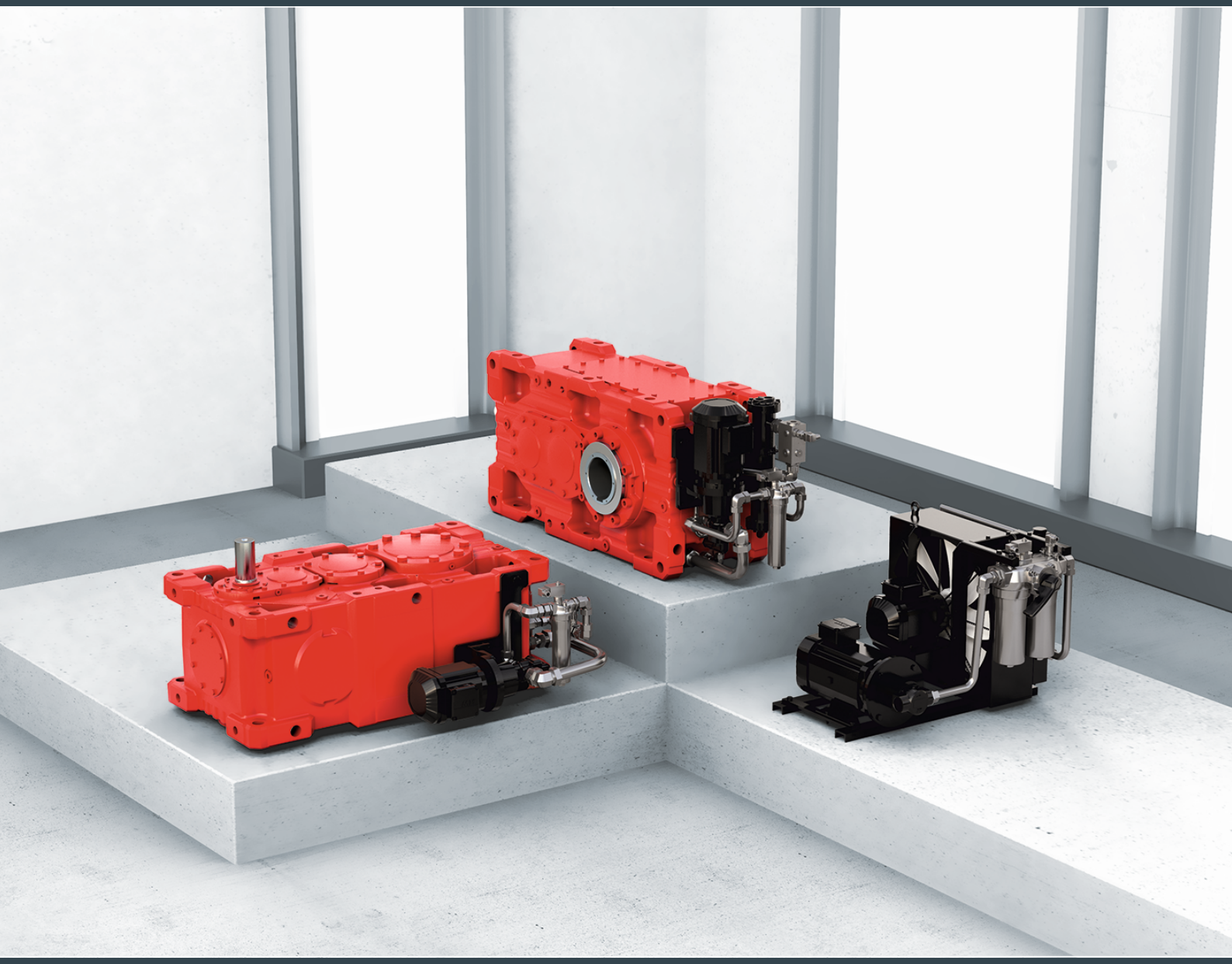
SEW EURODRIVE

Catalog



Industrial Gear Units

X.. Series Helical and Bevel-Helical Gear Units

External Oil Supply and Oil Cooling Systems

Edition 11/2018

23560851/EN



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SEW EURODRIVE

1 Introduction

1.1 The SEW-EURODRIVE group of companies

1.1.1 Global presence

Driving the world – with innovative drive solutions for all industries and for every application. Products and systems from SEW-EURODRIVE are used all over the world. Be it in the automotive, building materials, food and beverage, or metal-processing industry – the decision to use drive technology "made by SEW-EURODRIVE" stands for reliable products in regard of functionality and investment.

Products and services from SEW-EURODRIVE are represented in all important industries of our time. We also show this presence with subsidiaries and production plants all over the world, as well as with our service, which we see as an integrative part of our portfolio that extends SEW-EURODRIVE's high quality standards.

1.1.2 Always the right drive solution

With the broad product portfolio from SEW-EURODRIVE, which also includes mechatronic drive units, frequency inverters, controllers, software and communication in addition to the tried-and-tested modular system for gearmotors, it is possible to implement the perfect drive solution for every application.

Gear units and motors

Thanks to the modular system, gearmotors can be combined individually according to the required speed and torque ranges, the space requirements and the ambient conditions. Gear units and gearmotors offering a unique and finely tuned performance range and the best economic prerequisites to face any drive challenge.

Motors by SEW-EURODRIVE can be mounted directly or via adapter to SEW-EURODRIVE gear units. They meet all worldwide requirements regarding energy efficiency and technical regulations. A wide range of options and accessories ensures high flexibility for adjusting the motor to the requirements of the user and the application.

Inverters

The proven inverter series MOVITRAC®, MOVIDRIVE® and MOVIAXIS® enhance the gearmotors, forming a combination that blends in perfectly with the existing SEW-EURODRIVE systems program.

Modular automation system

With its brand MOVI-C®, SEW-EURODRIVE launches a new generation of drive and automation technology. MOVI-C® is the modular automation system that allows for the highest level of system and machine automation. It comprises drive technology, MotionControl, control technology and visualization.

MOVIDRIVE® modular is the modular application inverter for all types of applications, ranging from simple open-loop speed control to servo drives with kinematic model. MOVIDRIVE® modular can be supplemented by connecting MOVIDRIVE® system single-axis units. These possess functionalities comparable to those of axis modules, but have their own line connection. Especially in the upper power range, MOVIDRIVE® system complements the modular application inverter.

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MOVIDRIVE® modular and system are intended for operation at the MOVI-C® CONTROLLER, the controller from SEW-EURODRIVE. They offer a powerful clock-synchronous connection via the integrated EtherCAT®/SBus^{PLUS} communication interface. Other EtherCAT® stations from SEW-EURODRIVE or other manufacturers can be controlled and diagnosed by the MOVI-C® CONTROLLER.

The MOVISUITE® engineering software, with its unique operating philosophy, prevails over all MOVI-C® hardware and software components. MOVISUITE® was developed with a focus on systematically shortening the startup time and covers the entire engineering process, from planning to diagnostics.

Decentralized drive technology

For economical, decentralized installations, SEW-EURODRIVE offers decentralized drive technology components, such as MOVIMOT®, the gearmotor with integrated frequency inverter or MOVI-SWITCH®, the gearmotor with integrated switching and protection function. SEW-EURODRIVE hybrid cables have been designed specifically to ensure cost-effective solutions, independent of the philosophy behind or the size of the system.

The decentralized drive technology portfolio is complemented by the DRC.. electronic motor, MOVIGEAR® mechatronic drive system, MOVIFIT® decentralized drive controller, MOVIPRO® decentralized drive, positioning, and application controller, as well as MOVITRANS® system components for contactless energy transfer.

The smart energy management system MOVI-DPS® enhances the modular product portfolio from SEW-EURODRIVE. With MOVI-DPS®, SEW-EURODRIVE offers the perfect combination: Conserving resources. Reducing costs.

MOVI-DPS® allows for stable power grids, no power failures, and consequently reliable system availability. MOVI-DPS® shows what it can do in both mobile and stationary applications. In addition, MOVI-DPS® can be combined with other systems such as the contactless energy transfer system MOVITRANS®, resulting in further important synergy effects.

Industrial gear units

Power, quality and sturdy design combined in one standard product: With high torque levels, industrial gear units from SEW-EURODRIVE realize major movements. The modular concept will once again provide optimum adaptation of industrial gear units to meet a wide range of different applications.

Individual system solutions with MAXOLUTION®

MAXOLUTION® from SEW-EURODRIVE provides individual application solutions in all areas of system and machine automation. From electromechanical drives, controllers and communication to visualization and the contactless energy transfer system MOVITRANS® up to a comprehensive service portfolio, MAXOLUTION® offers all modules required to design customer-specific solutions for machines and systems.

MAXOLUTION® combines individual products of the proven modular system with innovative system components to form individual solutions that perfectly match the requirements of the specific application – "powered by SEW-EURODRIVE".

Safe – flexible – effective: safetyDRIVE

Guaranteeing the safety of all employees and preventing work accidents while ensuring trouble-free production processes are demands placed on all production areas. safetyDRIVE, the comprehensive safety concept, allows you to implement your machines "safely," in accordance with the currently valid guidelines. With controllers that meet the respective requirement of the safety categories or the performance levels and that monitor instead of switch off.

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All of our drive and frequency inverters provide the function that safely stops the electrical power to the motor (STO). The MOVISAFE® components complete the portfolio – integrated into the inverter as option cards DFS..B or DCS..B or modular as safety monitors UCS..B. The decentralized MOVIFIT® and MOVIPRO® drive technologies with integrated safety functions are ready for use in decentralized installations.

The functionally safe motor options allow for implementing safety functions in safety-related applications. Safety encoders are used to implement safety functions with respect to speed, direction of rotation, standstill, and relative position. Safety brakes can implement safety functions with respect to decelerating and stopping.

1.1.3 Your ideal partner

Its global presence, extensive product portfolio and broad spectrum of services make SEW-EURODRIVE the ideal partner for the machinery and plant construction industry when it comes to providing drive systems for demanding drive tasks in all industries and applications.

For detailed information on the entire SEW-EURODRIVE product portfolio, refer to our website www.sew-eurodrive.com where you can find out about components, system solutions, services and industries. Via the Online Support, you can access a large selection of documents and tools such as the product configurator and different selection guides as well as all documentation in different languages for download.

1.2 Documentation

1.2.1 Contents of this publication

This "External Oil Supply and Oil Cooling Systems" catalog describes the following product groups of SEW-EURODRIVE:

Oil cooling systems:

- Oil-air cooler for splash lubrication /OAC
- Oil-air cooler for splash lubrication /OAC1
- Oil-air cooler for pressure lubrication /OAP1
- Oil-water cooler for splash lubrication /OWC
- Oil-water cooler for pressure lubrication /OWP

Oil supply systems:

- Motor pump /ONP1
- Motor pump /ONP1L

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1.2.2 Additional documentation

The following catalogs are available from SEW-EURODRIVE in addition to the following catalogs and brochures:

They are also available on the SEW-EURODRIVE website under "Online Support" > "Data and documents".

- Catalog: "X.. Series Helical and Bevel-Helical Gear Units"
- Catalog: "X.. Series Helical and Bevel-Helical Gear Units, Bucket Elevator Drives"
- Catalog: "X.. Series Helical and Bevel-Helical Gear Units, Flange Couplings"
- Brochure: "Technology for Agitators and Aerators"
- Brochure: "Technology for Cranes"
- Brochure: "Drive Systems for Conveyor Systems"

1.3 Product names and trademarks

All product names included in this documentation are trademarks or registered trademarks of the respective titleholders.

1.4 Copyright notice

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1.5 Structure of the notes

The notes in this catalog are designed as follows:

Pictogram	Signal word	Meaning
	**INFORMATION**	Useful information or tip. Simplifies handling of the drive system.

1.6 Important information

Adhere to the following information:

INFORMATION



- The illustrations in the catalog are examples. Final dimensions are available from SEW-EURODRIVE on request.
- The specified weights are guide values and may deviate slightly.
- When installing a filter in the oil cooling system, make sure there is sufficient height for removing the filter element and the filter housing.

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2 Product description

The oil supply systems described in this document are used to cool and lubricate gear units.

2.1 Thermal rating

Using oil cooling systems makes it possible to use gear units under conditions where the specified thermal rating P_T of the naturally cooled gear unit or the cooling is not sufficient.

The thermal rating P_T of a gear unit is the power that a gear unit can transmit continuously without exceeding a specific oil temperature.

The following influencing factors are considered when selecting the gear unit:

- Gear unit type, size, and gear ratio
- Mechanical loss and its influencing factor
- Lubricant type
- Cyclic duration factor
- Ambient temperature
- Heat conduction to foundation at installation site
- Max. permitted oil temperature (oil grade/customer specification, etc.)
- Dirt or dust that has accumulated on the surface of the gear unit
- Installation altitude above sea level

Oil-air cooler

- Ambient wind speed (work space: small/large/outdoors, etc.)
- Installation site exposed to sunlight

Oil-water cooler

- Water quality
- Water temperature
- Water flow rate

2.2 Project planning

SEW-EURODRIVE plans the required oil supply and oil cooling systems individually depending on the above mentioned influencing factors.

2.3 Overview of advantages

- Virtually unlimited increase in thermal rating due to external oil cooling systems.
- Robust motor pump.
- Up to a starting viscosity of 5000 cSt.
- Sensors can be selected, such as TSK2 temperature switch or PT100 temperature sensor.
- Available with single or duplex filter.
- High availability and flexibility because SEW motors are used.

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2.4 Type designation

2.4.1 Oil cooling systems: OWC, OWP, OAC1, OAP1

The following examples show the structure of type designations.

OWC 020-00/M		**OAC1 16/120-020/**M	
O	Oil supply system	O	Oil supply system
W	Cooling medium • W = Water • A = Air	A	Cooling medium • W = Water • A = Air
C	Type • C = Circulation cooling • P = Pressure lubrication	C	Type • C = Circulation cooling • P = Pressure lubrication
020	System size • 005 – 070	1	Generation
0	Mounting positions • 0 = M1 • 1 = M5	16	Pump size • 06 – 63
0	Options • 0 = 50 Hz • 1 = 60 Hz • 9 = Special design	120	Air heat exchanger • 120 – 810
M	Mounting type • M = Mounted to the gear unit • S = Mounted separately	0	Mounting positions • 0 = M1 • 1 = M5
		2	Frequency • 0 = 50 Hz • 1 = 60 Hz • 2 = 50 Hz/60 Hz
		0	Options • 0 = No filter • 1 = Single filter • 2 = Duplex filter • 9 = Special design
		M	Mounting type • M = Mounted to the gear unit • S = Mounted separately

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2.4.2 Oil supply systems: ONP1, ONP1L

The following example shows the structure of the type designation.

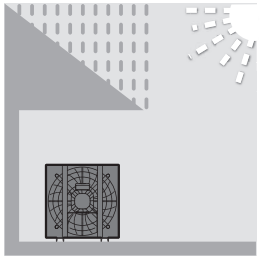
ONP1 12 - 0 0 0 /M	
O	Oil supply system
N	Cooling medium • N = Motor pump
p	Type • P = Pressure lubrication
1	Version • 1 – 99 • L = Light version without filter
12	Pump size • 06 – 25
0	Mounting positions • 0 = M1 • 1 = M5
0	Frequency • 0 = 50 Hz • 1 = 60 Hz • 2 = 50 Hz/60 Hz • 9 = Special design
0	Options • 0 = No filter • 1 = Single filter • 2 = Duplex filter • 9 = Special design
M	Mounting type • M = Mounted to the gear unit • S = For separate installation

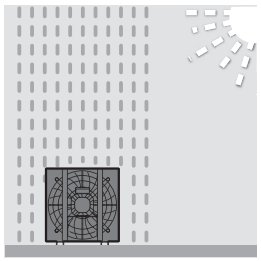
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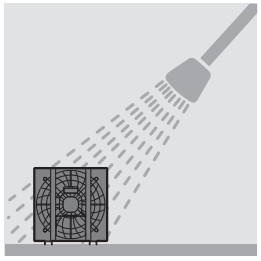
2.5 Coating and surface protection systems

Oil supply systems and oil cooling systems are availble with surface protection OS1 to OS3.

The following table provides an overview of the coating and surface protection systems.

OS 1 low environmental pollution	
	Suited for environments prone to condensation and atmospheres with low humidity or contamination, such as outdoor applications under roof or with protection, unheated buildings where condensation can build up. Based on corrosivity category: C2 (low)
Sample applications	• Systems in saw mills • Agitators and mixers
Condensation test ISO 6270	120 h
Salt spray test ISO 7253	–

OS 2 medium environmental pollution	
	Suitable for environments with high humidity or moderate atmospheric contamination, such as applications outdoors subject to direct weathering. Based on corrosivity category: C3 (moderate)
Sample applications	• Applications in gravel plants • Cable cars
Condensation test ISO 6270	120 h
Salt spray test ISO 7253	240 h

OS 3 high environmental pollution	
	Suitable for environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasional acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load. Based on corrosivity category: C4 (high)
Sample applications	• Port cranes • Sewage treatment plants • Mining applications
Condensation test ISO 6270	240 h
Salt spray test ISO 7253	480 h

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INFORMATION

- The standard top coat color for oil supply and oil cooling systems is RAL 9005.
- Colors according to RAL – Yes
- Higher quality surface protection systems are available on request.

2.6 Types of lubrication

SEW-EURODRIVE distinguishes between the following lubrication types:

2.6.1 Splash lubrication with circulation cooling

The following chapters provide an overview of splash lubrication with circulation cooling.

SEW-EURODRIVE offers the following oil supply systems:

- "Oil-air cooler for splash lubrication /OAC" (→ 🗎 16)
- "Oil-air cooler for splash lubrication /OAC1" (→ 🗎 19)
- "Oil-water cooler for splash lubrication /OWC" (→ 🗎 28)

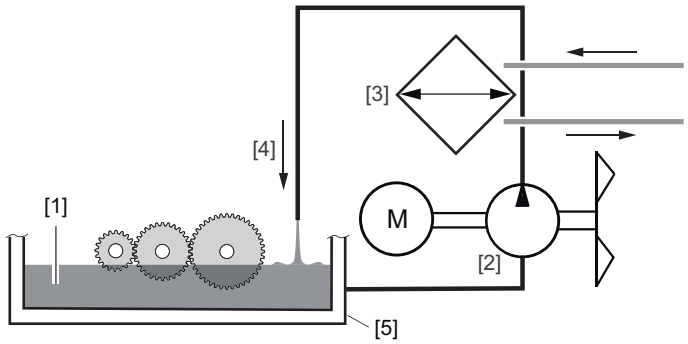
Definition

The gear unit is not completely filled with oil. All bearing and gearing parts that need to be lubricated are immersed in the oil sump. Standard lubrication type for horizontal mounting positions (M1 or M3).

