or fatal injuries.



Hazard

Possible consequences: Severe or fatal injuries.



Hazardous situation

Possible consequences: Slight or minor injuries.



Harmful situation

Possible consequences: Damage to the unit and the environment.



Tips and useful information.



Warning:

Live and moving parts of electrical equipment can cause severe or fatal injury. Installation, connection, startup, maintenance and repair work may only be carried out by correspondingly trained employees observing

- **these operating instructions**
- **any additional startup instructions and wiring diagrams regarding the drive**
- **applicable national/regional regulations**



1.1 Preliminary information

- You must observe these operating instructions and the corresponding notes as a prerequisite for fault-free operation and fulfillment of any right to claim under warranty.
- SEW-EURODRIVE produces and checks every motor according to the current technical specifications. The technical data and the structure may be subject to modifications according to the technical development.
- Check the delivery for damage caused during transport on receipt. Immediately report any damage to the shipping company.
- If it is not to be installed straight away, store the motor in a dry, dust-free room.
- Disposal (observe the applicable waste disposal regulations)
Dispose of the primary and secondary parts in accordance with the material structure observing the applicable waste deposit regulations for:
 - Steel scrap
 - Aluminum
 - Copper
 - Plastic



Cross reference in this document are marked with a → (" + section x.x" means: For more information, refer to section x.x)



2 Description of the Functions

2.1 Structure

The asynchronous linear motor basically consists of two parts, the primary and the secondary.

2.1.1 Primary

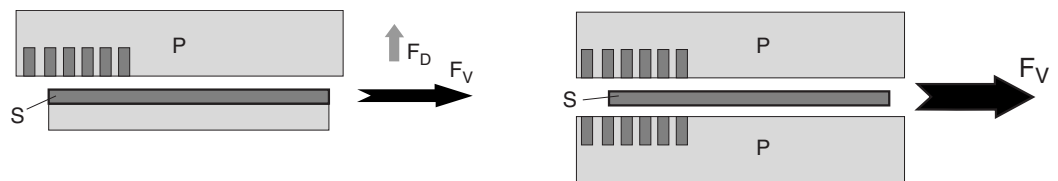
The electrically "active" primary consists of a laminated iron core with an AC winding. Due to the shape of the laminated iron core, the primary is also referred to as "fanning strip".

2.1.2 Secondary

As opposed to a rotating motors, the secondary consists of a massive plate (sword) made of aluminum or copper.

2.1.3 No attraction forces in double fanning strip design

Apart from the thrust force F_V , if a drive consists of a primary (P) and a secondary (S), there also is an attractive force F_D between the primary and secondary that directly depends on the level for the thrust force. However, if you use two primary parts (double fanning strip design, see right figure), both attractive forces cancel each other regarding their effect on the secondary, and only the thrust force applies. This increases the efficiency due to less friction, and reduces the apparent power requirement.



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Oftentimes the primary is stationary and the secondary is mobile. This arrangement is common for materials handling and sorting technology. Depending on the application, the primary may also be mobile (e.g. drives for floor conveyors).



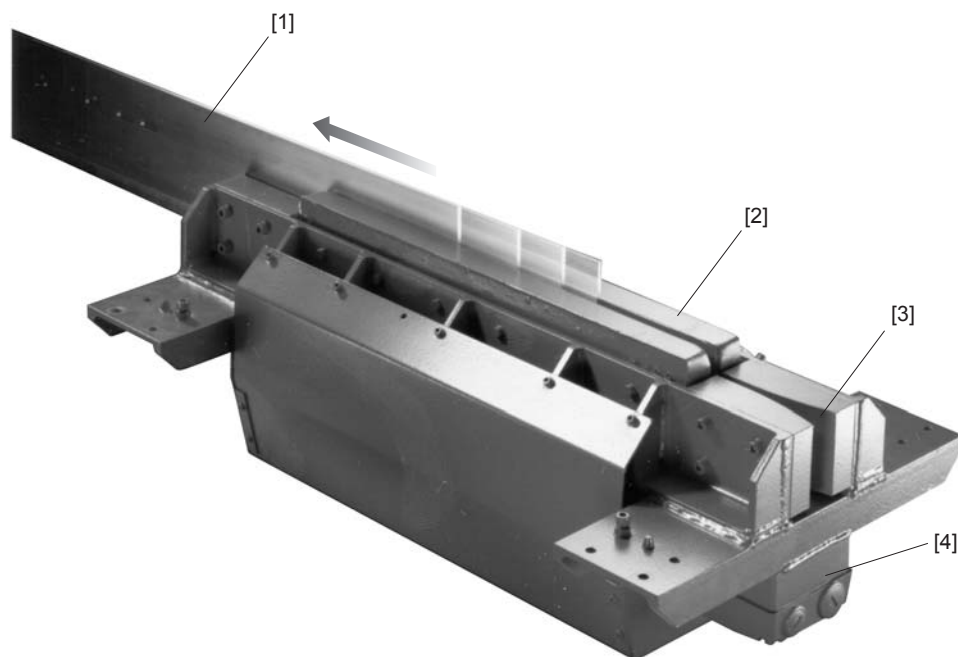
2.2 System description

The asynchronous linear motors from SEW are especially quiet and are used whenever there are high demands on maintenance-free service life and speed. They are suitable for many applications due to the minimum space requirements and the simple assembly.

The following characteristics represent advantages of the asynchronous linear motors:

- No wear due to contactless energy transfer
- Action of force only in feed direction, secondary not exposed to overhung loads
- driveline not exposed to shock pulses
- very simple secondary made of aluminum or copper
- multiple motors can easily be interconnected in a single driveline
- very long travel distances can easily be realized
- low noise development

With the asynchronous DLD linear motors in conjunction with the MOVIDRIVE® inverters, SEW provides the drive solution from one source



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- [1] Secondary made of aluminum or copper
- [2] Primary in double fanning strip design
- [3] Motor terminal box with integrated plug connector

**2.2.1 Design of the asynchronous DLD linear motor**

The asynchronous DLD linear motor consists of two current-carrying primaries (double fanning strip design) in one casting frame and a secondary provided by the customer. In the double fanning strip design, the magnetic overhung loads between the primary and the secondary are compensated. In order to achieve the nominal forces listed in section "Technical Data" on page 23, you have to observe the reference requirements specified in section "Secondary".

When de-energized, the asynchronous linear motor provides free-running characteristics. An electric deceleration is possible, and due to the high slip, there are major restrictions regarding the use as positioning drive.

