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Installation instructions

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

Gear box

Model: *omsHypodrive* EC 2-15.1



Please archive this document for future reference

OMS No.

**Date of Manufacture
Month / Year**

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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 Gear boxes

2.1 Applicable Use

The OMS – gear box EC 2-15.1 is solely intended for usage in escalators and moving walkways for public transportation according to EN 115: 2017 and DIN EN ISO 12100 part 1+2.

The installation and use of the EC 2-15.1 for other purposes is not applicable. The OMS ANTRIEBSTECHNIK 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 – gear box 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 moving walkway 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 moving walkway and the manufacturer has applied the CE label to the escalator or moving walkway 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 is 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 gear box is designed for indoor use only.

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

Further operation is not permissible once the predetermined 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
- 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 gear box 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 gear box is very efficient and has a very low natural friction rate. The gear box 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 gear box

- The drive manufacturer only respects the warranty for operation and safety of the drive if it is 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 Gear

Our gear boxes 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 gear box, e.g. wear, ageing etc. then the gear box should be serviced and the changes dealt with, according to this OMS installation manual.

The gear box 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 Installation Instructions carefully, these instructions will aid you to find mistakes and technical deficiencies during the installation and operating life of the gear box.

2.7 General Information

Should damage occur during transport, or should the gear box 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 gear box 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

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 gear box 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: *M20 quality 12.9*
Torque: *550 Nm*
Maximum allowed unevenness of the surface: 0,05mm
If necessary, use shims to achieve the required evenness.

3.2 Before commissioning

Exchange the labelled sealing plug on the gear box casing with the supplied oil dip stick or the supplied air bleeder valve. Take care to observe the correct positioning of the gear box. Retain the sealing plug for possible future transportation of the gear box.



Fig. 1 Screw plug / mechanical oil dip stick

Annotation:



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

The oil dip stick does not seal the gear box.

3.3 Special climate conditions

Temperature is falling below the dew point, especially:

- humid climate
- 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 $T \geq 45^{\circ}\text{C}$, additional air blowers must be installed in the machine room to blow colder air from in between the step band into the machine room so that the temperature does not exceed the maximum temperature of the gear box.

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

3.4 Manufacturers Identification Plate

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



4 Transport and Storage

4.1 Transport

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

When you accept delivery of your gear box, 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 gear box may not be taken into service.

The gear box leaves the OMS factory in an oil tight state. If the gear box 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.