Principle

Circulation cooling for splash lubrication works as follows:

A pump [2] is used to pump the oil [1] out of the gear unit and deliver it to the heat exchanger [3]. The oil is cooled in the heat exchanger [3]. The oil is then returned into the gear unit [5] via return pipe [4].



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2.6.2 Pressure lubrication with circulation cooling

The following chapters provide an overview of pressure lubrication with circulation cooling.

SEW-EURODRIVE offers the following oil supply systems:

- "Oil-air cooler for pressure lubrication /OAP1" (→ 🗎 24)
- "Oil-water cooler for pressure lubrication /OWP" (→ 🗎 33)

Definition

Pressure lubrication is used to supply bearings and gearing in the gear unit with oil if required.

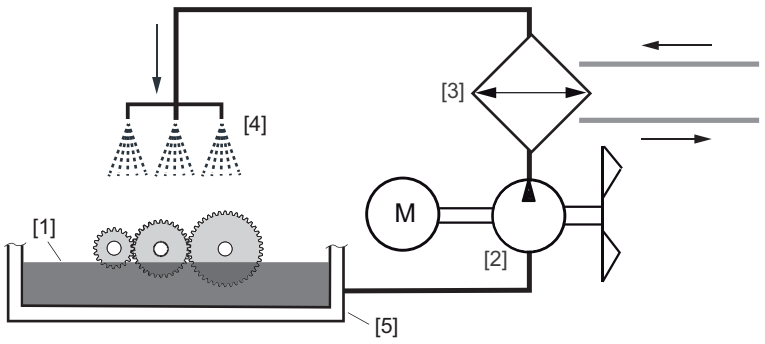
Pressure lubrication is used in the following cases:

- Splash lubrication is not possible (see the relevant mounting positions and variants under "Bath lubrication").
- Bath lubrication is not desired or is not advantageous for thermal reasons.
- A Drywell sealing system is required (only with a vertical output shaft with LSS facing down).
- High input speeds are present and the limit speed for the other types of lubrication is exceeded (dependant on gear unit size, variant, and number of stages).

Principle

Circulation cooling for pressure lubrication works as follows:

A pump [2] is used to pump the oil [1] out of the gear unit and deliver it to the heat exchanger [3]. The oil is cooled in the heat exchanger [3]. The oil is then returned into the gear unit [5] via pressure lubrication [4].



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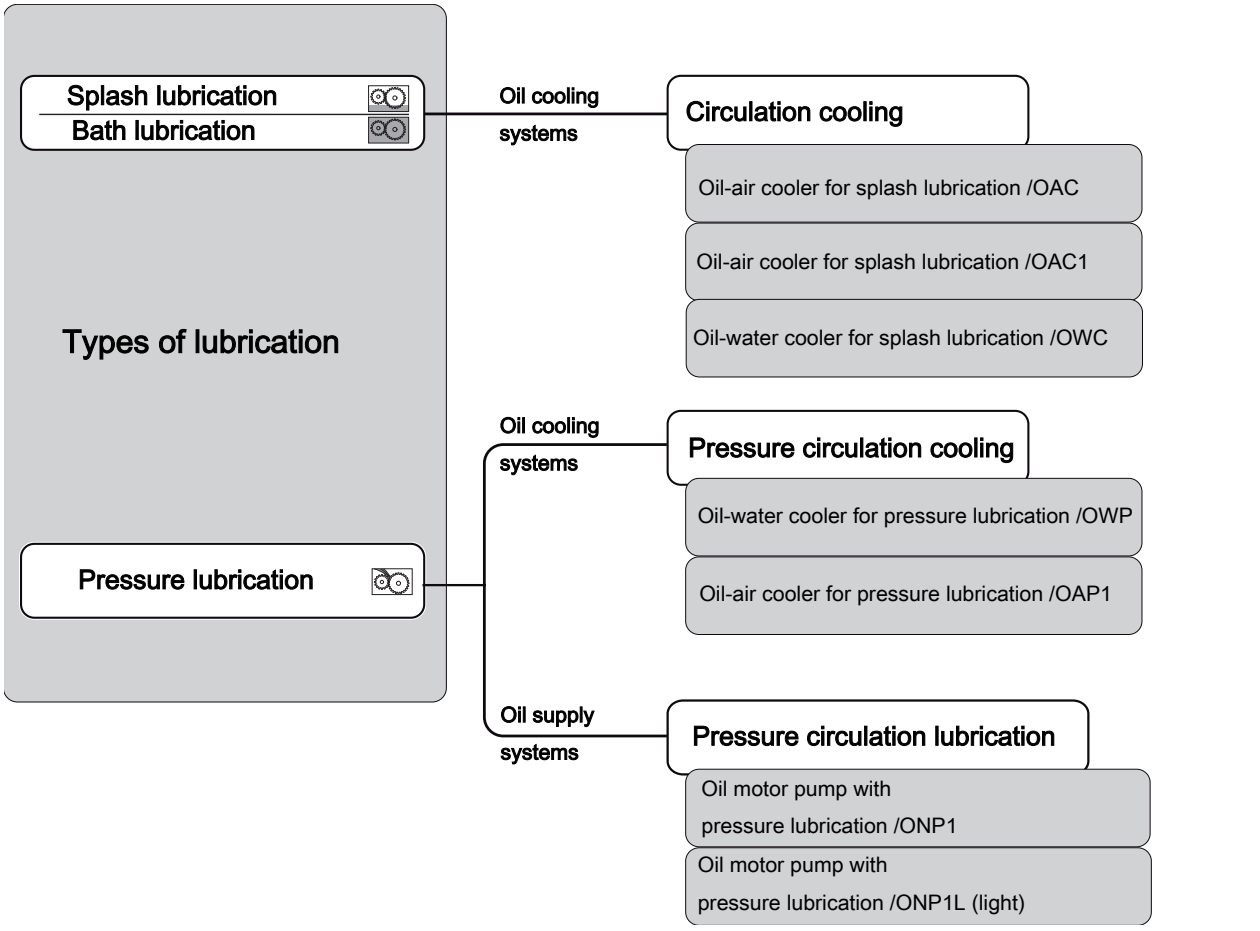
2.7 DRN.. series motors intended for oil supply and oil cooling systems

The following table shows the DRN.. series motors that are intended for generation 1 oil supply and oil cooling systems (OAC1, OAP1, ONP1, and ONP1L).

	Standard motor	Heavy duty motor
Degree of protection	IP54	IP65
Insulation	ISO B	ISO F
Mounting position	B5	B5/ C
Surface protection	OS1 standard	OS3 standard

2.8 Overview: External oil supply and oil cooling systems

The following types of lubrication and cooling are available depending on the specific requirements on the application:



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3 Oil cooling systems

Overview

The table provides an overview of available oil cooling systems:

	Oil-air cooler	Oil-water cooler
Splash and oil bath lubrication	OAC OAC1	OWC
Pressure lubrication	OAP1	OWP

Mounting

The following mounting options for oil cooling systems are available as standard:

	On the gear unit	Separately
Setup	OAC1 OAP1 OWC OWP	OAC

Electrical wiring

Depending on the design, customers have to perform the following electrical wiring:

- Pump motor
- Fan motor (OAC, OAC1 OAP1)
- Optional:
  - Electrical/optical contamination indicator of the oil filter
  - Temperature switch for pump motor and fan motor
  - Pressure switch
  - Pressure sensor
  - Flow switch

3.1 Oil-air cooler

3.1.1 Oil-air cooler for splash lubrication /OAC

Features

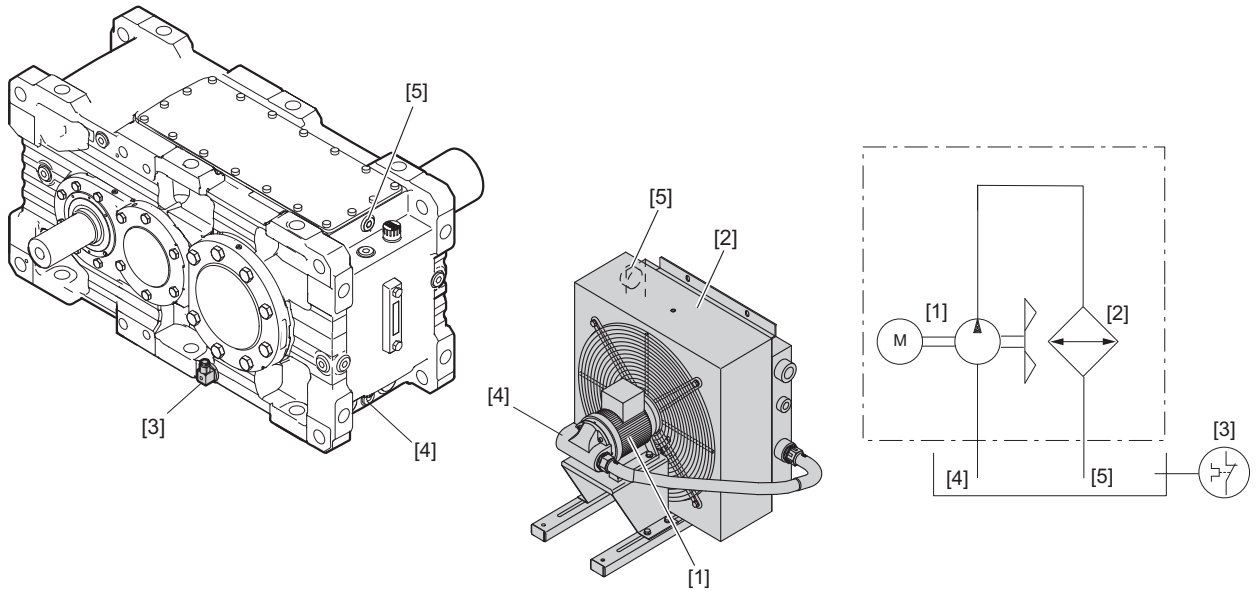
The oil-air cooler /OAC is characterized by the following features:

- Thermal limit rating of the gear unit can be increased significantly depending on the ambient temperature.
- The reduction of the maximum oil bath temperature increases the service life of the oil.
- Fan motor and temperature switch must be connected electrically.
- Starting viscosity 2000 cSt.

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Structure

The following figure shows a gear unit with separately installed oil-air cooler /OAC.



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[1] Fan motor

[2] Oil-air heat exchanger

[3] Temperature switch with two switching points

[4] Suction pipe connection

[5] Pressure pipe connection

Scope of delivery

As standard, the oil cooling system is mounted directly onto the gear unit as a complete unit. The electrical wiring is performed by the customer.

In its basic design, the oil-air cooler includes the following components:

- Oil pump with directly mounted asynchronous motor
- Oil-air heat exchanger
- Separate fan motor (for OAC 025/060)
- Temperature switch with 2 switching points for
  - Controlled startup of the fan motor with an oil temperature > 60 °C
  - Monitoring of the cooling group, i.e. warning or gear unit shutdown when the oil temperature exceeds 90 °C.

Sizes, cooling capacity and selection

The cooling capacity values given in the table apply to an air temperature of 40 °C, an oil temperature of 70 °C, equivalent volume flow of oil and cooling water, mineral oil CLP-CC-320, and 50 Hz line frequency.

Size	Cooling capacity cooling system kW	Oil flow rate cooling system l/min	Connected load pump motor kW	Weight kg
OAC 005	4	16	0.75	38
OAC 010	7	28	0.75	38
OAC 020	9	28	0.75	43
OAC 025	11	28	0.75	71
OAC 030	14	58	2.2	71
OAC 040	19	58	2.2	86
OAC 050	33	58	3	118
OAC 060	53	158	7.5	234

Installation and connection information

The oil-air cooler /OAC can only be installed separately from the gear unit. For mounting onto the gear unit, use the oil cooling system OAC1.

SEW-EURODRIVE recommends the following pipe cross sections for connecting the oil cooling system to the gear unit:

Size Cooling system	Pump suction connection	Suction pipe[1)]	Cooler pressure connection	Pressure pipe[2)]
OAC 005	G 1 1/4"	DN32	G 1"	DN25
OAC 010	G 1 1/4"	DN32	G 1"	DN25
OAC 020	G 1 1/4"	DN32	G 1"	DN25
OAC 025	G 1 1/4"	DN32	G 1"	DN25
OAC 030	G 1 1/2"	DN40	G 1"	DN32
OAC 040	G 1 1/2"	DN40	G 1 1/4"	DN32
OAC 050	G 1 1/2"	DN40	G 1 1/4"	DN32
OAC 060	SAE 2 1/2"	DN50	G 1 1/2"	DN40

1) Max. length 1.5 m

2) Max. length 2.5 m

INFORMATION



Detailed technical data and dimensions of the oil cooling systems are available from SEW-EURODRIVE on request.

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3.1.2 Oil-air cooler for splash lubrication /OAC1

Features

The oil-air cooler /OAC1 is characterized by the following features:

- Thermal limit rating of the gear unit can be increased significantly depending on the ambient temperature.
- The reduction of the maximum oil bath temperature increases the service life of the oil.
- The pump and fan motor as well as the temperature switch must be connected electrically.
- Starting viscosity 5000 cSt.
- Installed on the gear unit as standard.
- High availability due to one SEW motor each for fan and pump.

Structure

The following figures show the gear units in mounting position M1 with the standard mounting surfaces for the oil pump and oil-air heat exchanger.

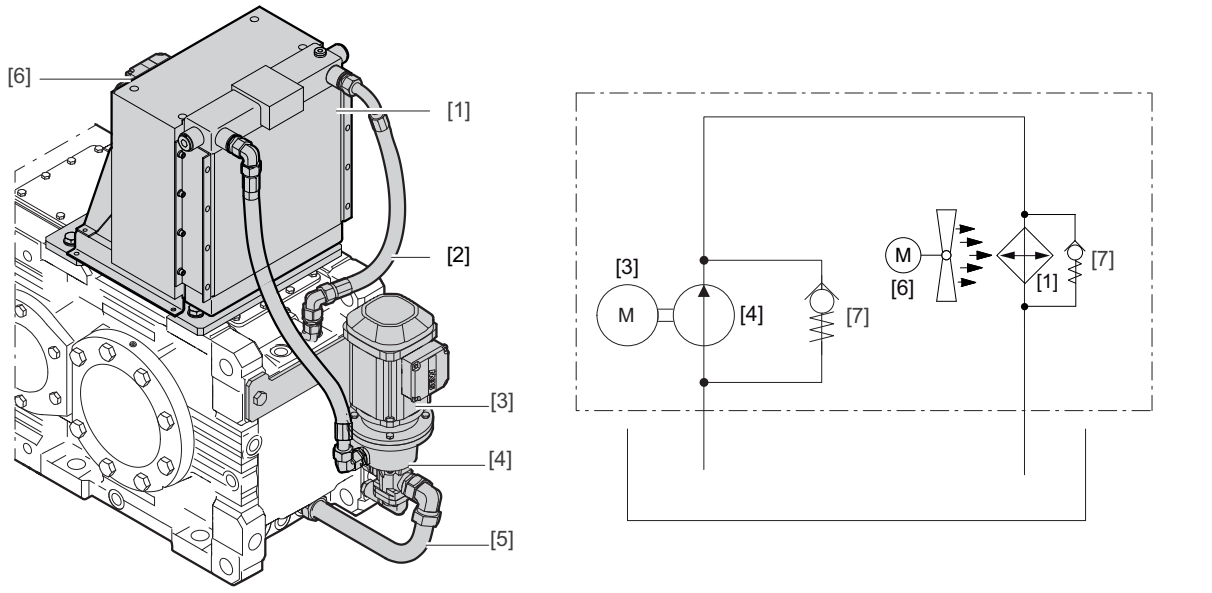
INFORMATION

Mounting surfaces deviating from the standard require a new construction. This may affect the minimum oil viscosity. A comprehensive individual check is required. Contact SEW-EURODRIVE.

SEW-EURODRIVE uses an oil-air cooler with separate motors for oil pump and fan.

Mounting position M1 - mounting surface: Oil-air heat exchanger F2/oil pump F6

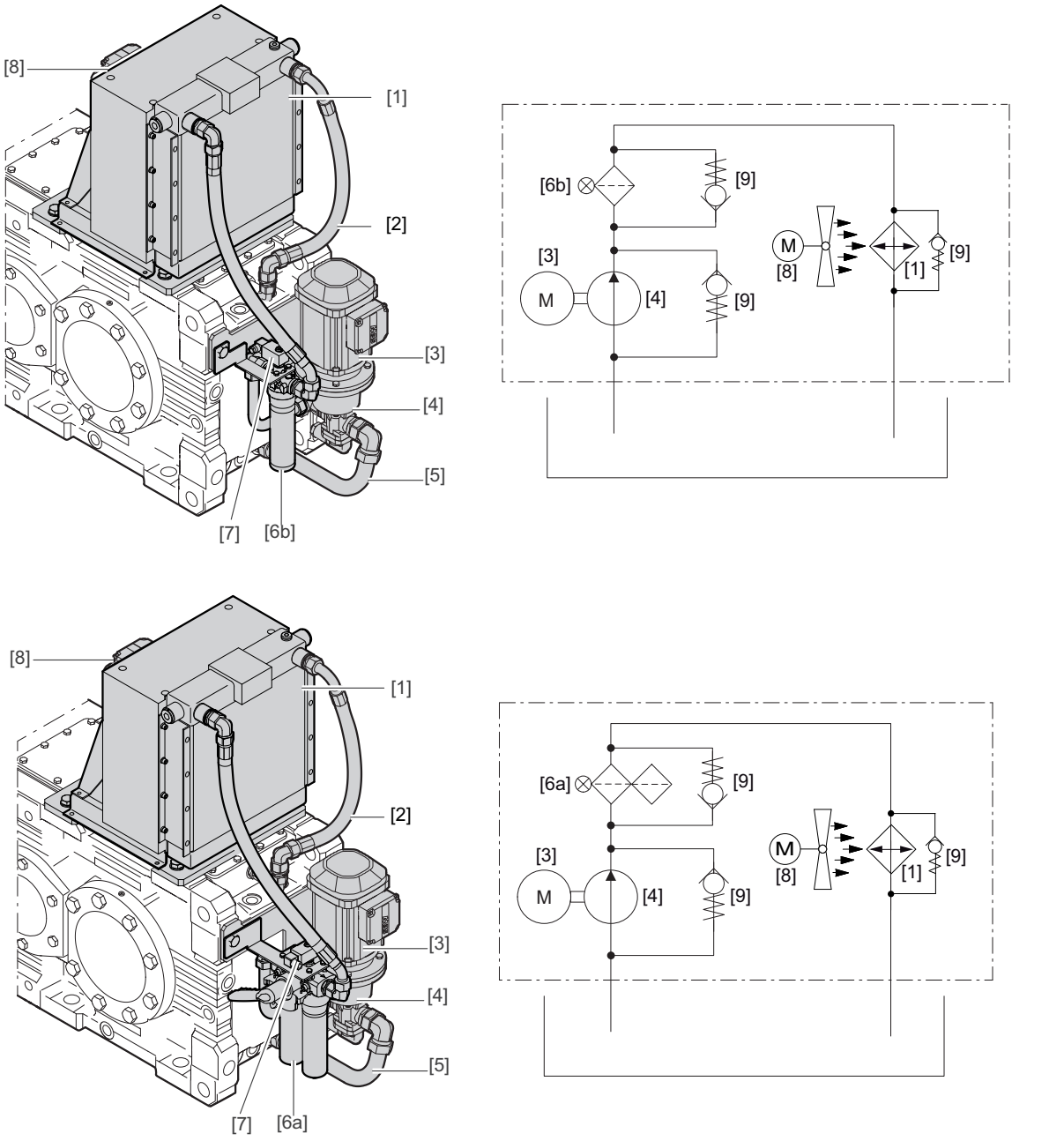
OAC1 without filter



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[1] Oil-air heat exchanger
[2] Pressure pipe
[3] Pump motor
[4] Oil pump
[5] Suction pipe
[6] Fan motor
[7] Check valve

OAC1 with single and duplex filter



26583404555

[1] Oil-air heat exchanger
[2] Pressure pipe
[3] Pump motor
[4] Oil pump
[5] Suction pipe
[6a] Duplex filter
[6b] Single filter
[7] Contamination indicator
[8] Fan motor
[9] Check valve

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Scope of delivery

As standard, the oil cooling system is mounted directly onto the gear unit as a complete unit. The electrical wiring is performed by the customer.