2.3 Scope of delivery

The scope of delivery comprises

- DLD.. primary with mounting frame, fans and IS plug connector



The secondary is not included in the scope of delivery.

2.4 Size

There are three sizes of primaries for the asynchronous linear motors:

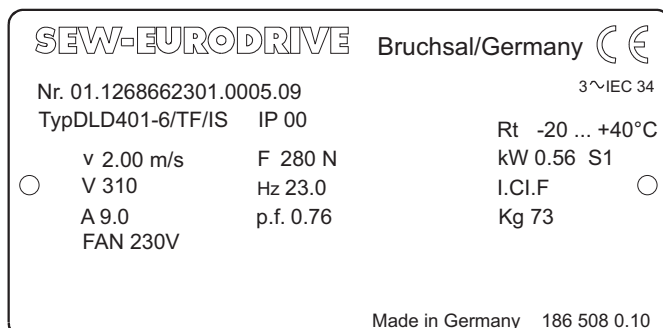
- DLD 200-7
- DLD 400-6
- DLD 401-6
- DLD 402-6 Flat

SEW can also provide customized designs such as higher velocity and feed thrust levels or a primary in single fanning strip design. Feel free to contact us for further information.



2.5 Nameplate

Example

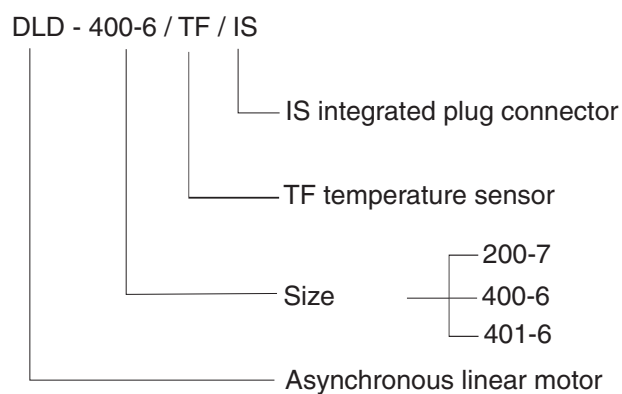


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2.6 Type code

Example

The type code for the asynchronous linear motor is structured as follows:



03965AEN



3 Project Planning Information

3.1 Calculating the feed thrust

In order to be able to determine the drive power, you have to determine the forces occurring during constant travel and acceleration.



The following formula is based on the assumption that the mobile part rolls on a wheel-rail system.

Force at constant travel

$$F_F = m \times g \times \left[\frac{2}{D} \times \left(\mu \times \frac{d}{2} + f \right) + c \right]$$

F_F = force at constant travel [N]

m = total weight [kg]

g = gravitational constant [ms^{-2}]

D = carrying wheel diameter [mm]

μ = bearing friction coefficient

d = bearing journal diameter [mm]

f = lever arm of the rolling friction [mm]

c = wheel flange and side friction coefficient

If the travel resistance is known, you can calculate the force during constant travel as follows:

$$FF = m \times f_W$$

f_W = travel resistance [N/kg]

m = total weight [kg]



Observe the side friction that especially occurs during cornering.



Keep in mind that the travel resistance after longer downtimes and with heavy load can increase significantly as the wheels may have flattened.

Force of acceleration

The force of acceleration can be calculated as follows:

$$FA = m \times a$$

Maximum feed thrust

The maximum feed thrust is calculated using the following formula:

$$FV = FF + FA$$

F_V = maximum feed thrust [N]

F_A = force of acceleration [N]

F_F = force at constant travel [N]

m = total weight [kg]

a = desired acceleration [ms^{-2}]



3.2 Drive selection

Motor selection Usually, plants in sorter and conveyor systems with DLD motors are designed for S1 operation. The motor power available in the operating point should be about 20% higher than the max. required feed thrust.

Inverter selection The inverter must be able to continuously provide the nominal motor current. The continuous output current provided by the inverter can be calculated as follows:

$$I_D = X \times I_N$$

I_D = continuous output current from the inverter [A]

I_N = nominal motor current [A]

X = Number of motors

Group drives with DLD motors Multiple asynchronous DLD linear motors can be connected to one inverter in parallel. However, make sure that the motor cable lengths do not vary crucially.

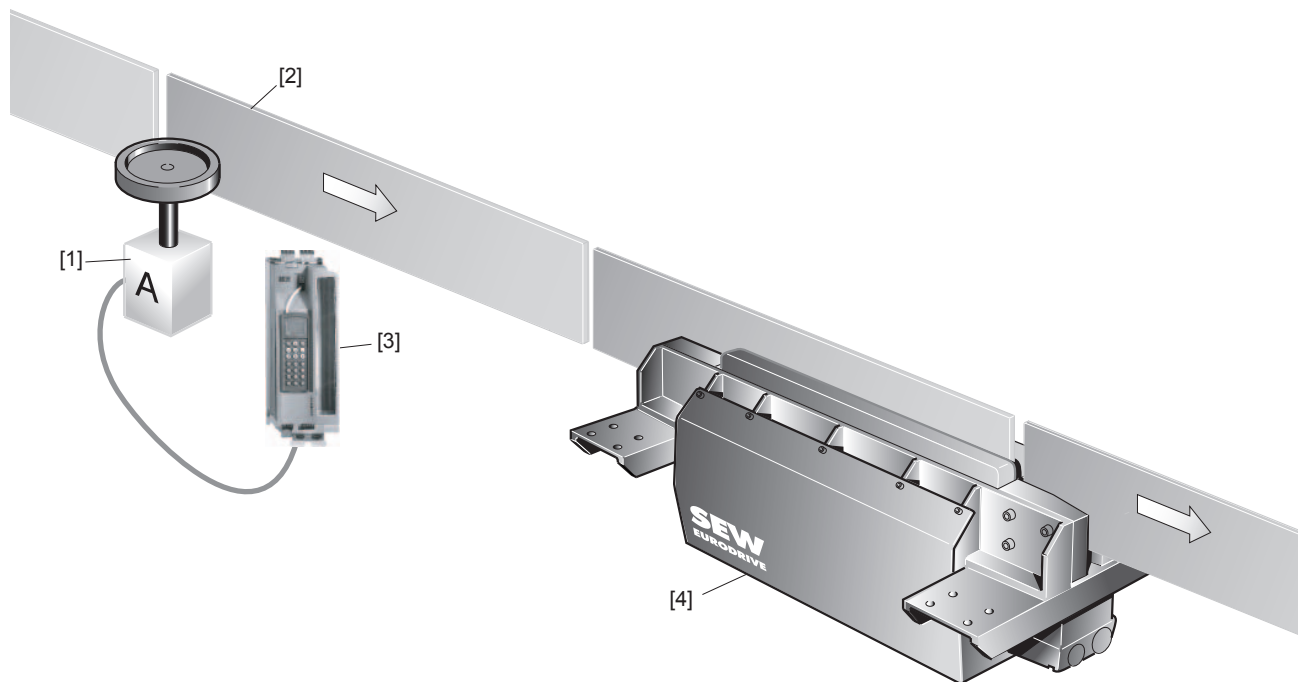


3.3 Speed monitoring and control

Generally, the linear drives can be operated in U/f mode (speed-controlled). Should there be higher demands on the accuracy, there are various possibilities to detect the feed rate of the secondary. We will describe two options.