Gearbox weight: approx. 228 kg

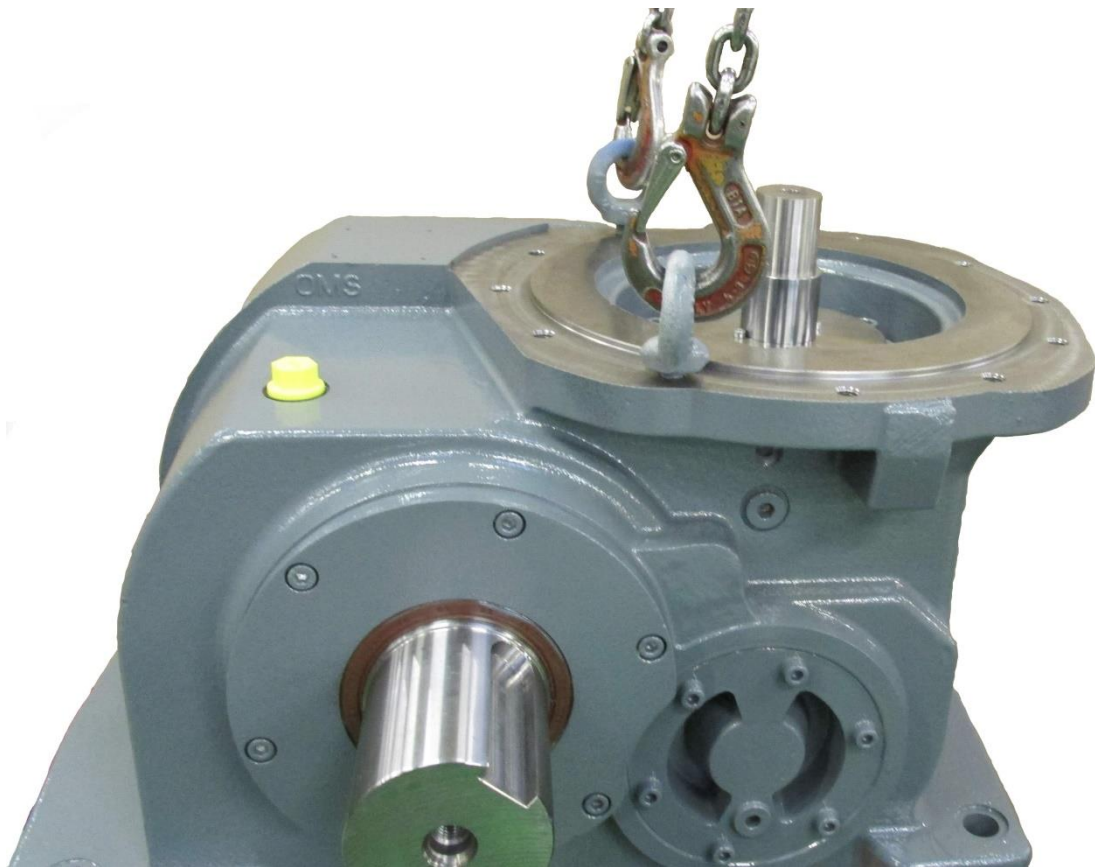
4.2 Lifting the gear box



Always use the appropriate lifting tackle to lift the gear box, otherwise it may fall!

Only eyebolts may be used to lift the gear unit!

The gear housing is equipped with threaded holes for eyebolts (M12).



4.3 Storage

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

A) Up to 3 Months Storage:

No special storage requirements.

Before installing the gear box, please note:

- Check the oil level

B) For storage up to 18 months:

If it is planned to store the gear box for a longer period of time before installing it, then the gear box can be ordered with the optional conservation kit. The gear box 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 gear box 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 gear box must be packed in a humidity proof (yellow) foil: (this foil can be ordered from OMS)
- Dry Storage is required

Before the gear box is installed:

- **Reduce the oil level!** to the standard level (ref. Chapter 5.3)
- Install the gear box (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 gear box is installed:

- Change all the gear box oil. Take care to use the correct type of oil and **observe the oil level** as outlined under 5.3.
- Install the gear box (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 gear box 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 DIN EN 115:2017 „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 moving walkway 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	up to 40.000 operating hours, latest after 5 years	See 5.3.2
Bearing, Check (Audible)	in accordance with the regular escalator maintenance schedule, at least annually	
Wear of chain wheel	in accordance with the regular escalator maintenance schedule, at least annually	
Cleaning the machine surfaces	when required, at least annually	
Checking the safety equipment (presence, function etc.)	according to the maintenance interval of the escalator, but least 1x per year	
Checking coupling buffer	every 2 years	
Replacing coupling buffer	every 4 years	

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

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: 5,5 liters

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

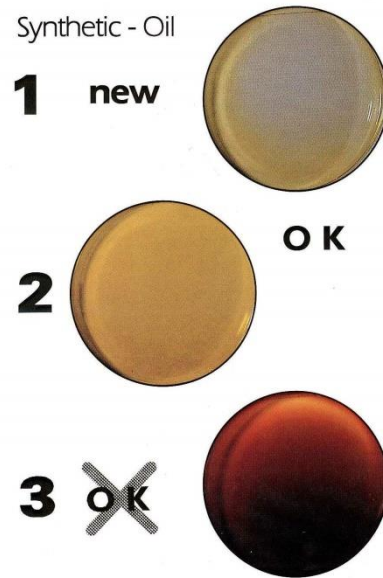


Fig. 5

- | | |
|---|-----------------------------------|
| • 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 |