In its basic design, the oil-air cooler includes the following components:

- Oil pump with directly mounted asynchronous motor
- Fan with directly mounted asynchronous motor
- Oil-air heat exchanger
- Temperature switch /TSK2 with 2 switching points for
  - Controlled start of the oil pump motor and oil-air heat exchanger motor at an oil temperature > 60 °C
  - Monitoring of the oil-air cooler, i.e. warning or gear unit shutdown at an oil temperature > 90 °C

Optional accessories

The oil cooling system can be equipped with the following components as an option:

- PT100 temperature sensor
- Oil filter with electrical/optical contamination indicator
  - Single filter
  - Duplex filter
- For installation on the gauge mounting block, the following is available:
  - Flow switch
  - Manometer
  - Thermometer

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Sizes and selection

The performance data of the standardized oil pump and oil-air heat exchanger is summarized in the following tables.

Motor data: Oil pump

Size OAC1	Size Oil pump	Motor type	IEC standard	Number of poles	Global motor Hz	Pump capacity at 1500 1/min	Global motor Hz
OAC1 06	KF 6	DRN	80MK	4	50/60	8.4	50/60
OAC1 10	KF 10	DRN	80M	4	50/60	13.7	
OAC1 16	KF 16	DRN	90S	4	50/60	21.8	
OAC1 20	KF 20	DRN	90L	4	50/60	27.1	
OAC1 32	KF 32	DRN	100L	4	50/60	43.8	
OAC1 50	KF 50	DRN	100L	4	50/60	68.2	
OAC1 63	KF 63	DRN	132S	4	50/60	86.2	

Motor data: Oil-air heat exchanger

Size OAC1	Air heat exchanger	Motor type	IEC standard	Number of poles	Motor power kW	Global motor Hz
OAC1 06	LKI-120	DRN	63M	4	0.18	50/60
OAC1 10	LKI-220	DRN	63M	4	0.18	
OAC1 16	LKI-320	DRN	71M	4	0.37	
OAC1 20	LKI-420	DRN	80M	4	0.75	
OAC1 32	LKI-420	DRN	80M	4	0.75	
	LKI-5204	DRN	90S	6	1.1	
OAC1 50	LKI-710	DRN	112M	6	1.1	
OAC1 63	LKI-810	DRN	132S	6	2.2	

Performance data: Oil-air cooler

The cooling capacity values given in the table apply to an air temperature of 40 °C, an oil temperature of 70 °C, equivalent volume flow of oil and cooling water, mineral oil CLP-CC-320, and 50 Hz line frequency.

Size OAC1	Cooling capacity at 40 °C air/70 °C oil kW/°C	Specific cooling capacity at 40 °C air/70 °C oil kW/°C	Noise dB(A)
OAC1 06	4	0.13	64
OAC1 10	4.8	0.16	64
OAC1 16	9.4	0.31	73
OAC1 20	10.8	0.36	75
OAC1 32	13	0.43	75
	20.3	0.68	80
OAC1 50	27.7	0.92	77
OAC1 63	40.4	1.35	79

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Installation and connection information

As standard, the oil cooling system is mounted directly onto the gear unit as a complete unit. If gear unit and oil pump are installed separately, the permitted cable lengths must be checked for the specific order. Contact SEW-EURODRIVE in such cases.

SEW-EURODRIVE recommends the following pipe cross sections for connecting the oil cooling system to the gear unit:

Size OAC1	Size oil pump	Thread size oil pump	Size air heat exchanger	Thread size air heat exchanger
OAC1 06	KF 6	G 3/4"	LKI-120	G 1"
OAC1 10	KF 10	G 3/4"	LKI-220	G 1"
OAC1 16	KF 16	G 1"	LKI-320	G 1"
OAC1 20	KF 20	G 1"	LKI-420	G 1"
OAC1 32	KF 32	SAE 1 1/2	LKI-420	G 1"
	KF 32	SAE 1 1/2	LKI-520	G 1 1/2"
OAC1 50	KF 50	SAE 1 1/2	LKI-710	SAE 1/2
OAC1 63	KF 63	SAE 1 1/2	LKI-810	SAE 1/2

INFORMATION

Detailed technical data and dimensions of the oil cooling systems are available from SEW-EURODRIVE on request.

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3.1.3 Oil-air cooler for pressure lubrication /OAP1

Features

The oil-air cooler /OAP1 is characterized by the following features:

- Thermal limit rating of the gear unit can be increased significantly depending on the ambient temperature.
- The reduction of the maximum oil bath temperature increases the service life of the oil.
- The pump and fan motor as well as the temperature switch must be connected electrically.
- Starting viscosity 5000 cSt.
- Installed on the gear unit as standard.
- High availability due to one SEW motor each for fan and pump.
- The following options can be mounted to the gauge mounting block with little effort and specific to the order.
  - Manometer
  - Thermometer
  - Flow switch
  - Pressure sensor
- The oil is filtered as standard.

Structure

The following figures show the gear units in mounting position M1 with the standard mounting surfaces for the oil pump and oil-air heat exchanger.

INFORMATION

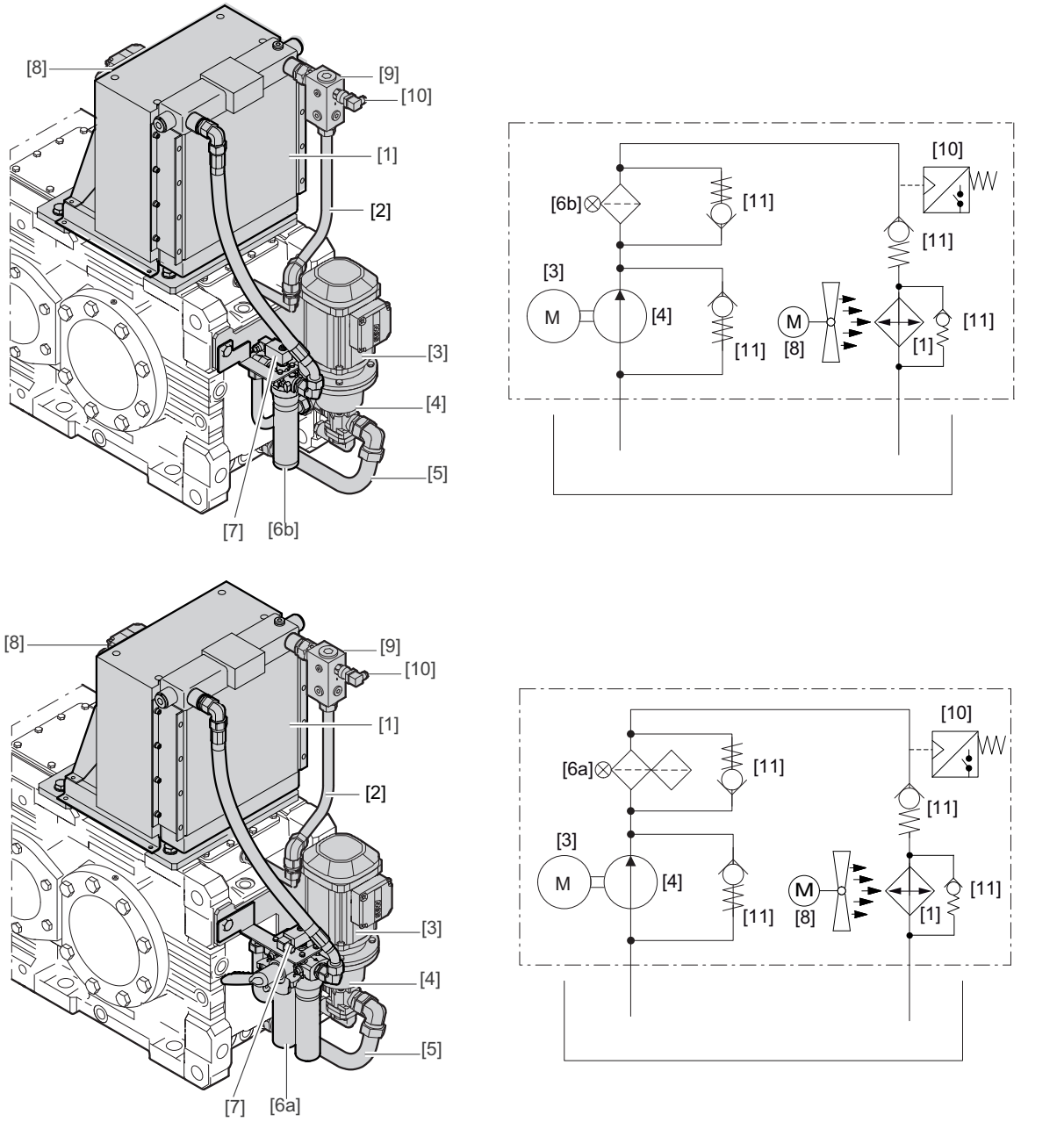
Mounting surfaces deviating from the standard require a new construction. This may affect the minimum oil viscosity. A comprehensive individual check is required. Contact SEW-EURODRIVE.

SEW-EURODRIVE uses an oil-air cooler with separate motors for oil pump and fan.

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Mounting position M1 - mounting surface: Oil-air heat exchanger F2/oil pump F6

OAP1 with single and duplex filter



26583761803

[1] Oil-air heat exchanger
[2] Pressure pipe
[3] Pump motor
[4] Oil pump
[5] Suction pipe
[6a] Duplex filter
[6b] Single filter
[7] Contamination indicator
[8] Fan motor
[9] Gauge mounting block
[10] Pressure switch
[11] Check valve

Scope of delivery

As standard, the oil cooling system is mounted directly onto the gear unit as a complete unit. The electrical wiring is performed by the customer.

In its basic design, the oil-air cooler includes the following components:

- Oil pump with directly mounted asynchronous motor **(pump always running)**
- Fan with directly mounted asynchronous motor
- Oil-air heat exchanger
- Oil filter with filter element and electrical/optical contamination indicator
- Pressure switch that monitors the pump pressure. Warning and switch-off signal when the oil pressure is < 0.5 bar.
- Temperature switch /TSK2 with 2 switching points for
  - Controlled start of the oil-air heat exchanger motor at an oil temperature > 60 °C
  - Monitoring of the oil-air cooler, i.e. warning or gear unit shutdown at an oil temperature > 90 °C

Optional accessories

The oil cooling system can be equipped with the following components as an option:

- PT100 temperature sensor
- Oil filter as duplex filter
  - The oil filter is available as single filter or duplex filter. For pressure lubrication systems, a single filter is included as standard.
- For installation on the gauge mounting block, the following is available:
  - Flow switch
  - Manometer
  - Thermometer
  - Pressure sensor

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Sizes and selection

The performance data of the standardized oil pump and oil-air heat exchanger is summarized in the following tables.

Motor data: Oil pump

Size OAP1	Size oil pump	Motor type	IEC standard	Number of poles	Global motor Hz	Pump capacity at 1500 1/min	Global motor Hz
OAP1 06	KF 6	DRN	80MK	4	50/60	8.4	50/60
OAP1 10	KF 10	DRN	80M	4	50/60	13.7	
OAP1 16	KF 16	DRN	90S	4	50/60	21.8	
OAP1 20	KF 20	DRN	90L	4	50/60	27.1	
OAP1 32	KF 32	DRN	100L	4	50/60	43.8	
OAP1 50	KF 50	DRN	100L	4	50/60	68.2	
OAP1 63	KF 63	DRN	132S	4	50/60	86.2	

Motor data: Oil-air heat exchanger

Size OAP1	Air heat exchanger	Motor type	IEC standard	Number of poles	Motor power kW	Global motor Hz
OAP1 06	LKI-120	DRN	63M	4	0.18	50/60
OAP1 10	LKI-220	DRN	63M	4	0.18	
OAP1 16	LKI-320	DRN	71M	4	0.37	
OAP1 20	LKI-420	DRN	80M..	4	0.75	
OAP1 32	LKI-420	DRN	80M..	4	0.75	
	LKI-520	DRN	90S	4	1.1	
OAP1 50	LKI-710	DRN	112M	6	1.1	
OAP1 63	LKI-810	DRN	132S	6	2.2	

Performance data: Oil-air cooler

The cooling capacity values given in the table apply to a cooling water temperature of 40 °C, an oil temperature of 70 °C, equivalent volume flow of oil and cooling water, mineral oil CLP-CC-320, and 50 Hz line frequency.

Size OAP1	Cooling capacity at 40 °C air/70 °C oil kW/°C	Specific cooling capacity at 40 °C air/70 °C oil kW/°C	Noise dB(A)
OAP1 06	4	0.13	64
OAP1 10	4.8	0.16	64
OAP1 16	9.4	0.31	73
OAP1 20	10.8	0.36	75
OAP1 32	13	0.43	75
	20.3	0.68	80
OAP1 50	27.7	0.92	77
OAP1 63	40.4	1.35	79

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Installation and connection information

As standard, the oil cooling system is mounted directly onto the gear unit as a complete unit. If gear unit and oil pump are installed separately, the permitted cable lengths must be checked for the specific order. Contact SEW-EURODRIVE in such cases.

SEW-EURODRIVE recommends the following pipe cross sections for connecting the oil cooling system to the gear unit:

Size OAP1	Size oil pump	Thread size oil pump	Size air heat exchanger	Thread size air heat exchanger
OAP1 06	KF 6	G 3/4"	LKI-120	G 1"
OAP1 10	KF 10	G 3/4"	LKI-220	G 1"
OAP1 16	KF 16	G 1"	LKI-320	G 1"
OAP1 20	KF 20	G 1"	LKI-420	G 1"
OAP1 32	KF 32	SAE 1 1/2	LKI-420	G 1"
	KF 32	SAE 1 1/2	LKI-520	G 1 1/2"
OAP1 50	KF 50	SAE 1 1/2	LKI-710	SAE 1/2
OAP1 63	KF 63	SAE 1 1/2	LKI-810	SAE 1/2

INFORMATION

Detailed technical data and dimensions of the oil cooling systems are available from SEW-EURODRIVE on request.

3.2 Oil-water cooler

3.2.1 Oil-water cooler for splash lubrication /OWC

Notes

INFORMATION

- Contact SEW-EURODRIVE if aggressive cooling media, such as brackish or salt water, are used.

Features

The oil-water cooler is characterized by the following features:

- Thermal limit rating of a gear unit can be increased depending on the water temperature.
- Compact solution compared to oil-air coolers.
- The reduction of the maximum oil bath temperature increases the service life of the oil.
- Availability of suitable cooling water on site. Observe the notes regarding the cooling water in the "Helical and Bevel-Helical Gear Units X.. Series" operating instructions.
- Installed on the gear unit as standard.
- Starting viscosity 2000 cSt.

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Structure

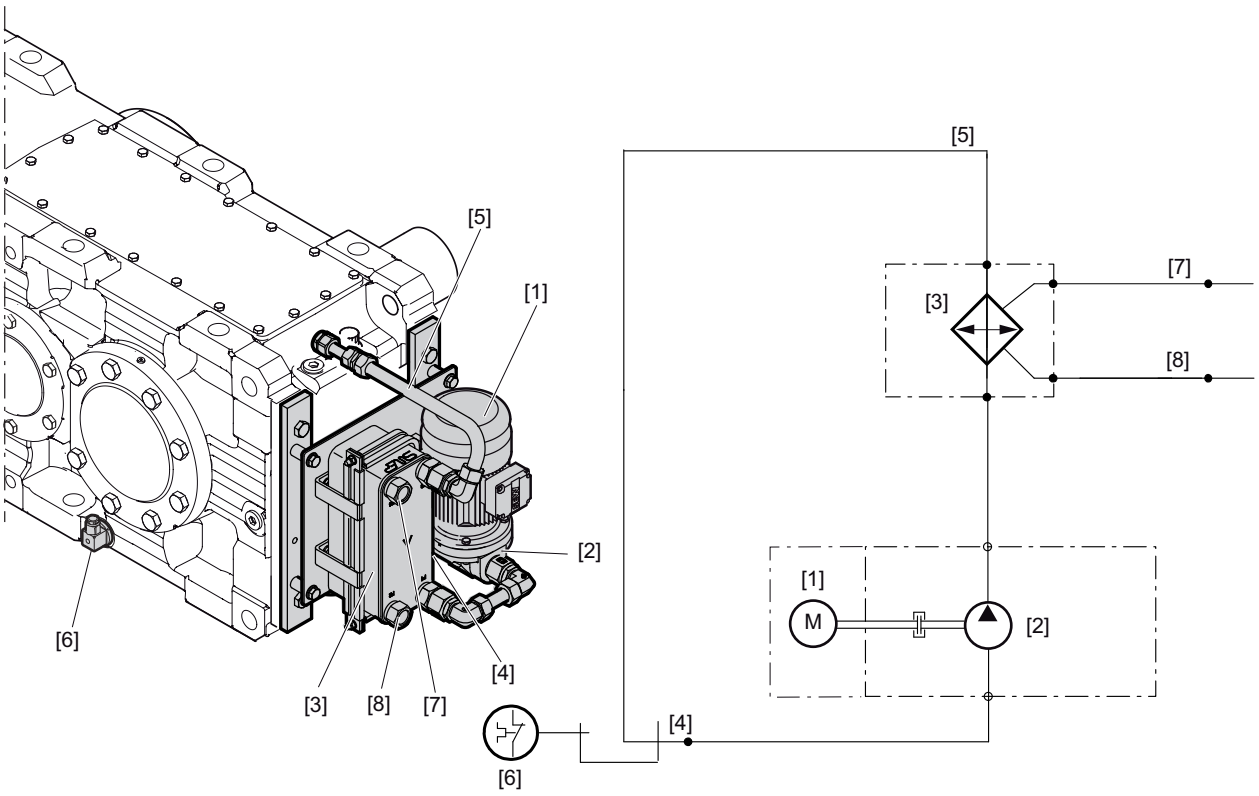
The following figures show the gear units in mounting positions M1 and M5 with the standard mounting surfaces for the oil pump and oil-air heat exchanger.

