

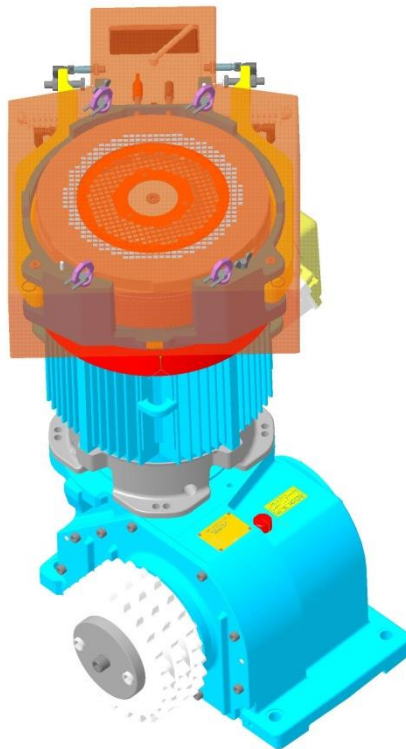
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Installation instructions

according to Annex VI of the EC Directive 2006/42/EC Mechanical Equipment
and further product details

Escalator Machine

Model: *omsHypodrive* EC 2 – 15.1



Please archive this document for future reference

OMS No.

**Date of Manufacture
Month / Year**

List of Contents

	Page
1 INTRODUCTION	5
2 SAFETY INSTRUCTIONS FOR OMS ESCALATOR MACHINES	6
2.1 Applicable Use	6
2.2 Non Applicable Use	7
2.3 Warranty and Liability for the Escalator Drive	8
2.4 Dangers, that are associated with the Escalator Drive	9
2.5 Instructions for Safe Use	9
2.6 Requirements and Qualification - Installation and Maintenance Personnel	9
2.7 General Information	9
3 INSTALLATION	10
3.1 Assembly	12
3.2 Before commissioning:	13
3.3 Special climate conditions	14
3.4 Electrical Connections	14
WIRING OF THE SENSOR SIGNALS TO THE WIELAND TYPE CONNECTORS:	18
3.5 Manufacturers Identification Plate	19
4 TRANSPORT AND STORAGE	20
4.1 Transport	20
4.2 Lifting the machine	21
4.3 Storage	23
5 REGULAR USE AND MAINTENANCE	25
5.1 Recommended Routine Maintenance	25
5.2 Error – Troubleshooting Errors	26
5.3 Gearbox Oil	26
5.4 Brake Maintenance	29
5.5 Replacing the elastic coupling rubbers	34
5.6 Adjusting the braking function sensor	37
5.7 Adjusting the break lining wear control	39
5.8 Adjustment of Non Reversal Device (NRD) and Speed Sensor	40
6 DISASSEMBLY	41
6.1 Disassembly of the Escalator Drive	41
6.2 Scrapping the Escalator Drive	41
7 APPENDIX	42



A	OMS technical data – escalator machine EC 2 - 25	43
B	EC-safety data sheet Klübersynth GH 6-220	51

1 Introduction

These instructions include pictograms for commenting on Warnings and Safety Issues.



Application Tip: Additional Comments and Information, no danger involved



Warning: of a general risk for the machine or a human safety hazard



Warning: of dangerous currents, a liability of serious damage to health or death



Warning: of hot surfaces, a liability of serious damage to health and / or serious material damage



Warning: of crush injuries, a liability of serious damage to health



Warning: of drawing in, a liability of serious damage to health



Warning: DANGER
Risk for the machine or a human safety hazard, a liability of serious damage to health or death

2 Safety Instructions for OMS Escalator Machines

2.1 Applicable Use

The OMS – escalator traction machine EC 2 – 15.1 is solely intended for usage in escalators and passenger conveyors (travelators, moving walks) for public transportation according to EN 115 : 2017 and DIN EN ISO 12100 part 1 + 2.

The installation and use of the EC 2-25 for other purposes is not applicable. The OMS ANTRIEB-STECHNIK is not liable for personal injury and or damage resulting from none applicable usage.

All Planning, installations and maintenance work may only be carried out by qualified personnel. Qualified personnel are such who having studied for qualifications, or are experienced, or have received instruction and have the knowledge relating to the relevant standards and directives, safety regulations and local knowledge required to install and maintain the machine and be able to recognise and access the risks appertaining to this machine. (Qualified Personnel, as defined in IEC 364).

This OMS – escalator drive is applicable to the 9th Directive of the Machine and Product Safety Law (9. Verordnung zum Geräte- und Produktsicherheitsgesetz [Maschinenverordnung]) and the 2006/42/EC Machine Directive. It is part of a machine, namely an escalator or a travelator and is therefore not liable for CE certification.

The commencement of regular use is not permitted until the traction machine has been correctly installed into the escalator or travelator and the manufacturer has applied the CE label to the escalator or travelator to certify that the safety requirements have been fulfilled for the complete product / machine as supplied by the manufacturer.

All other required regulations and certificates (e.g. applicable to general use, maintenance and inspections) remain in force.

The drive manufacturer only respects the warranty for operation and safety of the drive if it has been erected, maintained and operated according to the printed specifications supplied individually with each drive. The warranty is void if the parameters outlined in the operating, maintenance and control documentation have been exceeded. An incorrect installation or incorrect use of the system, and or violation of the standards outlined above, lead to a complete and absolute none liability of the drive manufacturer.

The used motors are generally suitable for frequency inverter operation, provided the slew rate limit of the motors is adhered to. Customer supplied frequency converters must be set up according to their instruction sheets, in order to comply with the requirements of the OMS-Escalator Machine, and with the national EMI directives. The escalator traction machine is only intended for installation and usage in an enclosed area.

OMS Drives may only be stored, erected and run in dry closed areas. The IQ/OQ representative and the user must ensure that adequate measures are taken to avoid a contamination with building dust and or dirt.

Stopping of a running traction machine is via frequency inverter control or via the machine brake. In emergency situations braking may be via an external, auxiliary brake on the escalator main shaft. Make sure that when braking with such an auxiliary brake *only*, the traction machine is not dynamically overloaded. When braking with an auxiliary brake, this should preferably be engaged together with the machine brake.

OMS-Escalator machines may only be operated when in technically good condition and within the parameters as described by OMS.

Applicable use also includes the following:

- Working according to the supplied instructions,
- Observing the regulatory safety and environmental requirements,
- Adherence and observance of the Escalator documentation and regulations.

2.2 Non Applicable Use

OMS Drives may not be operated in potentially explosive or environmentally aggressive areas.

Further operation is not permissible once the pre determined wear points have been achieved.

Permissible Limits:

- max. Motor Speed: refer to technical documentation;
- Local ambient temperature during operating min.: 0° C max. 45° C and 55° C for 1h.; with motor heating from -10°C up to 45°C and with additional gear box heating from -35°C up to 45°C
- Local ambient temperature without operating: -20°C max. 60°C
- The technical data and specifications on the Motor Data Label are only valid for an installation height up to $h \leq 1000\text{m}$ over NN.
- Max. rel. Humidity: 85% at 20°C (none condensing).
- Operation under extreme climatic conditions must be clarified with OMS.

None applicable use also includes the following:

- Dry operation without oil or use of a lubricant other than specified
- Opening the Gearbox when installed on the drive

Important:



- All work related to; Transport, Electrical Connections, pre-Service Checks and Maintenance of the Drive System must be carried out by qualified technicians. Incompetent work can lead to serious personal injury and / or damage.

Warning ! Special Notes appertaining to EC 2 – 15.1:



- The machine is very efficient and has a very low natural friction rate. The machine operates immediately after the brake has been released.



- At initial start-up, the motor must accelerate to normal speed and be run for min. 30 seconds, before a lower standby speed can be used! This is mandatory to warrant lubrication of the upper Hypoid bearing via the integral oil pump.

2.3 Warranty and Liability for the Escalator Drive

- The drive manufacturer only respects the warranty for operation and safety of the drive if it has been erected, maintained and operated according to the printed specifications supplied individually with each drive.
- The warranty is void if the parameters outlined in the operating, maintenance and control documentation have been exceeded.
- The customer is responsible for the qualified installation of the drive by certified personal.
- If damage or other problems are found on the Escalator or the drive, then the system must be disabled, otherwise the operator will be liable for all damage and injury appertaining thereto.
- An incorrect installation or incorrect use of the system, particularly with respect to the forbidden procedures outlined above, lead to a complete and absolute none liability of the drive manufacturer.
- This is also applicable, when after damage has occurred, the operator and/or the installer and /or the maintenance company cannot supply a fully documented list of procedures relating to the erection, testing, maintenance and SOP's of the escalator.

2.4 Dangers, that are associated with the Escalator Drive

Our escalator drives are at the cutting edge of technology and are delivered in a safe operating configuration. Any changes made by that customer or his operative that may affect the inherent safety of the escalator drive are not permissible

2.5 Instructions for Safe Use

If changes are observed during the service life of the machine, e.g. wear, ageing etc. then the machine should be serviced and the changes dealt with, according to this OMS Operating Manual. The gearbox may only be opened by OMS at our factory site; the warranty will otherwise become invalid.

2.6 Requirements and Qualification - Installation and Maintenance Personnel

All installations, maintenance work and repairs on the electrical parts of the machine may only be carried out by qualified personnel.

Qualified personnel are such who having studied for qualifications, or are experienced, or have received instruction and have the knowledge relating to the relevant standards and directives, safety regulations and local knowledge required to install and maintain the machine and to be able to recognise and assess the risks appertaining this machine. (Qualified Personnel, as defined in IEC 364).

OMS recommend that the technical personnel acquaint themselves with the machine before it is erected and taken into service. Please read the General- and Maintenance Instructions carefully, these instructions will aid you to find mistakes and technical deficiencies during the installation and operating life of the machine.

2.7 General Information

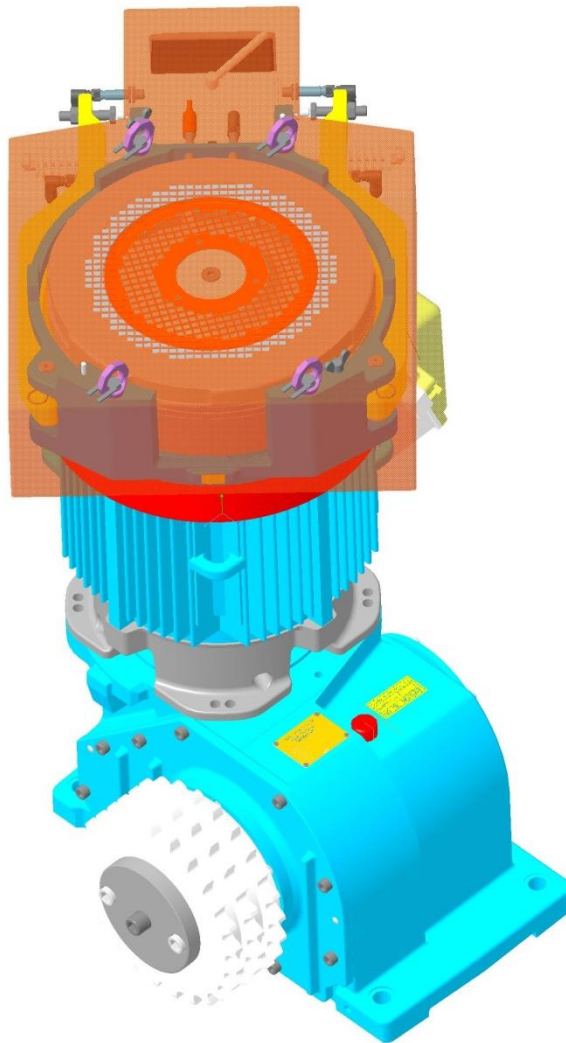
Should damage occur during transport, or should the machine appear during erection to have errors or be damaged, please contact OMS and inform us of the damage or error.

In case of damage caused by water, please contact OMS.

A decision as to whether the damage or error can be rectified on site or not, can first be taken after the customer has contacted OMS. OMS will then decide if the machine can be taken into service or whether the machine should be returned - with the original packaging – to OMS.

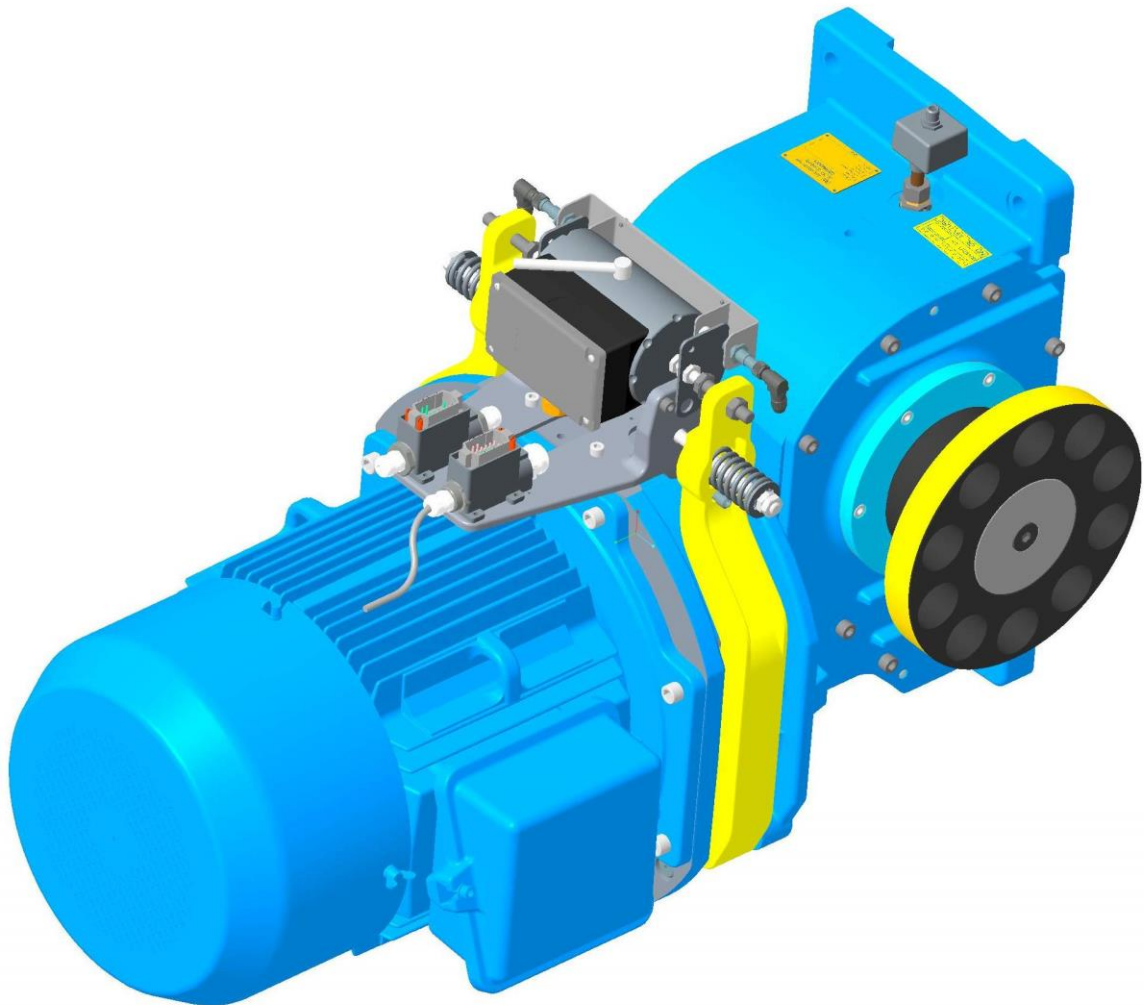
Please retain the original packaging until after the machine has been taken into service.

