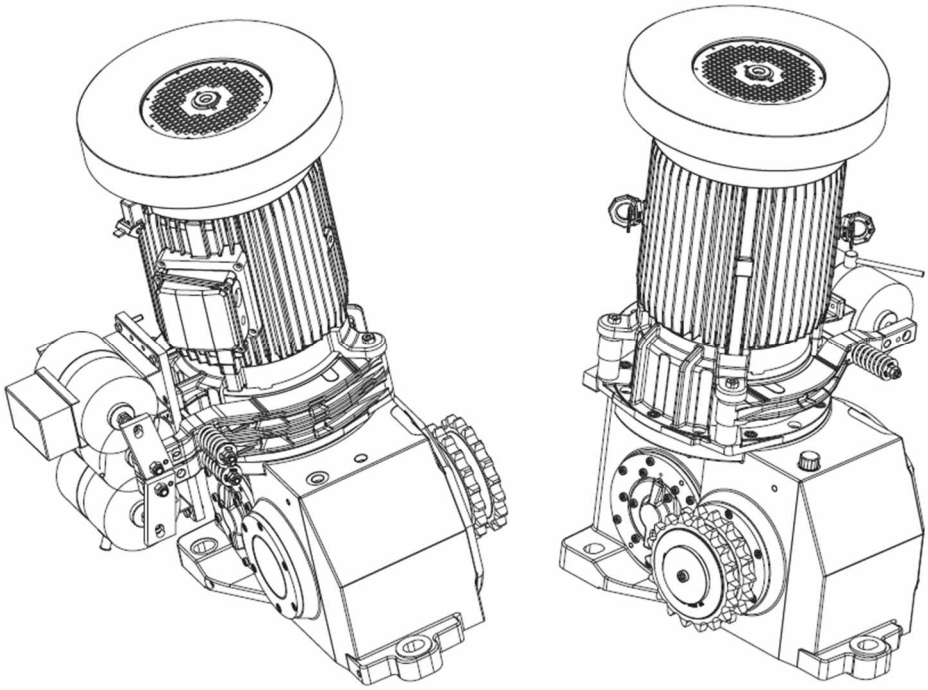
Installation instructions

Escalator drive omsHypodrive ECT 2-15

October 2022



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1. Declaration of incorporation

Declaration of incorporation of an incomplete machine

according appendix II section 1.B of the machine directive 2006/42/EC

1. Name of manufacturer

OMS Antriebstechnik

Bahnhofstrasse 12
D-36219 Cornberg

2. Authorized person for managing the relevant technical documents

René Hering

Bahnhofstrasse 12
D-36219 Cornberg

3. Information about the incomplete machine

3.1 Description

- Two stage gear box with a hypoid bevel gear as first stage
- Brake unit (1x double hub spread solenoid, 2x brake lever with traction brake linings, 1x compression spring, rod)
- Alternative break (2x double hub spread solenoid, 4x brake lever with traction brake linings, 4x compression spring, rod)

3.2 Identification

Type plate at the gear box

3.3 General designation

Escalator traction machine according to EN 115:2008

3.4 Function

Driving and slowing down escalators and moving walkways

3.5 Type

ECT 2-15

3.6 Serial number

OMS-no.:

3.7 Trade name

ECT 2-15

4. Explanations

4.1 Declaration about the basic requirements from the directive 2006/42/EC which have been employed

Appendix I
1.1.2; 1.1.3; 1.1.5
1.3.1; 1.3.2; 1.3.4
1.5.1; 1.5.2; 1.5.4; 1.5.5; 1.5.6; 1.5.8; 1.5.9; 1.5.13
1.6.1; 1.7.1; 1.7.3

4.2 The relevant technical documents according appendix VII part B are made

4.3 The incomplete machine is also according to the directives listed in the official journals as follows

Low voltage- directive 2014/35/EU – official journal L 96/357 from 29.03.2014
EMC- directive 2014/30/EU – official journal L 96/79 from 29.03.2014

5. Obligation to provide the relevant documents

We hereby commit ourselves to provide the competent authorities of EU- Member States, upon reasoned request, the relevant information on this incomplete machine.

The documents will be sent by usually CD.

6. Annotation

The machine may only be operated, if it´s sure that the complete machine, in which the incomplete machine is installed, is according to the machine directive 2006/42/EC.

Cornberg, October 31, 2022
Place, date

i.V. René Hering
signature of the authorized person

Information about the person who is authorized to do this declaration in the name of the manufacturer.
René Hering, technical director of OMS-Antriebstechnik

2. Basic information

2.1 Notes on the manual

This manual is to be understood as "installation instruction for an incomplete machine" within the meaning of Directive 2006/42/EC Annex VI. The manual refers to escalator drives of the "omsHypodrive" series for use in electrically operated escalators and moving walkways, hereinafter referred to as "drive".

These instructions have been prepared in accordance with the product-specific and application-related requirements of laws, ordinances, regulations, technical standards and directives. The declaration of incorporation serves as proof of this. In addition, the local accident prevention regulations and general safety regulations for the area of application of the system apply.

This installation instruction help the operator to familiarize himself with the design and function of the drives. Figures and illustrations in this instruction are for basic understanding and may differ from the actual design of the plant.

Before the drive is integrated into a complete system, the following must be observed:

NOTE

The installation instruction must be read carefully before commissioning and must always be available at the plant!

The drive is only intended for the purpose specified in the documentation. Warranty claims resulting from improper operation and insufficient maintenance will not be accepted. Damage caused by improper operation will result in the loss of the warranty claim.

In addition to this documentation, all operating instructions and data sheets of the installed components (↗ applicable documents) apply. The instructions on safety, setup and installation, operation, maintenance, disassembly and disposal of the components contained in the above-mentioned manufacturer's documents must be followed without restriction by the operating personnel of the plant.

2.2 Design of the safety instructions

The safety instructions in this document are identified by safety symbols and are designed according to the SAFE principle. They contain information on the type and source of the danger, on possible consequences and on how to avert the danger.

DANGER

Warns of an accident that will occur if the instructions are not followed. The accident will result in serious, possibly life-threatening injuries or death,
e.g. by touching electrical units under high voltage.

WARNING

Warns of an accident that can occur if the instructions are not followed. The accident may result in serious, possibly life-threatening injuries or death,
e.g. by touching electrical units under high voltage.

CAUTION

Warns of an accident that may occur if the instructions are not followed. The accident may result in minor injuries,
e.g. burns, skin injuries or bruises.

CAUTION

Warns of possible damage to property

NOTE

Important general note

NOTE

Important note on environment protection

2.3 Symbols used

Symbol	Meaning
	Warning of a general danger
	Warning of electric voltage; electric shock
	Hot surface warning
	Warning against hand injuries
	Warning against counter-rotating rolling
↗	Cross reference, see „xx“
*	Equipment is optionally available
	Assembly or component covered or located on the rear side

Tab. 1: Symbols used

2.4 Up-to-dateness at printing

All technical data and dimensional or weight specifications apply to the date of release of these instructions. They may deviate in detail from the respective design of the device without fundamentally changing the factual information and losing their validity.

Any claims arising from this cannot be asserted. Possible deviations from text and image statements depend on the technical development, equipment and accessories of the product.

2.5 Intended purpose

The drive is used in electrically operated escalators and moving walks for passenger transportation. Depending on the equipment/design, the drive essentially consists of the following components:

- Bevel helical gear box with hypoid bevel gear stage
- optional motor (three-phase motor, type IM V1, protection class IP 55, isolation-cl. F)
- Brake unit (single circuit safety brake: 1x double-acting spreader solenoids, 2x brake lever with friction lining, 2x compression spring, rods)
- alternative brake unit (dual circuit safety brake: 2x double-acting spreader solenoids, 4x brake lever with friction lining, 4x compression spring, 2x rods)

2.6 Intended use

The drive is intended exclusively for use in electrically operated escalators and moving walks in accordance with DIN EN 115. Any use beyond this is considered improper.