INFORMATION

Mounting surfaces deviating from the standard require the construction of a new piping set. This may affect the minimum oil viscosity. A comprehensive individual check is required. Contact SEW-EURODRIVE.

Plate heat exchanger

For **sizes X140 to 170**, a plate heat exchanger is used for oil supply systems OWC 005/015/025.



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[1] Pump motor

[2] Oil pump

[3] Oil-water heat exchanger

[4] Suction pipe (not visible in this view)

[5] Pressure pipe

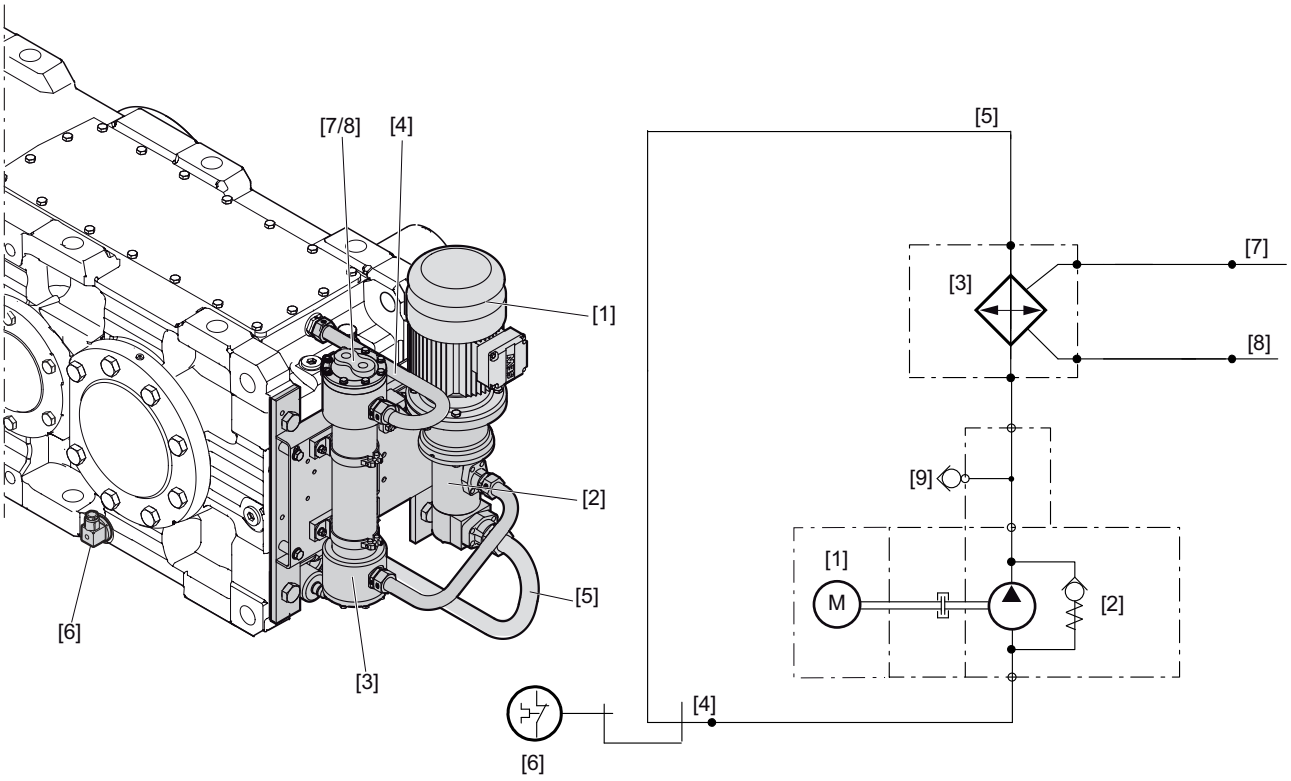
[6] Temperature switch with 2 switching points (TSK2)

[7] Water supply

[8] Water return

Shell and tube heat exchanger

For **sizes X180 to 320**, a shell and tube heat exchanger is used for oil supply systems OWC 10/20/30/40/50/60/70.



26626441355

[1] Pump motor (provided by the customer)
[2] Oil pump
[3] Oil-water heat exchanger
[4] Pressure pipe
[5] Suction pipe
[6] Temperature switch with 2 switching points (TSK2)
[7] Water supply
[8] Water return
[9] Breather valve

Scope of delivery

The oil cooling system is delivered as a complete unit but without electrical connections.

The standard delivery of the basic oil cooling system includes:

- Oil pump with directly mounted asynchronous motor
- Oil-water heat exchanger
- Temperature switch with 2 switching points for
  - Controlled startup of the fan motor with an oil temperature > 60 °C
  - Monitoring of the cooling group, i.e. warning or gear unit shutdown when the oil temperature exceeds 90 °C.
- Directly mounted on the gear unit, incl. cooling circuit piping, or
- On the mounting frame, for separate mounting, but without piping to the gear unit

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Sizes, cooling capacity and selection

The performance data of the standardized oil cooling systems is summarized in the following tables.

The cooling capacity values given in the table apply to a cooling water temperature of 30 °C, an oil temperature of 70 °C, equivalent volume flow of oil and cooling water, mineral oil CLP-CC-320, and 50 Hz line frequency.

Size	Cooling capacity cooling system kW	Flow rate cooling system l/min	Connected load pump motor kW	Weight [1] kg
OWC 005[2]	4	8	0.75	23
OWC 010	5	10	0.75	36
OWC 015[2]	9	16	1.1	28
OWC 020	10	21	1.1	57
OWC 025[2]	11	29	1.5	31
OWC 030	14	28	1.5	57
OWC 040	24	53	2.2	85
OWC 050	30	77	3.0	88
OWC 060	49	91	4.0	132
OWC 070	76	136	5.5	139

1) The oil cooling system is mounted on the gear unit

2) Cooling system with plate heat exchanger

INFORMATION

- Oil cooling systems OWC 005 – 070 are designed for sizes X140 – 320.
- The values differ slightly for operation with a line frequency of 60 Hz. Contact SEW-EURODRIVE.

INFORMATION

Contact SEW-EURODRIVE for selecting the oil cooling system matching the ambient conditions of your system.

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Installation and connection information for separate installation

The oil cooling system is mounted directly on the gear unit as standard.

Optionally, the oil cooling system can be delivered as a complete unit on a mounting frame for separate mounting but without electrical wiring and piping. Provide for a low-vibration installation location max. 1 meter from the gear unit. Install the oil cooling system at the same level as the gear unit or lower. If this is not possible, contact SEW-EURODRIVE.

SEW-EURODRIVE recommends the following cable cross sections for connecting the cooling system to the gear unit and the cooling circuit:

Size	Pump suction connection	Suction pipe[1)]	Pressure connection	Pressure pipe[2)]	Cooling water connection of cooler	Inner Ø of the cooling water line
OWC 005	GE22-LR 3/4"	DN20 / Ø22	GE18-LR 1/2"	DN16 / Ø18	G3/4"	Ø25
OWC 010	GE22-LR 1/2"	DN20 / Ø22	GE18-LR 1/2"	DN16 / Ø18	G1/2"	Ø13
OWC 015	GE28-LR 1"	DN25 / Ø28	GE22-LR 3/4"	DN20 / Ø22	G3/4"	Ø25
OWC 020	GE35-LR 1 1/4"	DN32 / Ø35	GE28-LR 1"	DN25 / Ø28	G1/2"	Ø19
OWC 025	GE35-LR 1 1/4"	DN32 / Ø35	GE28-LR 1 1/4"	DN25 / Ø28	G3/4"	Ø25
OWC 030	GE35-LR 1 1/4"	DN32 / Ø35	GE28-LR 1"	DN25 / Ø28	G1"	Ø25
OWC 040	GE42-LR 1 1/2"	DN40 / Ø42	GE35-LR 1 1/2"	DN32 / Ø35	G3/4"	Ø25
OWC 050	GE42-LR 1 1/2"	DN40 / Ø42	GE35-LR 1 1/2"	DN32 / Ø35	G1 1/4"	Ø32
OWC 060	SAE 2" SFL	DN50 / Ø2"	GE42-LR 1 1/2"	DN40 / Ø42	G1 1/2"	Ø38
OWC 070	SAE 2 1/2" SFL	DN50 / Ø2"	GE42-LR 1 1/2"	DN40 / Ø42	G1"	Ø38

1) Max. length 1.5 m

2) Max. length 2.5 m

INFORMATION

- For dimension sheets, refer to the chapter "Oil-water cooler /OWC.. -00/M mounting position M1 [mm]" (→ 🗎 54). Detailed technical data on the various oil cooling systems is available from SEW-EURODRIVE on request.
- Dimensions for OWC 005/015/025 oil cooling systems for separate installation are available from SEW-EURODRIVE on request.

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3.2.2 Oil-water cooler for pressure lubrication /OWP

Notes

INFORMATION

- Contact SEW-EURODRIVE if you use chemically aggressive cooling media, such as brackish water or salt water.
- SEW-EURODRIVE recommends to use cooling water at a temperature of 60 °C. For this purpose, SEW-EURODRIVE offers the "Thermostat valve" option.

Features

The oil-water cooler is characterized by the following features:

- Thermal limit rating of a gear unit can be increased depending on the water temperature.
- Compact solution compared to oil-air coolers.
- The reduction of the maximum oil bath temperature increases the service life of the oil.
- Availability of suitable cooling water on site. Observe the notes regarding the cooling water in the "Helical and Bevel-Helical Gear Units X.. Series" operating instructions.
- Installed on the gear unit as standard.
- Starting viscosity 2000 cSt.

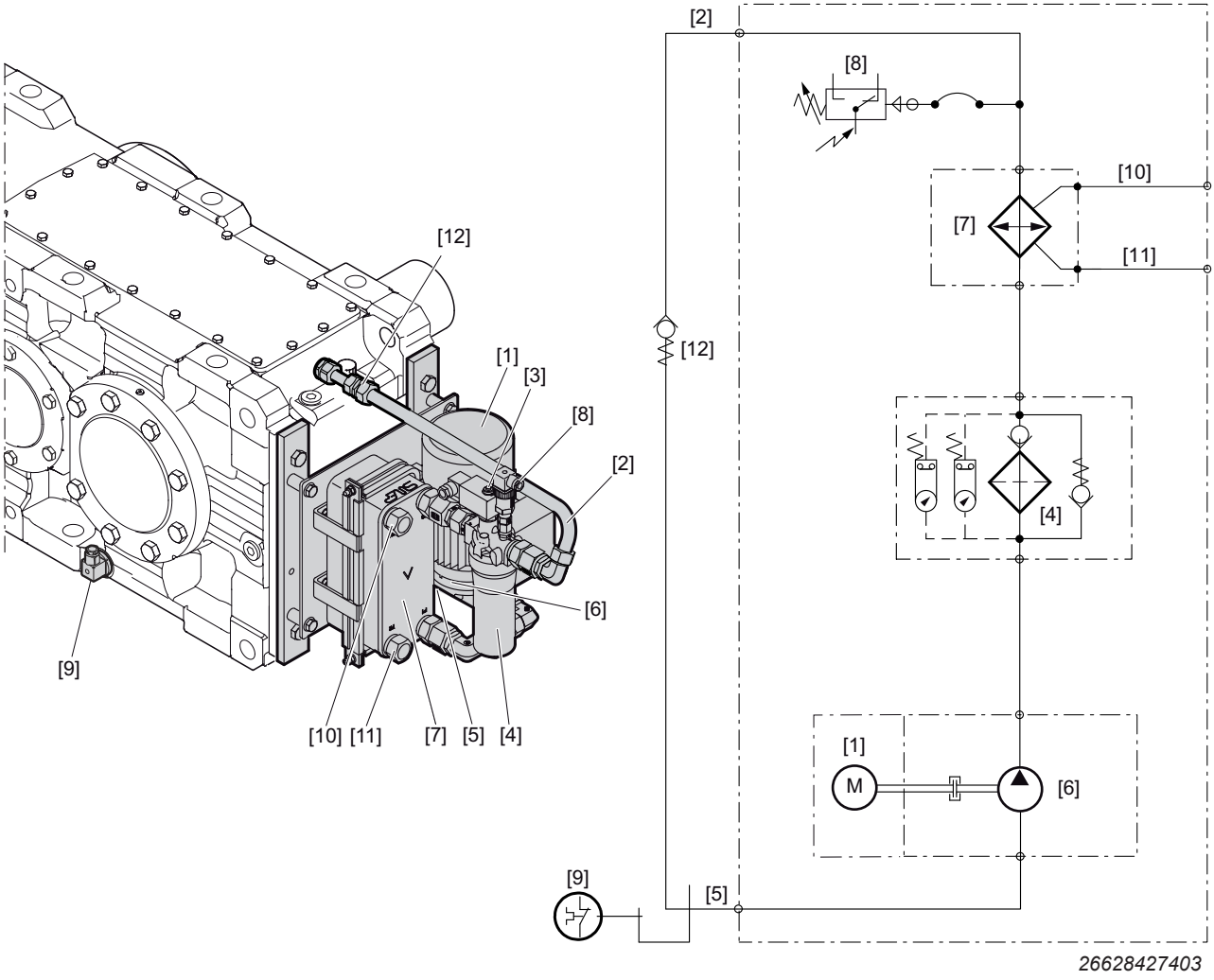
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Structure

SEW-EURODRIVE uses two different types of heat exchangers:

Plate heat exchanger

For **sizes X140 to 170**, a plate heat exchanger is used for oil supply systems OWP 005/015/0255.



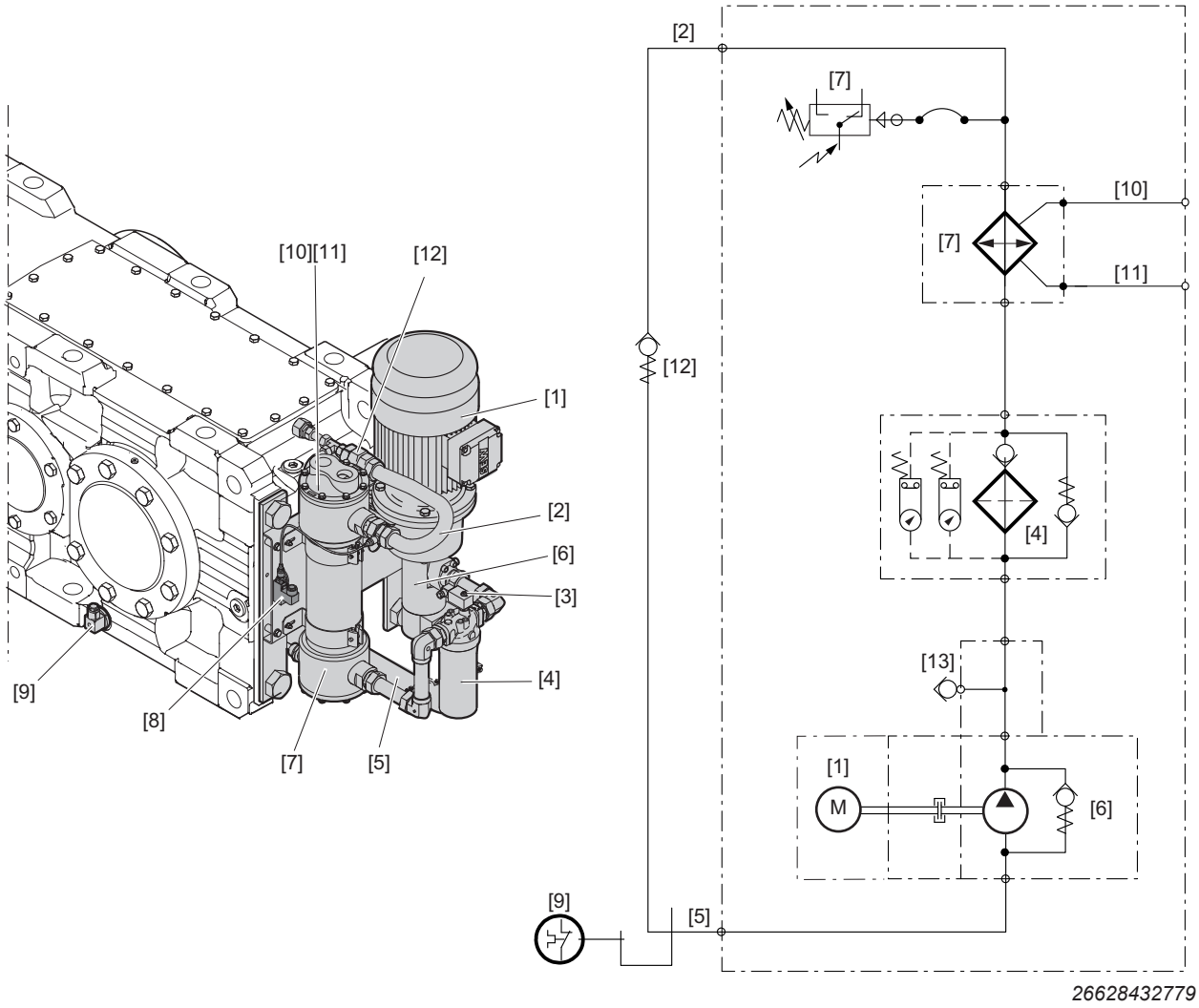
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[1]	Pump motor	[7]	Oil-water heat exchanger
[2]	Pressure pipe	[8]	Pressure switch
[3]	Contamination indicator	[9]	Temperature switch, optional (NTB)
[4]	Oil filter	[10]	Cooling water inflow
[5]	Suction pipe (not visible in this view)	[11]	Cooling water return
[6]	Oil pump	[12]	Check valve

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Shell and tube heat exchanger

For sizes **X180 – 320**, a shell and tube heat exchanger is used for oil supply systems OWP 10/20/30/40/50/60/70.



26628432779

[1] Pump motor
[2] Pressure pipe
[3] Contamination indicator
[4] Oil filter
[5] Suction pipe
[6] Oil pump
[7] Oil-water heat exchanger
[8] Pressure switch
[9] Temperature switch, optional (NTB)
[10] Cooling water inflow
[11] Cooling water return
[12] Check valve
[13] Breather valve

Scope of delivery

The oil cooling system is delivered as a complete unit but without electrical connections.