3 Installation



EC 2-15.1, Variant vertical, brake on top, shown is the version with output left

The machine is only allowed to install in the ordered position!



EC 2-15.1, Variant vertical, brake on top, shown is the version with output left

The machine is only allowed to install in the ordered position!

3.1 Assembly

Prior to installation, the intended frame or foundation upon which the escalator machines are to be installed must always have been calculated and proved adequate.
The frame must be rigid enough to withstand all and any bending and torsional forces that may occur during operation.

Fix the machine in the position as in the order using the four mounting holes in the gear unit base.
Using the through-holes in the support frame and bolts and nuts to ensure secure attachment is recommended.



Bolts: 4x M 20 quality 12.9
Torque: 550 Nm
Max. allowed unevenness of the surface : 0,05mm
If necessary, use shims to achieve the requires eveness.

3.2 Before commissioning:

Exchange the labelled sealing plug on the Gearbox Casing with the supplied Oil Dipstick or the supplied Air Bleeder Valve. Take care to observe the correct positioning of the Gearbox. Retain the sealing plug for possible future transportation of the Machine.

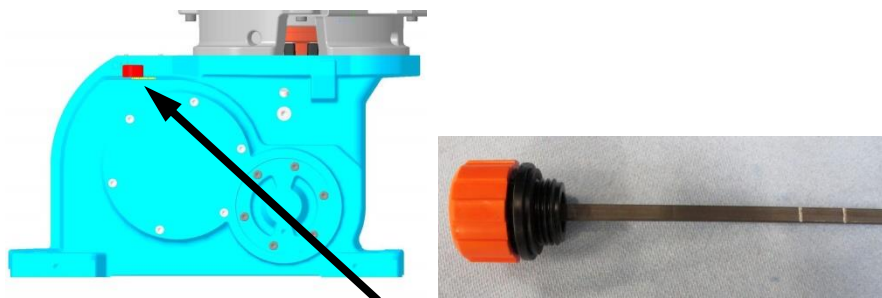


Fig. 1a, vertical

Screw plug

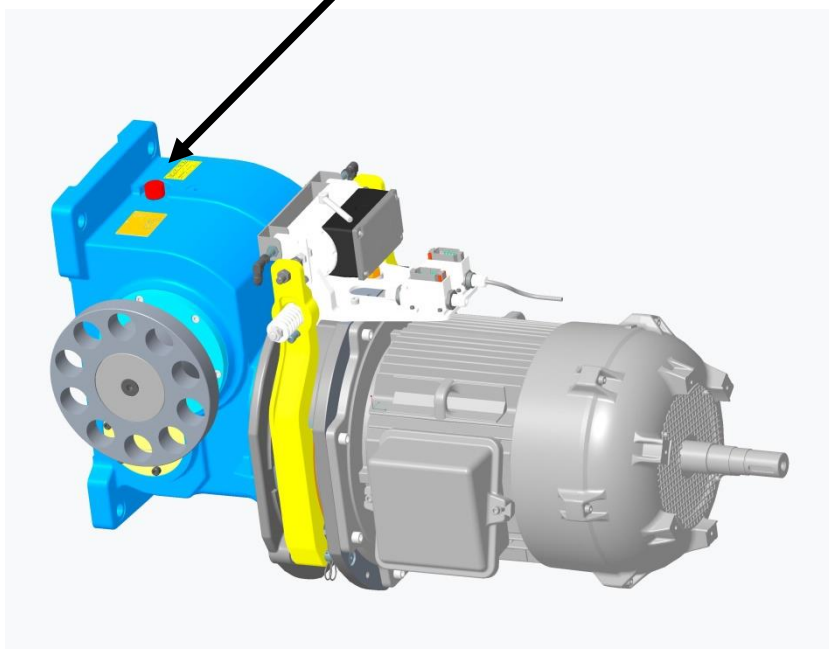


Fig. 1b, horizontal

Annotation:



The Gearbox has been sealed against oil leakage during transport. The Gearbox is airtight due to the sealing plug(s). If the Gearbox were to be taken into use with the sealing plug(s) in place, then excess pressure may build up in the Gearbox, eventually causing the Gearbox to leak – oil will be pressed out through the Shaft Gaskets.

The Oil Dipstick does not seal the gear box.

3.3 Special climate conditions

Temperature is falling below the dew point, especially:

-humid and hot & humid climate :

Motor heating is mandatory in every instance where condensation due to the temperature falling below the dew point is possible

Where the temperature in the machine room can reach $T \geq 45^{\circ}\text{C}$, 1 or 2 blowers in the step band are required to blow colder air from in between the step band Into the machine room

For temperature $T_{\text{amb}} \leq -20^{\circ}\text{C}$ heating of gear box (oil) is mandatory a thermostat controller is required

3.4 Electrical Connections



Only qualified personnel may open the Terminal Box on the Motor and connect the machine to the electrical supply. Only qualified personnel may carry out repairs and service work on the electrical parts of the machine.

Disconnect the main switch beforehand and secure the switch against unintended operation!

When you finish the work in the terminal box you have to close it! Before applying power and unscrewing the switch again. Always use isolated tools!

Important:

The electrical system for the machine has been designed according to: EN 60 204-1.

Procedure:

1. Motor:

The electrical connections should be connected as per the diagram in the Motor Terminal Box. (See also: Appendix, Electrical Connections). Should a different wiring exit position be required, the Terminal Box can be turned by loosening the internal fixing screws and repositioning the Terminal Box. Fasten the terminal box and tighten the inner screws with torque of 20 Nm.

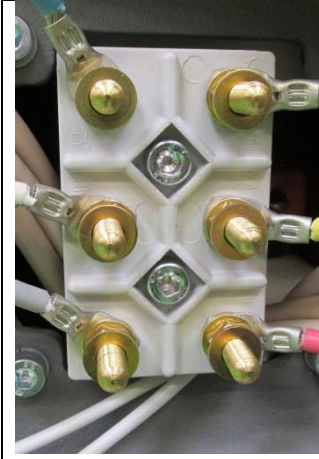
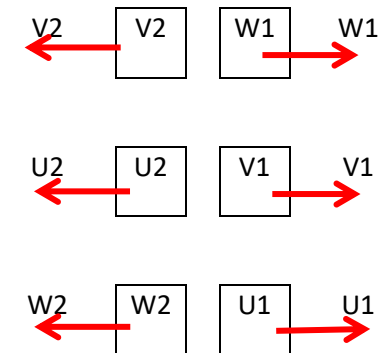
Please take care when adjusting the fine wiring of the temperature monitor switches..

1. Terminal diagram for E - motor

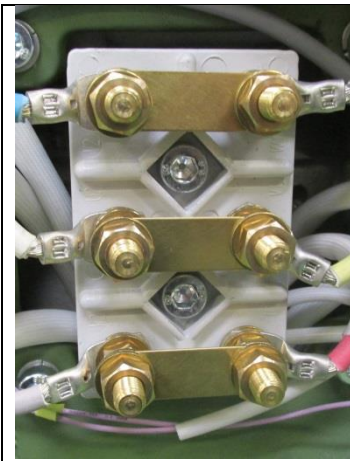
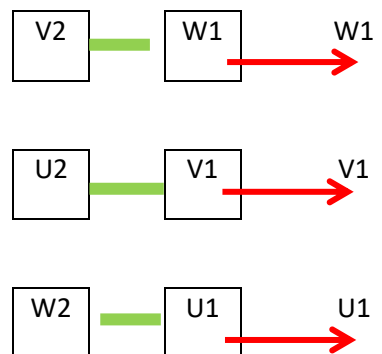
Terminal box:

The machine's motor must be wired for star/delta operation with a 7 way cable (3 + 3 +PE).

Connecting to mains voltage

		<p>Star-Delta-Connecting</p> <p>No jumper!</p> <p>Motor cable (consisting of U1 ; V1 ; W1 ; U2 ; V2 ; W2 and PE) connecting as follows :</p> <p>U1 to U1 ; V1 to V1 ; W1 to W1 ; U2 to U2 ; V2 to V2 ; W2 to W2 - PE(green-yellow) always first</p>
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Connecting to Frequency inverter

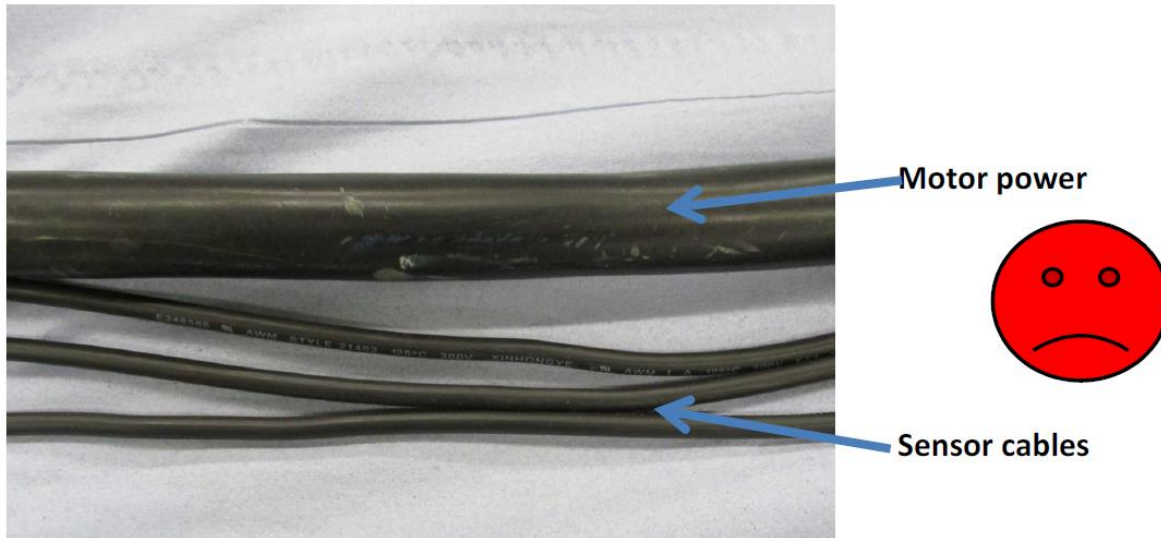
		<p>Delta-Connecting</p> <p>Jumper between U1-U2 and – V1-V2 and W1-W2!</p> <p>Motor cable (consisting of U1 ; V1 ; LW1 and PE) connecting as follows :</p> <p>U1 to U1 ; V1 to V1 ; W1 to W1 - PE(green-yellow) always first</p>
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Attention :

For Fi-operation the following must be observed:

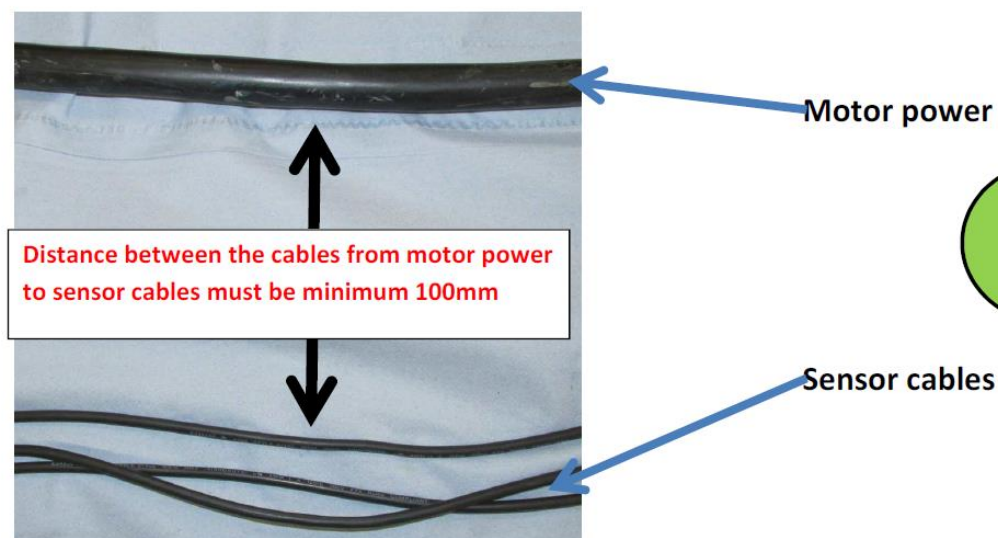
You have to use a filter between the Fi and the motor, which is limiting the increase speed of the voltage from the Fi to the motor connecting points to a limit of $dU/dt \leq 500V/ms$.

Higher increasing speed of the voltage can damage the motor windings (short circuit is possible).



Not allowed!

Capacitive coupling of transients from the motor power cable may destroy the sensors!



Optimized cable installation to protect the sensor cables against interference radiation (EMI)

Cables for the inductive sensors should use a cable screen

When using a frequency inverter : $\delta U / \delta t \leq 500V/\mu s$ is the max. allowable slew rate

Brake Solenoid:

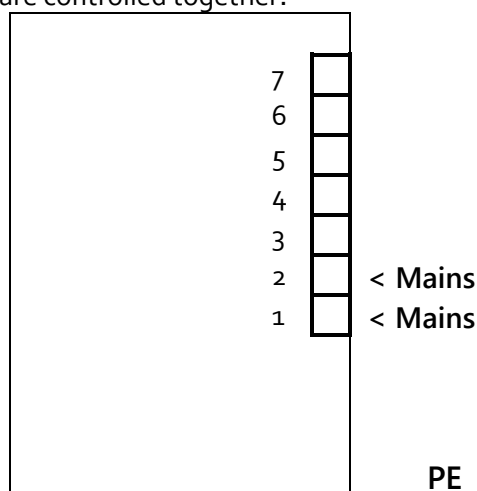
The brake solenoid (Two Circuit Double Stroke Expanding Magnet) must be connected according to the various requirements (see connection of the brake magnet to the power supply in the Appendix). Supply voltage generally 230V AC ($\pm 10\%$ max.)

