PRODUCT MANUAL

ABUS Trolley

Push trolley HF
Electric trolley EF

At a glance:

AN 120133EN012
2025-04-11

Original Operating Instructions

TROLLEY: VARIOUS TYPES, SIZES, VERSIONS AND OPTIONS

This product manual applies to trolleys of various types, sizes and versions. The work steps described and the technical data will vary according to the type, size and version of the trolley. The areas of this product manual which do not apply to all trolleys, but are applicable only under certain conditions, are enclosed in a dashed box. At the start of the box, the types, sizes and versions to which the section is applicable are specified.

If a work step is described in a dashed box:

- ➔ At the start of the dashed box text, read the size, version or option to which this box applies.
- ➔ Note page and turn to this first page.
- ➔ Based on the images, determine which size, version or option applies to the crane in question.
- ➔ Turn back to the page with the associated dashed box for the next work steps.

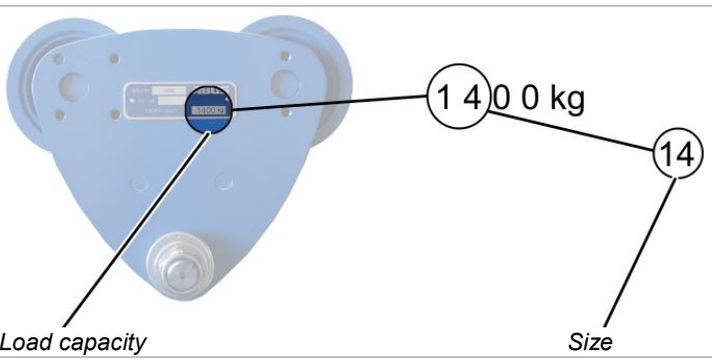
- ➔ The size, version or option that applies to the crane in question can also be determined by consulting the scope of delivery or the planning documents.

TYPE

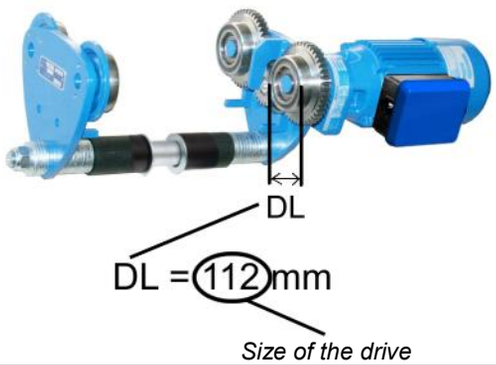
Push trolley HF

Electric trolley EF

SIZE OF THE TROLLEY

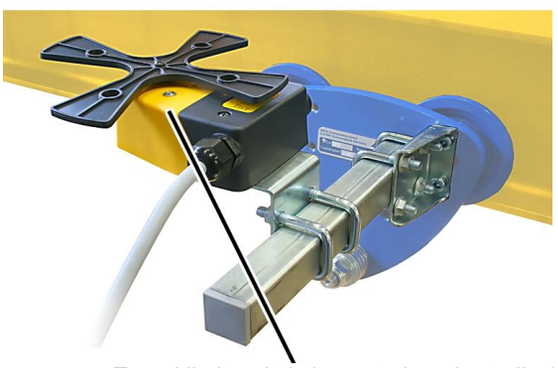


SIZE OF THE DRIVE



Size of the drive

TRAVEL LIMIT SWITCH (OPTION)



Travel limit switch (mounted on the trolley)

DRIVE (VERSION)

Drive with helical gear unit
Type plate: DSN 700329

Drive with planetary gear
Type plate: DSN 703717

POWER SUPPLY (VERSION)

➔ In the test log book of the crane, check whether the crane has a power supply through an energy chain or through a festoon cable system.

CONTENTS

GENERAL INFORMATION

THIS SECTION APPLIES TO ANYONE WHO LIFTS LOADS USING THE CRANE, PERFORMS WORK ON THE CRANE, OR WORKS NEARBY.

AT THE START

USING THIS PRODUCT MANUAL

The following symbols are used in this product manual:

DANGER TO PERSONS!
This warning notice indicates hazards for persons.

DANGER FROM ELECTRIC SHOCK!
This warning notice indicates hazards for persons due to incorrect handling of the electrical system and electricity.

DANGER FROM FALLING SUSPENDED LOAD!
This warning notice describes hazardous situations that can lead to the suspended load falling.

NOTICE OF POSSIBLE DAMAGE!
This notice describes situations in which a component could be damaged.

➔ This is an instruction regarding an action and prompts you to perform a work step.

- This is the result of an action and describes what happens on the device.

– This is a list.

ONLY WITH...

A section that appears in a box framed by a dashed line is only applicable for certain types, versions or options. The condition to which the section applies is specified at the beginning in the heading “Only with...”.