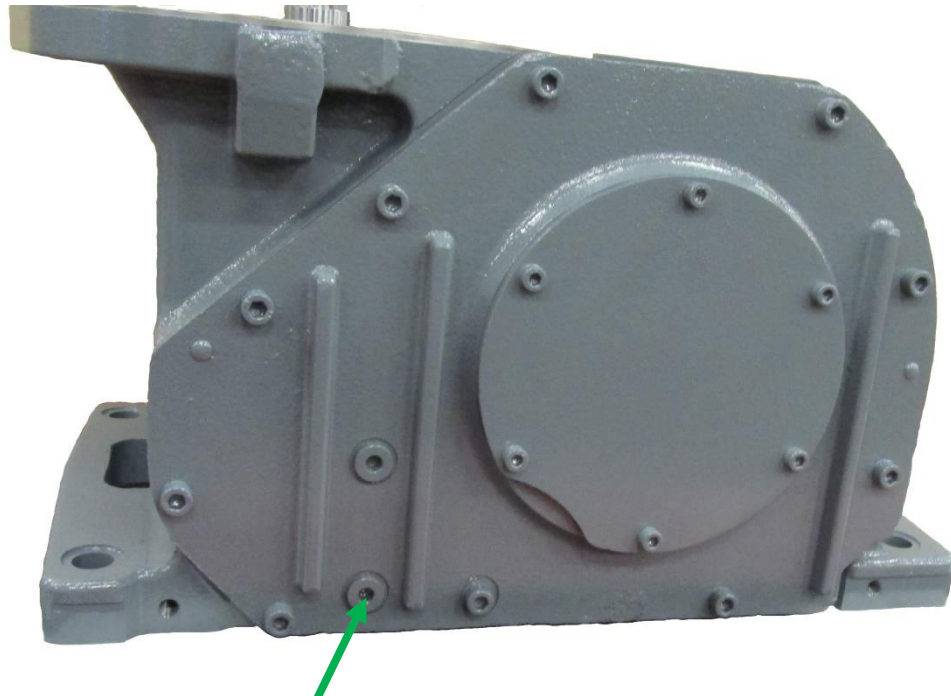


Fig. 6

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.



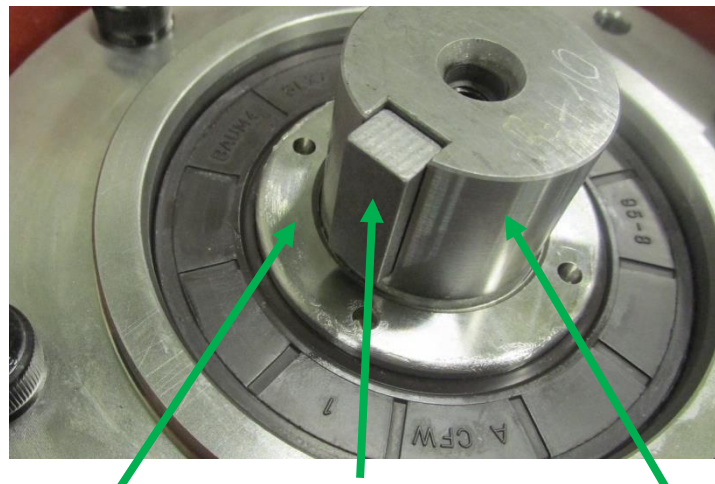
Any oil that escapes during an oil change or as the result of a leak must be removed immediately.

Used synthetic oil that has been replaced is special waste!

6 Mounting of the coupling or brake drum

6.1 Short input shaft

Delivery condition: w/o mounted coupling



Round nut

feather key

short input shaft

OMS-claw coupling, Variant A:

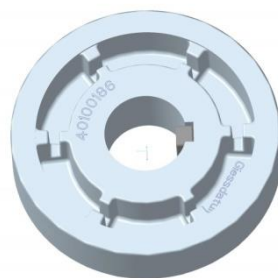


Variant A



coupling buffer ring

OMS-claw coupling, Variant B:



Variant B



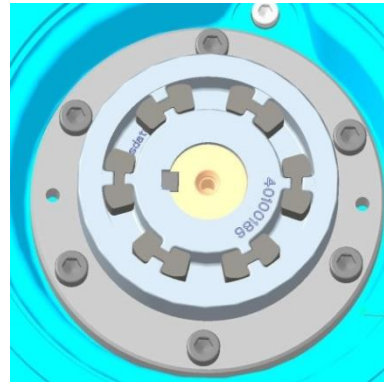
coupling buffers

Mounting of the coupling:

- Insert the key into the input shaft or check the correct mounting
- Heat up the claw coupling to approx. 110°C
- Put the heated claw coupling onto the shaft and slide it down until stop (round nut)
- After cooling down the claw coupling insert the coupling buffer ring (Variant A) or the coupling buffers (Variant B)



Variant A



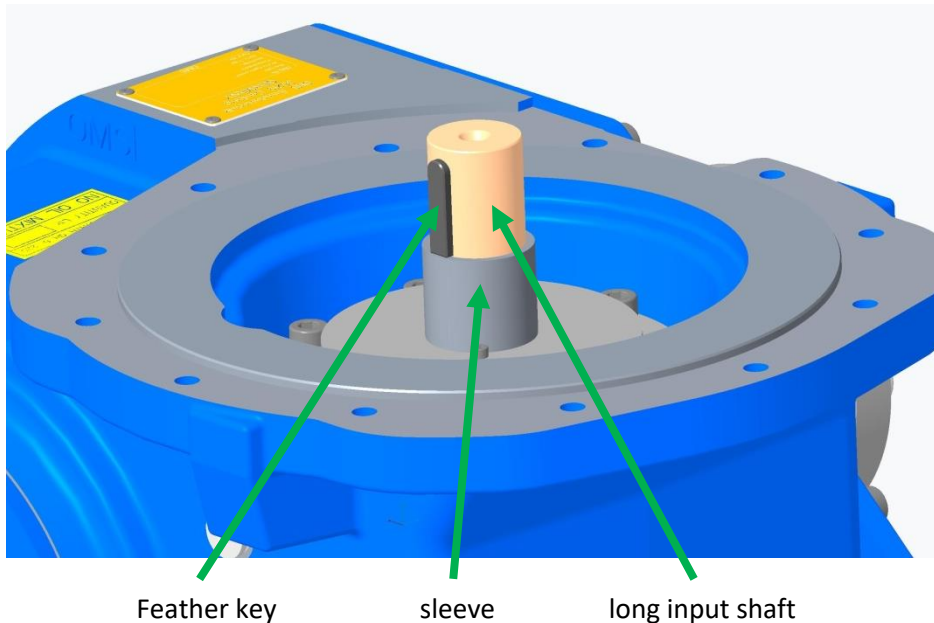
Variant B

6.1.1 Check and replacement coupling buffer

- To check / replace the coupling buffer, it is necessary to lift the motor off the gear box.
- Check the coupling buffer(s) for wear and cracking. Replace the coupling buffer(s) if they are worn or cracked.

6.2 Long input shaft (Tianjin Version)

Delivery condition: w/o mounted brake drum

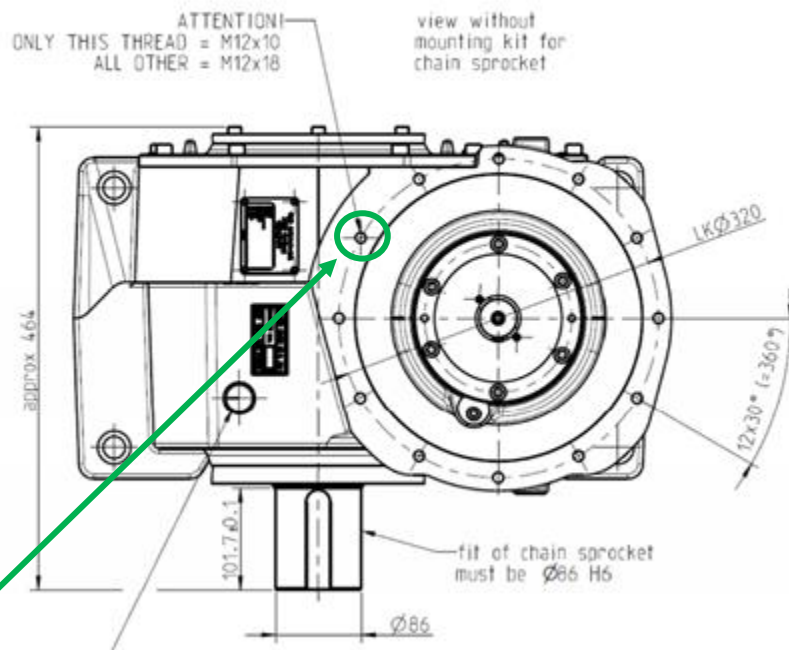


Mounting of the brake drum:

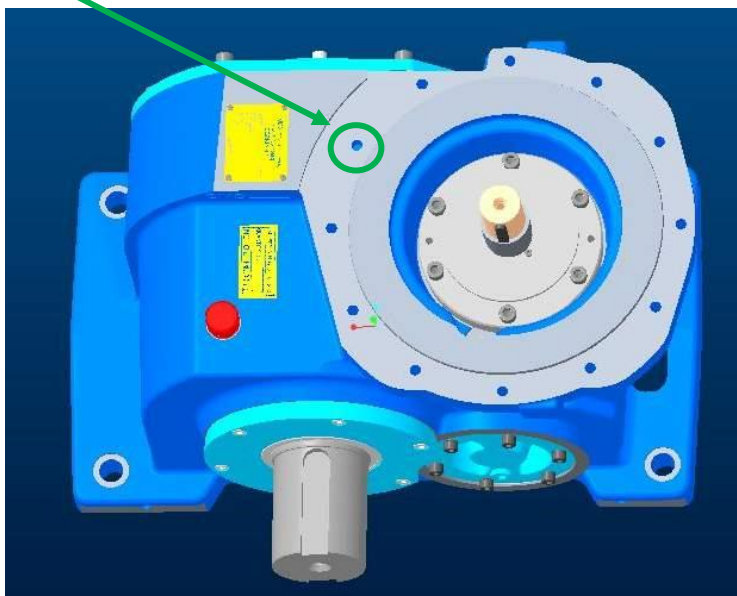
- Check the correct mounting of the sleeve and feather key
- Heat up the brake drum for better mounting
- Put the heated brake drum onto the input shaft until the stop (sleeve)

6.2.1 Mounting of the motor for long input shaft (Tianjin Version)

When mounting the motor onto the gear box take care to this:



The depth of this one thread is only 10mm, all other threads are 18mm deep. If you use this thread to fasten the motor the screw must be 5mm shorter than the other screws for fastening.



7 Disassembly

7.1 Disassembly of the gear box

Remove the Oil Dipstick and replace it with the supplied Sealing Plug. The gear box is not sealed when the oil dipstick is fitted.

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

7.2 Scrapping the gear box

- The gear wheels, axles and bearings can be scrapped as standard steel scrap
- The forged parts can also be scrapped as standard steel scrap
- Oil and grease must be removed and disposed of accordingly