- for a single circuit brake (O-31) both left and right solenoid circuits are controlled by one module.
- for a double circuit brake both sides of the solenoid (O-32) are controlled by an individual module. For earthquake unsafe regions the electrical connection of the two modules is made individually, too (O-33).

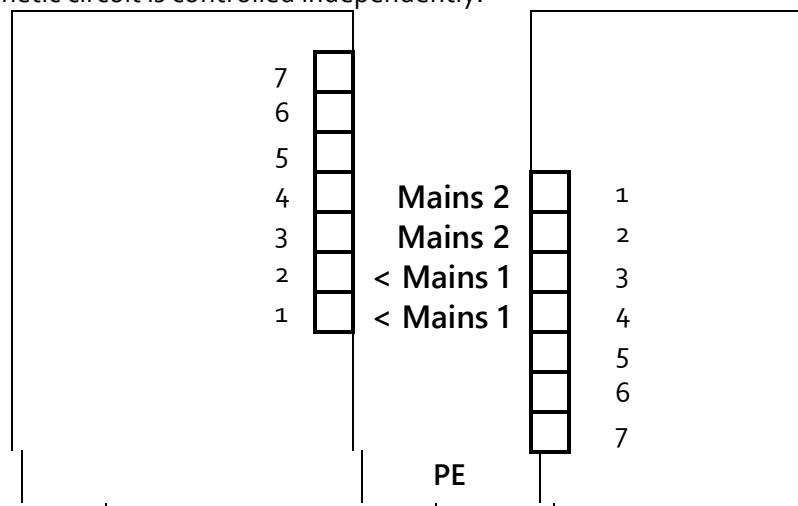
2. Mains supply connection for OMS brake magnet

TYP O 3X

Connection with one control switch;
Both magnetic circuits are controlled together.



Connection with two control switches;
Each magnetic circuit is controlled independently.



Each magnetic circuit is controlled independently.

Wiring of the sensor signals to the Wieland type connectors:

The pin assignment is agreed upon with the customer individually and is available to the customer accordingly.

3.5 Manufacturers Identification Plate

The following information can found on the manufacturers identification plate. For Example:

OMS ANTRIEBSTECHNIK	
36219 CORNBERG	
GERMANY	
Gear Type	EC 2 – 15.1
OMS Nr.	xxxx
Order No.::	xxxxxx
Delivery date	TT.MM.YYYY
Ratio:	xx,xx/1
Weight xxxkg	HP-No.:

4 Transport and Storage

4.1 Transport

All machines are inspected and passed prior to leaving our factory site.

When you accept delivery of your machine, please check the packaging for signs of exterior damage. If you find damage which appears to have been caused in transit, then please document this damage in the presence of the delivery agent. The machine may not be taken into service.

The Machine leaves the OMS factory in an Oil tight state. If the Machine has to be transported after having been installed, then the oil Dipstick and/or Air Bleeder Valve must be removed and replaced with the original OMS Oil Sealing Plugs. If the plugs are not available, please order new sealing plugs from OMS.

The total weight from the machine depends from the motor power, chain wheel or coupling flange

Variant vertical (brake drum belongs to the motor)

Gearbox weight separate : approx. 228 kg

Motor weight by BG 180 : approx. 300 kg

Variant horizontal (motor flange and brake drum are parts of the gear box)

Gear box weight separate : approx. 330kg

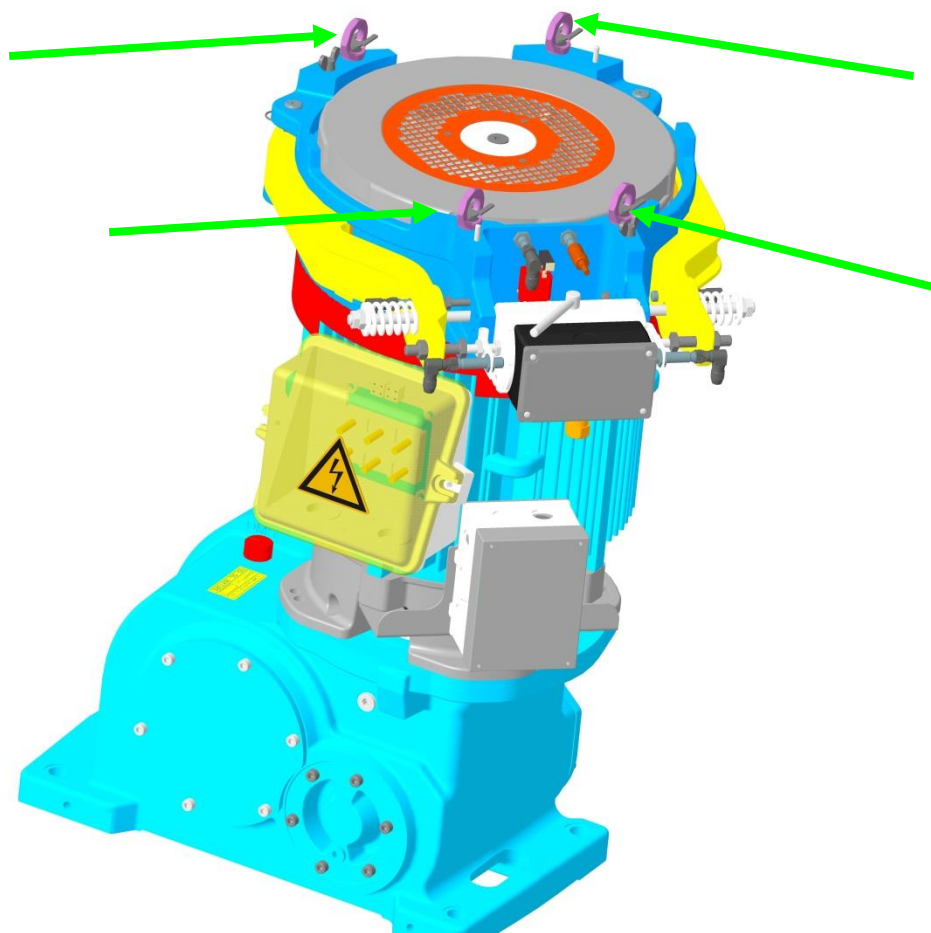
Motor weight by BG 225 : approx. 335kg

4.2 Lifting the machine

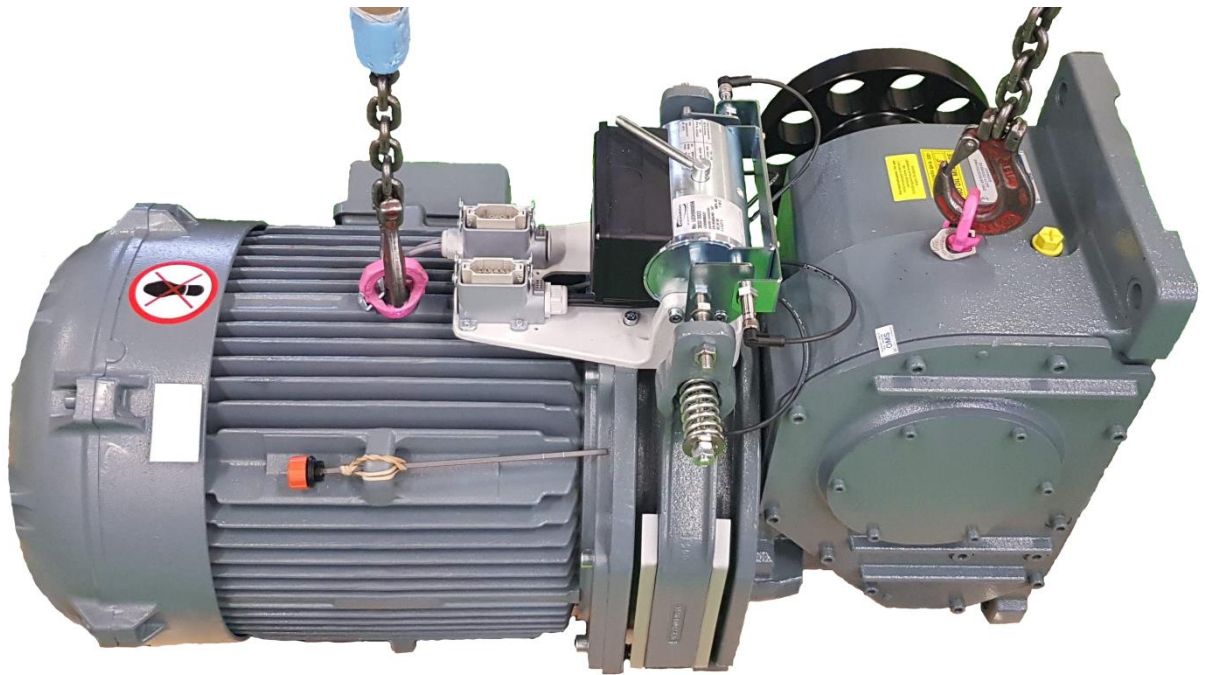


Always use the appropriate lifting tackle to lift the elevator machine, otherwise it may fall!
Only high strength eyebolts may be used to lift the gear unit!

Lifting the gear unit using the eyebolts on the motor is prohibited as these are ***only designed to carry the weight of the motor!***



Variant vertical : The motor housing is equipped with threaded holes for eyebolts (**4x M12**).



Variant horizontal : The gear housing is equipped with a threaded hole for an eyebolt screw (**1x M12**) and the motor housing is equipped with a thread hole for an eyebolt screw (**1x M16**).

4.3 Storage

The Machine must not be stored outside and may not be exposed to outdoor weather conditions. If it is planned to store the machine for a longer period of time before installing it, then the measure must be undertaken to ensure an adequate conservation of the machine

A) Up to 3 Months Storage:

No special storage requirements.

Before installing the machine, please note:

- Check all brake components (remove any slight rust film on the brake drum by braking).
- Turn the Machine a few times by hand, (to ensure that the Motor Bearings are evenly greased).

B) For storage up to 18 months:

If it is planned to store the machine for a longer period of time before installing it, then the Machine can be ordered with the optional conservation kit. The Machine is then treated in the OMS factory and packed in a humidity proof yellow plastic foil.

If this wasn't the case, then:

- At the latest, after six months Storage the Gearbox must be filled to the highest bolt hole with Oil.
- **Warning: Oil Type: See the yellow label; only use one sort of Oil.**
- After filling with Oil, the Machine must be packed in a humidity proof (yellow) foil: (this foil can be ordered from OMS)
- Dry Storage is required

Before the Machine is installed:

- **Reduce the Oil Level!** to the standard level (ref. Chapter 5.3.1)
- All the Brake Parts must be inspected (activate the Brake in case there should be light corrosive spots on the Brake Drum).
- Turn the Machine a few times by hand, (to ensure that the Motor Bearings are evenly greased).
- Install the Machine (Ref. Chapter 5. Preparing for use)

C) Longer than 18 Months Storage:

Optional factory conservation or procedures as in: **B) Up to 18 Months Storage**
Dry Storage is required.

Before the Machine is installed:

- Change all the Gearbox Oil. Take care to use the correct type of Oil and **observe the Oil Level** as outlined under: 5.3.1 and 5.3.2.
- All the Brake Parts must be inspected (activate the Brake in case there should be light corrosive spots on the Brake Drum)

- Turn the Machine a few times by hand, (to ensure that the Motor Bearings are evenly greased).
- If the Machine cannot be turned by hand, or the movement is stiff, then the Motor Bearings may have to be replaced.
- Install the Machine (Ref. Chapter 5. Preparing for use)



After a lengthy storage period, the manufactures warranty will have run out. If a further warranty period is required, then the Machine may be returned to OMS to be refurbished (new Bearings etc.), this will incur some expense for the customer.

Damage, that has been caused by negligible handling is not covered by our warranty specification.

5 Regular Use and Maintenance

The regulations for operation, service and inspection according to the valid safety regulations like EN 115 „Safety rules for the construction and installation of escalators and moving walks“ as well as all other applicable national and international regulations must be adhered to.

The operator is responsible for the safe installation, control and maintenance according to the applicable regulations and standards. Before beginning of the maintenance switch off the main switch and against inadvertent switching on secures!

For inspection, repair work and service and similar operations the access to the escalator or passenger conveyor must be restricted for unqualified persons, namely passengers by using appropriate provisions.

5.1 Recommended Routine Maintenance

<i>Item</i>	<i>Maintenance Frequency</i>	<i>Source</i>
Oil Level, Control	Every 3 Months	See 5.3.1
Oil change	Introduction - after 10.000 h.	See 5.3.2
Bearing, Check (Audible)	In accordance with the regular escalator maintenance schedule, at least annually.	
Brake, Check	In accordance with the regular escalator maintenance schedule, at least annually.	See 5.4
Wear of chain wheel	In accordance with the regular escalator maintenance schedule, at least annually	
Electrical Wiring and Connections, Check for wear and loose connections	In accordance with the regular escalator maintenance schedule, at least annually.	
Cleaning the machine surfaces	When required, at least annually.	
Safety installations and mechanisms, Check for presence and function	In accordance with the regular escalator maintenance schedule, at least annually.	

5.2 Error – Troubleshooting Errors

<i>Error</i>	<i>Possible Cause</i>	<i>Answer</i>
Unusual, none rhythmic operating noises	<ul style="list-style-type: none"> • Grinding / Scraping Bearings • Knocking / Jumping Gears • Regulator adjustment 	<ul style="list-style-type: none"> • Call Customer Service • Check the parameters of the Frequency Converter
Oil Leak	<ul style="list-style-type: none"> • Seal damaged 	<ul style="list-style-type: none"> • Call Customer Service
Brake does not switch	<ul style="list-style-type: none"> • Wiring is not OK 	<ul style="list-style-type: none"> • Check all electrical connections

5.3 Gearbox Oil

5.3.1 Controlling the Oil Level

Check the oil level at every maintenance opportunity, the oil level is checked using the Oil Dipstick.

- The Oil Level must lie between the marks.