INSTRUCTIONS FOR THE PRODUCT MANUAL

Read the product manual through carefully before beginning work. Also be sure to observe additional product manuals for accessories and components.

Afterwards, keep the product manual available in the vicinity of the crane. It must be accessible to all who work with or on the crane.

In the case of reselling or hiring out, always provide the product manual together with the crane.

PROPER USE

The push trolley HF and the electric trolley EF are to be used exclusively for moving a single-girder crane EHB-I or double-girder crane ZHB-I in a horizontal plane. The trolley is suspended for this from an I-beam with the appropriate width. The flange of the I-beam can be inclined a maximum of 15°. On the chain hoist or crane, the travelling trolley can be rigged with a load, which is then moved horizontally above the floor.

– Do not exceed the maximum load capacity.

– Dimension the entire supporting structure appropriately for the load-bearing capacity as well as the dead load of the trolley.

– Only install cranes and hoists on the trolley which can be permanently and securely mounted and for which this use has been approved.

– Long-term usage only under weatherproofed ambient conditions. Temporary use outdoors in rain or snow is permitted.

REGULATIONS

The installation has been built and tested according to European standards, rules and regulations applicable at the time of its manufacture. The conventions applied during design and construction are specified in the Declaration of Conformity or the Declaration of Incorporation. The conventions must also be observed for installation, operation, inspection and maintenance, as must the applicable occupational health and safety regulations.

DANGER TO PERSONS!
Non-observance of the regulations can result in the death of persons or serious accidents.

To ensure that the work can be performed safely, thorough instruction in regard to this product manual and the regulations is necessary.

Which provision applies in individual cases will greatly depend on the crane's use and the national regulations. Review and observe all applicable and current regulations, including the occupational health and safety regulations. Refer also to the Declaration of Conformity or Declaration of Incorporation.

WARRANTY

- ABUS assumes no liability for damages that were caused by improper use, inadequately trained personnel, incorrect performance of work, nor for any changes, reconstruction or other modification of the crane or crane components which were not approved by ABUS.
- Any warranty claim becomes invalid if components were modified without consent, the crane or crane components were installed, used or serviced in any way other than that described in this product manual, or if parts other than original ABUS replacement parts were used.
- Safe operation of the crane or crane components is only guaranteed if original ABUS replacement parts are used.

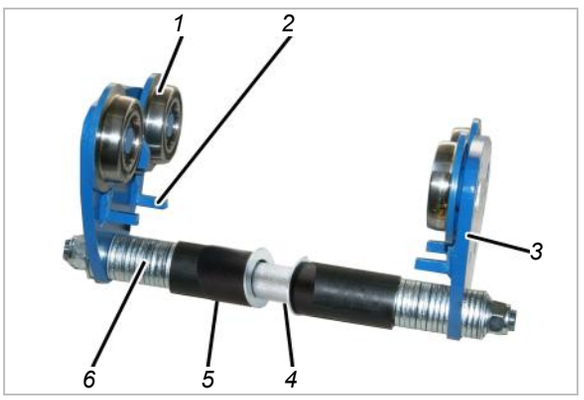
INSTRUCTIONS REGARDING SAFETY

Observe these instructions for safe handling of the crane. Special hazard notices are located in the corresponding sections in which the danger arises.

- Danger through rotating parts! If a drive is not mounted, the output shaft is not protected. If the non-mounted drive is operated, the output shaft is a source of danger (e.g. it can become caught in loose parts). Do not operate the drive if it is not mounted or take suitable measures to ensure safety.
- Do not permanently remove the fan cover! If the fan cover is removed, hazardous areas (fast-rotating fan blades) are no longer protected. As a result of this people can be injured! Remount the fan cover after working on the drive. Do not permanently remove the fan cover to improve cooling.

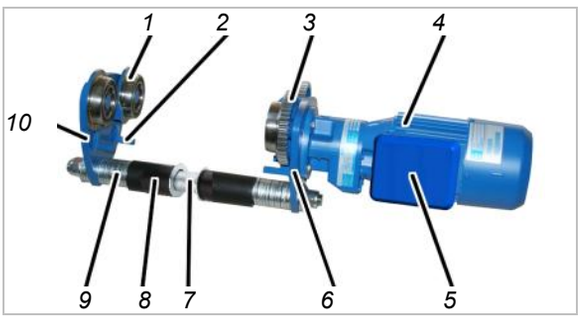
THE TROLLEY

MACHINE DESCRIPTION, PUSH TROLLEY HF



- 1: Wheel
- 2: Lift-off prevention device
- 3: Side panel
- 4: Travelling gear bolt
- 5: Bush
- 6: Distance rings