8 Appendix

A) Technical data OMS – gear box EC 2 – 15.1

B) Dimension sheet OMS – gear box EC 2 – 15.1

C) Safety Data Sheet Klübersynth GH 6-220

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

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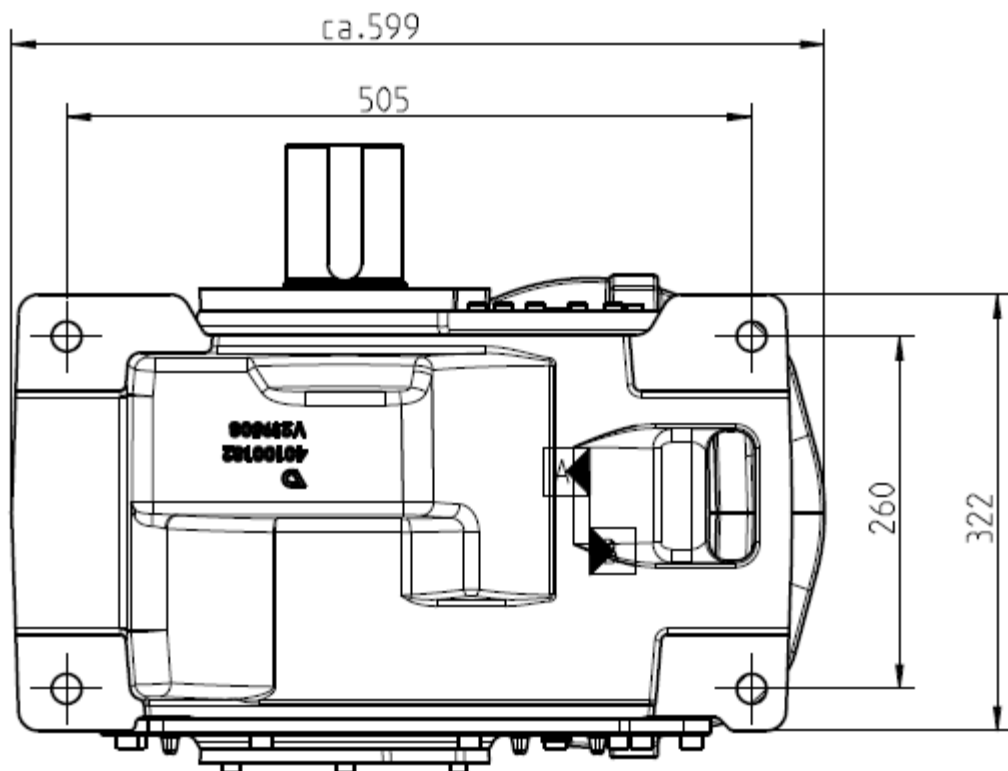
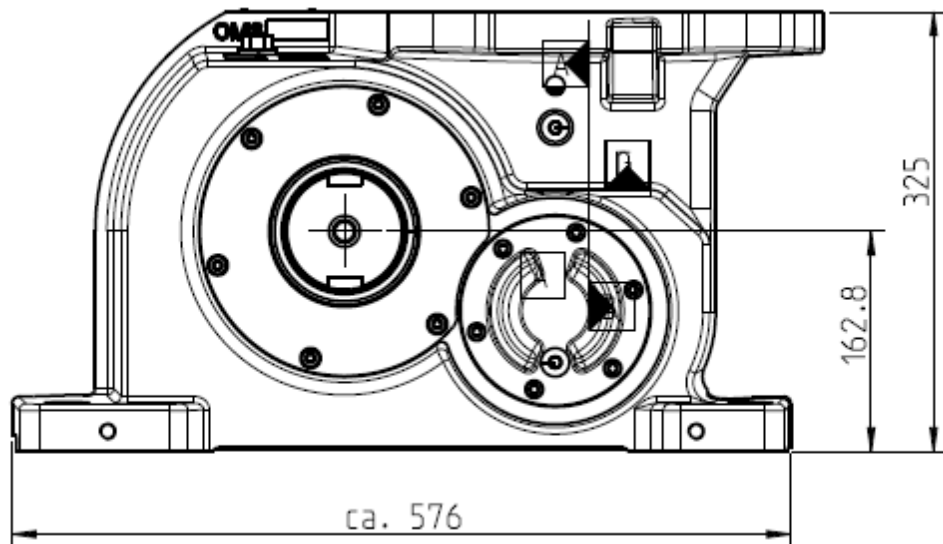
Homepage: www.oms-antrieb.de

(Technical changes reserved – Last Changes 05/2022)

Gear box:

Input torque, max.:	$T_{\max} = 150 \text{ Nm}$
Input speed:	$n = 1.000; 1.200 \text{ and } 1.500 \text{ rpm}$
Efficiency:	$\eta_{\text{nom}} \geq 96 \%$
Average oil temperature:	$T = 30 - 35 \text{ K above ambient temperature}$
Oil operating time up to:	$t = 40.000 \text{ hours}$
Oil quantity:	approx. 6 litres
Toothing:	life time durability
Bearing life time:	$> 146.000 \text{ h @ } p_{\text{equiv}} = 0.78 \text{ (ISO TS 16281:2008)}$
Gear ratio:	$i = 19,963; 25,301; 31,578$
For escalator speed:	$v = 0,5 \text{ up to } 0,75 \text{ m/s}$
Versions:	single- units for chain drive (left or right) duplex- units for chain drive (1x left and 1x right) single- unit for OMS intermediate gear box "ZG 510" (left or right) duplex- units for OMS intermediate gear box "ZG 510" (1x left and 1x right) all versions are suitable to drive escalators and moving walkways
Position at machine room:	left and right (viewed from the lower base of the escalator to upper landing platform)
Safety requirements:	DIN EN 115-1:2017 and ASME A17
Motors:	9,5 – 15kW @1.000rpm 9,5 – 22kW @1.500rpm 9,5 – 18kW @1.200rpm
Chain wheel:	
Press fit:	output shaft: $\varnothing 86 \text{ p6}$ / chain wheel: $\varnothing 86 \text{ H6}$
Version:	duplex, triplex
Size:	20A, 24A and 20B, 24B ($1 \frac{1}{4}''$, $1 \frac{1}{2}''$)
Standard:	DIN 8187 / 8188 (ANSI)
Optional monitoring:	oil temperature sensor, oil level sensor
Intermediate gear box:	more information see data sheet ZG 510