5.3.2 Controlling the Oil Viscosity

However, we would like you to check the viscosity of the Gearbox Oil regularly.

Control:



- Check the oil viscosity by letting a drop of oil fall from the Dipstick onto a piece of white paper. Compare the colour of the oil with the Oil Check Card.

Interval:

1. after approx. 10.000 h.
2. after approx. 20.000 h.
3. ; 3..... + 5000h Intervals

Oil quantity :Variant vertical: 6 liters

Variant horizontal: 5,5 liters

The oil must be exchanged at least every 5 years of operation

Synthetic - Oil

1 new



2



OK

3



Fig. 5

- Oil colour straw yellow to mid brown: Oil good to still usable
- Oil colour equally tone 3: Oil change required
- Oil colour dark brown to black: Oil no longer usable → Oil change

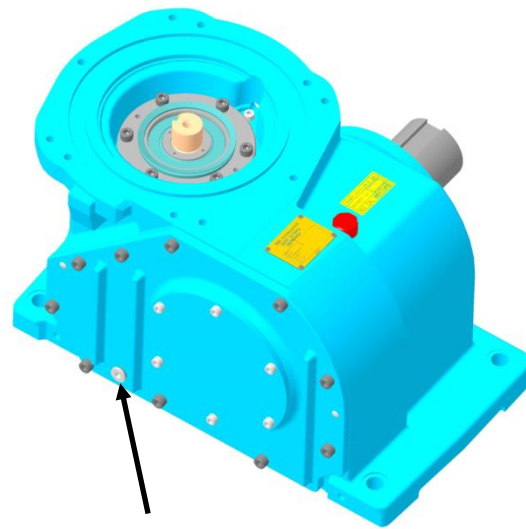


Fig.6. a, vertical

Oil drain plug

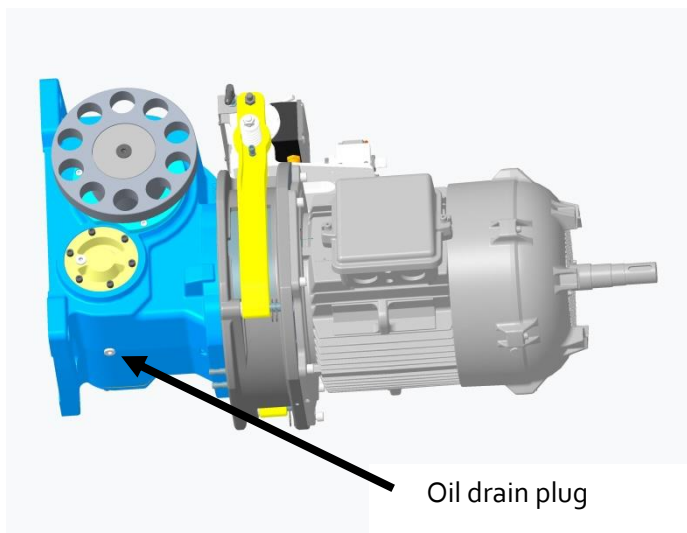


Abb. 6b, horizontal

Oil drain plug

General comments:

The loss of lubricating properties and the dark brown to black discoloration of the oil result after long maintenance intervals, due to particles or dirt collecting in the oil bath, due to moisture in the gear housing, high ambient temperature and the resulting temperature in the machine room. Please note: These conditions accelerate the end of the oil lubricating properties. Therefore: In case of doubt change the oil.

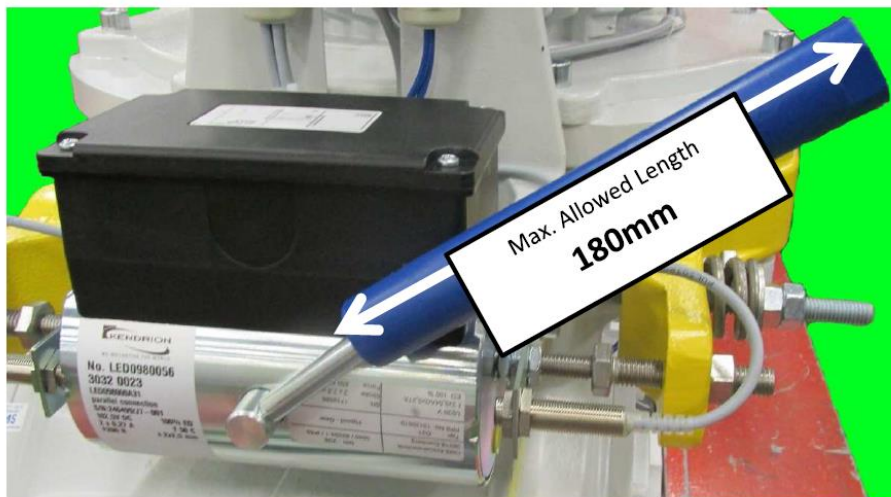


Any oil that escapes during an oil change or as the result of a leak must be removed immediately.

Used synthetic oil that has been replaced is special waste!

5.4 Brake Maintenance

5.4.1 Manual release lever



To open the brake it's allowed to put an extension tube onto the manual release lever.

The maximum allowed length of the extension tube is **180mm**.

The manual release lever is allowed to be actuated in **vertical direction. ONLY!**

The maximum allowed force for actuating the manual release lever with extension tube is **300N**.



5.4.2 Control: Movement of the Brake Lever

During the usual maintenance intervals the brake levers of the escalator equipment must be checked for easy movement. To do this, each individual brake lever must be opened as described under 4.4.6 (check the two brake circuits). The brake lever must close again with easy movement. If necessary the brake lever joint pin must be tightened (see 4.4.4) and regreased before being refitted.

5.4.3 Clearance and Brake Lining Wear

a) Air clearance :



The Clearance may not be less than 1,0 mm.
Should the clearance have been reduced to 1mm, then the clearance must be re-adjusted to max. 1,5 mm
(Ref. 5.4.4 and Fig. 9).

Procedure:

1. Force the solenoid plungers back and measure the clearance between the plungers and the pressure Bolts (Fig. 9).
2. Loosen the locking nut, turn the pressure bolt and re-tighten the locking nut. Clearance parameter $S=1,5\text{mm}$.
3. After adjusting the clearance open the brake mechanically using the air lever on the magnet and check electrically via the plant controls.

b) Brake Lining Wear:

The amount of brake lining wear determines the position of the brake lever. With increasing brake lining wear the brake lever approaches the inside of the magnet.

Control of Brake Lining Wear:

If the minimal allowed clearance has been achieved, then both brake levers must be exchanged against brake levers with new brake linings.

5.4.4 Adjusting the brake torque of one circuit braking system:

1. Loosen the locking nut M12 at the closed brakes threaded rod.
2. The pre set Brake Spring Pressure can be adjusted by turning the clamping nut. (Turning clockwise increases the pre set Pressure).

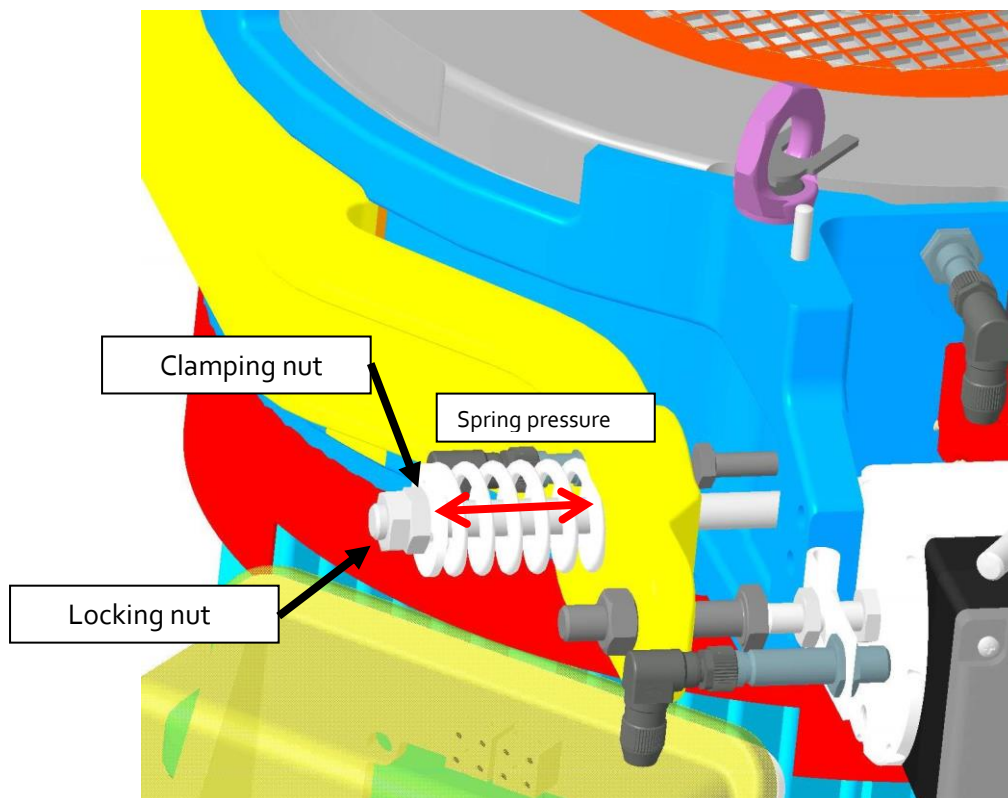


Fig. 8a, vertical

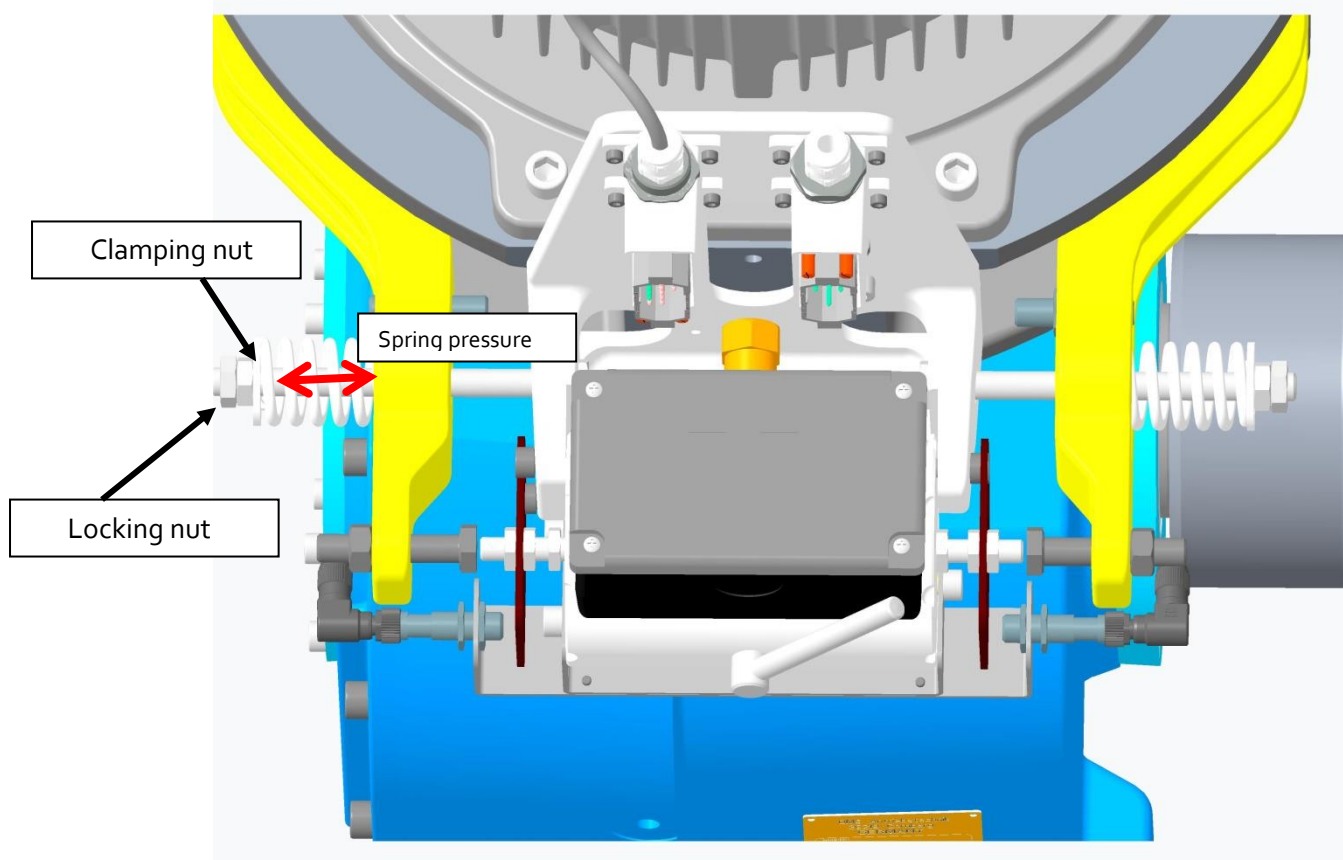


Fig. 8b, horizontal

3. Spring pressure preset (4mm), is adjusted during the field inspection.
4. -Loose the locking nut M12 and adjust the spring pressure
-Tighten the locking nut M12 with **T = 80Nm**.

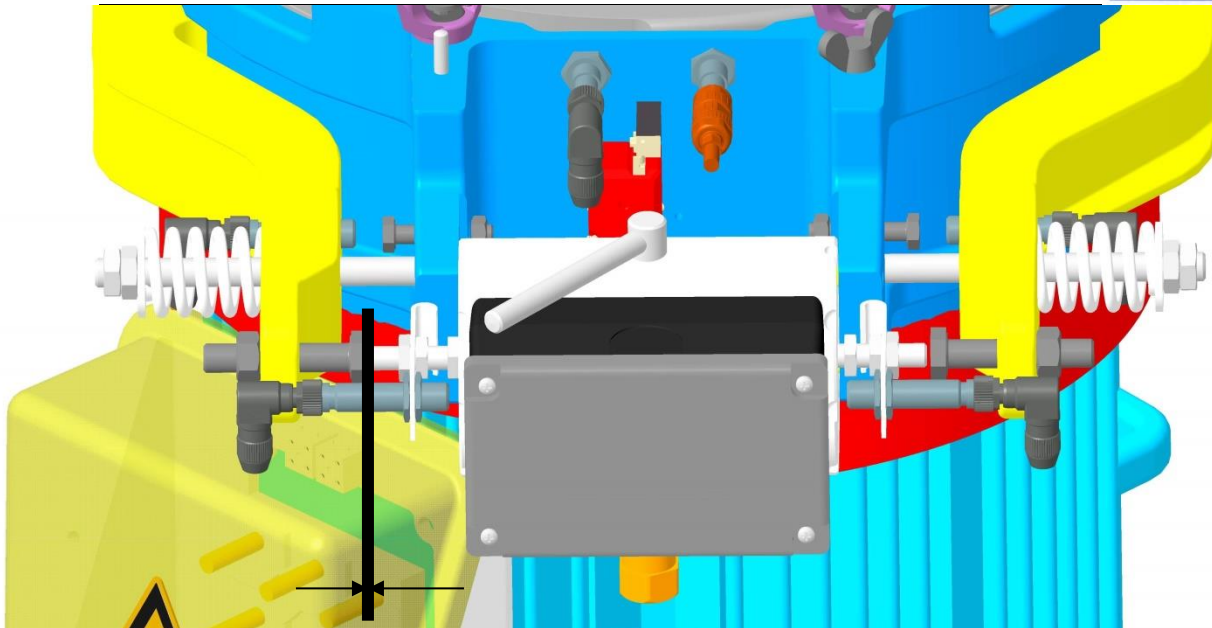


Fig. 9 adjusted 1,5mm

4. Check whether the brake magnet completely opens, mechanically with the central air lever and electrically by energizing the brake solenoid.