MACHINE DESCRIPTION, ELECTRIC TROLLEY EF



- 1: Wheel
- 2: Lift-off prevention device
- 3: Wheel with gear rim
- 4: Drive with disc brake
- 5: Connector housing for electrical connection
- 6: Side panel, powered
- 7: Travelling gear bolt
- 8: Bush
- 9: Distance rings
- 10: Side panel, not powered

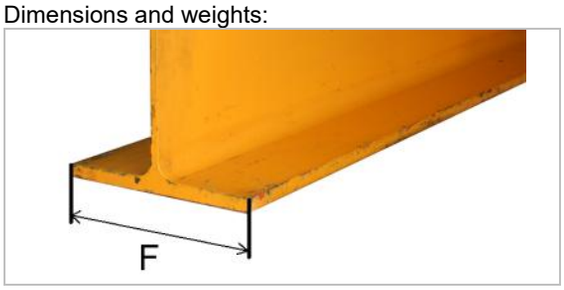
PERFORMANCE FEATURES

The trolley:

- The trolley serves as a manually (HF) or electrically (EF) powered hoist trolley for chain hoists or as a crane trolley for the single-girder crane EHB-I and the double-girder crane ZHB-I.
- The trolley can be mounted on I-beams with a flange inclined up to 15° or a non-inclined flange.
- The trolley is adapted to the flange width of the I-beam with travelling gear bolts of various lengths. For an exact width adjustment, distance rings are used.
- The trolleys HF3, HF6, HF/EF14 and HF/EF22 are curve-travelling in certain radii. The drive of the trolleys EF14 and EF22 must thereby lie on the outer side of the curve.
- The trolley is fixedly connected to the I-beam by a lift-off prevention device and cannot fall down even in adverse conditions.
-
- The electric trolley EF:
- The drive is designed as a pole-variable three-phase motor with electromagnetic brake and gear unit.
- The drive's gear unit is a maintenance-free, two-stage helical gear unit or a planetary gear unit.
- The drive has a low and a high speed. The ratio of the two travel speeds is 1/4.
- The drive brakes reliably through an electromagnetic disc brake even if the mains supply is shut off or a power outage occurs.
- Using plug-in connections in the connector housing directly on the drive, the drive can be quickly separated from the rest of the crane’s electrics.
- Only if the trolley is used as a hoist trolley: The electric trolley EF is provided with current by the chain hoist. The trolley is connected to the chain hoist, which is manoeuvred through a pendant control. Alternatively, the trolley can also be externally controlled (from an external panel for example).
- Only if the trolley is used as a crane trolley: The electric trolley EF is provided with current by the HB crane installation.

TECHNICAL DATA

Dimensions and weights:



Type	Flange width F [mm]	Weight of trolley [kg]	Add. weight of drive [kg] for electric trolley	Load capacity [kg]	Wheel Ø DL [mm]	Bolt Ø D [mm]
HF 3	42 – 120 121 – 180	4.1 4.5		300 300	56	22
HF 6	42 – 120 121 – 220	6.0 6.7		580 580	65	30
HF 14 and EF 14	64 – 125 126 – 200 201 – 300 301 - 400	11.0 11.9 12.9 13.6	20.0	1400 1400 1400 1150	80	34
HF 22 and EF 22	82 – 150 151 – 200 201 – 300 301 - 400	23.8 24.8 26.9 28.4	20.0	2200 2200 2200 1800	112	50
HF 36 and EF 36	90 – 155 156 – 200 201 – 300 301 - 400	28.6 29.9 32.2 34.4	20.0	3600 3600 3600 2900	112	60
EF 50	100 – 190 200 – 300	87.8 94.8	30.0	5000	140	70

Table: Dimensions and weights. Load capacity refers to the classification 2m according to FEM 9511.

Electrical connection brake

Drive	Voltage	Electrical power
EF 80 / 112	195 VDC	21 W
EF 140	195 VDC	25 W

Ambient conditions for operation:

Ambient temperature (for normal operation)	- 10 °C and + 40 °C
Ambient temperature (for reduced duty cycle)	+ 40°C to 80°C

Noise emissions:

Trolley	Sound pressure level LP, m dB(A) at distance of 4 m	Sound pressure level LW, m dB(A)
EF 80 / EF 112	67	84
EF 140	64	81

Table: Noise emissions based on DIN 45635, Part 61 following the substitution process with an acoustic power source

In the table, the sound pressure level LP is specified for a distance of 4 m from the trolley. To calculate the sound pressure level LW, the sound pressure level at any distance may be used.