Furthermore, the intended use includes:

- The drive is designed exclusively for use inside enclosed spaces.
- The drive is intended for commercial use only.
- Work on the drive may only be carried out by authorized persons.
- The safety and operating instructions as well as the inspection and maintenance conditions of the installations instructions must be observed.

2.7 Reasonably foreseeable misuse

Any use that is not part of the intended use or the following applications/scenarios are considered misuse:

- Improper use with unsuitable parameters (technical data)
- Use of unsuitable frequency converters
- Outdoor use
- Use in damaged condition
- Use outside the defined limits
- Use in potentially explosive areas
- Failure to follow the installation instructions
- Use by insufficiently trained and instructed personnel
- Use of non-approved operating materials and supplies
- Insufficient or improper maintenance and servicing
- Unauthorized modifications
- Manipulation of protective equipment

2.8 Warranty and liability

The manufacturer of the drive guarantees proper, safe operation of the drive only within the scope of the design data enclosed with each drive and when the drive is properly assembled (installed), maintained, tested and operated in accordance with the installation instructions and the procedure prescribed herein.
If the permissible limit values are exceeded during operation, maintenance or testing activities, the warranty becomes void.
The person placing the complete system on the market (operator) is liable for the proper assembly (installation), maintenance, testing and operation of the drive and ensures that demonstrably trained and qualified personnel are available.
If defects are detected in the escalator or moving walk system, including the drive, the system must be taken out of operation immediately, otherwise the operator is solely liable for all personal injury and property damage, regardless of the legal grounds.
Incorrect installation or improper operation of the equipment, especially with improper procedures described above, will result in a complete exclusion of liability by the manufacturer of the drive, regardless of the legal reason.
The manufacturer will refuse any warranty and liability claims if the operator, installer and/or maintenance company cannot provide complete proof of the described permissible procedure/use of the system including the drive.

2.9 Customer service

The manufacturer's customer service is available for technical information.

In addition, the manufacturer's employees are constantly interested in new information and experience resulting from the application, which can be valuable for the improvement of the products.

Contact information:

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3. Safety

3.1 Standards and directives

Applied guidelines:

Document No.	Title
2006/42/EG	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery and amending Directive 95/16/EC (recast)
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility (recast)

Tab. 2: Applied guidelines

Applied standards:

Type-C-standard	Title
EN 115-1:2017	Safety of escalators and moving walkway - Part 1: Design and installation
Type-B-standard	**Title**
EN ISO 13732-1:2008	Ergonomics of the thermal environment - Evaluation methods for human responses to contact with surfaces - Part 1: Hot surfaces (ISO 13732-1:2008)
EN 1032:2003+A1:2008	Mechanical vibration - Test methods for mobile machines for the purpose of determining the vibration emission value
EN ISO 13849-1:2015	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)
EN 60204-1:2018	Safety of machinery - Electrical equipment of machines. Part 1: General requirements (IEC 60204-1:2016, modified)

Typ-A-Norm	Titel
EN ISO 12100:2010-11	Safety of machinery - General design principles General design principles - Risk assessment and risk reduction (ISO 12100:2010)
Norm	**Titel**
EN 61000-6-2:2005/AC:2005	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity and industrial environments
EN 61000-6-4:2007/A1:2011	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards; Emission for Industrial areas
EN 60034-1:2010/AC:2010	Rotating electrical machines - Part 1: Rating and performance EN 60034-5/A1:2007-01 Rotating electrical machines - Part 5: Degrees of protection based on the overall design of rotating electrical machines (IP code) - Classification
EN 60034-6:1993-11	Rotating electrical machines - Part 6: Classification of cooling methods (IC code)
EN 60034-9/A1:2007-04	Rotating electrical machines - Part 9: Noise limits

Tab. 3: Applied standards

3.2 Labeling

The following labels are attached to the drive as well as the nameplate:

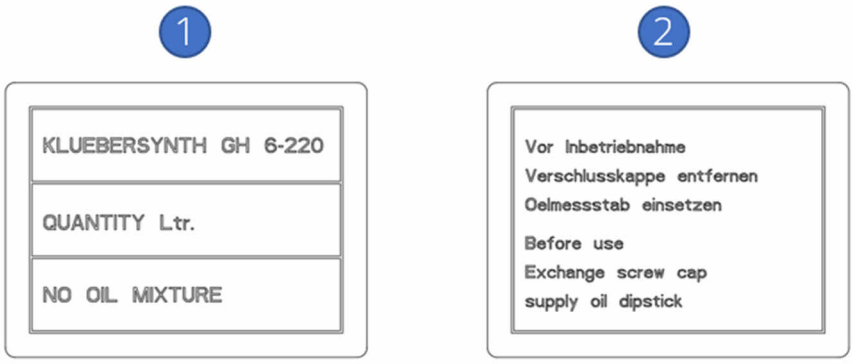

Fig. 1: Labels on the drive

1 Sticker: oil type, oil quantity

2 Sticker: sealing cap / oil dipstick

Nameplate:

The nameplate shows the most important key data of the drive supplied.

Fig. 2: Nameplate

3.3 General safety instructions

DANGER

Danger due to electric shock

- All work may only be carried out by qualified personnel in the disconnected condition and secured against reconnection.
- The regulations of the motor manufacturer must be observed.
- After completion of the work in the junction box, it must be closed again.
- Observe the safety rules for working on electrical equipment.
- Use insulated tools.

DANGER

Danger from contact with live parts due to fault conditions

- All work may only be carried out by qualified personnel in the disconnected condition and secured against reconnection.
- Observe the safety rules for working on electrical equipment.
- Fix loose connections, replace damaged cables immediately.
- Cables must not be pinched or crushed. Cables must be laid in such a way that they cannot trip over or be damaged.
- Periodically inspect electrical equipment in accordance with the applicable national regulations (e.g. DGUV regulation 3 in Germany).

WARNING

Danger when lifting the drive

- The drive may only be lifted using suitable lifting devices.
- The gear box may only be lifted using high-strength eyebolts. Tapped holes for eyebolts (2x M12) are provided on the gear box housing.

WARNING

Danger due to loss of stability

- The drive may only be put into operation if it has been secured in the base frame via the holes in the gear box feet or by means of claws on the gear box feet if no holes are provided.

CAUTION

Danger during work on the drive

- Depending on the size of the components, use load-bearing or auxiliary equipment if necessary.
- Assembly work may only be carried out by adequately qualified personnel.
- Ensure a healthy body posture during all work.

CAUTION

Danger of structural failure due to corrosion/vibration

- Check the drive regularly for damage. Do not operate the drive if there is damage.
- Replace damaged corrosion protection immediately.
- Replace wear parts regularly.
- Use the drive only as intended.

NOTE

Special note on omsHypodrive drive:

This drive has the lowest self-locking due to its high efficiency. This means that the escalator starts moving immediately (downward direction) when the brake is opened and the steps are loaded.

3.4 Personnel requirements

Commissioning, maintenance or carrying out repairs on parts of the machine may only be carried out by trained and qualified personnel.

Qualified personnel:

Qualified personnel are persons who, on the basis of their training, experience, instruction and knowledge of the relevant standards and regulations, accident prevention regulations and operating conditions, have been authorized by the person responsible for the safety of the plant to carry out the activities required in each case and are able to recognize and avoid possible dangers in the process (definition for skilled personnel according to IEC 364).

Usage Disclaimer:

The drive is not intended for use by consumers or physically or mentally impaired persons.