The standard delivery of the basic oil cooling system includes:

- Oil pump with directly mounted asynchronous motor **(pump always running)**
- Oil-water heat exchanger
- Oil filter with filter element and electrical/optical contamination indicator
- Pressure switch that monitors the pump pressure. Warning or switch-off signal when the oil pressure reaches < 0.5 bar
- Option: Temperature switch with trip point for monitoring the cooling group, i.e. warning or gear unit shutdown when the oil temperature exceeds 90°C

The following oil cooling system designs are available:

- Directly mounted on the gear unit, incl. cooling circuit piping, or
- On the mounting frame, for separate mounting, but without piping to the gear unit

Optional accessories

The oil cooling system can be equipped with the following components as an option:

- Flow monitoring
- Thermostatic valve in the oil or water circuit
- Manometer
- Thermometer

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Sizes, cooling capacity and selection

The performance data of the standardized oil cooling systems is summarized in the following tables.

The cooling capacity values given in the table apply to a cooling water temperature of 30 °C, an oil temperature of 70 °C, equivalent volume flow of oil and cooling water, mineral oil CLP-CC-320, and 50 Hz line frequency.

Size	Cooling capacity cooling system kW	Flow rate cooling system l/min	Connected load pump motor kW	Weight[1] kg
OWP 005[2]	4	8	0.75	25
OWP 010	5	10	0.75	38
OWP 015[2]	9	16	1.1	30
OWP 020	10	21	1.1	59
OWP 025[2]	11	29	1.5	33
OWP 030	14	28	1.5	59
OWP 040	24	53	3.0	87
OWP 050	30	77	4.0	90
OWP 060	49	91	5.5	134
OWP 070	76	136	7.5	141

1) The cooling system is mounted on the gear unit

2) Cooling system with plate heat exchanger

INFORMATION

- Oil cooling systems OWP 005 – 070 are designed for sizes X140 – 320.
- The values differ slightly for operation with a line frequency of 60 Hz. Contact SEW-EURODRIVE.

INFORMATION

Contact SEW-EURODRIVE for selecting the oil cooling system matching the ambient conditions of your system.

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Installation and connection information for separate installation

The oil cooling system is mounted directly on the gear unit as standard.

Optionally, the oil cooling system can be delivered as a complete unit on a mounting frame for separate mounting but without electrical wiring and piping. Provide for a low-vibration installation location max. 1 meter from the gear unit. Install the oil cooling system at the same level as the gear unit or lower. If this is not possible, contact SEW-EURODRIVE.

SEW-EURODRIVE recommends the following cable cross sections for connecting the cooling system to the gear unit and the cooling circuit:

Size	Pump suction connection	Suction pipe[1)]	Pressure connection	Pressure pipe[2)]	Cooling water connection of cooler	Cooling water pipe inner Ø
OWP 005	GE22-LR 3/4”	DN20 / Ø22	GE18-LR 1/2"	DN16 / Ø18	G3/4"	Ø25
OWP 010	GE22-LR 1/2”	DN20 / Ø22	GE18-LR 1/2“	DN16 / Ø18	G1/2"	Ø13
OWP 015	GE28-LR 1"	DN25 / Ø28	GE22-LR 3/4"	DN20 / Ø22	G3/4"	Ø25
OWP 020	GE35-LR 1 1/4"	DN32 / Ø35	GE28-LR 1"	DN25 / Ø28	G1/2"	Ø19
OWP 025	GE35-LR 1 1/4"	DN32 / Ø35	GE28-LR 1"	DN25 / Ø28	G3/4"	Ø25
OWP 030	GE35-LR 1 1/4"	DN32 / Ø35	GE28-LR 1"	DN25 / Ø28	G1"	Ø25
OWP 040	GE42-LR 1 1/2"	DN40 / Ø42	GE35-LR 1 1/2"	DN32 / Ø35	G3/4"	Ø25
OWP 050	GE42-LR 1 1/2"	DN40 / Ø42	GE35-LR 1 1/2"	DN32 / Ø35	G1 1/4"	Ø32
OWP 060	SAE 2" SFL	DN50 / Ø2"	GE42-LR 1 1/2"	DN40 / Ø42	G1 1/2"	Ø38
OWP 070	SAE 2 1/2“ SFL	DN50 / Ø2"	GE42-LR 1 1/2"	DN40 / Ø42	G1"	Ø38

1) Max. length 1.5 m

2) Max. length 2.5 m

INFORMATION

- For dimension sheets, refer to the chapter "Oil-water cooler /OWP.. – 00/M mounting position M1 [mm]" (→ 🗎 59). Detailed technical data on the various oil cooling systems is available from SEW-EURODRIVE on request.
- Dimensions for OWP 005/015/025 oil cooling systems for separate installation are available from SEW-EURODRIVE on request.

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4 Oil supply systems

4.1 Motor pump for lubrication

With pressure lubrication, a motor pump supplies all bearing points and gearing above the oil sump with oil via a tube system inside the gear unit.

The motor pump is used, for example, if the shaft end pump speed is ≤ 400 min^{-1}, or for inverter operation if using a shaft end pump is only possible to a certain extent.

The motor pump is mounted externally to the gear unit and is independent from the speed of the gear unit.

4.1.1 Overview

Several pressure lubrication designs are available. SEW-EURODRIVE recommends to use the ONP1 motor pump. The following table shows when to use other designs.

	ONP1L	ONP1
Only SEW motor	x	x
Suited for inverter operation	x	x
Robust gear pump	x	x
Can be activated independent of the gear unit	x	x
Starting viscosity 5000 cSt	x	x
Gauge mounting block included in standard	x	x
Single filter (duplex filter as option)	-	x
Motor in heavy duty design as option	x	x

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4.1.2 Features

The motor pumps are characterized by the following features:

- The following options can be mounted to the gauge mounting block with little effort and specific to the order.
  - Manometer
  - Thermometer
  - Flow switch
  - Pressure sensor
- The motor pump can be switched on independent of the gear unit.
- Suited for inverter operation.
- Suited for a long start-up ramp (gear unit).
- Starting viscosity 5000 cSt.

4.1.3 Motor pump /ONP1

Structure

For sizes **X140 – 320**, the oil pump is equipped with an integrated pressure control valve.

The following figures show the gear unit in mounting positions M1 and M5 with the standard mounting surfaces for the motor pump.

INFORMATION

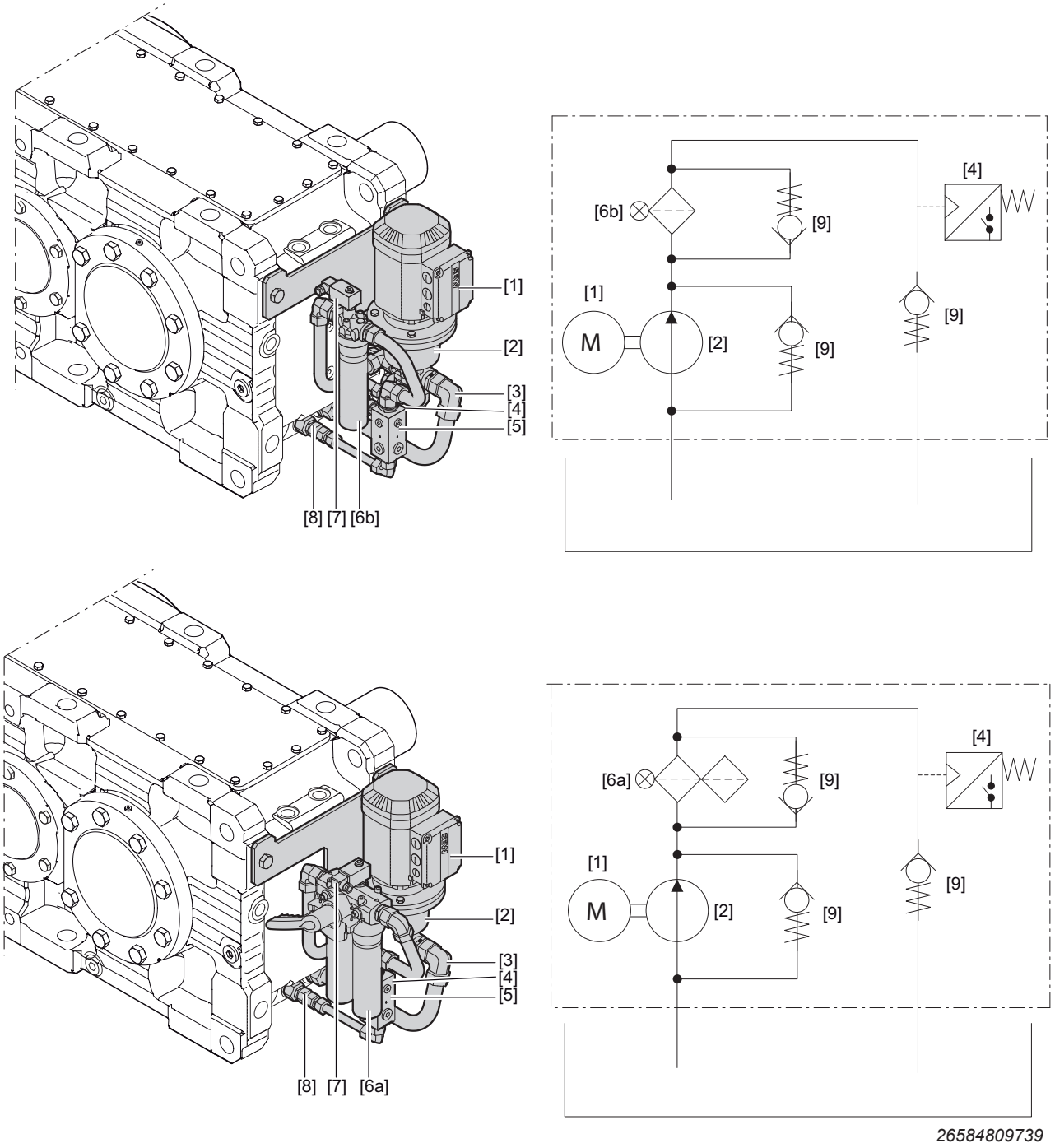
Mounting surfaces deviating from the standard require the construction of a new piping set. This may affect the minimum oil viscosity. A comprehensive individual check is required. Contact SEW-EURODRIVE.

INFORMATION

For dimension sheets, refer to the chapter "Dimension sheets" (→ 🗎 53). Detailed technical data is available from SEW-EURODRIVE on request.

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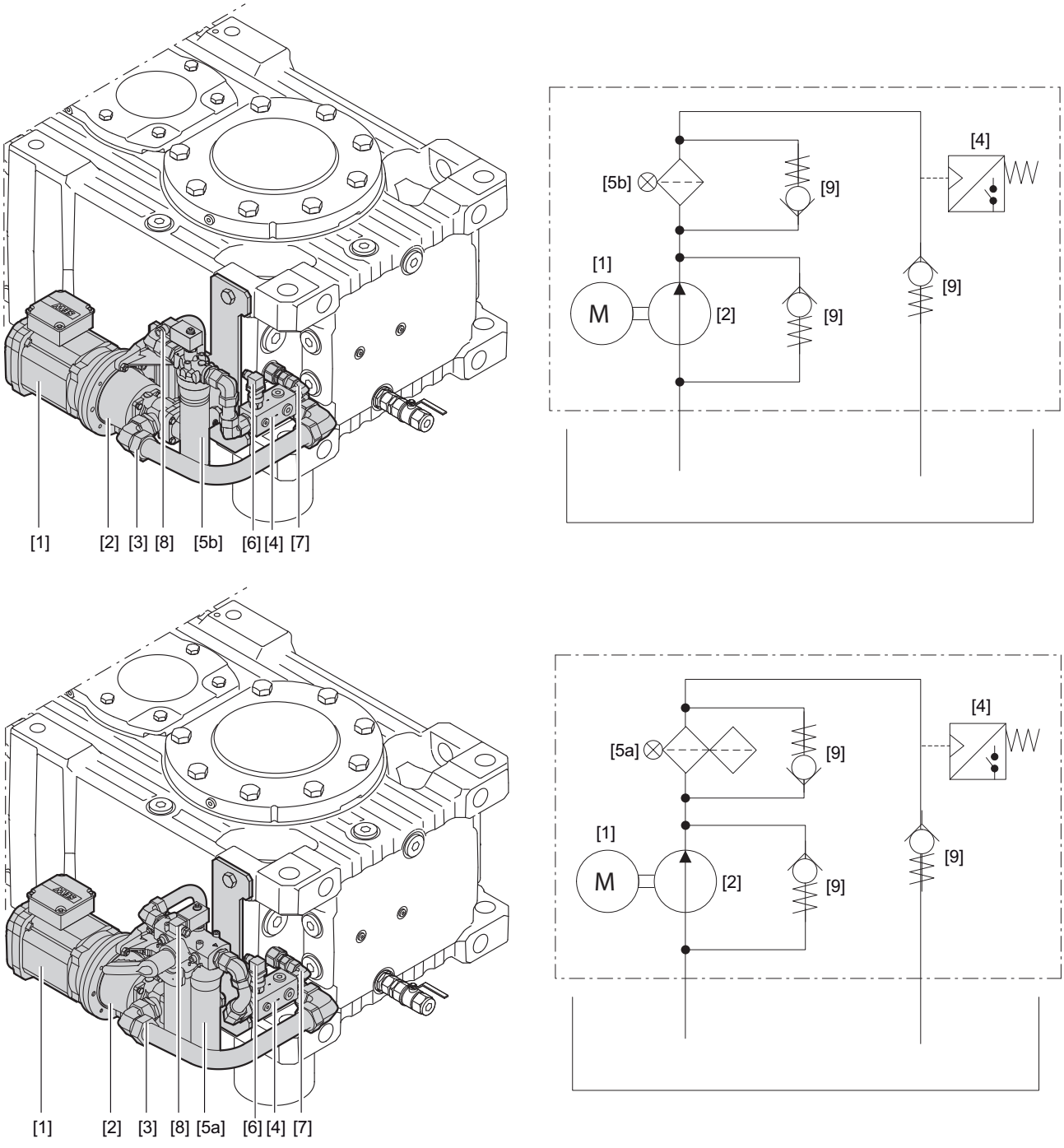
Mounting position M1 – mounting surface: Motor pump F6



26584809739

[1] Motor
[2] Pump
[3] Suction pipe
[4] Pressure switch
[5] Gauge mounting block
[6a] Duplex filter
[6b] Single filter
[7] Contamination indicator
[8] Pressure pipe
[9] Check valve

Mounting position M5 – mounting surface: motor pump F1



26586676363

[1] Motor
[2] Pump
[3] Suction pipe
[4] Gauge mounting block
[5a] Duplex filter
[5b] Single filter
[6] Pressure switch
[7] Pressure pipe
[8] Contamination indicator
[9] Check valve

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Scope of delivery

The motor pump is delivered as a complete unit but without electrical connections.

As standard, the motor pump comprises:

- Oil pump with directly mounted asynchronous motor **(pump always running)**.
- Pressure switch that monitors the pump pressure. Warning or switch-off signal when the oil pressure reaches < 0.5 bar.
- Gauge mounting block (pressure switch installed as standard). As standard, the ONP1 always comes equipped with a gauge mounting block with pressure switch and integrated check valve.
- Single filter with electrical/optical contamination indicator.

Optional accessories

The motor pump can be equipped with the following components as an option:

- Temperature switch /NTB with trip point for monitoring the cooling group, i.e. warning or gear unit shutdown at an oil temperature of > 90 °C.
- Duplex filter with electrical/optical contamination indicator.
- The following options can be installed on the gauge mounting block depending on the order:
  - Manometer
  - Thermometer
  - Flow switch
  - Pressure sensor

Sizes and selection

The performance data of the standardized motor pump is summarized in the following table.

Size ONP1	Size oil pump	Motor data			Connection power motor oil pump in kW	Global motor in Hz	Pump capacity at 1500 1/min
		Type	IEC standard	Number of poles			
ONP1 6	KF 6 RF	DRN	80MK	4	0.55	50/60	8.4
ONP1 8	KF 8 RF	DRN	80MK	4	0.55	50/60	10.5
ONP1 10	KF 10 RF	DRN	80M	4	0.75	50/60	13.7
ONP1 12	KF 12 RF	DRN	90S	4	1.1	50/60	17.1
ONP1 16	KF 16 RF	DRN	90S	4	1.1	50/60	21.8
ONP1 20	KF 20 RF	DRN	90L	4	1.5	50/60	27.1
ONP1 25	KF 25 RF	DRN	100L	4	2.2	50/60	34.0

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4.1.4 Motor pump /ONP1L

Structure

For sizes **X140 – 320**, the oil pump is equipped with an integrated pressure control valve.

The following figures show the gear unit in mounting positions M1 and M5 with the standard mounting surfaces for the motor pump.

INFORMATION

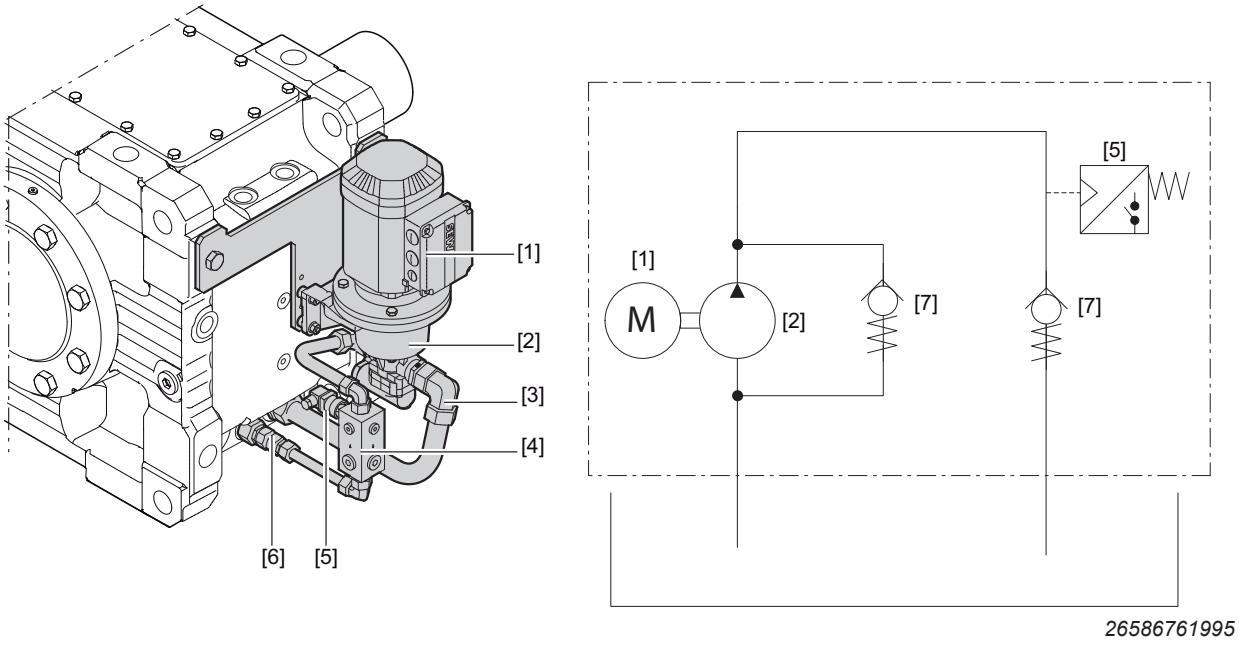
Mounting surfaces deviating from the standard require the construction of a new piping set. This may affect the minimum oil viscosity. A comprehensive individual check is required. Contact SEW-EURODRIVE.