DISPOSAL OF THE TROLLEY

If the trolley must be disposed of:

- ➔ Dismantle the trolley as far as possible.
- ➔ Observe local regulations concerning disposal and recycling.
- ➔ Dispose of the individual parts sorted by material in an environmentally sound manner.
  - – Dispose of the oil from the gear unit as a lubricant.
  - – Dispose of brake linings as multiple components (hazardous waste).
  - – Dispose of side panels, travelling gear bolts, motor and gear unit as metal waste.
  - – Dispose of cables and plug-in connections as scrap electronic parts.
  - – Dispose of electronic components as scrap electronic parts.
  - – Parts of the trolley that have been repainted are to be disposed of in accordance with the paint manufacturer's instructions.

This product or electrical device may not be disposed of at the end of its service life with regular domestic waste.

INSTALLING AND CONNECTING

THIS SECTION APPLIES TO ANYONE WHO WORKS ON THE CRANE PRIOR TO ITS USE

The end user of the crane is responsible for the proper qualifications of the commissioning personnel.

DANGER TO PERSONS!
Persons can be injured if the crane is incorrectly put into operation.

If personnel other than that of the ABUS company are employed to perform the crane commissioning, it is the end user's responsibility to ensure that these persons are adequately qualified. Follow the procedures described here precisely.

Examples of qualified persons:

- Persons with comprehensive knowledge from specialist training in engineering and in the electrical systems of cranes.
- Persons with sufficient experience in the operation, installation and maintenance of cranes.
- Persons with comprehensive knowledge regarding the relevant technical rules, directives and safety regulations applicable in the respective country.
- Persons receiving regular training from ABUS.

ABUS assumes no liability for damage due to incorrectly performed commissioning work done by unqualified personnel.

ABUS recommends having the commissioning work performed by the ABUS assembly team.

CHECKING THE REQUIREMENTS

The following requirements must be met in order for the trolley to be mounted.

CHECKING THE I-BEAM

- The trolley can only be mounted on I-beams with a flange inclined up to 15° or a non-inclined flange.

CHECKING THE LOAD CAPACITY

- The supporting structure on which the trolley is to be fastened (e.g. jib crane, supporting structure, hall ceiling, etc.) must have an adequate load capacity.

The load on the I-beam and the supporting structure is comprised of the weight of the trolley, the chain hoist, and the maximum load capacity of the chain hoist.

➔ Determine the weight of the trolley.

➔ Add the dead load of the chain hoist. If necessary, add the additional weight of the chain. See the product manual for the ABUS chain hoist.

➔ Add the maximum load capacity.

➔ Check the entire supporting structure as to whether it will support the expected load.

MEASURING THE FLANGE WIDTH

– The flange width of the I-beam must match the flange width of the trolley.

➔ Measure the width of the I-beam.

➔ Check whether the flange width F of the I-beam is within the range specified on the travelling gear bolt.

If not, contact the ABUS service department. See "ABUS Service", page 49.

INSTALLATION OVERVIEW

The following sections show how the push trolley HF and electric trolley EF are installed

– The trolley is first pre-assembled on the floor and adapted to the flange of the I-beam. See page 12.

– Then the trolley is mounted on the I-beam, see page 14.

– Finally, the power carrier is installed. See page 16.

– If necessary, the travel limit switch is then installed. See page 20.

– Then, if necessary, the buffer rods are fixed to the other trolleys. See page 21

– The electrical connection of the trolley will differ according to whether it is to be connected to an ABUS crane installation (see page 23) or a non-ABUS installation (see page 25).

– Finally, the connection cables are laid properly. See page 27.

Note:

The following work steps describe how the trolley is to be installed on an I-beam which is not freely accessible at the front and rear (welded end plate, building wall etc.).

If one of the two ends of the I-beam is freely accessible, the installation will be slightly easier: The side panels can then be bolted directly to the floor (observe tightening torques!) and the trolley can be pushed onto the lower flange from the open side.

PRE-ASSEMBLING THE TROLLEY

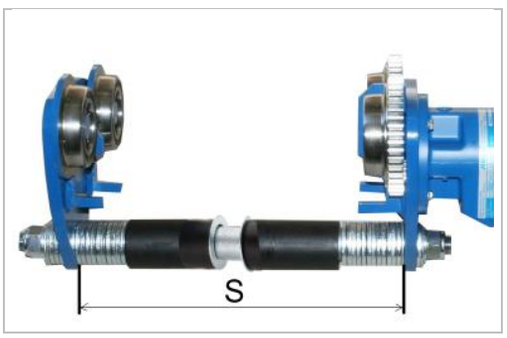
The following work steps can be performed on the floor.

ADAPTING THE TRAVELLING GEAR BOLT

The track gauge of the trolley is adapted for the width of the flange using multiple distance rings.

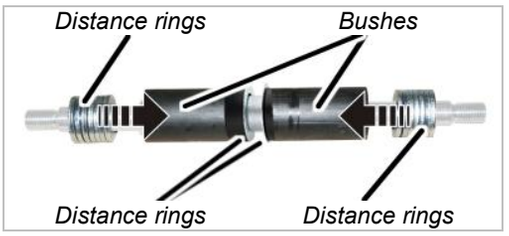
➔ Read the flange allowance FZ listed in the table according to the trolley type (HF or EF) and size.