4. Technical description

4.1 Structure

The escalator drive is a drive unit consisting of the following assemblies:

- Gear box
- Motor (with handwheel, flywheel mass)
- Brake system, 2-fold or 4-fold (brake drum, double-acting spreader solenoid(s), brake lever, compression springs, rods)
- Sprocket

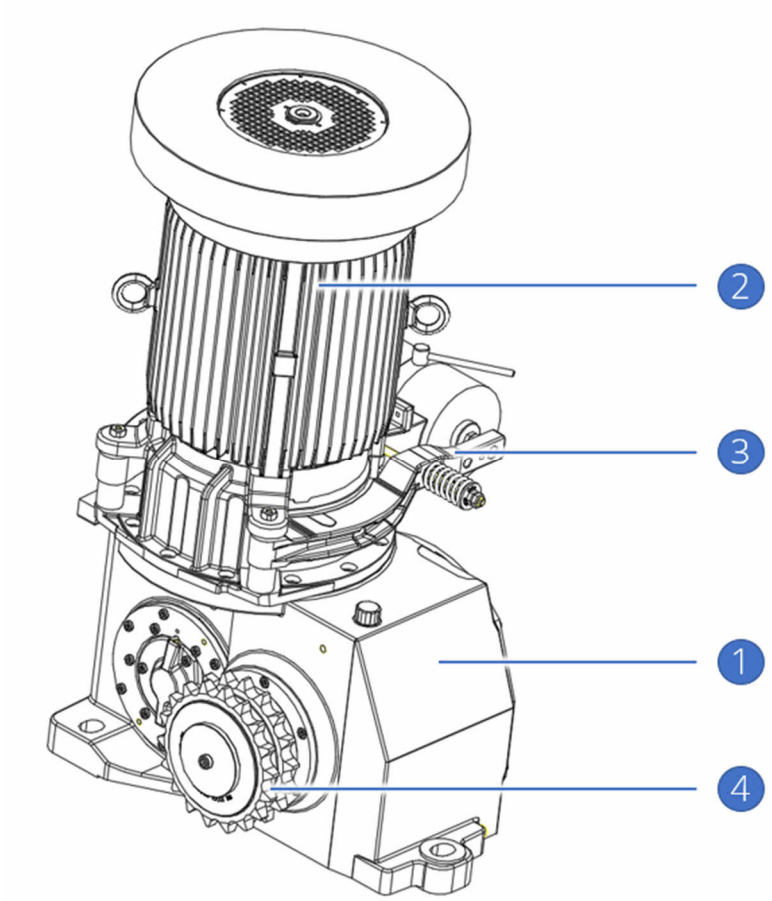

Fig. 3: General overview, version left

1	Gear box	2	Motor
3	Brake system	4	Sprocket

Options:

The escalator drive is available in different versions:

- Version left (related to the output shaft)
  - with 2-fold or 4-fold brake system
- Version right (related to the output shaft)
  - with 2-fold or 4-fold brake system

Gear box:

The gearboxes are available in different ratios:

- i=24,55:1
- i=20,45:1
- i=18,86:1
- i=15,69:1

Motor:

Standard equipment:

- Operating mode S6, duty cycle 60%
- Revolutions: 1.000min^{-1}, 1.200min^{-1}, 1.500min^{-1}
- Junction box with metric thread
- Color squirrel grey RAL 7000
- Protection class IP 55

Spare parts:

The following assemblies, components are replaceable:

- Gear box complete
- Motor complete
- Coupling + coupling buffer
- Oil dipstick
- Gear oil
- Sprocket
- Brake lever with friction lining
- Double-acting spreader solenoid
- Pivot pin
- Compression spring, rod

Gearbox version and installation position:

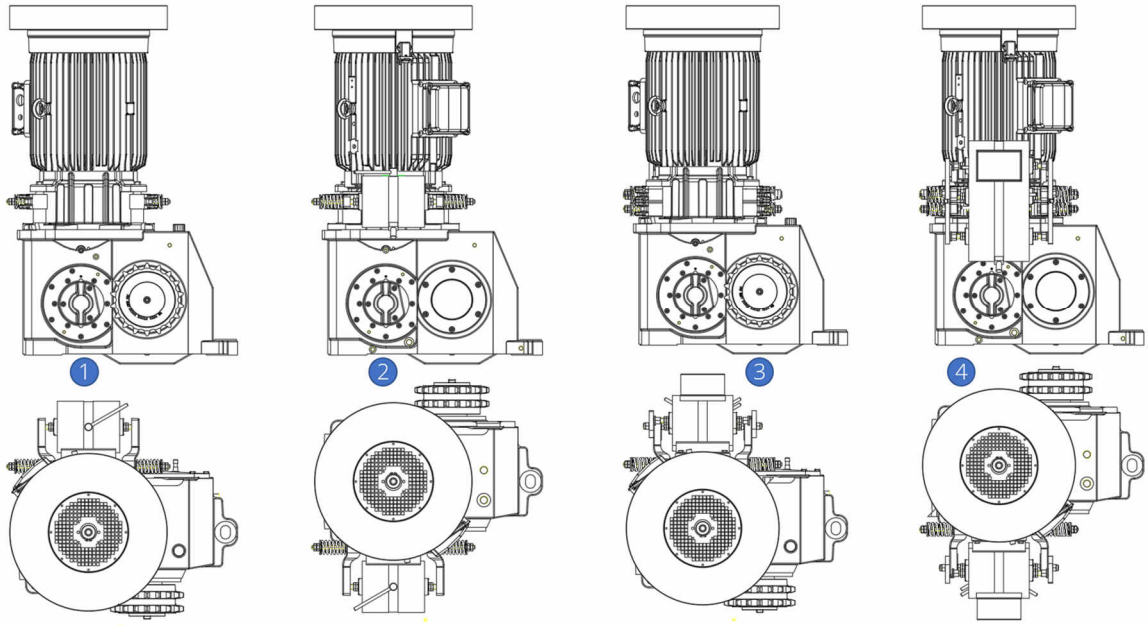

Fig. 4: Installation position

1	Version left, 2-fold brake system	3	Version left, 4-fold brake system
2	Version right, 2- fold brake system	4	Version right, 4-fold brake system

4.2 Technical Data

For technical data, please refer to the respective data sheets or dimension sheets (↗ applicable documents).

4.3 Noise emission

The A-weighted emission sound pressure level LpA in dB(A) according to DIN EN ISO 11200 is measured at a distance of 1m from the surface. The drive is operated directly on the mains on a load test bench in the sound measurement room.

At 25% partial load (referred to P_{nom}= xxkW), the drives meet the noise emission characteristics according to data sheet
(↗ applicable documents).

5. Transport/storage

5.1 Transport

Delivery:

All drives have left the factory in perfect condition after inspection. Please check the drive for external damage after delivery.

If you find any defects resulting from the transport, a damage report must be issued in the presence of the carrier. If necessary, the commissioning of this drive must be excluded.

Transport preparation:

The drive must be sealed oil-tight for transport. This has been done at the factory on delivery. The drive must be closed again for subsequent transports.

⇨ To do this, remove the oil dipstick and replace it with the originally enclosed sealing cap. If this is no longer available, you can request a new sealing cap from the manufacturer.

Lifting the drive:

WARNING

Danger when lifting the drive

- The gear box may only be lifted using high-strength eyebolts.
- The drive may only be lifted using suitable lifting gear.