INFORMATION

For dimension sheets, refer to the chapter "Dimension sheets" (→ 🗎 53). Detailed technical data is available from SEW-EURODRIVE on request.

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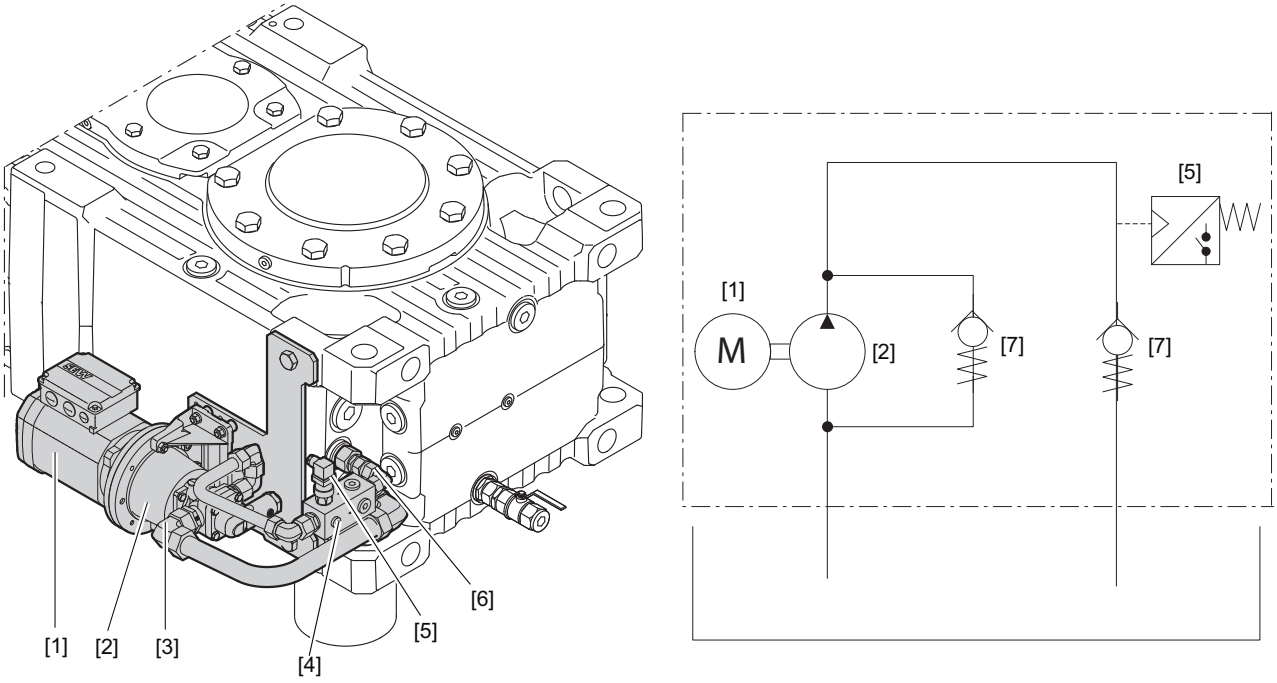
Mounting position M1 – mounting surface: Motor pump F6



26586761995

[1] Pump motor
[2] Oil pump
[3] Suction pipe
[4] Gauge mounting block
[5] Pressure switch
[6] Pressure pipe
[7] Check valve

Mounting position M5 – mounting surface: motor pump F1



26586836363

[1] Pump motor
[2] Oil pump
[3] Suction pipe
[4] Gauge mounting block
[5] Pressure switch
[6] Pressure pipe
[7] Risk assessment

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Scope of delivery

The motor pump is delivered as a complete unit but without electrical connections.

As standard, the motor pump comprises:

- Oil pump with directly mounted asynchronous motor **(pump always running)**.
- Pressure switch that monitors the pump pressure. Warning or switch-off signal when the oil pressure reaches < 0.5 bar.
- Gauge mounting block (pressure switch installed as standard). As standard, the ONP1 always comes equipped with a gauge mounting block with pressure switch and integrated check valve.

Optional accessories

The motor pump can be equipped with the following components as an option:

- Temperature switch /NTB with trip point for monitoring the cooling group, i.e. warning or gear unit shutdown at an oil temperature of > 90 °C.
- The following options can be installed on the gauge mounting block depending on the order:
  - Manometer
  - Thermometer
  - Flow switch
  - Pressure sensor

Sizes and selection

The performance data of the standardized motor pump is summarized in the following table.

Size ONP1L	Size Oil pump	Motor data			Connection power motor oil pump in kW	Global motor in Hz	Pump capacity at 1500 1/min
		Type	IEC standard	Number of poles			
ONP1L 6	KF 6 RF	DRN	80MK	4	0.55	50/60	8.4
ONP1L 8	KF 8 RF	DRN	80MK	4	0.55	50/60	10.5
ONP1L 10	KF 10 RF	DRN	80M	4	0.75	50/60	13.7
ONP1L 12	KF 12 RF	DRN	90S	4	1.1	50/60	17.1
ONP1L 16	KF 16 RF	DRN	90S	4	1.1	50/60	21.8
ONP1L 20	KF 20 RF	DRN	90L	4	1.5	50/60	27.1
ONP1L 25	KF 25 RF	DRN	100L	4	2.2	50/60	34.0

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5 Permitted lubricants

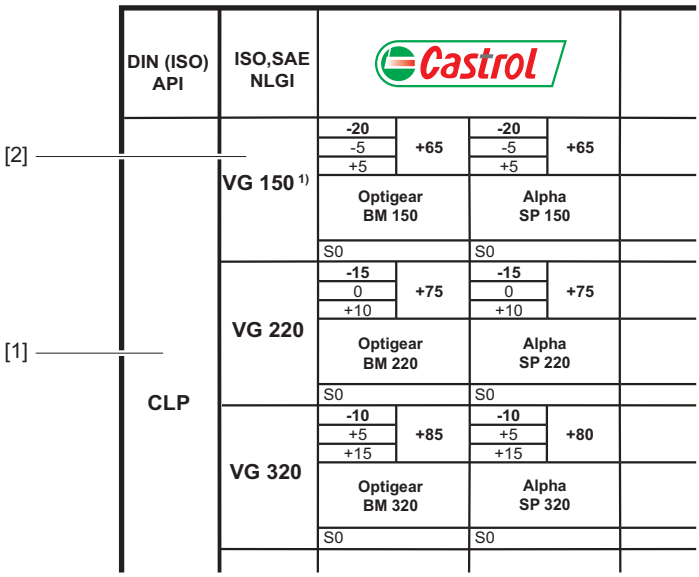
This chapter describes the permitted lubricants and the permitted temperatures for industrial gear units from SEW-EURODRIVE.

INFORMATION

- The standard for viscosity and oil grade is the type of oil that is specified by SEW-EURODRIVE in the order (see order confirmation and nameplate).
- Contact SEW-EURODRIVE if you use bio and food grade lubricants or polyglycol oils.
- Check the compatibility of the greases and oils used.
- The tables contain the lubricants approved by SEW-EURODRIVE.
- Oils of the same viscosity class from different manufacturers do not have the same characteristics. In particular, the minimum permitted oil bath temperatures are manufacturer-specific. These temperatures are specified in the lubricant tables.
- The minimum permitted oil bath temperatures depend on the lubrication type used. These temperatures are specified in the lubricant tables. The values correspond to the maximum viscosity of the individual lubricants.
- The values specified in the lubricant tables apply as of the time of printing of this document. The data of the lubricants are subject to dynamic change on the part of the lubricant manufacturers. For the latest information about the lubricants, visit: www.sew-eurodrive.de/lubricants

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5.1 Structure of the tables and abbreviations



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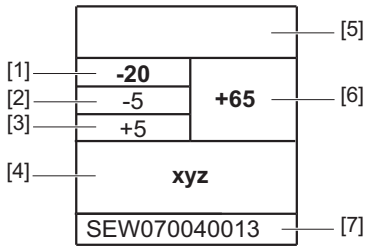
[1] Lubricant type
[2] Viscosity class

Abbreviations

Icons	Designation
CLP	= Mineral oil
CLP HC	= Synthetic polyalphaolefin (PAO)
E	= Ester-based oil
	= Mineral lubricant
	= Synthetic lubricant
	= Lubricant for the food industry (**NSF H1**-compliant)
	= Biodegradable oil (lubricant for agriculture, forestry, and water management)
1)	= Lubricants may only be used if service factor $F_s \geq 1.3$

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5.2 Explanation of the various lubricants



18014416413363467

[1] Lowest cold start temperature in °C for splash lubrication*
[2] Lowest cold start temperature in °C for drives with pumps up to a max. oil viscosity of 5000 cSt*
[3] Lowest cold start temperature in °C for drives with pumps up to a max. oil viscosity of 2000 cSt*
[4] Trade name
[5] Manufacturer
[6] Highest oil bath temperature in °C. MUST NOT BE EXCEEDED.
[7] Approvals

* In the event of low temperatures, the oil must be heated to the specified minimum temperature, for example by using an oil heater. The maximally permitted oil viscosity per pump type is specified in the following chapter.

5.3 Explanation of the oil supply systems and the oil viscosity

The following oil supply systems are designed for an oil viscosity of **2000 cSt**:

- Oil-air cooler for splash lubrication /OAC
- Oil-water cooler for splash lubrication /OWC
- Oil-water cooler for pressure lubrication /OWP

The following oil supply systems are designed for an oil viscosity of **5000 cSt**:

- Oil-air cooler for splash lubrication /OAC1
- Oil-air cooler for pressure lubrication /OAP1
- Motor pump /ONP1
- Motor pump /ONP1L

5.4 Lubricant tables

This lubricant table is valid when the document is published. Please refer to www.sew-eurodrive.de/lubricants for the latest version of the table.

[1]	[2]	SEW EURODRIVE	Castrol	FUCHS	Mobil®	KLÜBER LUBRICATION	Shell	TOTAL
CLP	VG 150 [1]	-20 -5 +5 +65	-20 -5 +5 +65	-20 -5 +5 +65	-20 -5 +5 +65	-20 -5 +5 +65		
		SEW GearOil Base 150 E[1]	Optigear BM 150	Alpha SP 150	Renolin CLP 150 Plus	Renolin HighGear 150	Mobilgear 600 XP 150	Klüberoil GEM 1-150 N		
		SEW07004013					SEW07003013			
	VG 220	-15 0 +10 +75	-15 0 +10 +75	-15 0 +10 +75	-15 0 +10 +75	-15 0 +10 +75	-15 0 +10 +75	-15 0 +10 +75	-15 0 +10 +75	
		SEW GearOil Base 220 E[1]	Optigear BM 220	Alpha SP 220	Renolin CLP 220 Plus	Renolin HighGear 220	Mobilgear 600 XP 220	Klüberoil GEM 1-220 N	Shell Omala Oil F 220	Carter EP 220
		SEW07004013					SEW07003013			
	VG 320	-10 +5 +15 +85	-10 +5 +15 +85	-10 +5 +15 +80	-10 +5 +15 +80	-10 +5 +15 +80	-10 +5 +15 +80	-10 +5 +15 +80	-10 +5 +15 +80	-10 +5 +15 +80
		SEW GearOil Base 320 E[1]	Optigear BM 320	Alpha SP 320	Renolin CLP 320 Plus	Renolin HighGear 320	Mobilgear 600 XP 320	Klüberoil GEM 1-320 N	Shell Omala Oil F 320	Carter EP 320
		SEW07004013					SEW07003013			
	VG 460	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90
		SEW GearOil Base 460 E[1]	Optigear BM 460	Alpha SP 460	Renolin CLP 460 Plus	Renolin HighGear 460	Mobilgear 600 XP 460	Klüberoil GEM 1-460 N	Shell Omala Oil F 460	Carter EP 460
		SEW07004013					SEW07003013			
	VG 680	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90		0 +15 +25 +90
		SEW GearOil Base 680 E[1]	Optigear BM 680	Alpha SP 680	Renolin CLP 680 Plus	Renolin HighGear 680	Mobilgear 600 XP 680	Klüberoil GEM 1-680 N		Carter EP 680
		SEW07004013					SEW07003013			
	VG 1000	+5 +20 +30 +90								
		Optigear BM 1000								

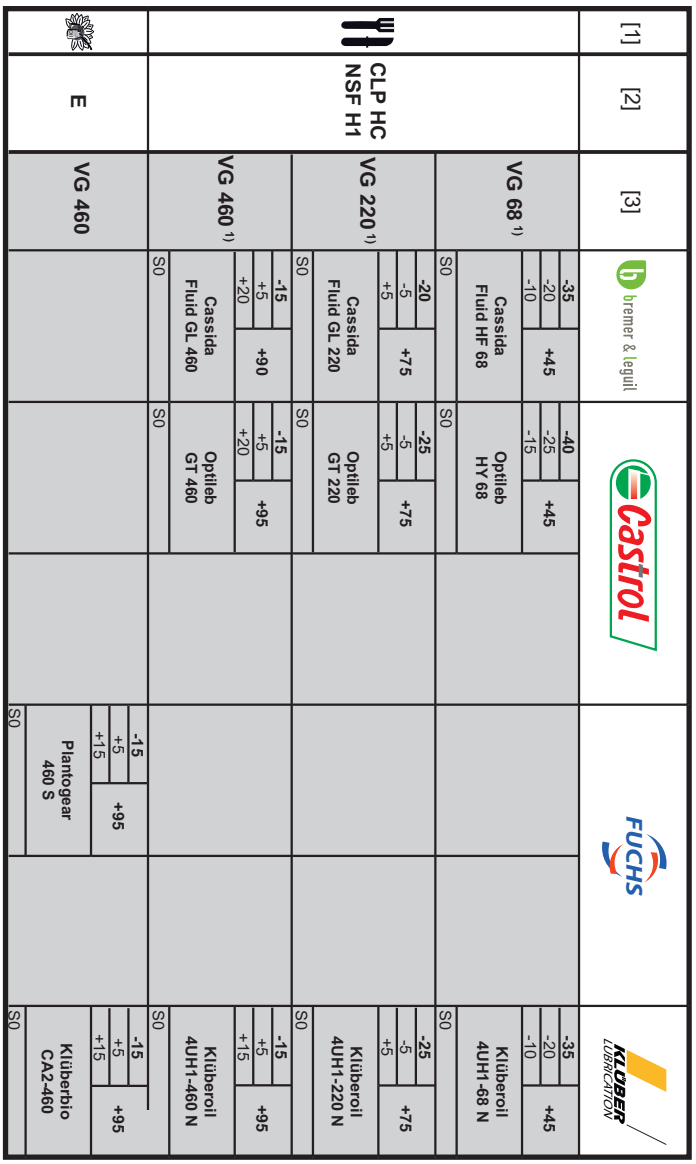
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This lubricant table is valid when the document is published. Please refer to www.sew-eurodrive.de/lubricants for the latest version of the table.

[1]	[2]	Castrol		FUCHS		Mobil®		KLÜBER LUBRICATION		Shell		TOTAL	
CLP HC	VG 32 [1]					-40 / -30 / -25	+30						
						SHC 624							
	VG 68 [1]			-35 / -20 / -10	+50	-40 / -25 / -15	+50	-35 / -20 / -10	+50	-40 / -20 / -10	+50		
				Renolin Unisyn CLP 68		SHC 626		Klübersynth GEM 4-68 N		Omala S4 GX 68			
	VG 150 [1]	-25 / -10 / 0	+70	-30 / -10 / +0	+70	-30 / -10 / 0	+75	-25 / -10 / 0	70	-30 / -10 / 0	+75	-35 / -15 / -5	+75
		Alphasyn EP 150		Renolin Unisyn CLP 150		SHC 629		Klübersynth GEM 4-150 N		Omala S4 GX 150		Carter SH 150	
	VG 220	-25 / -5 / +5	+80	-25 / -5 / +5	+80	-25 / -5 / 0	+85	-25 / -5 / +5	+80	-25 / -5 / +5	+85	-25 / -5 / +5	+80
		Alphasyn EP 220		Renolin Unisyn CLP 220		SHC 630		Klübersynth GEM 4-220 N		Omala S4 GX 220		Carter SH 220	
	VG 320	-20 / 0 / +10	+90	-20 / 0 / +10	+90	-20 / 0 / +10	+95	-20 / 0 / +10	+95	-20 / 0 / +10	+95	-20 / 0 / +10	+90
		Alphasyn EP 320		Renolin Unisyn CLP 320		SHC 632		Klübersynth GEM 4-320 N		Omala S4 GX 320		Carter SH 320	
	VG 460	-15 / +5 / +15	+100	-15 / +5 / +15	+100	-15 / +5 / +15	+105	-15 / +5 / +20	+105	-15 / +5 / +15	+105	-15 / +5 / +15	+100
		Alphasyn EP 460		Renolin Unisyn CLP 460		SHC 634		Klübersynth GEM 4-460 N		Omala S4 GX 460		Carter SH 460	
	VG 680	-10 / +10 / +25	+110	-10 / +10 / +25	+110	-10 / +10 / +25	+110	-10 / +10 / +25	+110	-10 / +10 / +25	+110	-10 / +10 / +25	+110
		Optigear Synthetic X 680		Renolin Unisyn CLP 680		SHC 636		Klübersynth GEM 4-680 N		Omala S4 GX 680		Carter SH 680	
	VG 1000					-10 / +15 / +30	+110	0 / +20 / +30	+110				
						SHC 639		Klübersynth EG4-1000					

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This lubricant table is valid when the document is published. Please refer to www.sew-eurodrive.de/lubricants for the latest version of the table.