Size	FZ for HF [mm]	FZ for EF [mm]
3	25 mm	-
6	25 mm	-
14	23 mm	35 mm
22	30 mm	41 mm
36	30 mm	41 mm
50	62 mm	62 mm



➔ Sum up the flange width F and flange allowance FZ. This is the dimension for the trolley track gauge S.

Track gauge S = flange width F + flange allowance FZ



➔ Slide the bushes (2x) onto the travelling gear bolt with distance rings (2x) in the centre.

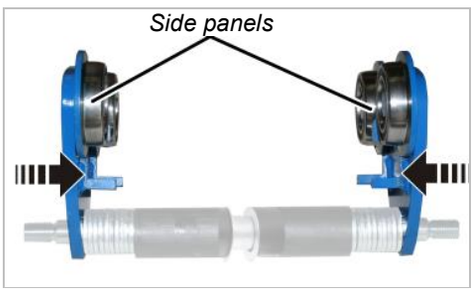
➔ Slide the 2.5 mm and 5 mm distance rings on the travelling gear bolt identically on the left and right until the calculated track gauge S is reached.

There must always be the same number of distance rings of the same thickness on the left and right. This will ensure that the chain hoist rests centrally under the trolley and distributes its weight evenly on all wheels.

Leave at least one spare 5 mm distance ring for each side and do not use it at this point.

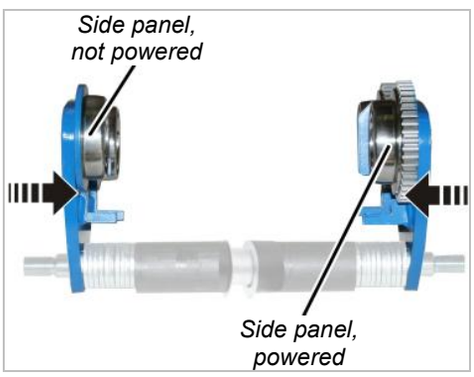
MOUNTING THE SIDE PANELS

ONLY WITH PUSH TROLLEY HF



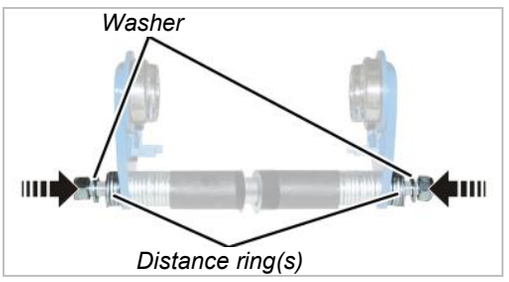
➔ Slide both side panels, left and right, onto the travelling gear bolt.

ONLY WITH ELECTRIC TROLLEY EF



➔ Slide the non-powered side panel and powered side panel (wheels with gear rim) on the left and right onto the travelling gear bolt.

BOLTING THE TROLLEY TOGETHER



➔ If available: Slide the remaining 2.5 mm and 5 mm distance rings onto the travelling gear bolt identically on the left and right.

➔ Slide on at least one 5 mm distance ring (left over from the adjustment of the travelling gear bolt) on each side.

➔ Slide on one washer each on the left and right sides.

➔ Turn the self-locking nuts each several turns on the travelling gear bolt. The side panels should still allow themselves to be tipped and rotated.

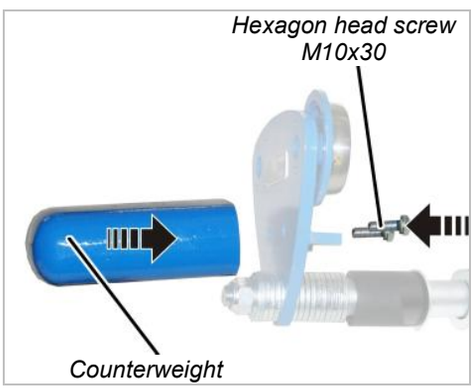
ONLY FOR ELECTRIC TROLLEYS EF 14 AND EF 22 (WITH NARROW FLANGE WIDTHS AND CERTAIN CHAIN HOISTS)

This work step applies only to electric trolleys EF 14 and EF 22 with narrow flange widths and lightweight chain hoists.

MOUNTING THE COUNTERWEIGHT

Small electric trolleys with narrow flange widths and lightweight chain hoists require a counterweight. Otherwise, the weight of the motor would place an uneven load on the wheels.