5.4.5 Adjusting the brake moment of the double circuit braking system:

1. Loosen the lock nut M12 on both bolts on the springs of the closed brakes.
2. for further adjustment refer to 5.4.4
Tighten the counter nut only if the brake is adjusted finally, torque = 25Nm!

5.4.6 Checking the two brake circuits:

Note: The procedure for the brake acceptance inspection within the scope of the escalator acceptance inspection is not described here in detail. Please note the required safety regulations.

a) If the machine is accessible

If the machine is accessible in an operations room, you can individually open each brake lever to the side with the aid of a tyre lever (heavy screwdriver) and check the simple holding torque of the respective other brake lever.

b) Separate electrical remote control: To check the simple holding torque of each braking circuit, the brake levers can be individually controlled separately by the two existing magnetic coils. This requires a Type O 32 or O 33.

5.5 Replacing the elastic coupling rubbers

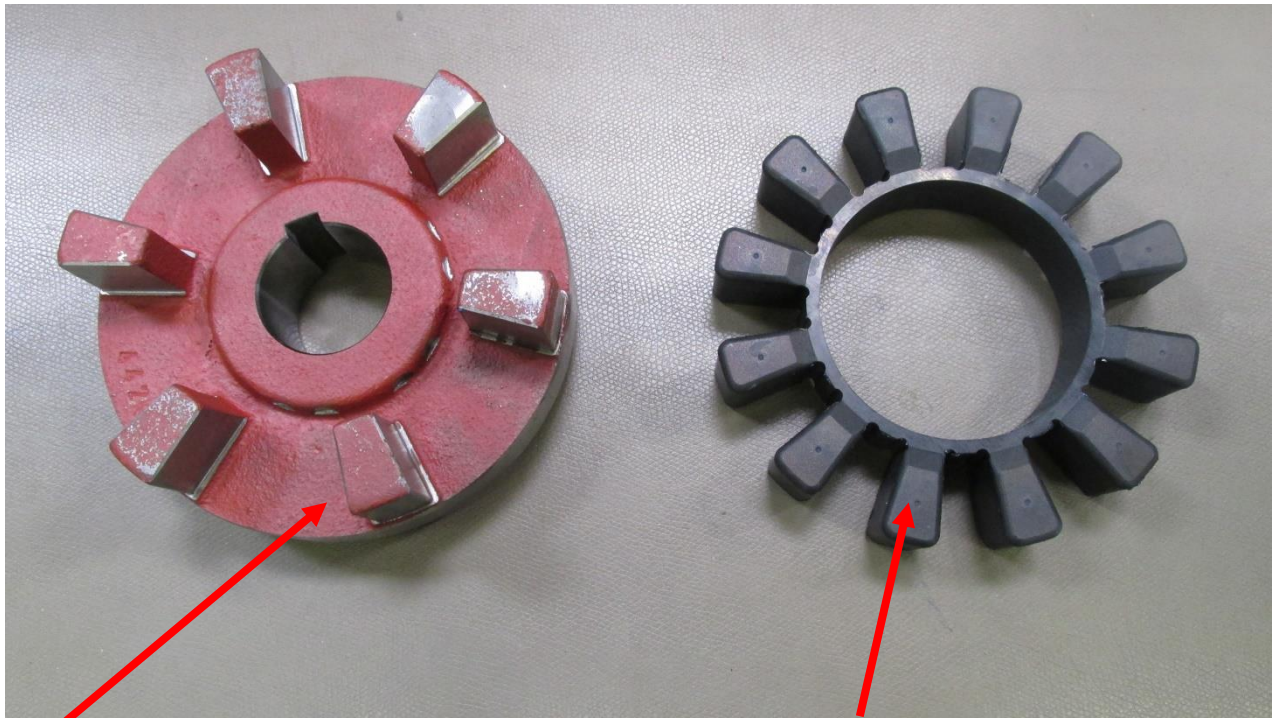
A coupling with an elastic coupling rubber is located between the motor and the gears. The coupling rubber is made of HNBR material, essentially moisture and heat resistant.

The abrasion of the elastic coupling rubber depends on climate and usage.

We recommend an inspection of the elastic coupling rubber after 2 years and the replacement after 4 years of usage.

Coupling :

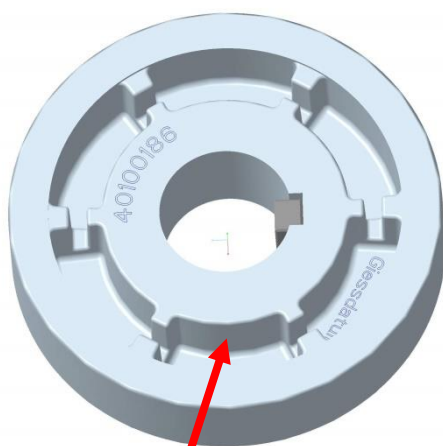
OMS-Coupling, claw flange



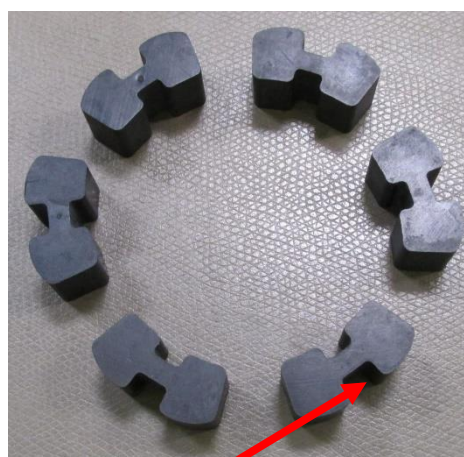
Coupling flange

Coupling buffer ring

OMS N-Eupex coupling



Coupling flange



Coupling buffer

Mounting the coupling / brake drum:

Insert the key into the driving shaft or check the correct mounting

Heat up the coupling flange to approx. 110°C

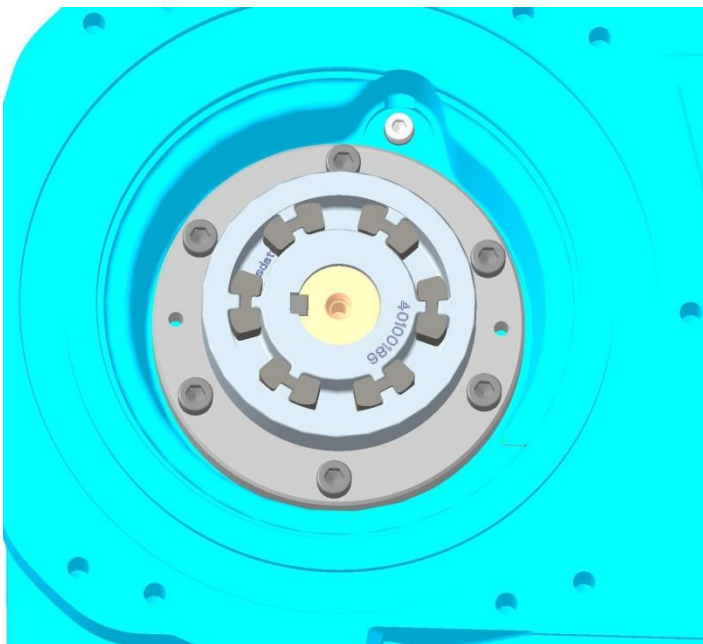
Put the heated flange onto the shaft and slide it down until stop (round nut)

After cooling down the flange insert the coupling buffers / ring

OMS-Coupling with claw flange :



OMS-N-Eupex coupling



5.6 Adjusting the braking function sensor

Sensor mounted on switching lug

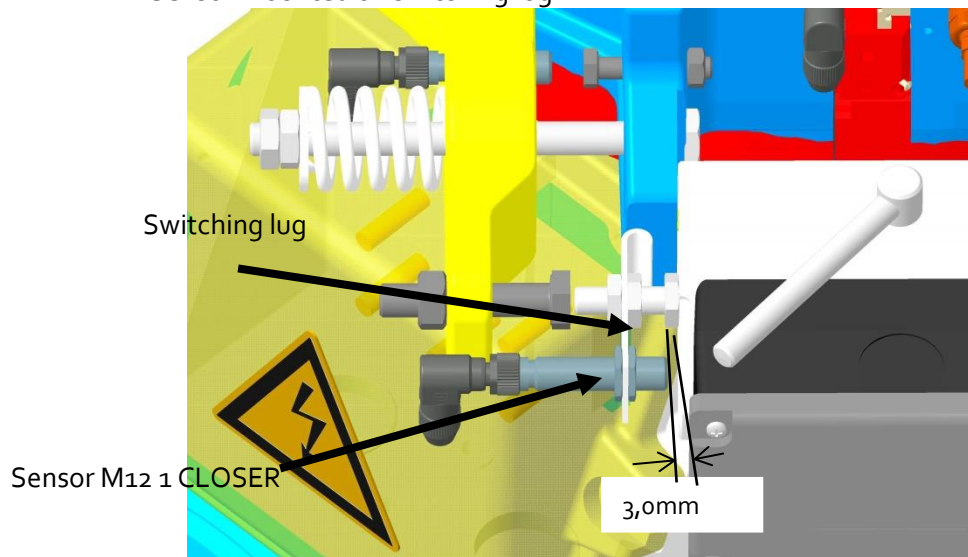
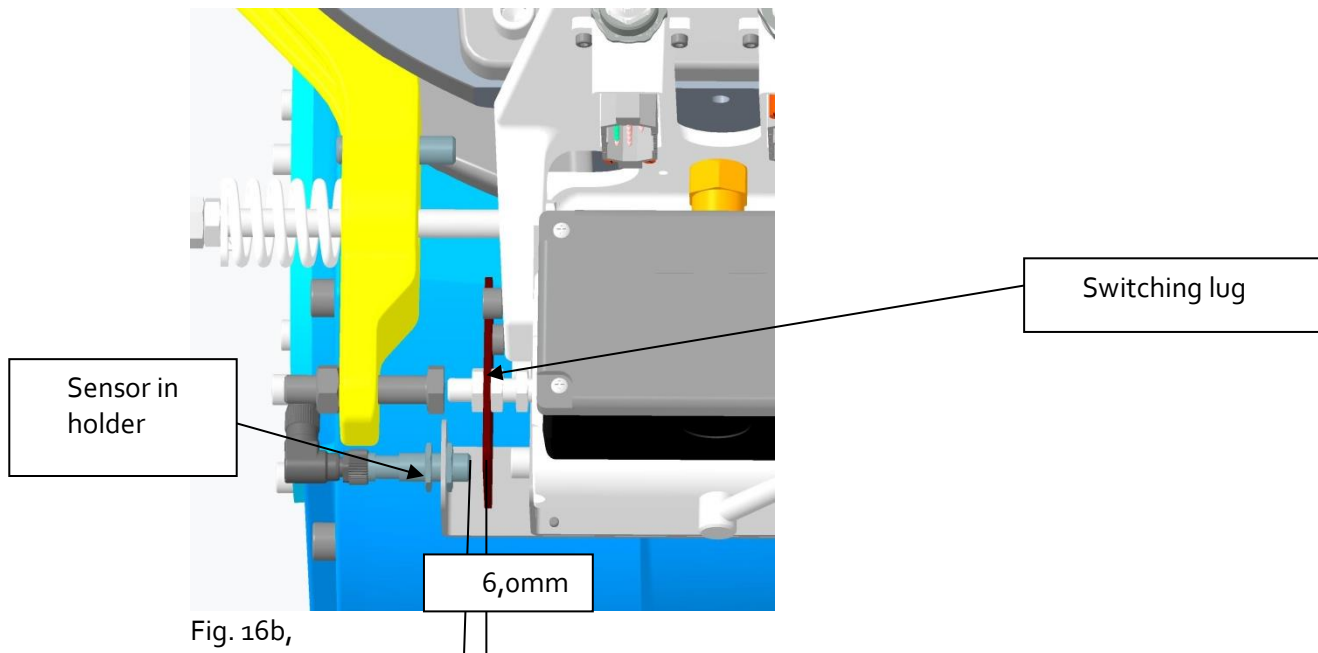


Fig. 16

- The switching lug must be fitted onto the thread of the brake magnet tappet.
- The sensor must be installed in the front drill hole with an air clearance of 3,0mm between the sensor and brake solenoid. The sensors must be adjusted while the brakes are closed.

Sensor mounted on fix holder



The switching lug is mounted on the thread of the solenoid plunger
Press in the plunger of the solenoid and adjust the gap between the sensor and the switching lug, 6,0mm

Inductive Brake Function Sensor Information:

Calculated switch clearance: 4,5mm

Standard Function – The electrical circuit is closed when the brake is open

5.7 Adjusting the brake lining wear control

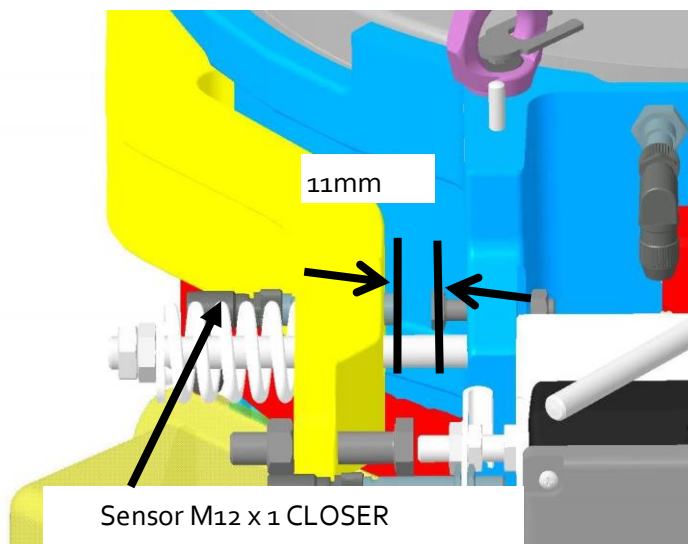


Fig. 17

The sensor for the brake lining wear monitoring is fitted in the drill hole of the brake lever.