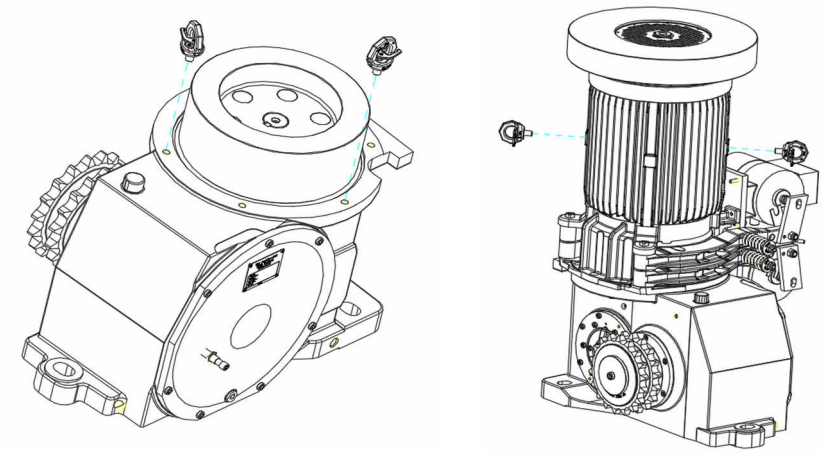

Fig. 5: Suspension points

NOTE

When selecting lifting devices and slings, take into account the total weight of the drive. This depends on the motor power. Please refer to the relevant technical data sheet for the applicable total weight.

5.2 Storage

The drive must not be stored outdoors or exposed to the weather without protection.

Preservation measures are necessary if the drive is not used for a longer period of time or is put into operation at a later date. The extent of the preservation measures depends on the storage time.

Storage time <3 months:

No special preservation measures are required.

Observe the following notes before installing the drive:

⇨ Check all brake components (remove light rust on the brake drum by braking).

⇨ Turn the drive by hand (for even grease distribution in the motor bearings).

Storage time <18 months:

For a longer storage time from the beginning (option when ordering), the drive is preserved at the factory and packed in a moisture-repellent (yellow) foil.

If this is not the case, perform the following activities:

⇨ Fill the gear box with oil up to the upper screw plug after 6 months of storage at the latest.

ATTENTION

Only refill oil of the same type. The oil type can be found on the yellow sticker.

⇨ After filling, pack the drive in moisture-repellent foil (available from the manufacturer).

⇨ Store the drive in dry conditions.

Observe the following notes before installing the drive:

⇨ Reduce the oil level. Drain the oil to the prescribed level.

⇨ Check all brake components (remove light rust on the brake drum by braking).

⇨ Turn the drive by hand (for even grease distribution in the motor bearings).

Storage time >18 months:

If the drive is not preserved at the factory, the same activities as described under "Storage time <18 months" must be performed.

⇨ Store the drive in dry conditions.

Observe the following notes before installing the drive:

⇨ Change the gear oil completely. Observe the oil type and fill level.

⇨ Check all brake components (remove light rust on the brake drum by braking).

⇨ Turn the drive by hand (for even grease distribution in the motor bearings).
If the drive can only be turned with stiffly by hand, the motor bearings may need to be replaced.

NOTE

If the drive is stored for a longer period of time, the manufacturer's warranty may be terminated. If further warranty is desired, the drive can be returned to the manufacturer for a fee required overhaul (possibly replacement of bearings, etc.) and for the above measures to be carried out.

Damage that has occurred due to improper handling is not subject to liability for defects.

6. Set up / assembly

6.1 Basics

Basically, it must be ensured that the escalator truss in which the drive is installed must be checked by calculations.

The escalator truss must have sufficient rigidity to counteract possible bending and torsional forces throughout the load range.

6.2 Installing and connecting the drive

Assembly:

CAUTION

The drive may only be put into operation when it has been fixed in the base truss. If possible, use the holes in the gear box feet. If no holes are provided, use claws for fastening.

- ⇨ If possible, fasten the drive using the three holes in the gear box feet. A fastening with through holes in the base truss with screw and nut is recommended.
- ⇨ Observe the following notes:
  - ¬ Screws: M24, grade min. 12.9
  - ¬ Tightening torque: min. 650 Nm
  - ¬ Maximum unevenness of the contact surface: 0.05 mm

NOTE

Use shims, if necessary, to achieve the required evenness of the support surface.

Install of oil dipstick:

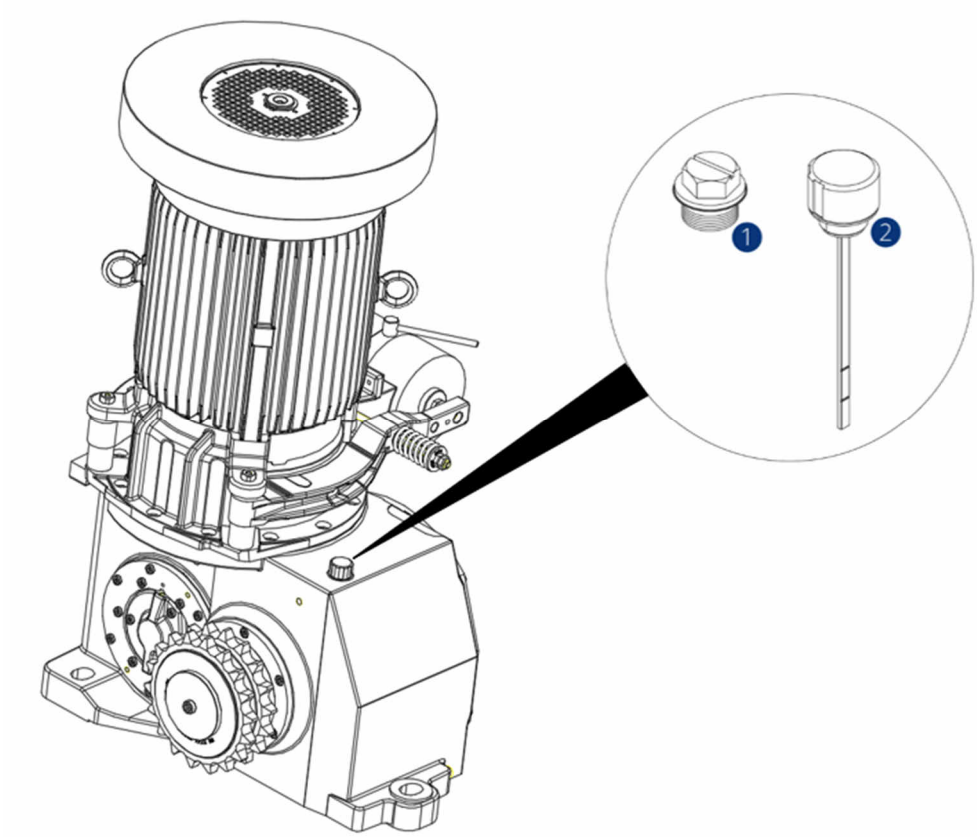

Fig. 6: Insert oil dipstick

1	Sealing plug	2	Oil dipstick

⇨ Replace the sealing cap on the gear housing with the supplied oil dipstick.

⇨ Keep the sealing cap in an easy-to-find location for possible later transport.

⇨ Check oil level.

NOTE

The gear box is sealed oil-tight for transport. The gear box is not vented when the cap is fitted. If it is put into operation sealed in this way, overpressure can occur in the housing, with the possible consequence of leakage and oil leakage at the radial shaft seals. The oil dipstick does not function as a seal for the gear box.

Special climate conditions:

Observe the following notes when using the drive in particularly cold or warm environments:

- If the ambient temperature around the drive falls below the dew point, motor heating is mandatory.
- At an ambient temperature ≤ -20 °C, a gear box heater (oil) is mandatory.
- At an ambient temperature ≥ 45 °C, fans must be provided to blow colder air from the step band into the machine room.

Electrical connection:

DANGER

Electrical hazard due to direct contact with live parts.

- All work may only be carried out by qualified personnel in the disconnected state and secured against reconnection.
- The regulations of the motor manufacturer must be observed.
- Observe the safety rules for working on electrical equipment.

Connecting motor:

⇨ The mains connection of the motor is made according to the circuit diagram in the junction box of the motor.

Sensors:

ATTENTION

Interference voltage from the motor connection can damage the sensors. Observe a minimum distance of 100 mm between motor and sensor cables.

The cables of the inductive proximity switches should be shielded. The maximum permissible rate of voltage rise must not exceed $\delta U/\delta t \leq 500 V/\mu s$.