If a counterweight was included in the delivery:

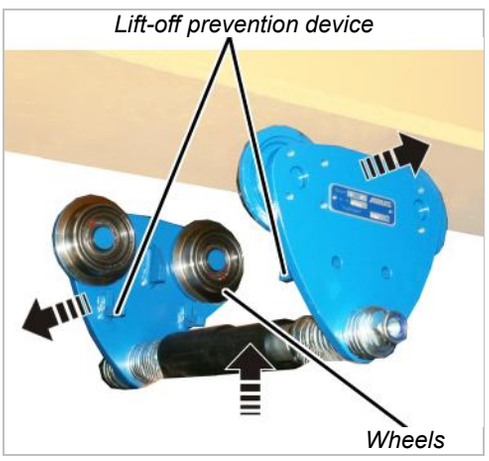


➔ Hold the counterweight to the non-powered side panel.

➔ Fasten the counterweight with hexagon head screws M10x30 (2x) until hand-tight.

MOUNTING THE TROLLEY ON THE I-BEAM

MOUNTING THE TROLLEY



➔ Only with electric trolley EF:

Turn the trolley so that the drive (side panel with gear rims on the wheels) lies on the side opposite to the power supply and lift the trolley under the beam.

The drive must also be on the outer side of the curve. The power supply must therefore lie on the inner side of the curve.

➔ Only with push trolley HF: The side panels are identical. For this reason it makes no difference which way round the trolley is mounted.

➔ Press or turn the side panels apart at the top.

➔ Slide the trolley with the wheels on the flange and the lift-off prevention device under the flange.

➔ Fold the side panels together and secure them against slipping.

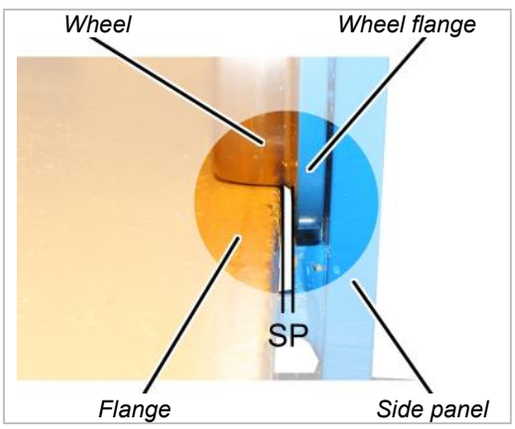
Note:

If the two side panels cannot be folded out or turned far enough, remove one side panel completely and slide the trolley onto the flange in two parts.

CHECKING THE TOLERANCE OF THE TRACK GAUGE

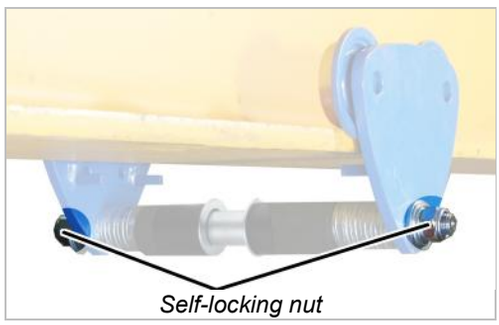
DANGER FROM FALLING SUSPENDED LOAD!
If the tolerance of the track gauge is exceeded, the trolley, together with chain hoist and load, could slip from the beam and seriously or fatally injure someone.

Before installing, check the tolerance precisely.



➔ Measure the clearance between wheel flange and rail SP (the distance between the rail flange and the wheel flange) on both sides of the trolley. The measured value may not be larger than 2 mm on either side.

BOLTING ON THE SIDE PANEL

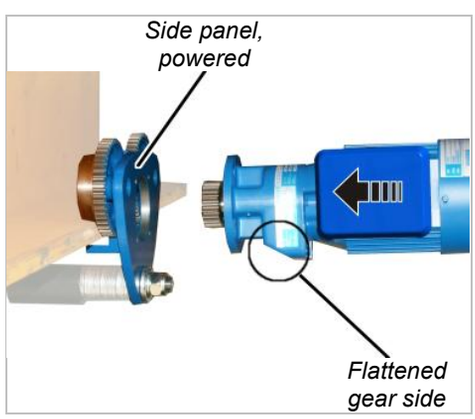


➔ Tighten the self-locking nut.

Size	Type	Tightening torque
HF 3	M12	70 Nm
HF 6	M16	90 Nm
HF 14 EF 14	M20	130 Nm
HF 22 EF 22	M24	160 Nm
HF 36 EF 36	M30	200 Nm
EF 50	M36	300 Nm

ONLY WITH ELECTRIC TROLLEY EF

INSTALLING THE DRIVE



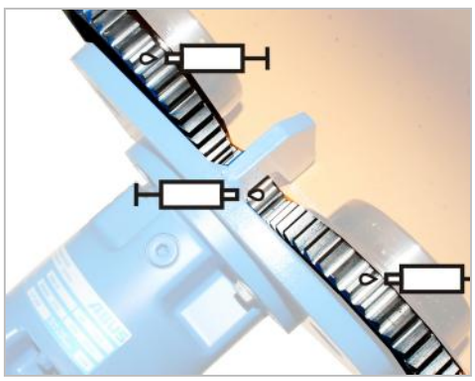
➔ Only for drive with helical gear unit: Align the drive with the flattened gear side facing down.