Clearing 11mm : (end of life detection)

- A clearing of 11mm is set for new machines in the factory, and should not need to be adjusted. The sensor responds, if the brake lining at the front edge of the brake lever has reached a thickness of 1mm. The machine can still be used, but the brake linings are close to " end of life " and need to be replaced. Then the levers must be replaced.
- If it is necessary to replace the two brake levers the distance of 11mm must be checked and if necessary reset to 11mm for the new linings.

Information about the inductive brake lining wear sensor:

Calculated switch clearance: 4,5mm

Standard Function – electric circuit is closed when the brake lining is worn.

5.8 Adjustment of Non Reversal Device (NRD) and Speed Sensor

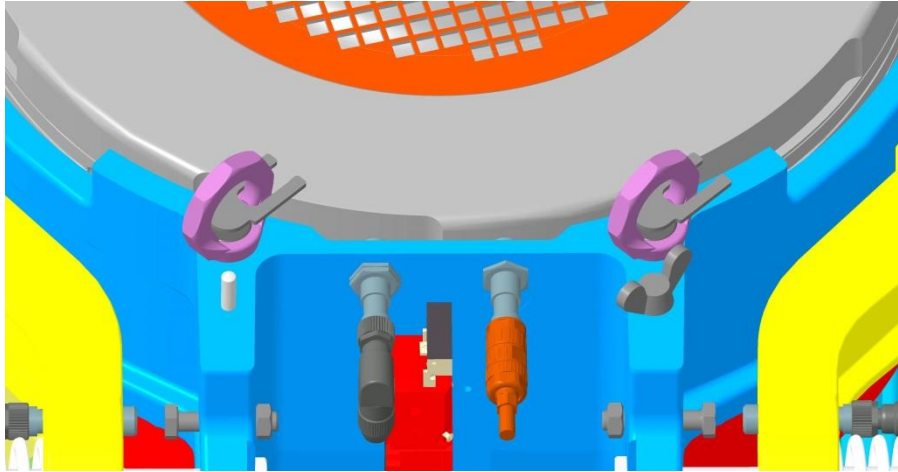


Fig. 18a, vertical

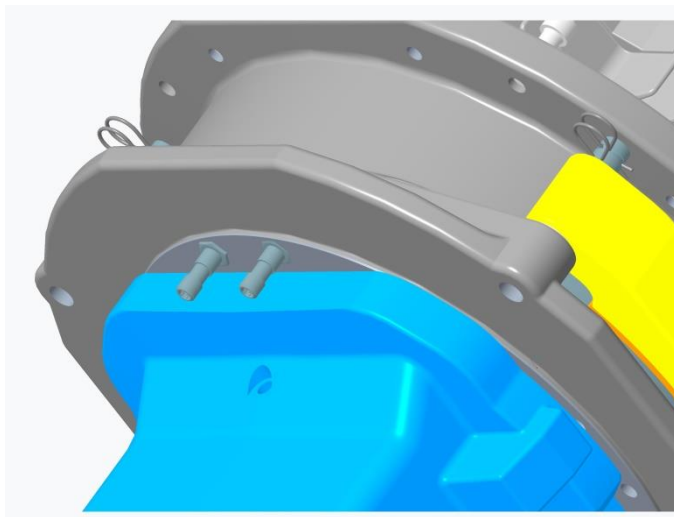


Fig. 18b, horizontal

1. Change sensor

- Disconnect wires from sensor
- Measure the distance to the brake drum
- Remove the sensor
- Screw in the new sensors
- Adjust the gap you measured before
- Function test and adjustment

6 Disassembly

6.1 Disassembly of the Escalator Drive

Remove the Oil Dipstick and replace it with the supplied Sealing Plug. The Gearbox is not sealed when the Oil Dipstick is fitted.

To disassemble the Escalator Drive carry through the same procedure as during the assembly – but in reverse order.

6.2 Scrapping the Escalator Drive

- The Gear Wheels, Axles and Bearings can be scrapped as standard steel scrap.
- The forged parts can also be scrapped as standard steel scrap.
- The Motor Winding and the Brake Unit are mainly brass and bronze and must be scrapped as such.
- Oil and Grease must be removed and disposed of accordingly.

7 Appendix

Technical Data OMS - Escalator Machine EC 2 – 15.1

Dimension sheet OMS – Escalator Machine EC 2 – 15.1

Safety Data Sheet Klbersynth GH 6-220

We shall be pleased to receive your questions, comments and suggestions:

OMS Antriebstechnik
Bahnhofstraße 12
36219 Cornberg

Tel.: 05650 – 969 – 0
Fax: 05650 – 969 - 100

E-Mail: info@oms-antrieb.de

Homepage: www.oms-antrieb.de

Gear :

input-torque, max. : $T_{max} = 150 \text{ Nm}$
 input revolution : $n = 1000, 1200 \text{ or } 1500 \text{ min}^{-1}$
 efficiency : $\eta_{nom} = \geq 96 \%$
 starting efficiency : $\eta_{start} = \geq 90 \%$
 average oil temperature rise : $T = 30 - 35 \text{ K above ambient temperature}$
 oil operating time up to : $t = 40.000 \text{ h}$
 oil quantity

toothing : life time durability
 bearing life time: 146.000 h
 with equivalent loading: $p_{equiv} = 0,78$ of nominal motor power
 ISO TS 16281:2008

noise pressure level (1000 min^{-1}) : $L_{pA} \leq 60 \text{ dB(A)}$ (25% load at $P_{max} 15 \text{ kW}$) /
 motor mains-operated
 dependent on performance and application
 gear ratios : $i = 19,96 / 25,30 / 31,58^*$
 for escalator speed : $v = 0,5 \text{ up to } 0,75 \text{ m/s}$

version : Single- and Duplex-units for chain-driving
 suitable for driving escalators and moving walkways

position at machine room : left or right side, vertical or horizontal
 (seen from the lower landing platform)

satisfied safety requirements : DIN EN 115-1:2017 and ASME A17

Motors :

3 phase asynchronous motor, 4 or 6-poles, IP 55,
 integrated fan, suitable for frequency inverter operation
 9,5 to 15 kW @ 1000 min^{-1}
 9,5 to 22,5 kW @ 1500 min^{-1}
 9,5 to 18,6 kW @ 1200 min^{-1}
 motor protection : bimetal-switch
 frequency: 50 Hz or 60 Hz
 type : frame size 160-225; type vertical v1
 motor-nominal torque : T_{nom} to 150 Nm

Brake:

braking torque : double circuit safety brake
 free adjustable up to $\leq 2,4^* T_{nom}$

Chain wheel:

version : duplex or triplex,
 size : $1 \frac{1}{4}"$, $1 \frac{1}{2}"$

standard : DIN 8187 / 8188 (ANSI)

Dimension:

see dimensioned drawing, total height A according to motor type

Machine monitoring:

optionally for: brake function monitor
 brake lining wear monitor
 vibration measuring sensors
 oil bath oil: temperature, level

Safety sensors :

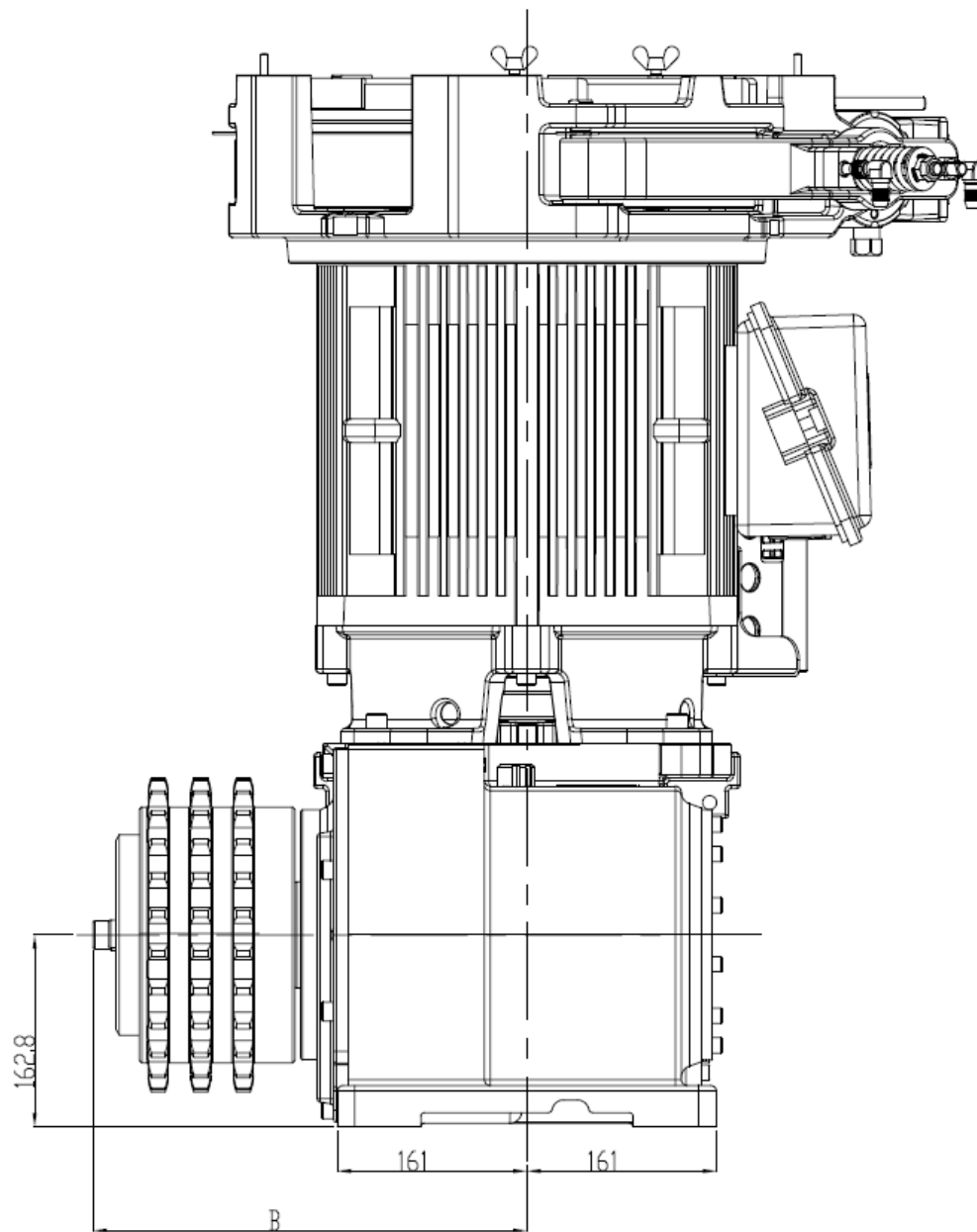
optionally for: machine none reversing detection (NDR)

*limited to 9-15kW

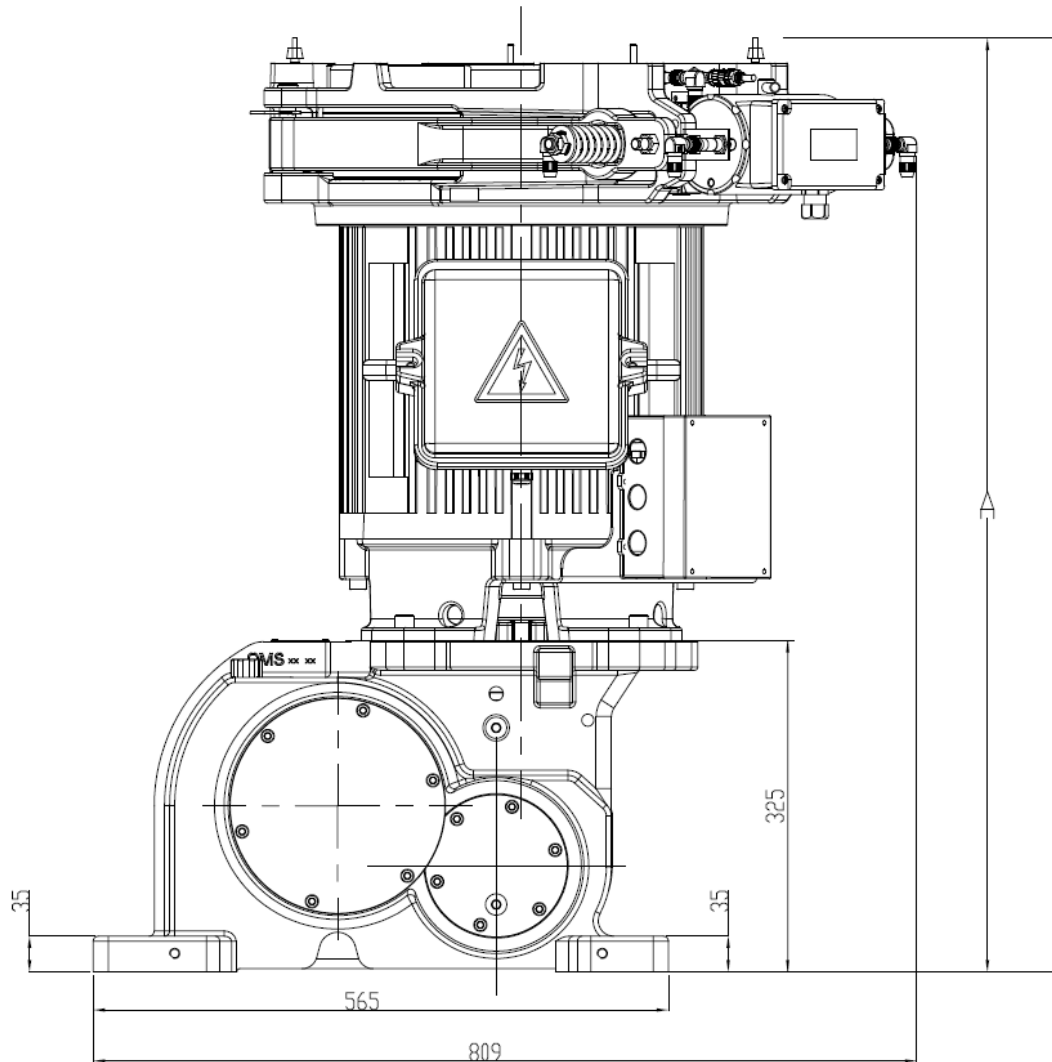
Dimensioned drawing EC 2-15.1

OMS Hypodrive		
Version :		EC 2-15.1
version left		7002 0131
version right		7002 0132
Version duplex		7002 0135
gear ratio		19,96 ; 25,30 ; 31,58
input - torque, max.	Nm	150
dimension:	mm	See dimension drawing
A,max. ***)		Depends from power, max 992mm
B		Depends from chain wheel
C		Single max 757mm
D		Depends from chain wheel
E		Duplex max 809mm