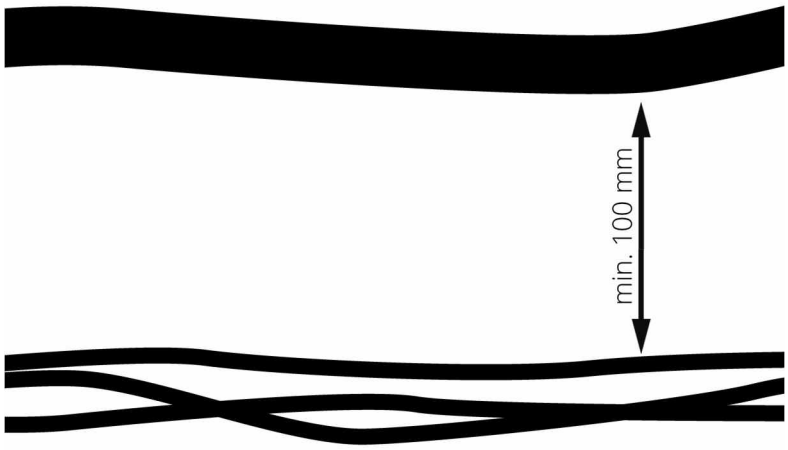

Fig. 7: Minimum distance motor and sensor cables

Double-acting spreader solenoid:

The supply voltage is generally 230 V AC (±10 % max.)

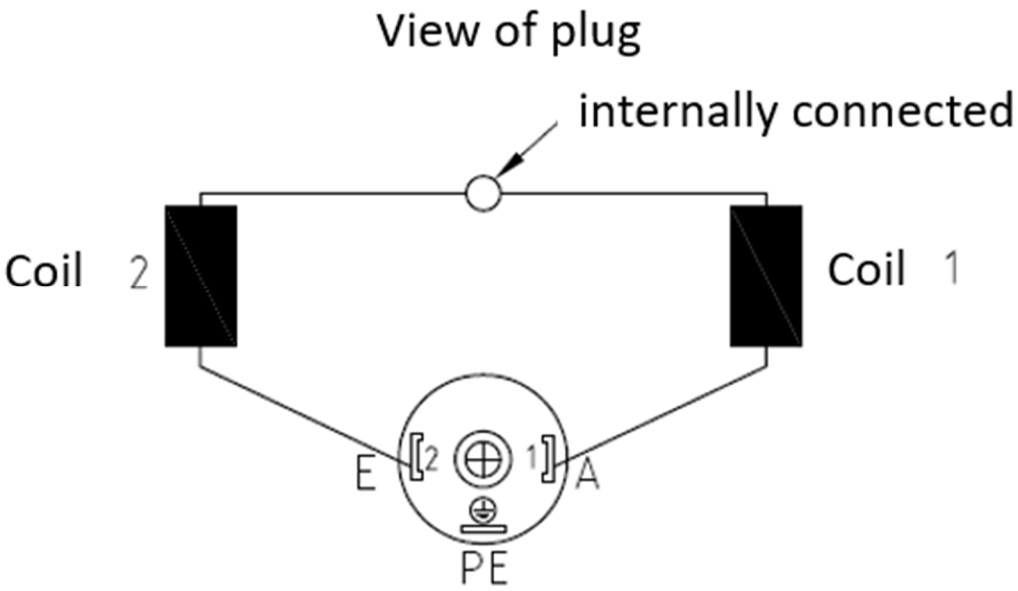

Fig. 8: Wiring diagram double-acting spreader solenoid

7. Operation

WARNING

The regulations for operation, maintenance and inspection in accordance with the valid safety regulations for escalator construction, as well as other relevant regulations, must be strictly observed.

The correct operation of the drive in terms of safety is the sole responsibility of the escalator operator.

8. Servicing/maintenance

8.1 Overview maintenance work/troubleshooting

Maintenance work:

Activity	Interval
Check oil level	3 months
Oil change	40.000 operating hours, but after 5 years at the latest
Checking the bearings (acoustic)	according to the maintenance interval of the escalator, but at least 1x per year
Checking the brake	according to the maintenance interval of the escalator, but at least 1x per year
Checking the sprocket (wear)	according to the maintenance interval of the escalator, but at least 1x per year
Checking the electrical cables (tight fit, chafing points, etc.)	according to the maintenance interval of the escalator, but at least 1x per year
Cleaning the drive	as needed, but at least 1x per year
Checking the safety equipment (presence, function etc.)	according to the maintenance interval of the escalator, but at least 1x per year
Checking the coupling buffers	every 2 years
Replacing the coupling buffers	every 4 years

Tab. 4: Maintenance work

Malfunctions/Troubleshooting:

Malfunction	Possible cause	Solution
unusual, irregular running noises	# Noise rolling/grinding: → Bearing damage # Noise knocking: → Irregularities in the toothing	Contact customer service
Oil leaking	# Seal defective	Contact customer service
Brake does not switch	# Wiring not correct	Check electrical wiring

Tab. 5: Malfunctions

8.2 Gear box

Check oil level:

DANGER

Risk of burns from hot surfaces and hot oil.
The gear box and gear oil can cause severe burns if they come into contact with the skin at operating temperature.

Check the oil level at every service. To do this, proceed as follows:

⇨ Unscrew the oil dipstick and clean it.

⇨ Screw the clean dipstick into the gear box up to the stop.

⇨ Unscrew the oil dipstick.

⇨ Check the oil level. The oil level must be between the two marks. If the oil level is below the MIN mark, fill up with oil.

Check oil condition:

Check the condition of the oil at regular intervals.

Inspection interval:

after 10,000 operating hours

after 20.000 operating hours

after that every 5.000 operating hours

To do this, proceed as follows:

⇨ Unscrew the oil dipstick and put a drop on a white paper.

⇨ Compare the color of the oil with the colors on the oil check card.

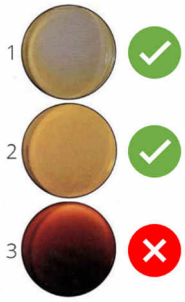

Fig. 9: Oil check card

ATTENTION

If the oil is discolored dark brown to black, the gear oil must be changed immediately.

Oil change:

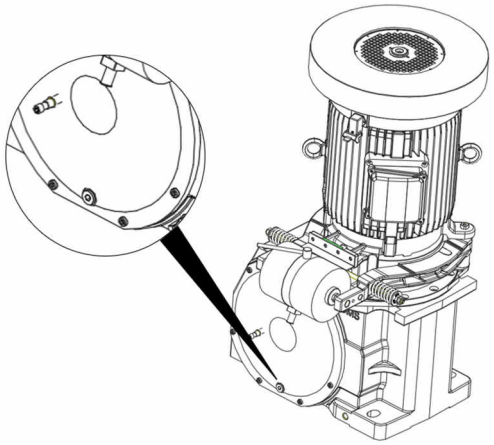

Fig. 10: Oil drain screw

If an oil change is necessary, proceed as follows:

⇨ Place a suitable, sufficiently large container under the oil drain screw (oil quantity is approx. 9 liters).

⇨ Carefully open the oil drain screw.

⇨ Clean the oil drain screw thoroughly.

⇨ After all the oil has drained, screw the oil drain plug firmly back into the drain hole.

⇨ Fill in the oil via the hole for the oil dipstick. Observe the fill level.

⇨ Filling quantity: approx. 9 liters

⇨ Close the filler hole with the oil dipstick.

Oil type according to manufacturer's recommendation:

Kluebersynth GH 6-220

ATTENTION

Fill only with the specified type of oil. Other oils may only be used after consulting the manufacturer.
Do not mix different oils with each other.

NOTE

Waste oil must never be allowed to enter the ground or water. Remove leaked oil immediately.