[1]	[2]	[3]						
	CLP HC NSF H1	VG 68 [1]	bremer & leguil	Castrol	FUCHS	KLÜBER LUBRICATION		
			-35 -20 -10 +45	Cassida Fluid HF 68			Klüberoil 4UH1-68 N	
			-40 -25 -15 +45	Optileb HY 68				
		VG 220 [1]						
			-20 -5 +5 +75	Cassida Fluid GL 220			Klüberoil 4UH1-220 N	
			-25 -5 +5 +75	Optileb GT 220				
		VG 460 [1]						
			-15 +5 +20 +90	Cassida Fluid GL 460			Klüberoil 4UH1-460 N	
			-15 +5 +20 +95	Optileb GT 460				
	E	VG 460						
			-15 +5 +15 +95	Plantogear 460 S			Klüberbio CA2-460	

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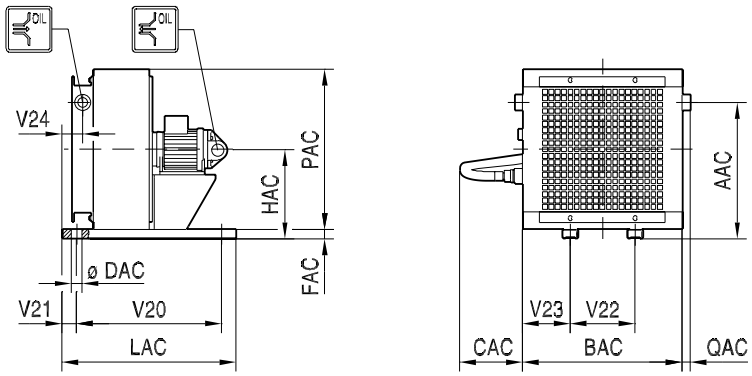
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6 Dimension sheets

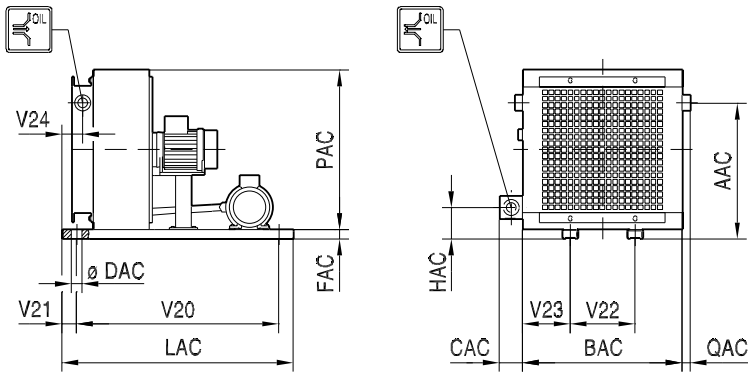
6.1 Oil-air cooler /OAC..-00/S [mm]

OAC..-00/S

48 086 04 07



OAC 025+060

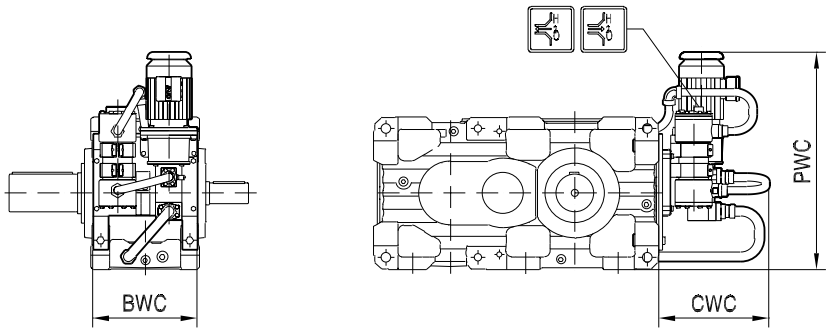


	AAC	BAC	CAC	Ø DAC	FAC	HAC	LAC	PAC	QAC	V20	V21	V22	V23	V24	OIL	OIL	kg
OAC005-00/S	365	440	119	9	30	247	550	440	25	510	20	203	118.5	66.5	G1 1/4"	G1"	38
OAC010-00/S	365	440	119	9	30	247	550	440	25	510	20	203	118.5	66.5	G1 1/4"	G1"	38
OAC020-00/S	426	500	119	9	30	277	550	500	25	510	20	203	148.5	66.5	G1 1/4"	G1"	43
OAC025-00/S	510	580	134	9	30	287	760	580	24	720	20	356	112	66.5	G1 1/4"	G1"	71
OAC030-00/S	510	580	134	9	30	317	550	580	24	510	20	356	112	66.5	G1 1/2"	G1"	71
OAC040-00/S	620	700	132	9	30	377	550	700	10	510	20	356	172	66.5	G1 1/2"	G1 1/4"	86
OAC050-00/S	798.5	870	134	9	30	462	550	870	11	510	20	508	181	66.5	G1 1/2"	G1 1/4"	118
OAC060-00/S	951	1010	91	12	30	172	1200	1020	5	1160	20	518	246	109.5	SAE 2 1/2"	G1 1/2"	234

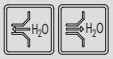
6.2 Oil-water cooler /OWC.. -00/M mounting position M1 [mm]

OWC.. -00/M

48 085 03 07



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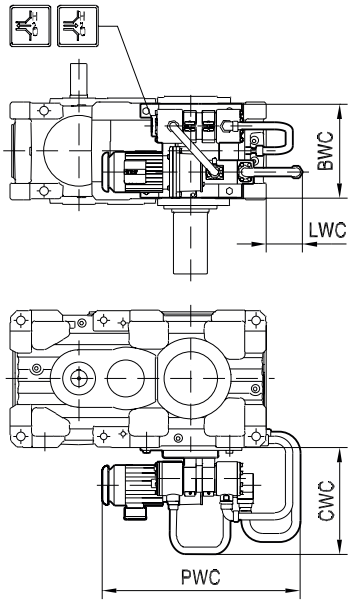
		BWC	CWC	WC		kg
X140 – 150	**OWC005 – 00/M**	345	284	500	G3/4"	23
X140 – 150	**OWC015 – 00/M**	345	312	504	G3/4"	28
X160 – 170		395	312	601		
X160 – 170	**OWC025 – 00/M**	395	291	601	3/4"	31
X180 – 190	**OWC010 – 00/M**	457	354	697	G1/2"	36
X200 – 210		497	354	712		
X220 – 230		519	354	778		
X240 – 250		604	354	786		
X180 – 190	**WC020 – 00/M**	457	426	818	1/2"	7
X200 – 210		497	426	832		
X220 – 230		519	426	899		
X240 – 250		604	426	907		
X180 – 190	**WC030 – 00/M**	457	426	838	G1"	57
X200 – 210		497	426	852		
X220 – 230		519	426	919		
X240 – 250		604	426	927		
X180 – 190	**OWC040 – 00/M**	457	479	959	G3/4"	85
X200 – 210		497	479	956		
X220 – 230		519	479	968		
X240 – 250		604	479	976		
X260 – 270		680	480	976		
X280		680	480	976		
X290 – 300		745	480	986		
X310 – 320		810	480	1033		
X220 – 230	**OWC050 – 00/M**	519	479	1016	1 1/4"	88
X240 – 250		604	479	1024		
X260 – 270		680	470	1024		
X280		680	470	1024		
X290 – 300		745	470	1034		
X310 – 320		810	470	1081		
X240 – 250	**WC060 – 00/M**	604	531	1135	G1 1/2"	132
X260 – 270		680	490	1165		
X280		680	490	1165		
X290 – 300		745	490	1187		
X310 – 320		810	490	1195		
X260 – 270	**OWC – 070 – 00/M**	680	540	1242	G1"	39
X280		680	540	1242		
X290 – 300		745	540	1255		
X310 – 320		810	540	1257		

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6.3 Oil-water cooler /OWC..-10/M mounting position M5 [mm]

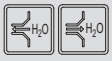
OWC.. -10/M

48 014 02 10



		BWC	CWC	LWC	PWC	H_2O H_2O	kg
X..140 – 150	OWC005-10/M	345	284	27	588	G3/4"	23
X..140 – 150	OWC015-10/M	345	310	27	598	G3/4"	28
X..160 – 170		395	312	29	631		
X..160 – 170	OWC025-10/M	395	308	29	631	G3/4"	31
X..180 – 190	OWC010-10/M	457	345	72	829	G1/2"	36
X..200 – 210		497	345	57	829		
X..220 – 230		519	345	55	829		
X..240 – 250		604	345	35	829		
X..180 – 190	OWC020-10/M	457	405	106	812	G1/2"	57
X..200 – 210		497	405	91	812		
X..220 – 230		519	405	87	812		
X..240 – 250		604	405	68	812		
X..180 – 190	OWC030-10/M	457	405	106	832	G1"	57
X..200 – 210		497	405	91	832		
X..220 – 230		519	405	87	832		
X..240 – 250		604	405	68	832		
X..180 – 190	OWC040-10/M	497	460	184	1004	G3/4"	85
X..200 – 210		497	460	169	1004		
X..220 – 230		519	460	166	1004		
X..240 – 250		604	460	145	1004		
X..260 – 270		680	460	66	906		
X..280		680	460	66	906		
X..290 – 300		745	460	41	906		
X..310 – 320		810	460	36	906		
X..220 – 230	OWC050-10/M	519	460	166	1052	G1 1/4"	88
X..240 – 250		604	460	145	1052		
X..260 – 270		680	460	66	954		
X..280		680	460	66	954		
X..290 – 300		745	460	41	954		
X..310 – 320		810	460	36	954		

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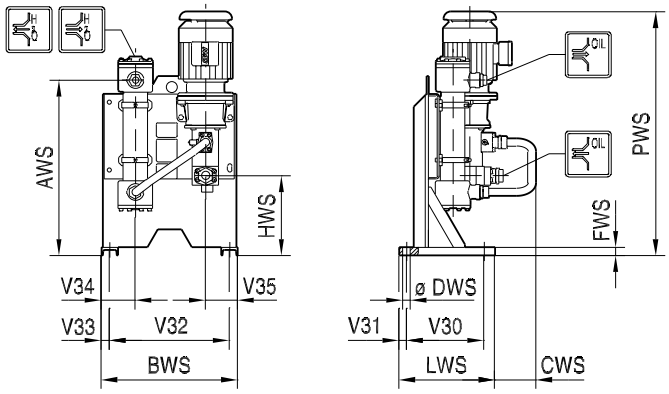
		BWC	CWC	LWC	PWC		kg
X..240 – 250	OWC060-10/M	604	490	184	1264	G1 1/2"	132
X..260-270		680	490	80	1164		
X..280		680	490	80	1164		
X..290 – 300		745	490	68	1164		
X..310 – 320		810	490	60	1164		
X..260 – 270	OWC-070-10/M	680	537	80	1225	G1"	139
X..280		680	537	80	1225		
X..290 – 300		745	537	68	1225		
X..310 – 320		810	537	60	1225		

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6.4 Oil-water cooler /OWC..-00/S with frame for separate installation [mm]

OWC.. -00/S

48 014 03 08



	AWS	BWS	CWS	Ø WS	FWS	HWS	LWS	PWS	V30	V31	V32	V33	V34	V35
OWC010-00/S	790	480	100	12	30	217	350	883	275	30	430	25	127	117
OWC020-00/S	670	480	150	12	30	292	350	890	275	30	430	25	125	117
OWC030-00/S	641	480	150	12	30	292	350	916	275	30	430	25	125	117
OWC040-00/S	603	480	215	12	30	250	350	981	275	30	430	25	120	137
OWC050-00/S	603	480	215	12	30	250	350	1030	275	30	430	25	120	137
OWC060-00/S	814	630	115	12	30	322	470	1153	390	30	577	25	164	137
OWC070-00/S	916	630	165	12	30	288	470	1226	390	30	577	25	164	157

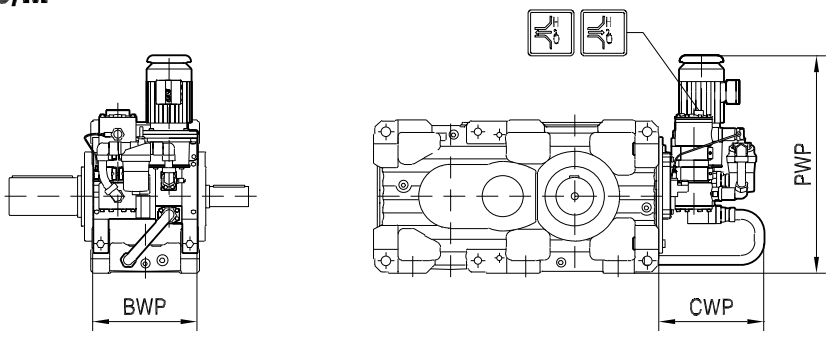
	H_2O	H_2O	OIL	OIL	kg
OWC010-00/S	G1/2"	GE18–LR 1"		GE22–LR 1/2"	60
OWC020-00/S	G1/2"	GE28–LR 1"		GE35–LR 1 1/4"	80
OWC030-00/S	G1"	GE28–LR 1"		GE35–LR 1 1/4"	80
OWC040-00/S	G3/4"	GE35–LR 1 1/2"		GE42–LR 1 1/2"	107
OWC050-00/S	G1 1/4"	GE35–LR 1 1/2"		GE42–LR 1 1/2"	110
OWC060-00/S	G1 1/2"	GE42–LR 1 1/2"		SAE 2" SFL	167
OWC070-00/S	G1"	GE42–LR 2 1/2"		SAE 2 1/2"SFL	174

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6.5 Oil-water cooler /OWP.. – 00/M mounting position M1 [mm]

OWP.. -00/M

48 018 02 10



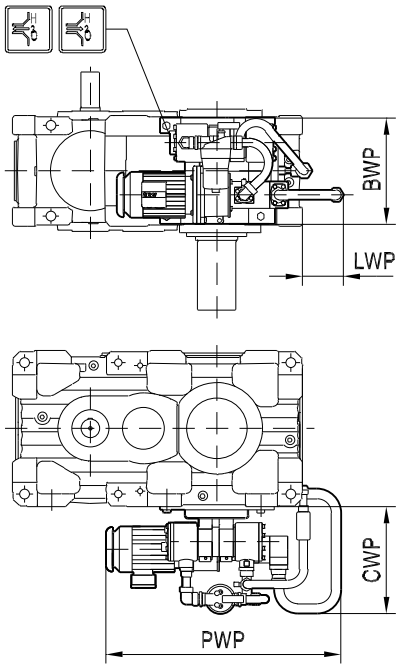
		OWP	CWP	PWP	H_2O H_2O	kg
X160 – 170	**OWP015-00/M**	395	455	601	G3/4"	30
X160 – 170	**OWP025-00/M**	395	502	601	G3/4"	33
X180 – 190	**OWP010-00/M**	457	354	697	G1/2"	38
X200 – 210		497	354	712		
X220 – 230		519	354	778		
X240 – 250		604	354	786		
X180 – 190	**OWP020-00/M**	457	415	818	G1/2"	59
X200 – 210		497	415	832		
X220 – 230		519	415	899		
X240 – 250		604	415	907		
X180 – 190	**OWP030-00/M**	457	415	838	G1"	59
X200 – 210		497	415	852		
X220 – 230		519	415	919		
X240 – 250		604	415	927		
X180 – 190	**OWP040-00/M**	457	486	1007	G3/4"	87
X200 – 210		497	486	1004		
X220 – 230		519	486	1016		
X240 – 250		604	490	1024		
X260 – 270		680	500	1024		
X280		680	500	1024		
X290 – 300		745	500	1034		
X310 – 320		810	500	1081		
X220 – 230	**WP050-00/M**	519	486	1039	G1 1/4"	90
X240 – 250		604	490	1047		
X260 – 270		680	500	1047		
X280		680	500	1047		
X290 – 300		745	500	1057		
X310 – 320		810	500	1104		
X240 – 250	**OWP060-00/M**	604	565	1185	G1 1/2"	134
X260 – 270		680	565	1215		
X280		680	565	1215		
X290 – 300		745	565	1237		
X310 – 320		810	565	1245		
X260 – 270	**OWP – 070-00/M**	680	540	1242	G1"	141
X280		680	540	1242		
X290 – 300		745	540	1255		
X310 – 320		810	540	1257		

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6.6 Oil-water cooler /OWP..-10/M mounting position M5 [mm]

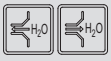
OWP.. -10/M

48 019 02 10



		BWP	CWP	LWP	PWP	H_2O H_2O	kg
X..140 – 150	**OWP005-10/M**	441	409	27	568	G3/4"	25
X..140 – 150	**OWP015-10/M**	441	455	27	580	G3/4"	30
X..160 – 170		467	455	31	615		
X..160 – 170	**OWP025-10/M**	426	502	31	615	G3/4"	33
X..180 – 190	**OWP010-10/M**	457	345	72	829	G1/2"	38
X..200 – 210		497	345	57	829		
X..220 – 230		519	345	55	829		
X..240 – 250		604	345	35	829		
X..180 – 190	**OWP020-10/M**	457	405	106	812	G1/2"	59
X..200 – 210		497	405	91	812		
X..220 – 230		519	405	87	812		
X..240 – 250		604	405	68	812		
X..180 – 190	**OWP030-10/M**	457	405	106	832	G1"	59
X..200 – 210		497	405	91	832		
X..220 – 230		519	405	87	832		
X..240 – 250		604	405	68	832		
X..180 – 190	**OWP040-10/M**	457	460	184	1052	G3/4"	87
X..200 – 210		497	460	169	1052		
X..220 – 230		519	460	166	1052		
X..240 – 250		604	460	145	1052		
X..260 – 270		680	460	66	954		
X..280		680	460	66	954		
X..290 – 300		745	460	41	954		
X..310 – 320		810	460	36	954		

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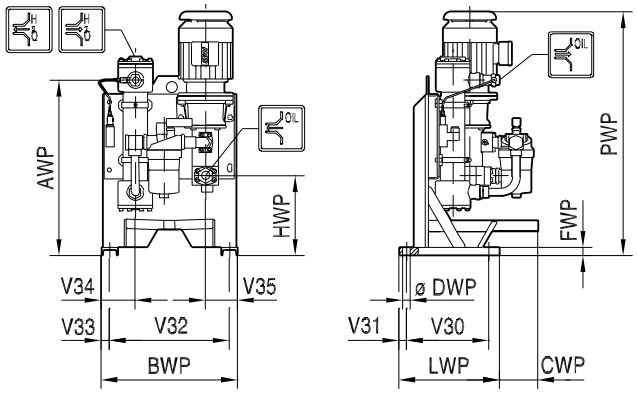
		BWP	CWP	LWP	PWP		kg
X..220 – 230	**OWP050-10/M**	519	460	166	1075	G1 1/4"	90
X..240 – 250		604	460	145	1075		
X..260 – 270		680	460	66	977		
X..280		680	460	66	977		
X..290 – 300		745	460	41	977		
X..310 – 320		810	460	36	977		
X..240 – 250	**OWP060-10/M**	604	490	184	1314	G1 1/2"	134
X..260 – 270		680	490	80	1214		
X..280		680	490	80	1214		
X..290 – 300		745	490	68	1214		
X..310 – 320		810	490	60	1214		
X..260 – 270	**OWP-070-10/M**	680	537	80	1225	G1"	141
X..280		680	537	80	1225		
X..290 – 300		745	537	68	1225		
X..310 – 320		810	537	60	1225		