3.3.1 Speed detection with contact

An analog speed indicator [1] driven by the friction wheel generates a voltage proportional to the speed of the secondary [2]. The analog signal is used as an input signal for a PI controller to be programmed in the inverter [3].



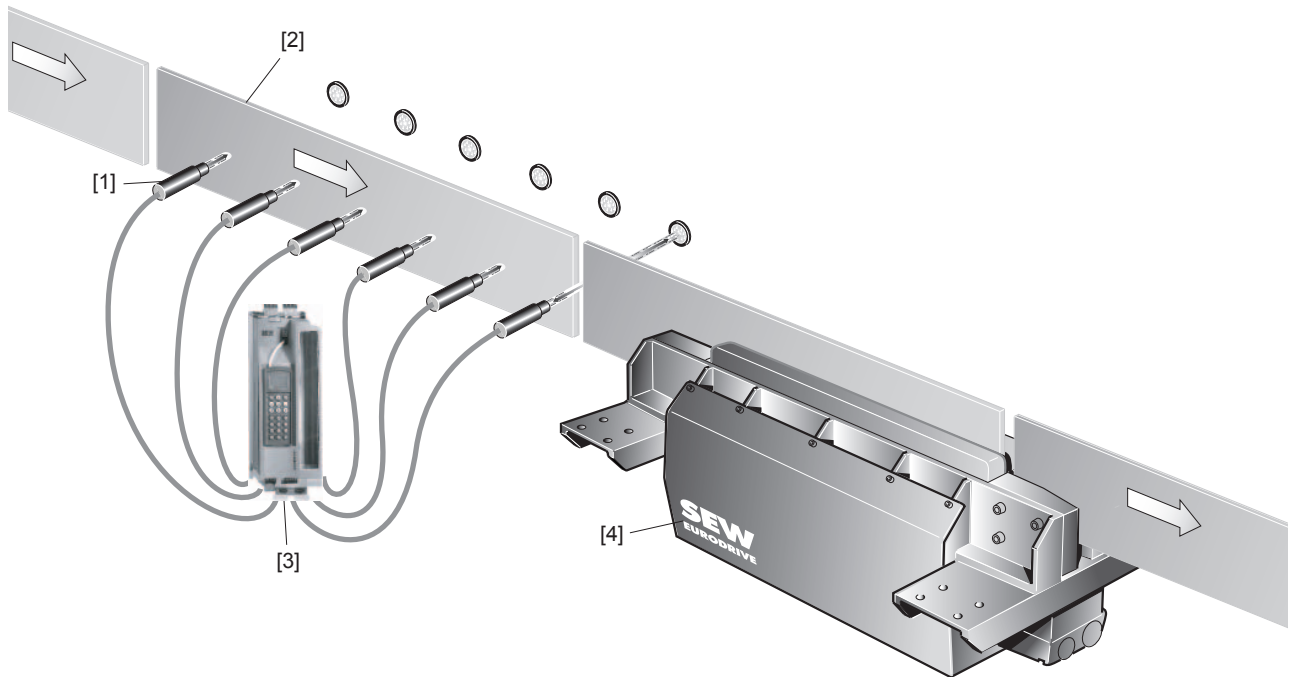
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- [1] Friction wheel speed indicator with analog output
- [2] Secondary of the linear motor
- [3] MOVIDRIVE® inverter
- [4] Primary of the linear motor



3.3.2 Contactless speed detection

Light barriers [1] are installed along the travel distance of the secondary [2]. At a consistent speed, a continuous pulse sequence is generated via the light barrier signals. The light barriers are read-in in the PLC or at the MOVIDRIVE® inverter. A speed control and a detection of the direction of motion can be realized in the user program via the time intervals of the edges and the sequence.



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- [1] Light barrier
- [2] Secondary of the linear motor
- [3] MOVIDRIVE® inverter
- [4] Primary of the linear motor



4 Installation/Assembly

4.1 Before you start



The drive may only be installed if

- the power of the linear motor is suitable for the frequency inverter
- 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
 - No oil, acid, gas, vapors, radiation, etc.
 - Installation altitude max 1000 m (absolute altitude)
 - Not intended for the use in wet and unprotected areas

4.2 Preliminary work after longer periods of storage

Check whether the motor has absorbed any moisture during storage. Check the insulation resistance (500 V test voltage). Sufficient insulation resistance: 10 MΩ at 25 °C.



The insulation resistance largely depends on the temperature conditions. Consult SEW-EURODRIVE should the insulation resistance turn out to be insufficient.

4.3 Installing the motor

The motor may only be mounted in the specified position on a level, vibration-free and torsionally rigid support structure.

- Align the motor with due care in order to prevent an impermissible load on the secondary.
- Provide for unobstructed cooling air supply.



5 Electrical Installation

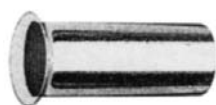


If you use electronic speed monitoring devices, observe the respective operating instructions and wiring diagrams.

5.1 Before you start

5.1.1 Tools/accessories

- Standard tools
- If using wire end sleeves: Crimping tool and wire end sleeves (without insulation joint, DIN 46228 section 1, material E-CU)



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5.2 Connection via integrated IS plug connector

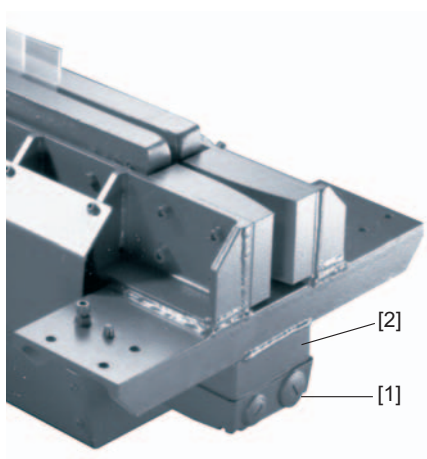
5.2.1 Description/technical data

The integrated IS plug connector allows for connecting the motor quickly and easily.