8.3 Brake

Checking the smoothness of the brake levers:

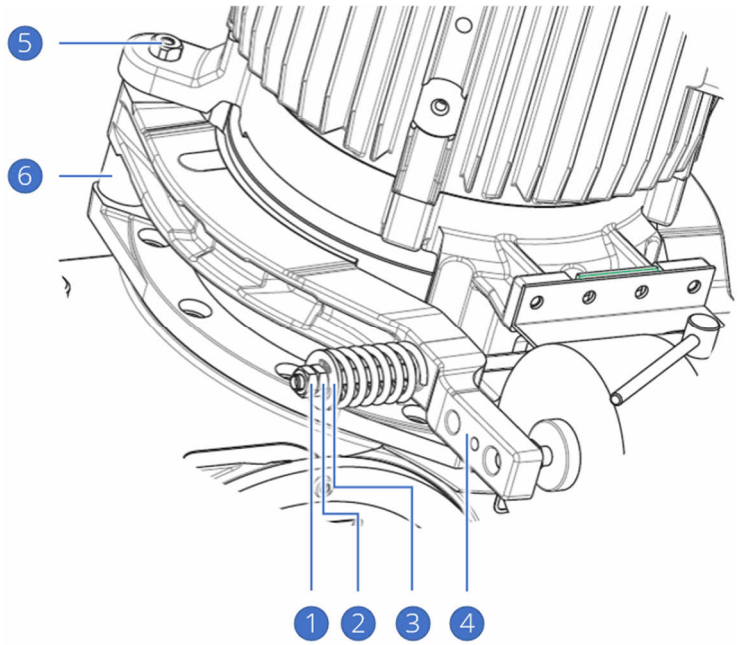

Fig. 11: Checking brake lever

1	Counter nut	2	Clamping nut
3	Spring seat	4	Brake lever
5	Pivot pin	6	Spacer pin / washer

Within the usual maintenance intervals of the escalator, check the smooth operation of the brake levers, as follows:

- ⇨ Loosen the counter nut.
- ⇨ Unscrew the counter nut and the clamping nut from the threaded rod.
- ⇨ Remove the spring seat and the pressure spring.
- ⇨ Open each brake lever beyond the threaded rod. The brake lever must open and close smoothly.
- ⇨ If the brake lever will be move stiffly, remove the pivot pin of the brake lever.
- ⇨ Pay attention to spacer pins / washers.
- ⇨ Grease the pivot pin (MOLYKOTE Longtherm 2 Plus).
- ⇨ Mount in reverse order.
- ⇨ Adjust the braking torque again.

Check brake lining thickness:

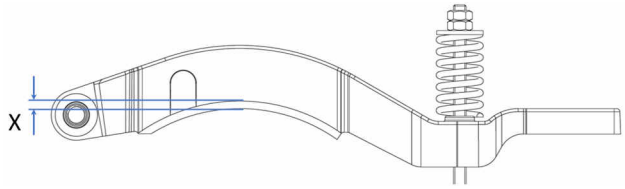

Fig. 12: Measure brake lining

Within the usual maintenance intervals of the escalator, check the brake lining thickness of the brake levers. Open the brake lever and measure the thickness of the brake lining. Thickness X: >2mm.

NOTE

If the wear limit is reached on one brake lever, both brake levers must be replaced with newly fitted brake levers.

Checking the brake lever stroke:

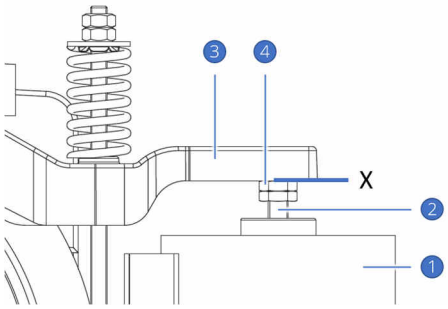

Fig. 13: Checking brake lever stroke

1	Double-acting spreader solenoid	2	Plunger
3	Brake lever	4	Adjustment nut

Proceed as follows:

⇨ Press the plunger into the double-acting spreader solenoid.

⇨ Check the distance between adjustment nut and brake lever using a feeler gauge (dimension X: 0.5mm - 2mm / basic setting 1.5mm).

ATTENTION

The brake lever stroke must not be less than 0.5mm.
At the latest when 0.5mm stroke is reached, it must be readjusted to a maximum of 2mm.

Adjustment of the brake lever stroke:

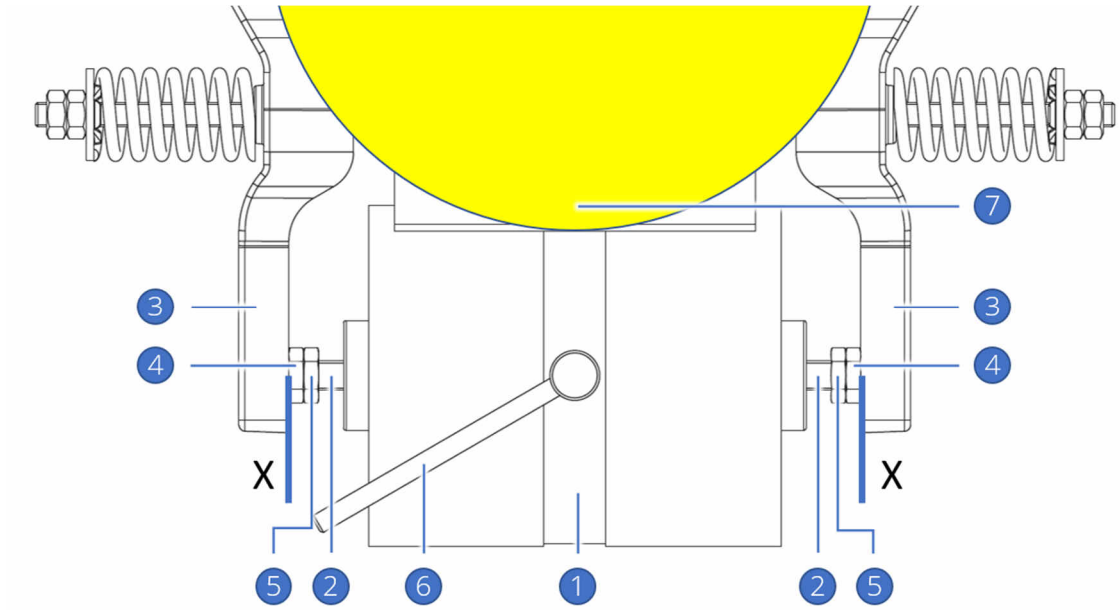

Fig. 14: Adjust brake lever stroke

1	Double-acting spreader solenoid	2	Plunger
3	Brake lever	4	Adjustment nut
5	Counter nut	6	Release lever
7	Hand wheel		

Proceed as follows:

- ⇨ Loosen the counter nut.
- ⇨ Press the plunger into the double-acting spreader solenoid.
- ⇨ Adjust the brake lever stroke using the adjustment nut and feeler gauge.
- ⇨ Dimension X: 1,5mm – 2mm
- ⇨ Tighten the counter nut.
- ⇨ After the setting procedure, control the opening of the brake mechanically by operating the release lever on the double-acting spreader solenoid and electrically via the system control.

ATTENTION

When turning the handwheel and simultaneously release of the double-acting spreader solenoid, no grinding noises must be heard.

Changing the brake levers:

WARNING

When the brake levers are removed, there is no longer any holding force is given. The escalator starts to move. Shut down the escalator system and secure it. Observe the escalator manufacturer's instructions for this.