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6.7 Oil-water cooler /OWP..-00/S with frame for separate installation [mm]

OWP.. -00/S

48 017 02 10



	AWP	BWP	CWP	Ø DWP	FWP	HWP	LWP	PWP
OWP010-00/S	790	480	158	12	30	217	350	883
OWP020-00/S	670	480	158	12	30	292	350	890
OWP030-00/S	641	480	158	12	30	292	350	916
OWP040-00/S	603	480	158	12	30	250	350	1000
OWP050-00/S	603	480	158	12	30	250	350	1023
OWP060-00/S	814	630	178	12	30	322	470	1161
OWP070-00/S	916	630	178	12	30	288	470	1176

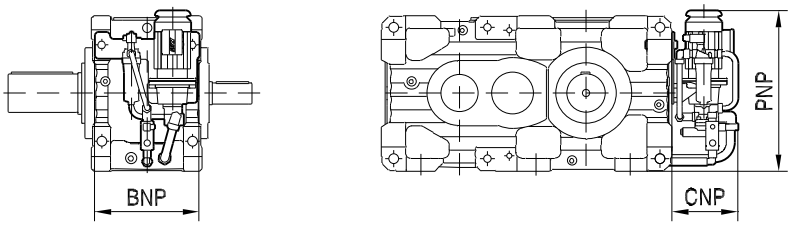
	V30	V31	V32	V33	V34	V35	H_2O	H_2O	OIL	OIL	kg
OWP010-00/S	275	30	430	25	127	117	G1/2"	GE18–LR 1"	GE22–LR 1/2"		60
OWP020-00/S	275	30	430	25	125	117	G1/2"	GE28–LR 1"	GE35–LR 1 1/4"		80
OWP030-00/S	275	30	430	25	125	117	G1"	GE28–LR 1"	GE35–LR 1 1/4"		80
OWP040-00/S	275	30	430	25	120	137	G3/4"	GE35–LR 1 1/2"	GE42–LR 1 1/2"		107
OWP050-00/S	275	30	430	25	120	137	G1 1/4"	GE35–LR 1 1/2"	GE42–LR 1 1/2"		110
OWP060-00/S	390	30	577	25	164	137	G1 1/2"	GE42–LR 1 1/2"	SAE 2" SFL		167
OWP070-00/S	390	30	577	25	164	157	G1"	GE42–LR 2 1/2"	SAE 2 1/2"SFL		174

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6.8 Motor pump /ONP1 [mm]

ONP1.. -00/M

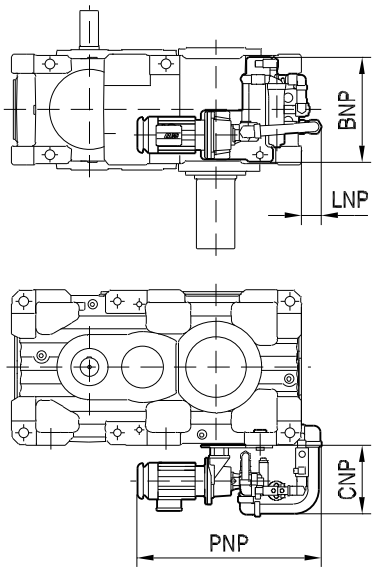
48 001 00 18



→ 74

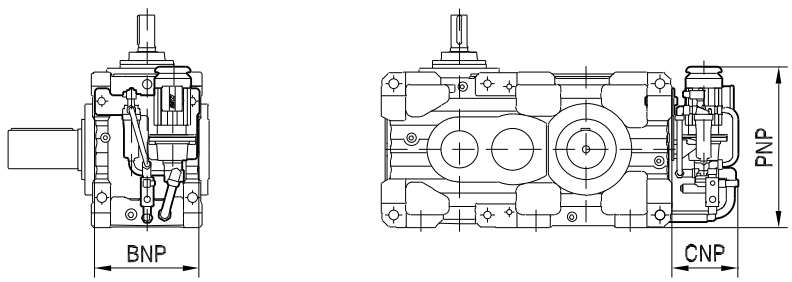
ONP1.. -10/M

48 003 00 18



ONP1.. -00/M

48 005 00 18



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6.8.1 Mounting position M1

		BNP	CNP	PNP	kg
X160 – 170	ONP1 08–00/M	395	284	596	28
X180 – 190	ONP1 10–00/M	457	401	691	32
X200 – 210		497	401	705	
X220 – 230		519	401	772	
X240 – 250		604	415	954	
X260 – 270		680	415	956	
X280		680	415	956	
X160 – 170	ONP1 12–00/M	395	293	596	32
X180 – 190		457	401	691	
X200 – 210		497	401	705	
X290 – 300		745	415	966	
X310 – 320		810	415	1014	
X160 – 170	ONP1 16–00/M	395	293	596	38
X180 – 190		457	401	691	
X200 – 210		497	401	705	
X220 – 230		519	401	772	
X240 – 250		604	415	954	
X260 – 270		680	415	956	
X280		680	415	956	
X290 – 300		745	415	966	
X220 – 230	ONP1 20–00/M	519	401	772	41
X240 – 250		604	415	954	
X260 – 270		680	415	956	
X280		680	415	956	
X310 – 320		810	415	1014	
X290 – 300	ONP1 25–00/M	745	415	966	59
X310 – 320		810	415	1014	

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6.8.2 Mounting position M5

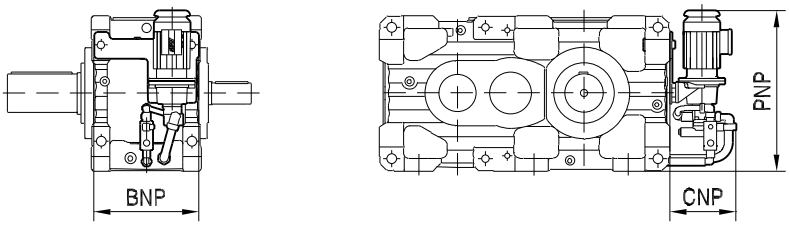
		BNP	CNP	LNP	PNP	kg
X..140 – 150	ONP1 06-10/M	350	267	68	659	28
X..160 – 170	ONP1 08-10/M	413	293	31	615	32
X..180 – 190		460	366	66	942	
X..200 – 210		500	366	70	982	
X..220 – 230		510	366	70	996	
X..240 – 250		585	366	70	1013	
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..160 – 170	ONP1 10-10/M	413	293	31	615	32
X..180 – 190		460	258	40	866	
X..200 – 210		500	366	70	982	
X..220 – 230		510	366	70	996	
X..240 – 250		585	366	70	1013	
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..290 – 300		760	366	45	1031	
X..310 – 320		826	385	40	1043	
X..160 – 170	ONP1 12-10/M	413	293	31	615	37
X..180 – 190		460	258	40	866	
X..200 – 210		500	366	70	982	
X..220 – 230		510	366	70	996	
X..240 – 250		585	366	70	1013	
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..290 – 300		760	366	45	1031	
X..310 – 320		826	385	40	1043	
X..180 – 190	ONP1 16-10/M	460	258	40	866	38
X..200 – 210		500	366	70	982	
X..220 – 230		510	366	70	996	
X..240 – 250		585	366	70	1013	
X..260 – – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..290 – 300		760	366	45	1031	
X..310 – 320		826	385	40	1043	
X..240 – 250	ONP1 20-10/M	585	366	70	1013	41
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..290 – 300		760	366	45	1031	
X..310 – 320		826	385	40	1043	
X..290 – 300	ONP1 25-10/M	760	366	45	1031	59
X..310 – 320		826	385	40	1043	

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6.9 Motor pump /ONP1L [mm]

ONP1L.. -00/M

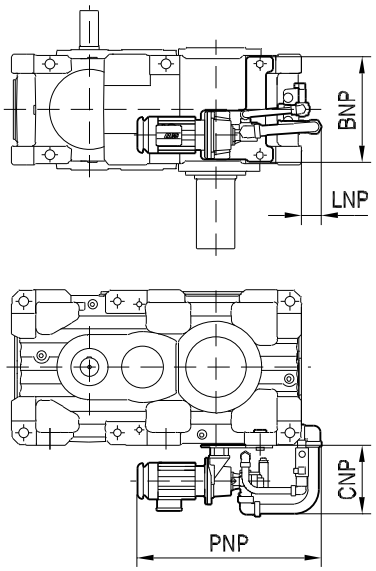
48 002 00 18



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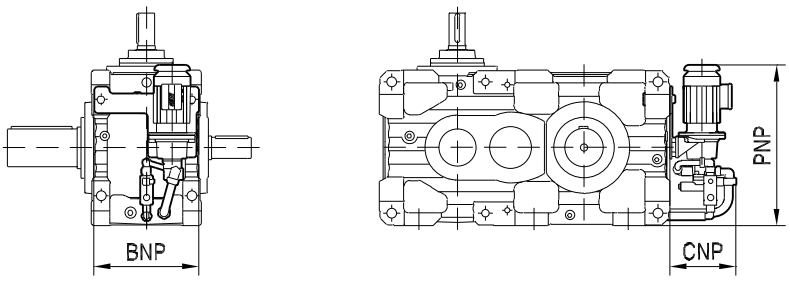
ONP1L.. -10/M

48 004 00 18



ONP1L.. -00/M

48 006 00 18



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6.9.1 Mounting position M1

		BNP	CNP	PNP	kg
X160 – 170	ONP1L 08–00/M	395	284	596	30
X180 – 190	ONP1L 10–00/M	457	401	691	30
X200 – 210		497	401	705	
X220 – 230		519	401	772	
X240 – 250		604	415	954	
X260 – 270		680	415	956	
X280		680	415	956	
X160 – 170	ONP1L 12–00/M	395	293	596	36
X180 – 190		457	401	691	
X200 – 210		497	401	705	
X290 – 300		745	415	966	
X310 – 320		810	415	1014	
X160 – 170	ONP1L 16–00/M	395	293	596	37
X180 – 190		457	401	691	
X200 – 210		497	401	705	
X220 – 230		519	401	772	
X240 – 250		604	415	954	
X260 – 270		680	415	956	
X280		680	415	956	
X290 – 300		745	415	966	
X220 – 230	ONP1L 20–00/M	519	401	772	40
X240 – 250		604	415	954	
X260 – 270		680	415	956	
X280		680	415	956	
X310 – 320		810	415	1014	
X290 – 300	ONP1L 25–00/M	745	415	966	57
X310 – 320		810	415	1014	

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6.9.2 Mounting position M5

		BNP	CNP	LNP	PNP	kg
X..140 – 150	ONP1L 06-10/M	350	267	68	659	28
X..160 – 170	ONP1L 08-10/M	413	293	31	615	30
X..180 – 190		460	366	66	942	
X..200 – 210		500	366	70	982	
X..220 – 230		510	366	70	996	
X..240 – 250		585	366	70	1013	
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..160 – 170	ONP1L 10-10/M	413	293	31	615	30
X..180 – 190		460	258	40	866	
X..200 – 210		500	366	70	982	
X..220 – 230		510	366	70	996	
X..240 – 250		585	366	70	1013	
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..290 – 300		760	366	45	1031	
X..310 – 320		826	385	40	1043	
X..160 – 170	ONP1L 12-10/M	413	293	31	615	36
X..180 – 190		460	258	40	866	
X..200 – 210		500	366	70	982	
X..220 – 230		510	366	70	996	
X..240 – 250		585	366	70	1013	
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..290 – 300		760	366	45	1031	
X..310 – 320		826	385	40	1043	
X..180 – 190	ONP1L 16-10/M	460	258	40	866	37
X..200 – 210		500	366	70	982	
X..220 – 230		510	366	70	996	
X..240 – 250		585	366	70	1013	
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..290 – 300		760	366	45	1031	
X..310 – 320		826	385	40	1043	
X..240 – 250	ONP1L 20-10/M	585	366	70	1013	40
X..260 – 270		663	366	60	1002	
X..280		663	366	60	1002	
X..290 – 300		760	366	45	1031	
X..310 – 320		826	385	40	1043	
X..290 – 300	ONP1L 25-10/M	760	366	45	1031	57
X..310 – 320		826	385	40	1043	

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7 Address list

Algeria			
Sales	Algiers	REDUCOM Sarl 16, rue des Frères Zaghnoune Bellevue 16200 El Harrach Alger	Tel. +213 21 8214-91 Fax +213 21 8222-84 http://www.reducom-dz.com info@reducom-dz.com
Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@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	Vienna	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Straße 24 1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at
Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
Belarus			
Sales	Minsk	Foreign unitary production enterprise SEW-EURODRIVE RybalkoStr. 26 220033 Minsk	Tel. +375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by
Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue du Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-IG@sew-eurodrive.be
Brazil			
Production Sales Service	São Paulo	SEW-EURODRIVE Brasil Ltda. Estrada Municipal José Rubim, 205 – Rodovia Santos Dumont Km 49 Indaiatuba – 13347-510 – SP	Tel. +55 19 3835-8000 sew@sew.com.br
Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

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Cameroon			
Sales	Douala	SEW-EURODRIVE S.A.R.L. Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 02 10 Fax +237 233 39 02 10 sew@sew-eurodrive-cm
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2001 Ch. de l'Aviation Dorval Quebec H9P 2X6	Tel. +1 514 367-1124 Fax +1 514 367-3677 n.paradis@sew-eurodrive.ca
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA Las Encinas 1295 Parque Industrial Valle Grande LAMPA Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@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 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co,. Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
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

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Colombia			
Assembly Sales Service	Bogota	SEW-EURODRIVE COLOMBIA LTDA. Calle 17 No. 132-18 Interior 2 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co
Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
Czech Republic			
Assembly Sales Service	Hostivice	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline / 24 Hour Service	+420 800 739 739 (800 SEW SEW)	Service Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Copenhagen	SEW-EURODRIVEA/S Geminivej 28-30 2670 Greve	Tel. +45 43 95 8500 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies Building 10, Block 13005, First Industrial Zone, Obour City Cairo	Tel. +202 44812673 / 79 (7 lines) Fax +202 44812685 http://www.copam-egypt.com copam@copam-egypt.com
Estonia			
Sales	Tallin	ALAS-KUUL AS Reti tee 4 75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi
France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	Forbach	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09

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France			
	Lyon	SEW-USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 Fax +33 4 74 99 60 15
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Gabon			
Sales	Libreville	SEW-EURODRIVE SARL 183, Rue 5.033.C, Lalala à droite P.O. Box 15682 Libreville	Tel. +241 03 28 81 55 +241 06 54 81 33 http://www.sew-eurodrive.cm sew@sew-eurodrive.cm
Germany			
Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	Bruchsal	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str. 10 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de

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Germany			
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911
Greece			
Sales	Athens	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyí út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavík	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@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 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
Indonesia			
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari JL.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com

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Indonesia			
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com
Ireland			
Sales Service	Dublin	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperton.ie info@alperton.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 20020 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pêcheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 21 21 81 05 Fax +225 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp hamamatsu@sew-eurodrive.co.jp
Kazakhstan			
Sales	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz
	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn
Kenya			
Sales	Nairobi	SEW-EURODRIVE Pty Ltd Transnational Plaza, 5th Floor Mama Ngina Street P.O. Box 8998-00100 Nairobi	Tel. +254 791 398840 http://www.sew-eurodrive.co.tz info@sew.co.tz
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com

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Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Saudi Arabia, Syria)	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com
Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
Representation: Belgium			
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexico			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
Morocco			
Sales Service	Bouskoura	SEW-EURODRIVE Morocco Parc Industriel CFCIM, Lot 55 and 59 Bouskoura	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
Namibia			
Sales	Swakopmund	DB Mining & Industrial Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

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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. 30 Lodestar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omole GRA Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpegltd.com bolaji.adekunle@greenpegltd.com
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk
Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py
Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU 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
Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Av. da Fonte Nova, n.º 86 3050-379 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» а. я. 36 195220 Санкт-Петербург	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

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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 http://www.senemeca.com senemeca@senemeca.sn
Serbia			
Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 831 06 Bratislava	Tel.+421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 Mobile +421 907 671 976 sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 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 11 248-7289 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	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE KOREA CO., LTD. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE KOREA CO., LTD. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230

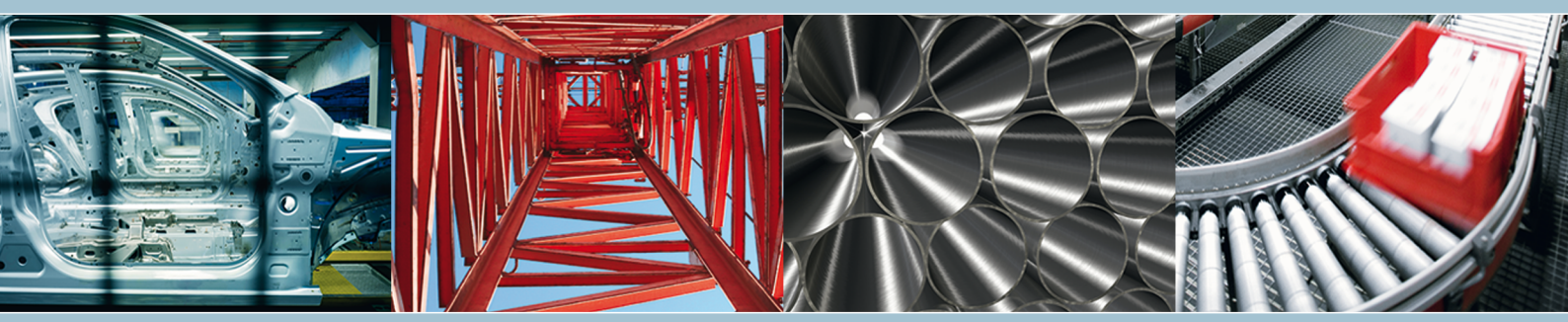
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Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981
Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn
Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Ukraine			
Assembly Sales Service	Dnipropetrovsk	ООО «СЕВ-Евродрайв» ул. Рабочая, 23-В, офис 409 49008 Днепр	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua

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United Arab Emirates			
Sales Service	Dubai	SEW-EURODRIVE FZE PO Box 263835 Office No. S3A1SR03 Jebel Ali Free Zone – South, Dubai, United Arab Emirates	Tel. +971 (0)4 8806461 Fax +971 (0)4 8806464 http://www.sew-eurodrive.ae info@sew-eurodrive.ae
Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
USA			
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	Tel. +1 864 439-7537 Fax +1 864 661 1167 IGOrders@seweurodrive.com
	Additional addresses for service provided on request!		
Vietnam			
Sales	Ho Chi Minh City	Nam Trung Co., Ltd Huế - South Vietnam / Construction Materials 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 khanh-nguyen@namtrung.com.vn http://www.namtrung.com.vn
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn
Zambia			
Representation: South Africa			

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