In addition it facilitates the removal and re-installation process for inspection, maintenance and repair purposes.

The lower part of the integrated IS plug connector comes completely wired as a standard (for functions like forced cooling fan etc.). Connect the upper part of the plug connector according to the wiring diagram.

The integrated IS plug connector complies with DIN VDE 0110 with a rated voltage of 690 V and cleanliness factor 3.



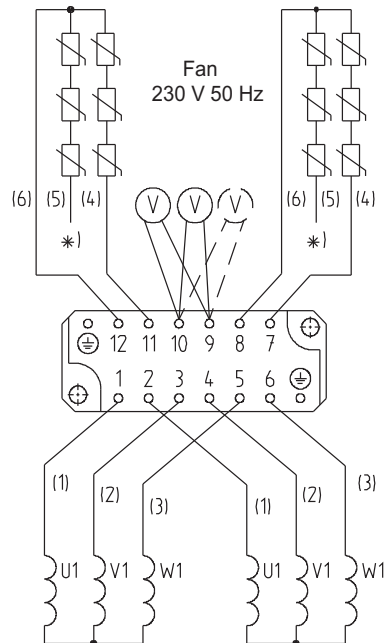
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[1] IS plug connector upper part

[2] IS integrated plug connector lower part



5.2.2 Input connection (IS plug connector lower part)

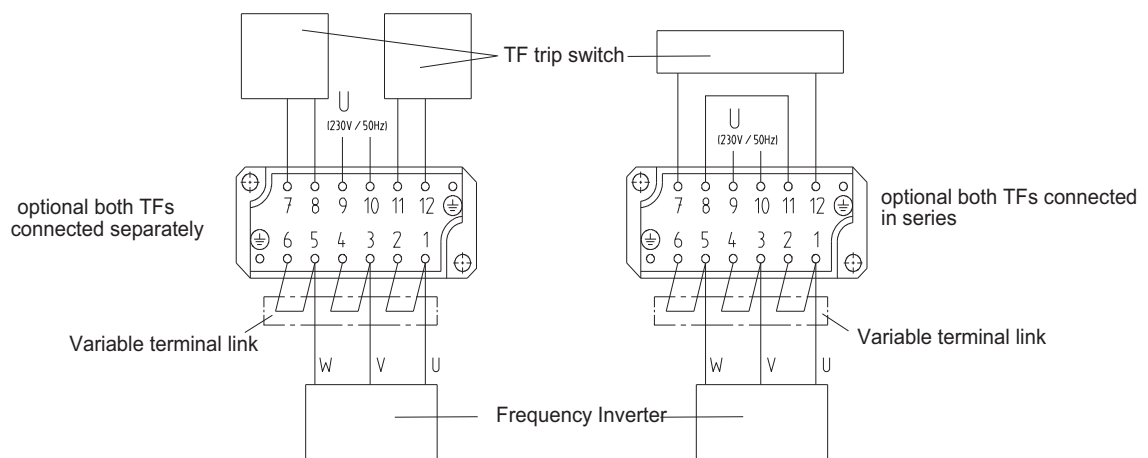


* reserved; not connected

1. Positive temperature coefficient thermistor (TF) left
2. Positive temperature coefficient thermistor (TF) left

1. Positive temperature coefficient thermistor (TF) right
2. Positive temperature coefficient thermistor (TF) right

5.2.3 Output connection (IS plug connector upper part)





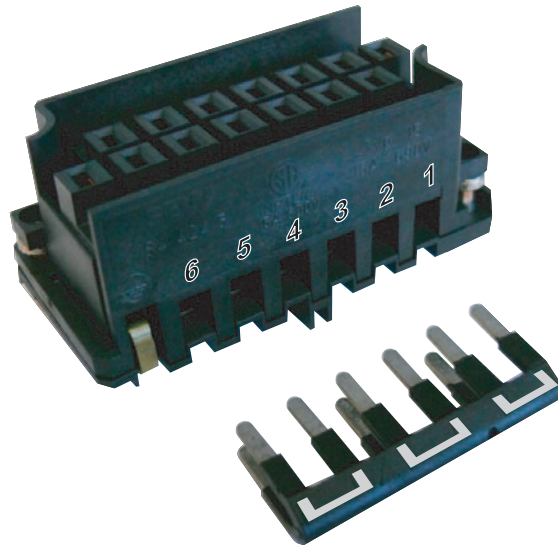
5.2.4 Cable requirements

Only use cable types that comply with the requirements of the applicable regulations. The nominal currents are specified on the nameplate. Possible cable cross sections with variable terminal link: 0.25 - 2.5 mm².

SEW recommends to use shielded cables in conjunction with EMC glands (not included in the scope of the SEW delivery).

5.2.5 Wiring the upper part of the integrated IS plug connector provided by the customer

1. Remove the screws of the housing cover.
 - Remove the cover
2. Remove the screws of the upper part and
 - remove the upper part from the housing
3. Remove about 9 mm of the insulation of the connection cable.
4. Insert the cable through the EMC cable gland (not included in the scope of delivery). Make sure that the shield is applied to the gland over a large area.
5. Connect the leads according to the wiring diagram in section 5.2.3
6. Install the variable terminal link (standard scope of delivery). Insert the upper connections of the variable terminal link into the IS plug connector.



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7. Install the mating connector
8. SEW recommends to connect both shield ends with the ground potential (PE). On the motor end, you can use an EMC gland, on the FI end, you can apply the shield.