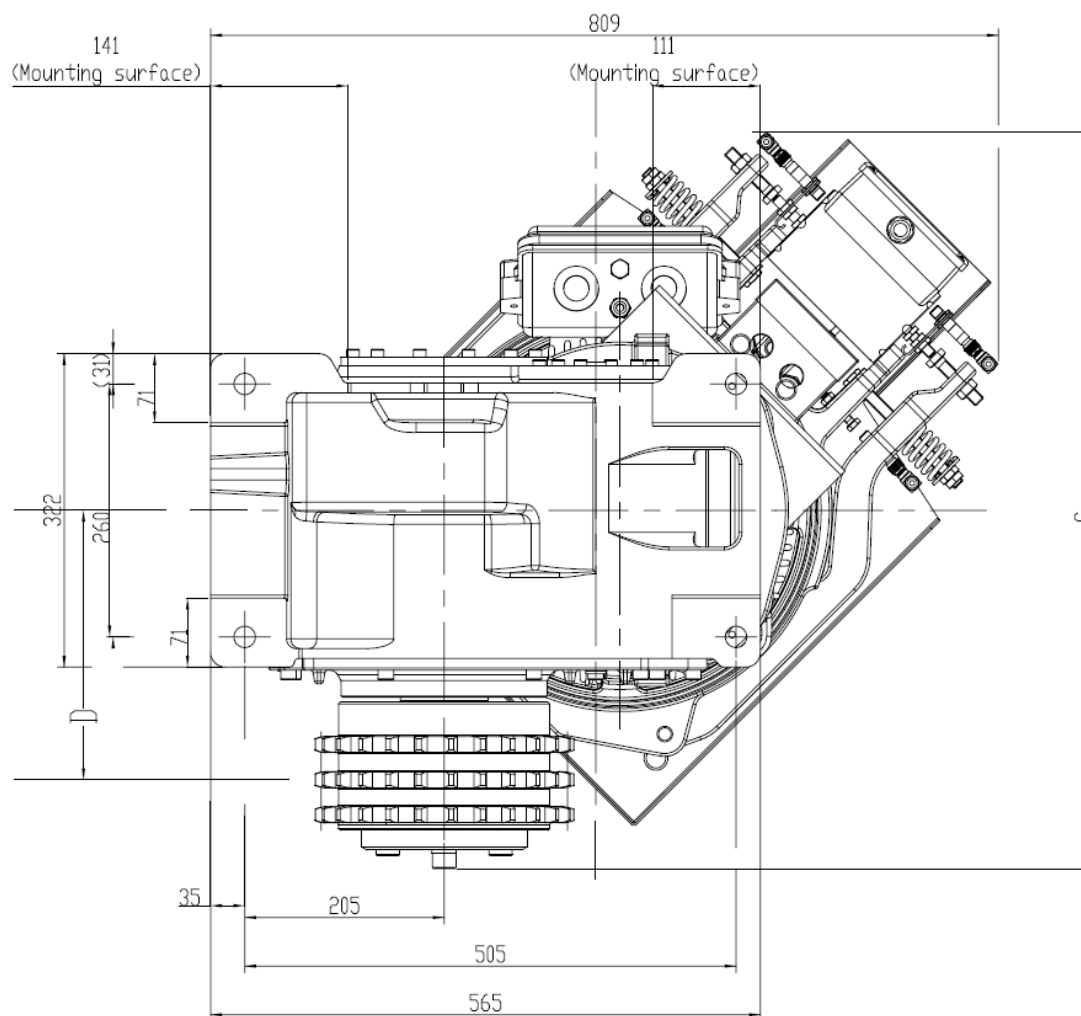
Left version



Front view

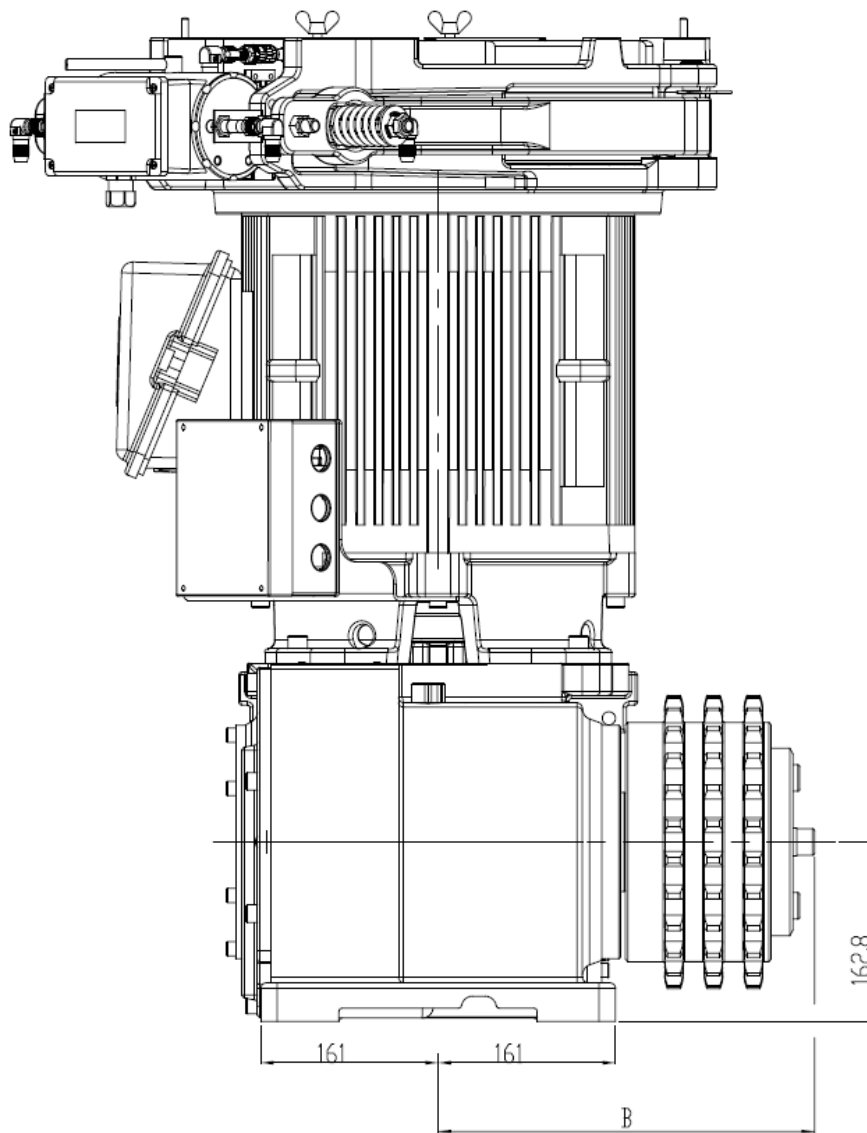


Side view

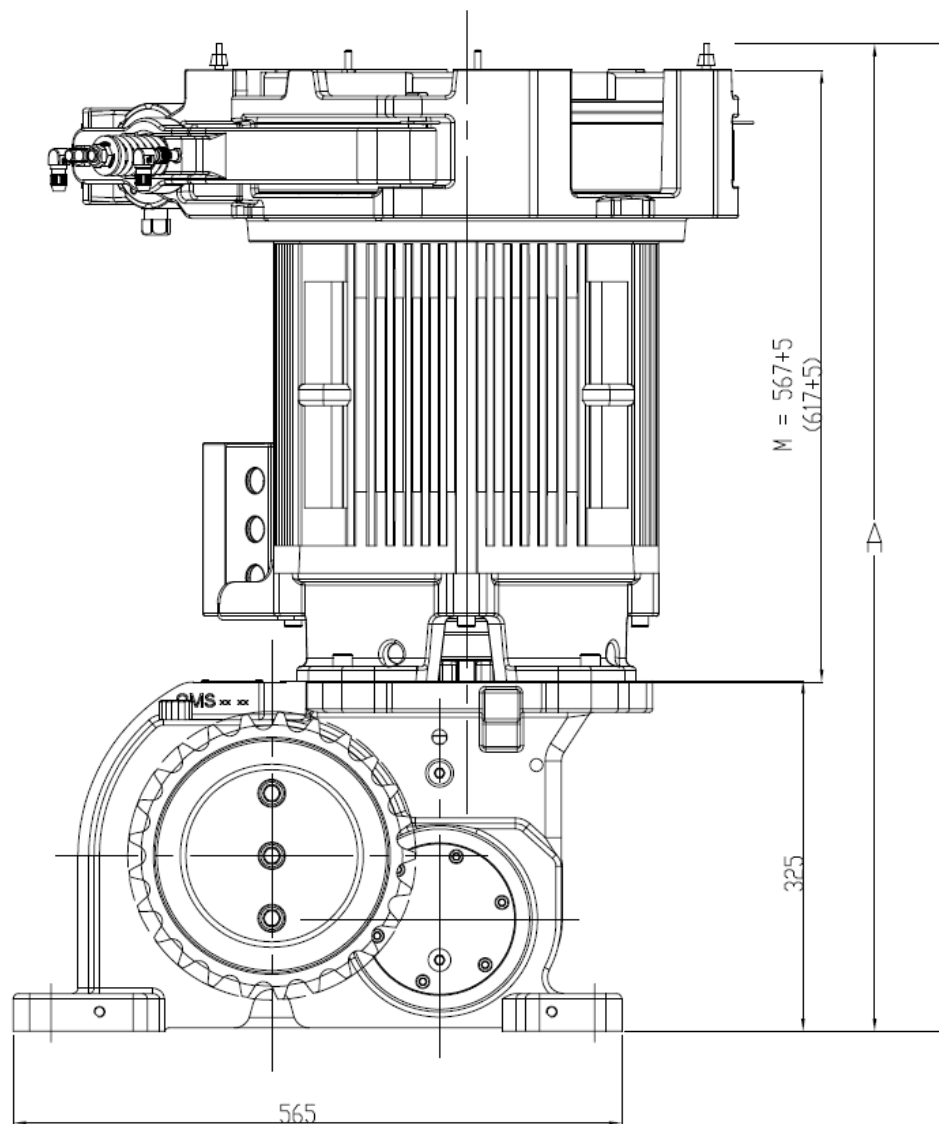


Bottom view

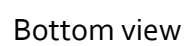
Right version



Back view



Side view



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version	Revision Date:	Date of last issue: 20.06.2018	Print Date:
1.5	13.08.2018	Date of first issue: 16.06.2015	17.08.2018

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name : Klübersynth GH 6-220

Article-No. : 012161

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Sub-
stance/Mixture : Lubricating oil

Recommended restrictions
on use : Restricted to professional users.

1.3 Details of the supplier of the safety data sheet

Company : Klüber Lubrication München
Geisenhausenerstr. 7
81379 München
Deutschland
Tel: +49 (0) 89 7876 0
Fax: +49 (0) 89 7876 333
info@klueber.com

E-mail address of person
responsible for the SDS : mcm@klueber.com
Material Compliance Management

National contact : Klüber Lubrication Deutschland
Geisenhausenerstraße 7
81379 München
Deutschland
Tel.: +49 89 7876 0
Fax: +49 89 7876 565
customer.service.de@klueber.com
www.klueber.com

1.4 Emergency telephone number

Emergency telephone
number : +49 89 7876 700 (24 hrs)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Chronic aquatic toxicity, Category 3 : H412: Harmful to aquatic life with long lasting effects.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard statements : H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P273 Avoid release to the environment.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : polyalkylene glycol oil

Hazardous components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration limits M-Factor Notes	Concentration (% w/w)
bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine	15721-78-5 239-816-9 01-2119930672-39-XXXX	Aquatic Chronic3; H412		>= 1 - < 2,5
diphenyl tolyl phosphate	26444-49-5 247-693-8	Aquatic Acute1; H400 Aquatic Chronic1; H410	M-Factor: 1/1	>= 0,25 - < 1
triphenyl phosphate	115-86-6 204-112-2	Aquatic Acute1; H400 Aquatic Chronic2; H411	M-Factor: 1/1	>= 0,25 - < 1
bis(methylphenyl)phenyl phosphate	26446-73-1	Aquatic Acute1; H400	M-Factor: 1/1	>= 0,25 - < 1

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

	247-708-8	Aquatic Chronic1; H410		
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For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- | | |
|-------------------------|--|
| If inhaled | : Remove person to fresh air. If signs/symptoms continue, get medical attention.
Keep patient warm and at rest.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
If breathing is irregular or stopped, administer artificial respiration. |
| In case of skin contact | : Remove contaminated clothing. If irritation develops, get medical attention.
In case of contact, immediately flush skin with plenty of water.
Wash clothing before reuse.
Thoroughly clean shoes before reuse. |
| In case of eye contact | : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes.
If eye irritation persists, consult a specialist. |
| If swallowed | : Move the victim to fresh air.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
Do NOT induce vomiting.
Rinse mouth with water.
Never give anything by mouth to an unconscious person. |

4.2 Most important symptoms and effects, both acute and delayed

- | | |
|----------|-----------------------------|
| Symptoms | : No information available. |
| Risks | : None known. |

4.3 Indication of any immediate medical attention and special treatment needed

- | | |
|-----------|-----------------------------|
| Treatment | : No information available. |
|-----------|-----------------------------|

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version	Revision Date:	Date of last issue: 20.06.2018	Print Date:
1.5	13.08.2018	Date of first issue: 16.06.2015	17.08.2018

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Fire may cause evolution of:
Carbon oxides
Nitrogen oxides (NO_x)

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. In the case of respirable dust and/or fumes, use self-contained breathing apparatus. Exposure to decomposition products may be a hazard to health.