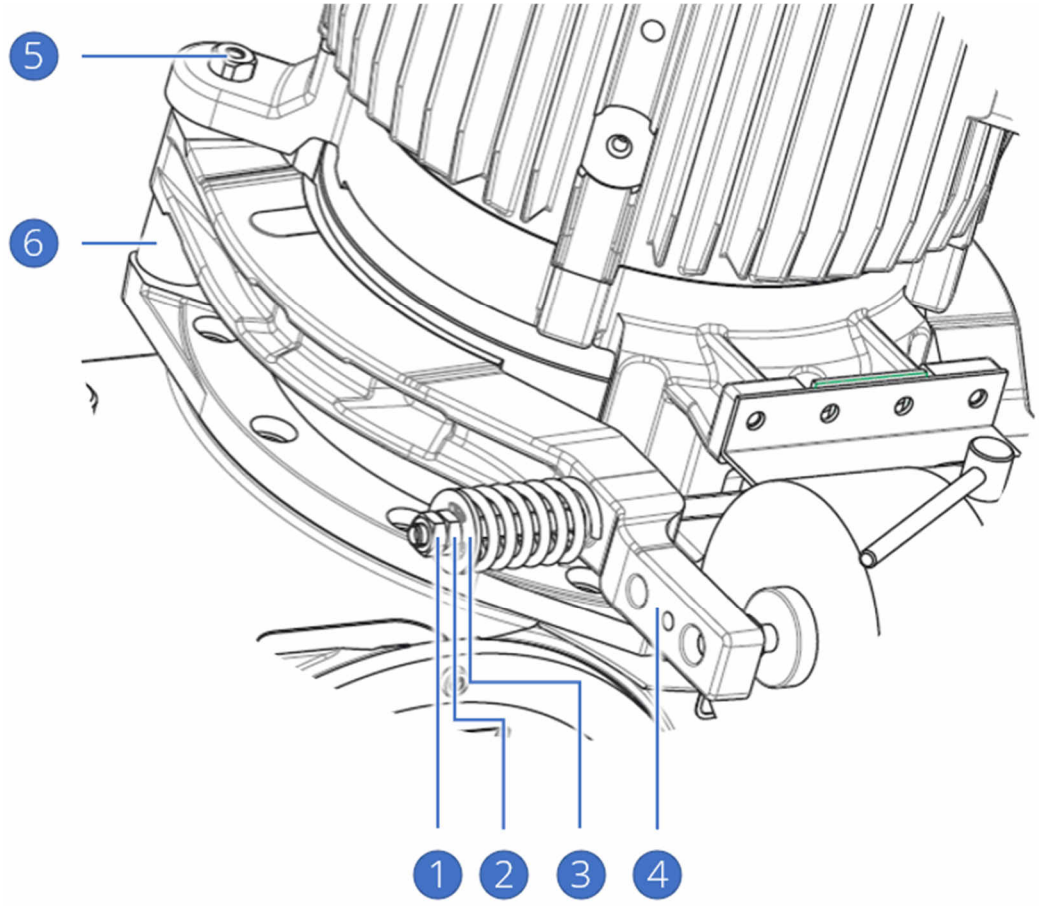

Fig. 15: Changing the brake levers

1	Counter nut	2	Clamping nut
3	Spring seat	4	Brake lever
5	Pivot pin	6	Spacer pin / washer

Proceed as follows for disassembly.

- ⇨ Loosen the counter nut.
- ⇨ Unscrew the counter nut and the clamping nut from the threaded rod.
- ⇨ Remove the spring seat and the pressure spring.
- ⇨ Open the brake lever beyond the threaded rod.
- ⇨ Loosen the pivot pin and pull it out of the hole.
- ⇨ Pay attention to spacer pins / washers.
- ⇨ Mount in reverse order.

WARNING

With new brake pads, the required braking torque is only achieved after repeated short braking with the selected spring preload. Before this, the holding force is not fully given, slipping is possible.

NOTE

Always replace the brake levers in pairs.

Adjustment of the brake:

- ⇨ Check the functionality of the brake before commissioning the escalator. If the preset braking torque does not correspond to the operating conditions, you can adjust it.

Adjustment of the braking torque:

- ⇨ With closed brake, loosen the lock nut on the threaded rod.
- ⇨ Turning the clamping nut changes the preload of the compression spring.
  Clockwise rotation increases the preload.
  Counterclockwise rotation reduces the preload.
- ⇨ Always adjust the preload of the compression spring evenly on the respective opposite brake levers.
- ⇨ Tighten the counter nut again after adjusting the braking torque.
- ⇨ Control the opening of the brake mechanically by operating the release lever on the double-acting spreader solenoid and electrically via the system control.

ATTENTION

When turning the handwheel and simultaneously release of the double-acting spreader solenoid, no grinding noises must be heard.

8.4 Motor

Checking the coupling:

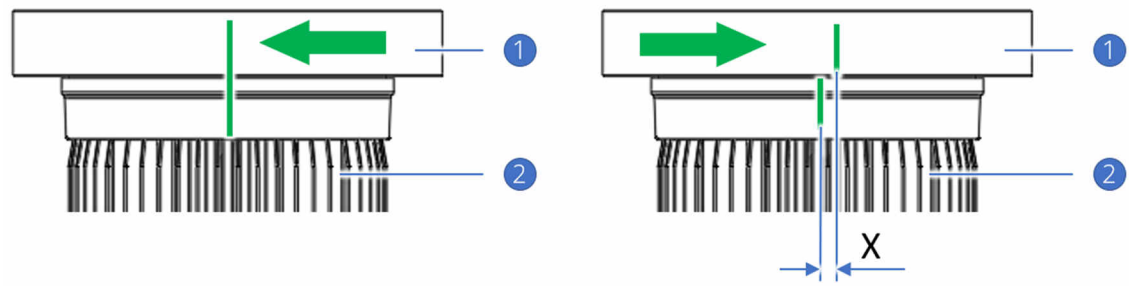

Fig. 16: Checking the coupling

1 Flywheel / hand wheel 2 Motor

To check the wear of the coupling buffers, proceed as follows:

⇨ Turn the flywheel / handwheel to the left until resistance is encountered.

⇨ Mark a line on the flywheel and motor.

⇨ Then turn the flywheel in the opposite direction until resistance is encountered.

⇨ Measure the distance of the markings, dimension X < 5mm.

Motor replacement:

WARNING

When the brake levers are removed, there is no longer any holding force is given. The escalator starts to move. Shut down the escalator system and secure it. Observe the escalator manufacturer's instructions for this.

WARNING

Danger when lifting the motor

- The motor may only be lifted by means of high-strength eyebolts.

CAUTION

Danger of burns on hot surfaces. Allow the motor to cool down before starting work.

NOTE

A coupling with flexible coupling buffers is arranged between the motor and the gear box.