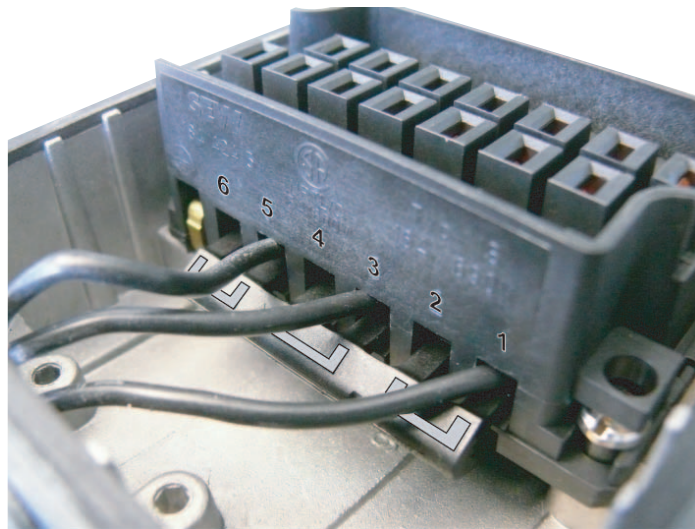
Electrical Installation

Connection via integrated IS plug connector

5.2.6 Installing the plug connector

The housing cover of the IS plug connector can be screwed onto the lower section of the plug connector depending on the required position of the cable lead. The upper section of the plug connector shown in the following figure must first be installed in the housing cover so it will match the position of the lower section of the plug connector:

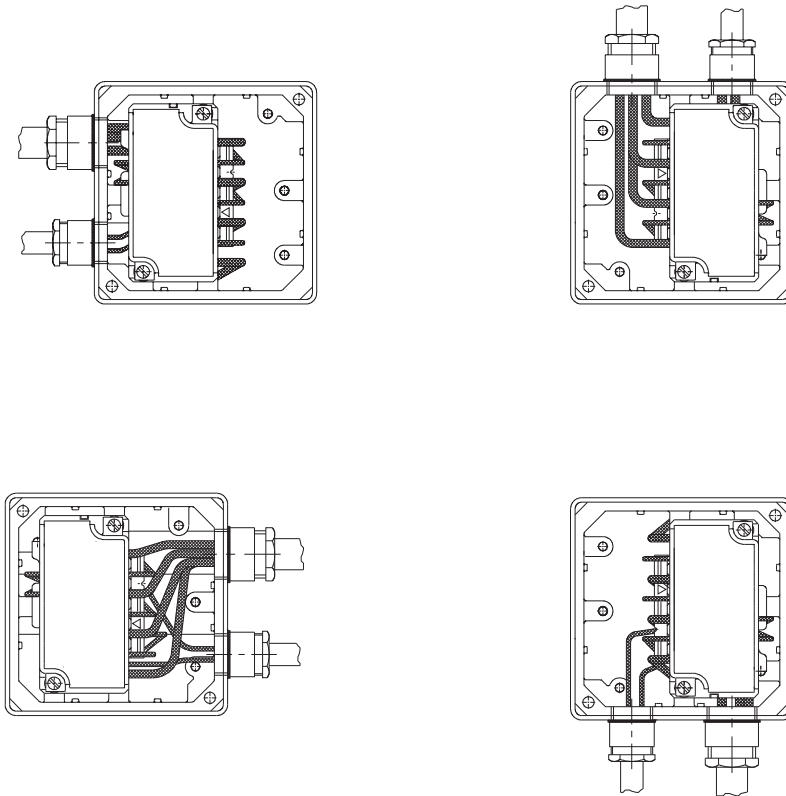
- Define the required mounting position
- Install the upper section of the plug connector into the housing cover in accordance with the mounting position
- Close the plug connector
- Tighten the cable gland



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Mounting position of the upper section of the plug connector in the housing cover



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5.2.7 Installing the integrated IS plug connector

The housing cover of the integrated plug connector can be connected to the lower part according to the desired cable position. You have to install the upper part in the housing cover according to the position of the lower part:

1. Determine the required mounting position
2. Install the upper part in the housing cover according to the mounting position
3. Connect the plug connector
4. Screw the lower part on the housing cover
5. Tighten the cable glands



You have to insert the bridge with all 6 pins as illustrated (see section 5.2.3) . If not properly installed, only one stator part is supplied, the drive generates only half the feed thrust and overheats.

5.3 Thermal motor protection

5.3.1 TF temperature sensor



Do not energize the terminals.

Check the resistance (measure with $V \leq 2.5 \text{ V}$)

Measurement per sensor: Cold resistance 20 - 250 Ω ; thermal resistance > 4000 Ω .
Connection to a measuring instrument in the control cabinet according to DIN 44081.

5.3.2 Fan

The fan motors are equipped with bimetallic thermostats for overload protection.



6 Startup

6.1 Before you start



Before startup, make sure that:

- All connections have been made properly
- The direction of force of the motor is correct
U, V, W is connected to U, V, W
- The drive is not blocked
- There are no other hazards



During startup, make sure that:

- the motor is running correctly (no speed fluctuations, no loud noises, etc.). Malfunctions, see section 7.