Dimensioned drawing EC 2-15.1



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE
(Commission Regulation (EU) 2020/878)

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version	Revision Date:	Date of last issue:	Print Date:
2.1	13.01.2022	02.04.2020 Date of first issue: 16.06.2015	13.01.2022

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 num-
ber : +49 89 7876 700 (24 hrs)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Not a hazardous substance or mixture.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE
(Commission Regulation (EU) 2020/878)

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version	Revision Date:	Date of last issue: 02.04.2020	Print Date:
2.1	13.01.2022	Date of first issue: 16.06.2015	13.01.2022

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

Additional Labelling

EUH210 Safety data sheet available on request.

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.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : polyalkylene glycol oil

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	specific concentration limit M-Factor Notes Acute toxicity estimate	Concentration (% w/w)
Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate	945-730-9 01-2119511174-52-XXXX	Aquatic Acute1; H400 Aquatic Chronic3; H412	M-Factor: 1/	>= 1 - < 2,5

For explanation of abbreviations see section 16.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - DE
(Commission Regulation (EU) 2020/878)

KLÜBER
LUBRICATION

Klübersynth GH 6-220

Version	Revision Date:	Date of last issue: 02.04.2020	Print Date:
2.1	13.01.2022	Date of first issue: 16.06.2015	13.01.2022

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. |
|-----------|-----------------------------|

SECTION 5: Firefighting measures

5.1 Extinguishing media

- | | |
|------------------------------|--|
| Suitable extinguishing media | : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| Unsuitable extinguishing | : High volume water jet |

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media

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products : Carbon oxides
Nitrogen oxides (NOx)

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. 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).

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 ap-

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plication 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) : Specific instructions for handling, not required.

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	4,11 mg/m ³
	Workers	Skin contact	Long-term systemic effects	1,17 mg/kg bw/day
Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate	Workers	Inhalation	Long-term systemic effects	3,5 mg/m ³

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	Workers	Inhalation	Acute systemic effects	28 mg/m3
	Workers	Dermal	Long-term systemic effects	0,5 mg/kg bw/day
	Workers	Dermal	Acute systemic effects	4 mg/kg bw/day
pentaerythritol tetrakis(3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate)	Workers	Inhalation	Long-term systemic effects	9,5 mg/m3
	Workers	Skin contact	Long-term systemic effects	27 mg/kg

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	0,00002 µg/l
	Marine water	0,000002 µg/l
	Fresh water sediment	0,00467 mg/kg
	Marine sediment	0,000467 mg/kg
	Soil	0,000934 mg/kg
Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate	Fresh water	0,002 mg/l
	Marine water	0,0002 mg/l
	Fresh water sediment	3,43 mg/kg
	Marine sediment	0,343 mg/kg
pentaerythritol tetrakis(3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate)	Fresh water	0,086 mg/l
	Marine water	0,0086 mg/l

8.2 Exposure controls

Engineering measures

none

Personal protective equipment

Eye protection : Safety glasses with side-shields

Hand protection

Material : Nitrile rubber
Break through time : > 10 min
Protective index : Class 1

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Remarks	:	For prolonged or repeated contact use protective gloves. 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. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.
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

Physical state	:	liquid
Colour	:	yellow
Odour	:	characteristic
Odour Threshold	:	No data available
Melting point/range	:	No data available
Boiling point/boiling range	:	No data available
Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	>= 250 °C Method: ISO 2592, open cup
Auto-ignition temperature	:	No data available