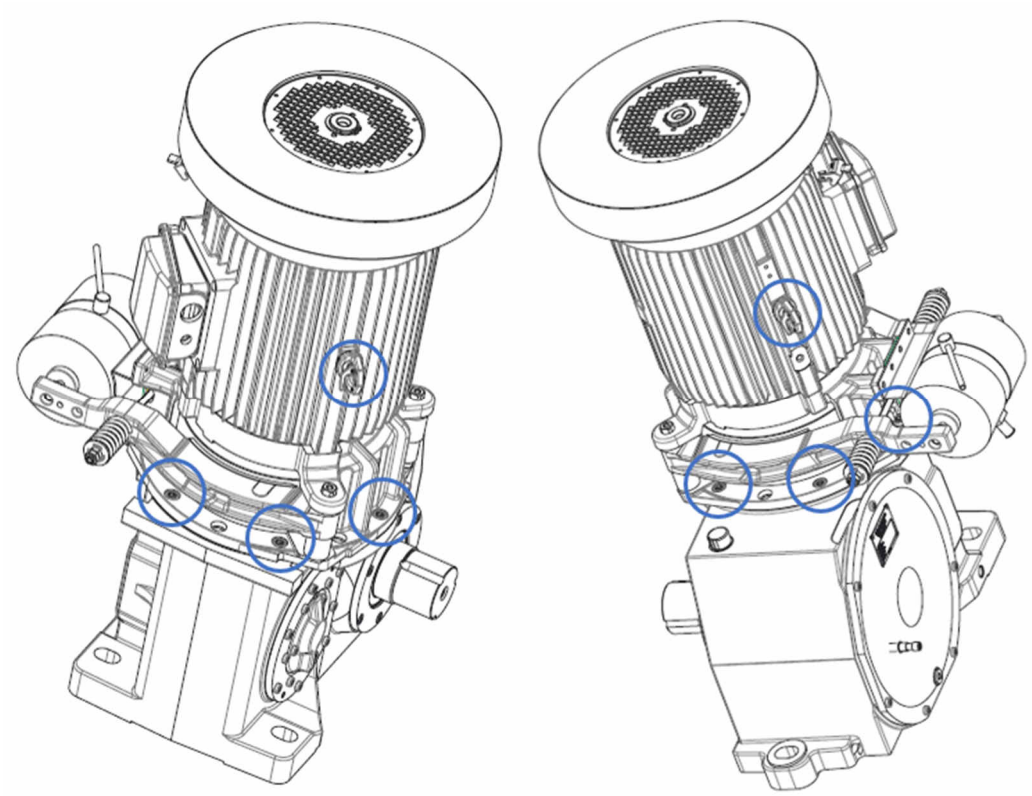

Fig. 17: Motor replacement

To replace the motor, proceed as follows:

- ⇨ Open the brake levers until the brake linings are no longer in contact with the brake drum.
- ⇨ Loosen and disassemble the motor mounting screws (6 screws around the circumference of the motor flange).
- ⇨ Lift the motor using the lifting devices provided for this purpose.
- ⇨ Assembly of the components takes place in reverse order. When mounting the motor, ensure that the coupling bolts on the motor are correctly seated and positioned in relation to the holes in the brake drum.
- ⇨ Electrical wiring of the motor as shown in the junction box.

Assembly of the sprocket:

CAUTION

Risk of burns on hot surfaces. Wear heat-resistant gloves to prevent burns.

ATTENTION

Note the opening of the C-pin slots to each other.

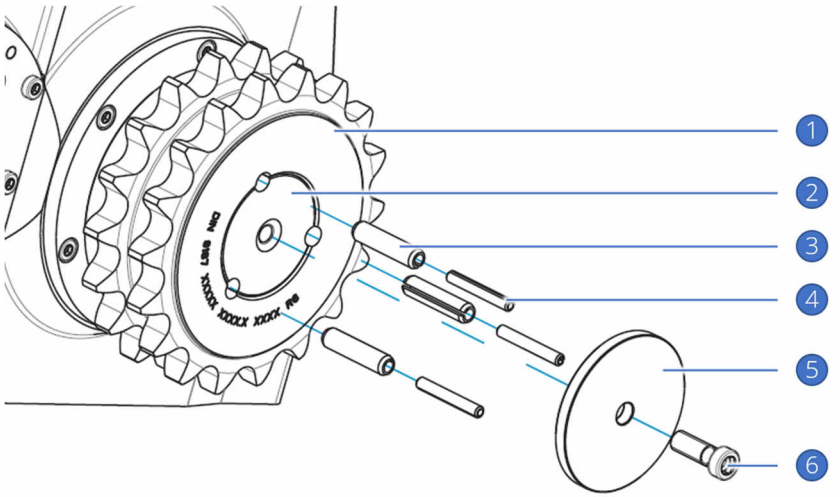

Fig. 18: Assembly sprocket

1	Sprocket	2	Output shaft
3	C-pin Ø12	4	C-pin Ø7
5	Thrust washer	6	Bolt DIN 6912 - M12x35

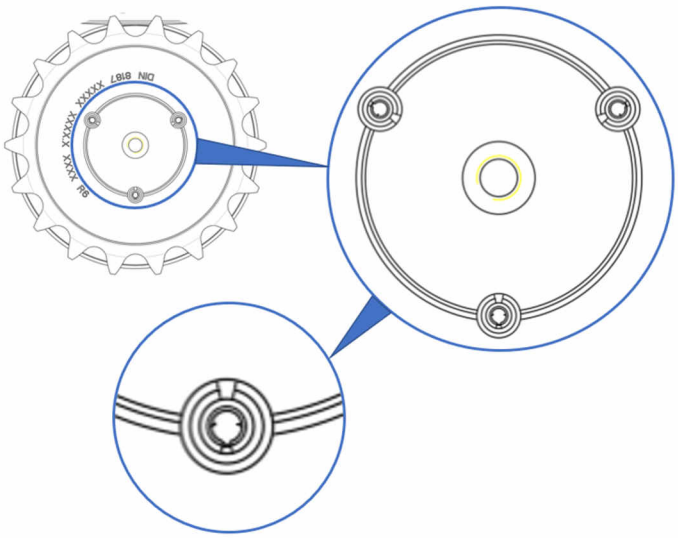

Fig. 19: Alignment C-pins

Proceed as follows:

- ⇨ Clean the shaft and the sprocket.
- ⇨ Heat the sprocket to a temperature of 170° ±5°Celsius.
- ⇨ Push the warmed-up sprocket onto the output shaft as far as it will go and align it with the existing pin holes.
  Align the pin holes immediately after pushing on the sprocket while it is still heated. After cooling down, it is no longer possible to turn the sprocket on the output shaft.
- ⇨ Allow the sprocket to cool before continuing assembly.
- ⇨ Knock in C-pin 3x Ø12 into the pin bore with a hammer. Pay attention to the alignment of the C-pin. Slot in direction of center of output shaft.
- ⇨ Knock in C-pin 3x Ø7 into C-pin Ø12 with hammer. Pay attention to the alignment of the C-pin. Slot 180° offset to C-pin Ø12.
- ⇨ Mount the thrust washer with the bolt on the output shaft.
  Apply LOCTITE blue (243) to the thread of the bolt. Tightening torque of cap screw 84Nm.

Disassembly of the sprocket:

Proceed as follows:

- ⇨ Disassemble the bolt and thrust washer from the output shaft.
- ⇨ Pull the sprocket off the output shaft using a suitable puller. When pulling off, make sure that the thread for the bolt is not damaged.

9. Disassembly/disposal

Disassembly of the drive:

⇨ Replace the oil dipstick with the supplied sealing plug. The gear box is not sealed oil-tight with the oil dipstick.

⇨ For disassembly, proceed in reverse order of assembly.

Disposal:

Dispose of all components correctly. Observe the respective country-specific regulations for disposal.

NOTE

Waste oil must never be allowed to enter the ground or water.

Appendix

A1 Applicable documents

The following documents also apply to the drive considered in these installation instructions:

Technical data sheet

Technical data sheet – ECT 2-15

Technical changes reserved – Status 03/2011

Input torque, max.	$T_{max.}$=	150 Nm
Input revolutions	n =	1.000, 1.200, 1.500 rpm
Efficiency	$\eta \geq$	96%
Oil quantity:	V =	9 liters
Average temperature in oil bath	T =	30 - 35 Kelvin above ambient temperature
Oil change intervals	t =	40.000 operating hours
Lifetime gearing		Lifetime durability
Lifetime bearings with equivalent load factor	t = $p_{equiv.}$ =	70.000 operating hours 0,48 x nominal power
Sound pressure level	L_p =	60 dB (A) @ 1.000 rpm
Ratios	i =	15,69 / 18,86 / 20,45 / 24,55
Escalator speed	v =	0,5 bis 0,75 m/s
Versions		Left and right version Single or double drive for chain drive, suitable for escalators and moving walks
Sprocket		Duplex and Triplex, DIN 8187
Brake		2-fold brake 4-fold brake
Weight gear box incl. brake drum	m =	approx. 170kg

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