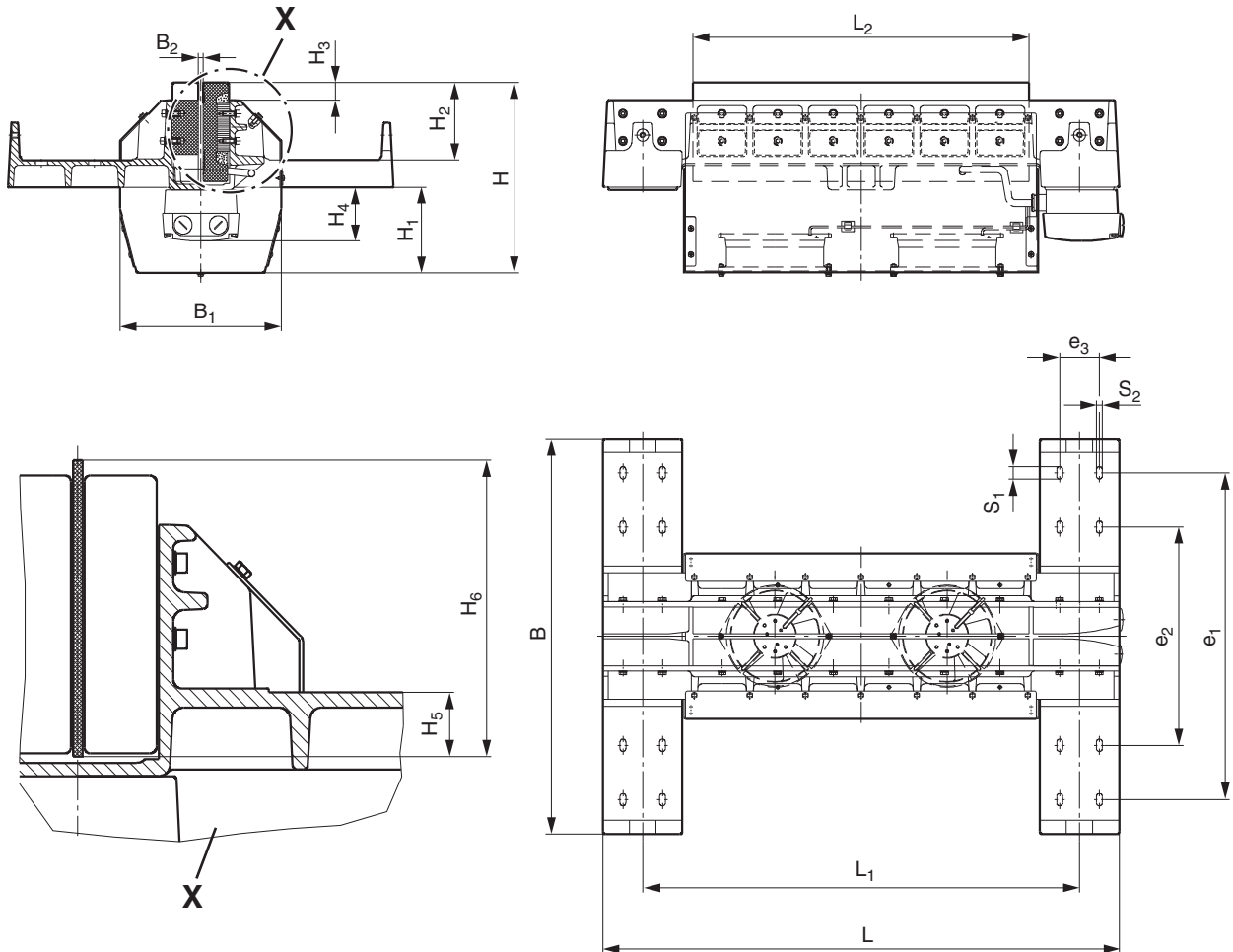


7 Malfunctions

Problem	Possible cause	Solution
Motor does not start easily or does not start at all	Cable defective	Check the respective connections and replace them if necessary
	Fuse has blown	Replace the fuse
	Motor protection	Make sure that the motor protection is set-up correctly and adjust it if necessary
	Terminal strip designed for delta connection but wired in star connection	Re-wire, see section 5.2
	Insufficient power supply	Check the inverter settings and the cable cross sections
Incorrect direction of rotation	Motor not wired correctly	Check the wiring and swap two phases if necessary
Motor makes humming noise and requires too much energy	Faulty winding	Motor needs to be repaired by qualified service engineers
	System blocked	Check system for blocking
Fuse blows or motor protection trips immediately, overload in the inverter	Short circuit in the cables	Eliminate short circuit
	Short circuit in motor	Malfunction to be eliminated in a specialist workshop
	Lines connected incorrectly	Check connections, correct if necessary
Significantly lower speed under load	Overload	Measure the power and reduce the load if necessary
	Voltage drop	Use cables with a higher cross section
	Incorrect inverter parameters	Change the inverter parameters
Motor overheats, thermal protection function trips	Overload	Measure the power and reduce the load if necessary
	Insufficient cooling	Adjust the cooling air supply or clean the air passage. Check the forced cooling fan
	Forced cooling fan does not run	Check connection and correct, if necessary
	Ambient temperature too high	Reduce the power
	Terminal strip designed for delta connection but wired in star connection	Re-wire, see section 5.2.5 and 5.2.6

8 Technical Data

8.1 Dimension sheet DLD 200-7 / DLD 400-6 / DLD 401-6



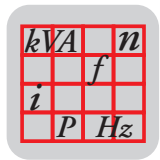
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Type	L	B	H	L1	L2	B1	B2	H1	H2	H3	H4	H5	H6	e1	e2	e3	s1	s2
DLD 200-7	826	426	191	723	591	171	7.1 ±0.3	68	93	26	79	5	98	330	250	40	18	9
DLD 400-6	780	582	235	660	508	243	7.5 ±0.3	81	114	26	79	33	148	480.8	320.8	60	18	9
DLD 401-6	780	736	235	660	508	243	7.5 ±0.3	81	114	26	79	33	148	575	415	60	18	9

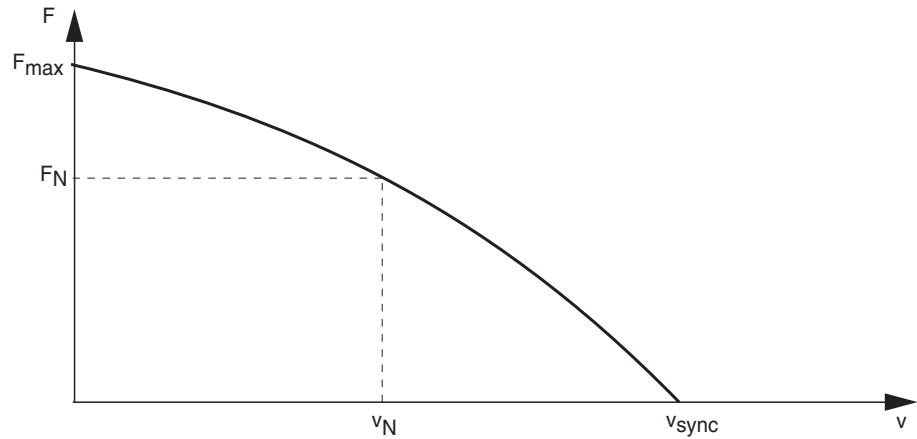


The secondary is not included in the scope of delivery. The dimensions H5 and H6 serve as a reference for dimensioning the secondary. The H5 values are maximum values that must not be exceeded. The H6 values are minimum values for achieving the nominal data (see section "Technical Data").





8.3 Motor data primary

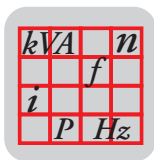


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The following nominal values can only be achieved if the secondary is dimensioned exactly according to the values in section 6.2.

			Motor size		
			DLD 200-7	DLD 400-6 DLD 401-6 DLD 402-6	DLD 400-6 DLD 401-6 power fan 230 V
Nominal thrust force	F _N 31 mS/m	[N]	165	260	315
	F _N 35 mS/m		185	280	350
Nominal speed v _N		[m/s]	2		
Rated power P _N		[kW]	0.37	0.56	0.7
Voltage in the operating point V _N		[V]	340	310	330
Nominal current I _N		[A]	4.8	9.0	9.8
Nominal frequency f _N		[Hz]	23		
Power factor cos j			0.74	0.76	0.64
Pole pitch		[mm]	84		
Motor protection			TF temperature sensor		
Degree of protection			IP00		
Weight		[kg]	56	59	
Noise level		[db(A)]	< 60		
Ambient temperature		[°C]	-20 °C to +40 °C		
Connection			IS integrated plug connector		



8.4 Motor data secondary

Observe the H_5 and H_6 values as well as the length of the secondary, if possible, without exceeding or falling below them.