Further information : Standard procedure for chemical fires. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Evacuate personnel to safe areas.
Use personal protective equipment.
Ensure adequate ventilation.
Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions : Do not allow contact with soil, surface or ground water.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Advice on safe handling : Avoid inhalation of vapour or mist.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Wash hands and face before breaks and immediately after handling the product.
Do not ingest.
Do not repack.
Do not re-use empty containers.
These safety instructions also apply to empty packaging which may still contain product residues.
Keep container closed when not in use.
- Hygiene measures : Wash face, hands and any exposed skin thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Store in original container. Keep container closed when not in use. Keep in a dry, cool and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in accordance with the particular national regulations. Keep in properly labelled containers.
- Storage class (TRGS 510) : 10, Combustible liquids

7.3 Specific end use(s)

- Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine	Workers	Inhalation	Long-term systemic effects	13,127 mg/m ³

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

	Workers	Inhalation	Acute systemic effects	39,38 mg/m ³
	Workers	Skin contact	Long-term systemic effects	0,938 mg/kg
	Workers	Skin contact	Acute systemic effects	2,81 mg/kg
pentaerythritol tetrakis(3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate)	Workers	Inhalation	Long-term systemic effects	9,5 mg/m ³
	Workers	Skin contact	Long-term systemic effects	27 mg/kg
triphenyl phosphate	Workers	Inhalation	Long-term systemic effects	5,2 mg/m ³
	Workers	Skin contact	Long-term systemic effects	5,55 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine	Fresh water	0 mg/l
Remarks:	No data available	
pentaerythritol tetrakis(3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate)	Fresh water	0,086 mg/l
	Marine water	0,0086 mg/l
triphenyl phosphate	Fresh water	0,004 mg/l
	Intermittent use/release	0,003 mg/l
	Marine water	0,0004 mg/l
	Sewage treatment plant	5 mg/l
	Fresh water sediment	1,103 mg/kg dry weight (d.w.)
	Marine sediment	0,11 mg/kg dry weight (d.w.)
	Soil	0,218 mg/kg dry weight (d.w.)
	Oral	16,667 mg/kg

8.2 Exposure controls

Engineering measures

Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety glasses with side-shields conforming to EN166

Hand protection

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

Material	: Nitrile rubber
Protective index	: Class 1
Remarks	: For prolonged or repeated contact use protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case.
Respiratory protection	: Not required; except in case of aerosol formation.
Filter type	: Filter type A-P
Protective measures	: The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	: liquid
Colour	: yellow
Odour	: characteristic
Odour Threshold	: No data available
pH	: No data available
Melting point/range	: No data available
Boiling point/boiling range	: No data available
Flash point	: ≥ 250 °C Method: ISO 2592, open cup
Evaporation rate	: No data available
Flammability (solid, gas)	: Not applicable
Upper explosion limit	: No data available

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

Lower explosion limit	: No data available
Vapour pressure	: < 0,001 hPa (20 °C)
Relative vapour density	: No data available
Density	: 1,05 g/cm ³ (20 °C)
Bulk density	: No data available
Solubility(ies)	
Water solubility	: partly soluble
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	
Viscosity, dynamic	: No data available
Viscosity, kinematic	: 220 mm ² /s (40 °C)
Explosive properties	: Not explosive
Oxidizing properties	: No data available

9.2 Other information

Sublimation point	: No data available
Self-ignition	: No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No hazards to be specially mentioned.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	: No dangerous reaction known under conditions of normal use.
---------------------	---

10.4 Conditions to avoid

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

Conditions to avoid : No conditions to be specially mentioned.

10.5 Incompatible materials

Materials to avoid : No materials to be especially mentioned.

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity : Remarks: This information is not available.

Acute inhalation toxicity : Remarks: This information is not available.

Acute dermal toxicity : Remarks: This information is not available.

Components:

bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine:

Acute oral toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 423
GLP: yes
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 402
GLP: yes
Assessment: The substance or mixture has no acute dermal toxicity

diphenyl tolyl phosphate:

Acute oral toxicity : LD50 (Rat): > 5.000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 5.000 mg/kg

triphenyl phosphate:

Acute oral toxicity : LD50 (Rat): > 20.000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 200 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version	Revision Date:	Date of last issue:	Print Date:
1.5	13.08.2018	20.06.2018 Date of first issue: 16.06.2015	17.08.2018

Method: OECD Test Guideline 403

Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 10.000 mg/kg
Method: OECD Test Guideline 402

bis(methylphenyl) phenyl phosphate:

Acute oral toxicity : LD50 (Rat, male and female): > 5.000 mg/kg

Acute dermal toxicity : LD50 (Rat, male and female): > 5.000 mg/kg

Skin corrosion/irritation

Product:

Remarks: This information is not available.

Components:

bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine:

Species: Rabbit

Assessment: No skin irritation

Method: OECD Test Guideline 404

Result: No skin irritation

GLP: yes

diphenyl tolyl phosphate:

Species: Rabbit

Assessment: No skin irritation

Result: No skin irritation

triphenyl phosphate:

Species: Rabbit

Assessment: No skin irritation

Method: OECD Test Guideline 404

Result: No skin irritation

GLP: yes

bis(methylphenyl) phenyl phosphate:

Assessment: No skin irritation

Serious eye damage/eye irritation

Product:

Remarks: This information is not available.



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015
----------------	------------------------------	---

Print Date: 17.08.2018

Components:

bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine:

Species: Rabbit
Assessment: No eye irritation
Method: OECD Test Guideline 405
Result: No eye irritation
GLP: yes

diphenyl tolyl phosphate:

Species: Rabbit
Assessment: No eye irritation
Result: No eye irritation

triphenyl phosphate:

Species: Rabbit
Assessment: No eye irritation
Method: OECD Test Guideline 405
Result: No eye irritation
GLP: yes

bis(methylphenyl) phenyl phosphate:

Assessment: No eye irritation

Respiratory or skin sensitisation

Product:

Remarks: This information is not available.

Components:

bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine:

Species: Guinea pig
Assessment: Did not cause sensitisation on laboratory animals.
Result: Did not cause sensitisation on laboratory animals.

diphenyl tolyl phosphate:

Assessment: Does not cause skin sensitisation.
Result: Does not cause skin sensitisation.

triphenyl phosphate:

Species: Guinea pig
Assessment: Does not cause skin sensitisation.
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
GLP: yes

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

//
KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

bis(methylphenyl) phenyl phosphate:

Result: Does not cause skin sensitisation.

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Remarks: No data available

Genotoxicity in vivo : Remarks: No data available

Components:

triphenyl phosphate:

Genotoxicity in vitro : Test Type: reverse mutation assay
Species: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Germ cell mutagenicity- Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Product:

Remarks: No data available

Components:

triphenyl phosphate:

Carcinogenicity - Assessment : No evidence of carcinogenicity in animal studies.

Reproductive toxicity

Product:

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

Components:

triphenyl phosphate:

Effects on foetal development : Species: Rabbit
Application Route: Oral
General Toxicity Maternal: NOAEL: >= 200 mg/kg body weight

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

Teratogenicity: NOAEL: ≥ 200 mg/kg body weight
Developmental Toxicity: NOAEL: ≥ 200 mg/kg body weight
Embryo-foetal toxicity: NOAEL: ≥ 200 mg/kg body weight
Method: OECD Test Guideline 414
Result: No effects on fertility and early embryonic development were detected.

Reproductive toxicity - Assessment : No toxicity to reproduction
No effects on or via lactation

Repeated dose toxicity

Product:

Remarks: This information is not available.

Components:

triphenyl phosphate:

Species: Rat
NOAEL: 105 mg/kg
Application Route: Oral
Method: OECD Test Guideline 408

Species: Rabbit
NOAEL: 1.000 mg/kg
Application Route: Dermal

Aspiration toxicity

Product:

This information is not available.

Components:

triphenyl phosphate:

No aspiration toxicity classification

Further information

Product:

Remarks: Information given is based on data on the components and the toxicology of similar products.

Components:

diphenyl tolyl phosphate:

Remarks: Information given is based on data on the components and the toxicology of similar products.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : Remarks: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to microorganisms : Remarks: No data available

Components:

bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine:

Ecotoxicology Assessment

Acute aquatic toxicity : Harmful to aquatic life.

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

diphenyl tolyl phosphate:

Toxicity to fish : LC50 (*Oryzias latipes* (Orange-red killifish)): 1,3 mg/l
Exposure time: 96 h

Toxicity to algae : ErC50 (*Desmodesmus subspicatus* (green algae)): 0,55 mg/l
Exposure time: 72 h
Test Type: Growth inhibition

M-Factor (Acute aquatic toxicity) : 1

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0,12 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)

M-Factor (Chronic aquatic toxicity) : 1

Ecotoxicology Assessment

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

triphenyl phosphate:



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0,4 mg/l
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0,36 mg/l
Exposure time: 48 h
Test Type: static test
- Toxicity to algae : NOEC (Pseudokirchneriella subcapitata (green algae)): 0,25 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201

EL10 (Pseudokirchneriella subcapitata (green algae)): 0,25 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201
- M-Factor (Acute aquatic toxicity) : 1
- Toxicity to microorganisms : NOEC (activated sludge): 100 mg/l
Exposure time: 28 h
- Toxicity to fish (Chronic toxicity) : NOEC: 0,037 mg/l
Exposure time: 30 d
Species: Oncorhynchus mykiss (rainbow trout)
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0,254 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211
- M-Factor (Chronic aquatic toxicity) : 1
- bis(methylphenyl) phenyl phosphate:**
- Toxicity to fish : LC50 (Oryzias latipes (Orange-red killifish)): 1,3 mg/l
Exposure time: 96 h
- Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 0,27 mg/l
Exposure time: 72 h
Test Type: Growth inhibition
- M-Factor (Acute aquatic toxicity) : 1
- Toxicity to microorganisms : EC50 (Bacteria): > 10.000 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50: 0,31 mg/l
Exposure time: 21 d

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

ic toxicity) Species: Daphnia magna (Water flea)

NOEC: 0,12 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

M-Factor (Chronic aquatic toxicity) : 1

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Physico-chemical removability : Remarks: No data available

Components:

bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine:

Biodegradability : Test Type: aerobic
Result: Not rapidly biodegradable
Biodegradation: 1,38 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

diphenyl tolyl phosphate:

Biodegradability : Result: rapidly biodegradable

triphenyl phosphate:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 83 - 94 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).
This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

Components:

bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine:

Partition coefficient: n-octanol/water : log Pow: 10,82 (25 °C)

diphenyl tolyl phosphate:

Bioaccumulation : Bioconcentration factor (BCF): 220

Partition coefficient: n-octanol/water : log Pow: 4,5

triphenyl phosphate:

Bioaccumulation : Species: Oryzias latipes (Orange-red killifish)
Exposure time: 18 d
Concentration: 0,01 mg/l
Bioconcentration factor (BCF): 144

Partition coefficient: n-octanol/water : log Pow: 4,6 (20 °C)

12.4 Mobility in soil

Product:

Mobility : Remarks: No data available

Distribution among environmental compartments : Remarks: No data available

Components:

diphenyl tolyl phosphate:

Distribution among environmental compartments : Adsorption/Soil
Medium: Water
Koc: 5560

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

Components:

diphenyl tolyl phosphate:



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB)..

12.6 Other adverse effects

Product:

Additional ecological information : Harmful to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Waste codes should be assigned by the user based on the application for which the product was used.

The product should not be allowed to enter drains, water courses or the soil.
Do not dispose of with domestic refuse.
Dispose of as hazardous waste in compliance with local and national regulations.

Contaminated packaging : Packaging that is not properly emptied must be disposed of as the unused product.
Dispose of waste product or used containers according to local regulations.

The following Waste Codes are only suggestions:

SECTION 14: Transport information

14.1 UN number

ADR : Not regulated as a dangerous good
IMDG : Not regulated as a dangerous good
IATA : Not regulated as a dangerous good

14.2 UN proper shipping name

ADR : Not regulated as a dangerous good
IMDG : Not regulated as a dangerous good
IATA : Not regulated as a dangerous good

14.3 Transport hazard class(es)

ADR : Not regulated as a dangerous good

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

IMDG : Not regulated as a dangerous good

IATA : Not regulated as a dangerous good

14.4 Packing group

ADR : Not regulated as a dangerous good

IMDG : Not regulated as a dangerous good

IATA (Cargo) : Not regulated as a dangerous good

IATA (Passenger) : Not regulated as a dangerous good

14.5 Environmental hazards

ADR : Not regulated as a dangerous good

IMDG : Not regulated as a dangerous good

IATA (Passenger) : Not regulated as a dangerous good

IATA (Cargo) : Not regulated as a dangerous good

14.6 Special precautions for user

No special precautions required.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Remarks : Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants : Not applicable

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : Not applicable

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version	Revision Date:	Date of last issue: 20.06.2018	Print Date:
1.5	13.08.2018	Date of first issue: 16.06.2015	17.08.2018

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Not applicable

Water contaminating class (Germany) : WGK 1 slightly water endangering
Classification according to AwSV, Annex 1 (5.2)

TA Luft List (Germany) : Total dust:
others: 3,54 %

Inorganic substances in powdered form:

Not applicable

Inorganic substances in vapour or gaseous form:

Not applicable

Organic Substances:

portion Class 1: 0,1 %

others: 96,36 %

Carcinogenic substances:

Not applicable

Mutagenic:

Not applicable

Toxic to reproduction:

Not applicable

Volatile organic compounds : Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
Volatile organic compounds (VOC) content: 50,05 %
Remarks: VOC content excluding water

15.2 Chemical safety assessment

This information is not available.

SECTION 16: Other information

Full text of H-Statements

H400 : Very toxic to aquatic life.
H410 : Very toxic to aquatic life with long lasting effects.
H411 : Toxic to aquatic life with long lasting effects.
H412 : Harmful to aquatic life with long lasting effects.

Full text of other abbreviations



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version 1.5	Revision Date: 13.08.2018	Date of last issue: 20.06.2018 Date of first issue: 16.06.2015	Print Date: 17.08.2018
----------------	------------------------------	---	---------------------------

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Classification of the mixture:

Aquatic Chronic 3 H412

Classification procedure:

Calculation method

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE



Klübersynth GH 6-220

Version	Revision Date:	Date of last issue: 20.06.2018	Print Date:
1.5	13.08.2018	Date of first issue: 16.06.2015	17.08.2018

the product's suitability for particular applications and do not justify any contractual legal relationships.