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Decomposition temperature	
Decomposition temperature	: No data available
pH	: 8,0 (20 °C) Concentration: 100 %
Viscosity	
Viscosity, dynamic	: No data available
Viscosity, kinematic	: 220 mm ² /s (40 °C)
Solubility(ies)	
Water solubility	: partly soluble
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Vapour pressure	: < 0,001 hPa (20 °C)
Relative density	: 1,050 (20 °C) Reference substance: Water The value is calculated
Density	: 1,05 g/cm ³ (20 °C)
Bulk density	: No data available
Relative vapour density	: No data available

9.2 Other information

Explosives	: Not explosive
Oxidizing properties	: No data available
Self-ignition	: No data available
Evaporation rate	: No data available
Sublimation point	: No data available

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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

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 hazard classes as defined in Regulation (EC) No 1272/2008

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:

Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:

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

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

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toxicity

Skin corrosion/irritation

Product:

Remarks : This information is not available.

Components:

Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:

Species	: Rabbit
Assessment	: No skin irritation
Method	: OECD Test Guideline 404
Result	: No skin irritation

Serious eye damage/eye irritation

Product:

Remarks : This information is not available.

Components:

Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:

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

Respiratory or skin sensitisation

Product:

Remarks : This information is not available.



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Components:

Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:
Assessment : Did not cause sensitisation on laboratory animals.
Result : Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Remarks: No data available
Genotoxicity in vivo : Remarks: No data available

Components:

Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:
Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Carcinogenicity

Product:

Remarks : No data available

Reproductive toxicity

Product:

Effects on fertility : Remarks: No data available
Effects on foetal development : Remarks: No data available



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Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:

Reproductive toxicity - Assessment

: - Fertility -

No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

Repeated dose toxicity

Product:

Remarks : This information is not available.

Aspiration toxicity

Product:

This information is not available.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

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

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.



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

Toxicity to algae/aquatic plants : Remarks: No data available

Toxicity to microorganisms : Remarks: No data available

Components:

Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:
Toxicity to fish : LC50 (Oryzias latipes (Japanese medaka)): 1,3 mg/l
Exposure time: 96 h

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 0,55 mg/l
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 1

Toxicity to microorganisms : EC50 (activated sludge):
Exposure time: 3 h
Method: OECD Test Guideline 209

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

12.2 Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Physico-chemical removability : Remarks: No data available

Components:

Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:

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Biodegradability : Result: rapidly biodegradable
Biodegradation: 75 %
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).

Components:

Reaction mass of 3-methylphenyl diphenyl phosphate, 4-methylphenyl diphenyl phosphate, bis(3-methylphenyl) phenyl phosphate, 3-methylphenyl 4-methylphenyl phenyl phosphate and triphenyl phosphate

:
Bioaccumulation : Bioconcentration factor (BCF): 220
Partition coefficient: n-octanol/water : log Pow: 4,5

12.4 Mobility in soil

Product:

Mobility : Remarks: No data available
Distribution among environmental compartments : Remarks: No data available

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..

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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12.7 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 : 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.
- Waste codes should be assigned by the user based on the application for which the product was used.
- 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:
- Waste Code : unused product
13 02 06*, synthetic engine, gear and lubricating oils
- uncleaned packagings
15 01 10, packaging containing residues of or contaminated by hazardous substances

SECTION 14: Transport information

14.1 UN number or ID number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good

14.4 Packing group

Not regulated as a dangerous good

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14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Not applicable

14.7 Maritime transport in bulk according to IMO instruments

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 - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Not applicable

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 (EU) 2019/1021 on persistent organic pollutants (recast) : Not applicable

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

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 2 obviously hazardous to water
Classification according to AwSV, Annex 1 (5.2)

TA Luft List (Germany) : Total dust:
others: 3,18 %

Inorganic substances in powdered form:
Not applicable
Inorganic substances in vapour or gaseous form:
Not applicable
Organic Substances:

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portion Class 1: < 0,01 %
others: 96,82 %

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: 0,06 %

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

Full text of other abbreviations

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; AIIC - Australian Inventory of Industrial Chemicals; 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; KECL - 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

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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

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