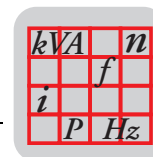
Motor size	Secondary [mm]		Secondary [mm]		Nominal conductance	
	H6	Length	Aluminum	Copper	Aluminum	Copper
DLD 200	98	700	5	3	min. 35 mS/m	min. 55 mS/m
DLD 400 / 401	148	650	5	3		

If it is not possible to observe the thickness of the secondary and the conductance, there is the following approximation.

$$\text{reduced force} = \text{rated force} \times \frac{\text{actual thickness}}{\text{rated thickness}} \times \frac{\text{actual conductance}}{\text{rated conductance}}$$



The secondary is not included in the scope of delivery.



8.5 Forced cooling fan

8.5.1 FAN 230 V (standard)

	Motor size	
	DLD 200-7	DLD 400-6 DLD 401-6 DLD 402-6
Number of fans	3	2
Voltage V_N [V]	230	
Current I [A]	0.9	0.6
Frequency f [Hz]	50	
Power P [W]	135	90
Degree of protection	IP20	

8.5.2 POWER FAN 230 V

	Motor size	
	DLD 400-6 DLD 401-6	
Number of fans	2	
Voltage V_N [V]	230	
Current I [A]	0.7	
Frequency f [Hz]	50	
Power P [W]	100	
Degree of protection	IP54	

8.5.3 FAN 115 V

	Motor size	
	DLD 200-7	DLD 400-6 DLD 401-6 DLD 402-6
Number of fans	2	3
Voltage V_N [V]	115	
Current I [A]	1.5	1.0
Frequency f [Hz]	60	
Power P [W]	120	80
Degree of protection	IP 20	



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
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	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	Hagenau	SEW-USOCOME 48-54, route de Soufflenheim B. P. 20185 F-67506 Hagenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocomme.com sew@usocomme.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 Zagnoun 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
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			
Sales	Minsk	SEW-EURODRIVE BY Rybalko Str. 26 BY-220033 Minsk	Tel. +375 (17) 298 38 50 Fax +375 (17) 29838 50 sales@sew.by
Belgium			
Assembly Sales Service	Brüssel	SEW Caron-Vector Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.be info@caron-vector.be
Service Competence Center	Industrial Gears	SEW Caron-Vector 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
	Antwerp	SEW Caron-Vector Glasstraat, 19 BE-2170 Merksem	Tel. +32 3 64 19 333 Fax +32 3 64 19 336 http://www.sew-eurodrive.be service-antwerpen@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 2489-9133 Fax +55 11 2480-3328 http://www.sew-eurodrive.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



Address List

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 LAMP 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
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478398 Fax +86 27 84478388
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. +420 255 709 601 Fax +420 220 121 237 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
Service	Sharjah	Copam Middle East (FZC) Sharjah Airport International Free Zone P.O. Box 120709 Sharjah United Arab Emirates	Tel. +971 6 5578-488 Fax +971 6 5578-499 copam_me@eim.ae
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, PL 8 FI-03600 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi
Gabon			
Sales	Libreville	ESG Electro Services Gabun Feu Rouge Lalala 1889 Libreville Gabun	Tel. +241 741059 Fax +241 741059
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



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Assembly Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk
Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 office@sew-eurodrive.hu
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 2831086 Fax +91 265 2831087 http://www.seweurodriveindia.com sales@seweurodriveindia.com subodh.ladwa@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 c.v.shivkumar@seweurodriveindia.com
Ireland			
Sales Service	Dublin	Alpert Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 info@alperon.ie http://www.alperon.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



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



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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, Ferryroad 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 42 676 53 00 Fax +48 42 676 53 45 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
		24 Hour Service	Tel. +48 602 739 739 (+48 602 SEW SEW) sewis@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-831 06 Bratislava	Tel. +421 2 33595 202 Fax +421 2 33595 200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. Industry Park - PChZ ulica M.R.Štefánika 71 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-974 11 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 SK-040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 cfoster@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaco Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 cdejager@sew.co.za
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