➔ Only for drive with planetary gear unit: The drive can be positioned either way.

➔ Slide the drive in the powered side panel.

➔ Bolt on the drive with the rib screws M6x20 (4x). Tightening torque 10 Nm.

LUBRICATING THE GEAR RIM

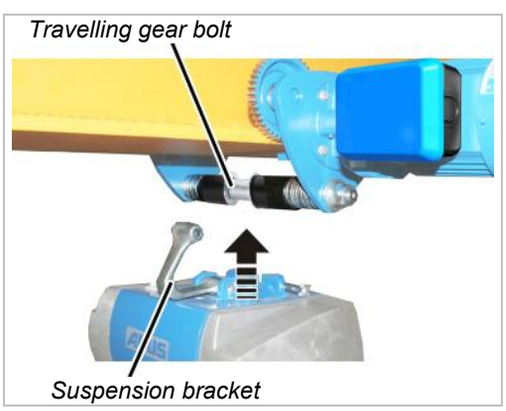


➔ Lubricate all three gear rims.

Lubricant: “High-Lub LT1 EP”. For details, see “Lubricants”, page 50.

ATTACHING THE CHAIN HOIST

The chain hoist can now be suspended on the travelling gear bolt with the fold-out suspension bracket. Be sure to read and observe the product manual of the chain hoist!



➔ Attach the chain hoist with folded-out suspension bracket under the travelling gear bolt.

➔ Fold the suspension bracket over the travelling gear bolt.

Both distance rings should sit to the left and right of the suspension bracket.

➔ Insert the bolt in the suspension bracket and press on the SL safety clip.

INSTALLING THE POWER CARRIER

The power carrier is mounted on one of the two side panels. It pulls the electrical cables for the power supply (festoon cable system, conductor system, energy chain, etc.) back and forth parallel to the trolley.

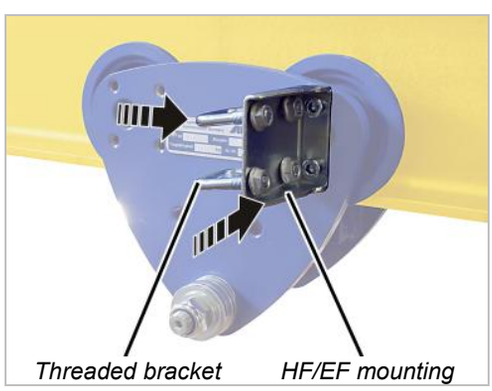
Depending on the crane (overhead travelling crane, jib crane, HB crane), the height of the I-beam, the type of power supply (festoon cable system, conductor system, energy chain) and other crane features, the power carrier will need to be mounted differently.

➔ Select the appropriate option from the following variations and install.

MOUNTING A VERTICAL SQUARE TUBE AS POWER CARRIER

Mounting the power carrier vertically on the right on the side panel:

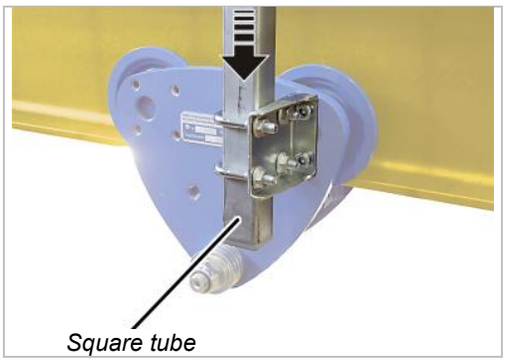
The power carrier is normally mounted vertically on the right on the side panel.



➔ Screw the HF/EF mounting onto the side panel with fillister-head screws M8x10 (2x) until hand-tight.

➔ Insert threaded brackets (2x) into the HF/EF mounting.

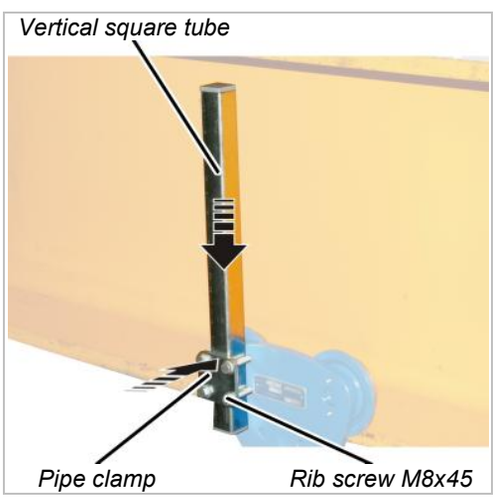
➔ Loosely screw in the M8 rib nuts (4x).