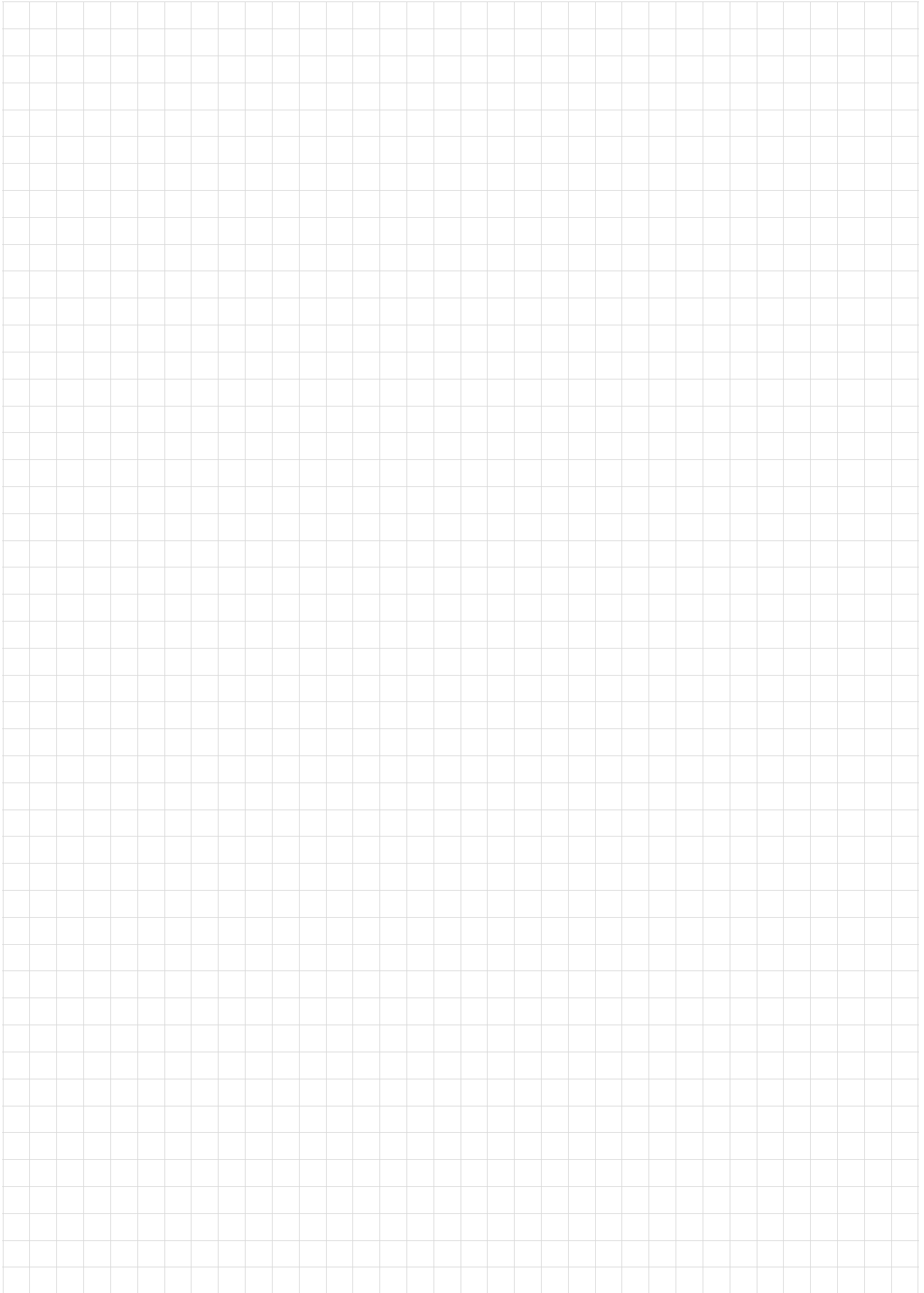


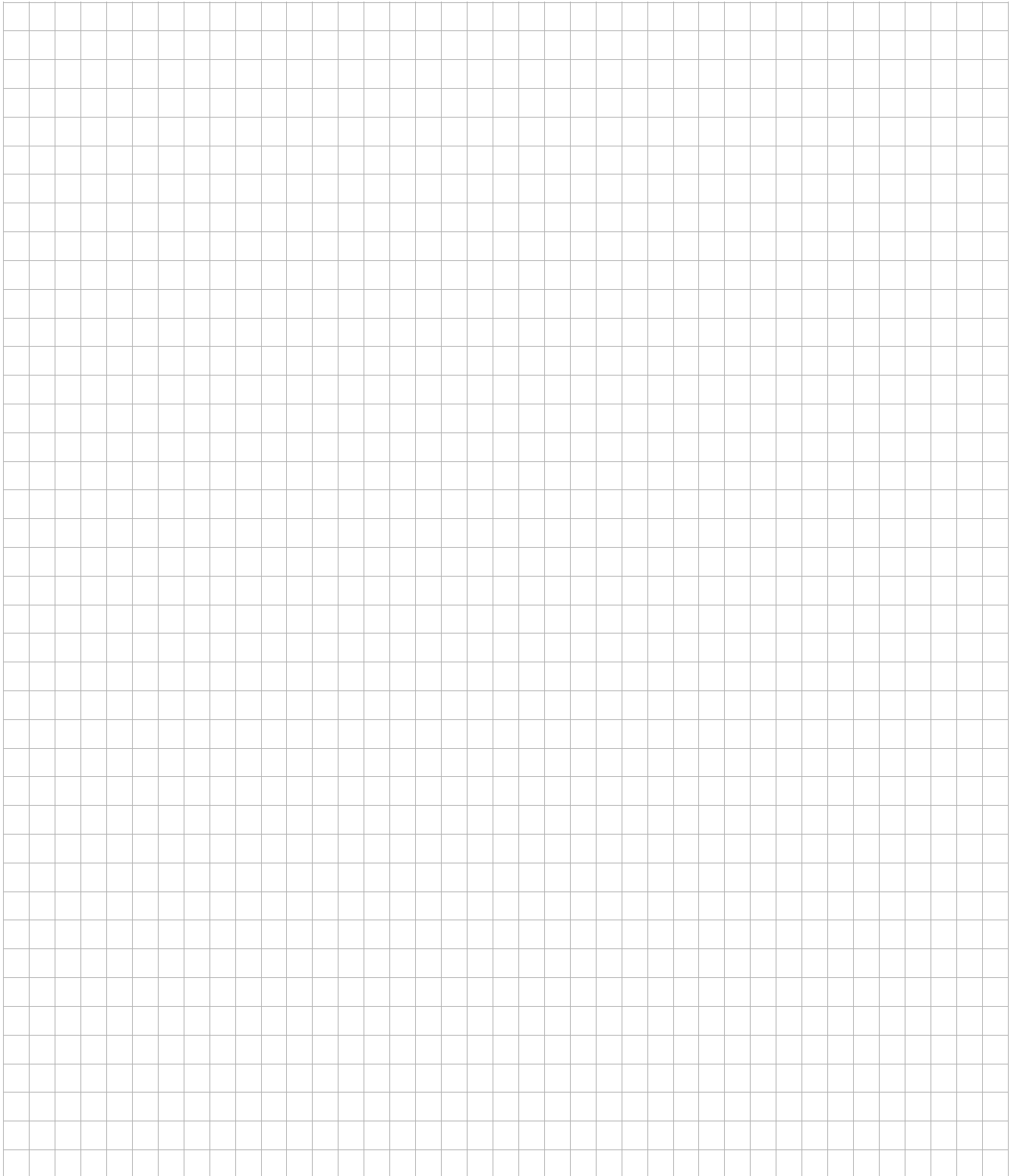
Address List

Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442 00 Fax +46 36 3442 80 http://www.sew-eurodrive.se jonkoping@sew.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 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 Corporate Offices	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manufacturing +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Additional addresses for service in the USA provided on request!		



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





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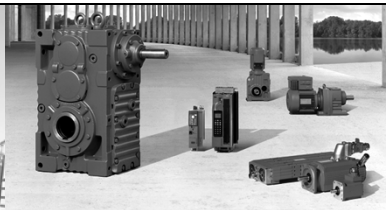
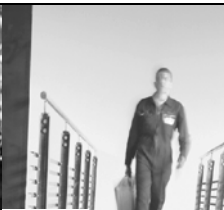
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