- Insert the vertical square tube.
- Shorten the square tube as required.
- Screw on the M8 rib nuts (4x) until hand-tight.

Mounting the power carrier vertically on the left on the side panel:

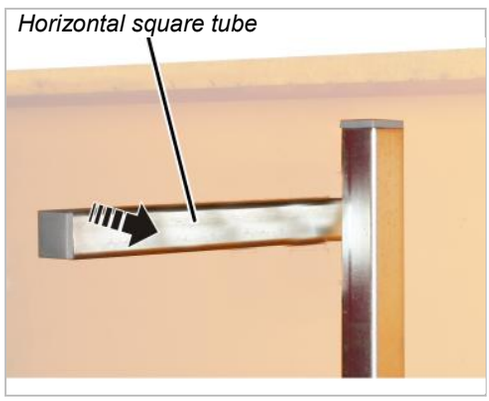
Depending on the power supply, it may be necessary to mount the power carrier vertically on the left on the side panel.



- Loosely screw the pipe clamp onto the side panel with the rib screws M8x45 (4x).
- Insert the vertical square tube.
- Shorten the square tube as required.
- Screw on the rib screws M8x45 (4x) until hand-tight.

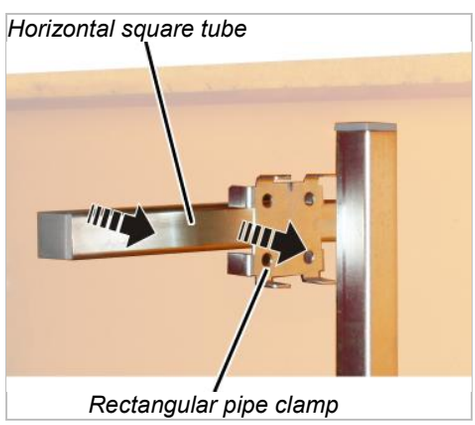
MOUNTING AN ADDITIONAL HORIZONTAL SQUARE TUBE

Depending on the power supply, it may be necessary to mount an additional horizontal square tube on the vertical square tube.

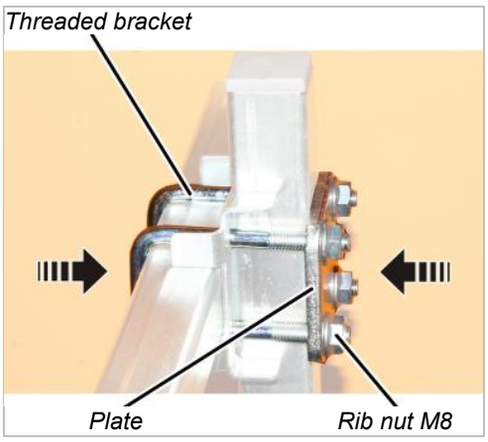


- Hold the horizontal square tube to the vertical square tube.
- Shorten the horizontal square tube as required.

ONLY WITH ENERGY CHAINS FUNCTIONING AS THE POWER SUPPLY



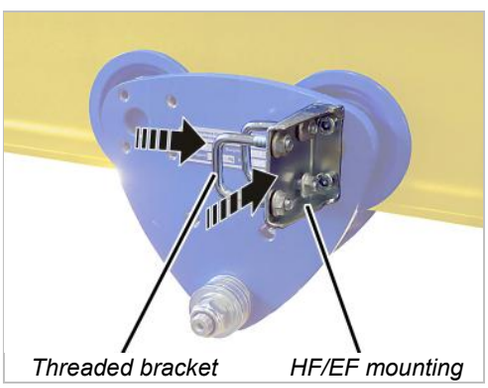
- Push the pipe clamp between the two square tubes.



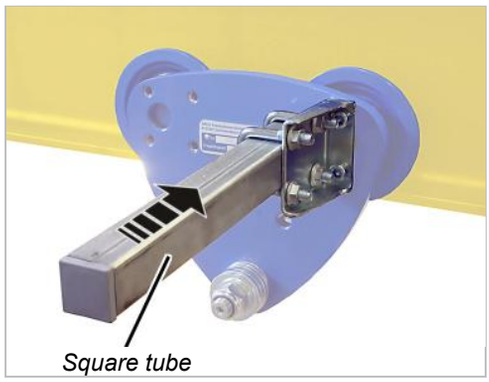
- Push the threaded bracket over the two square pipes and the plate for the pipe clamp.
- Screw on the M8 rib nuts (4x) until hand-tight.

WHEN MOUNTING ONLY A HORIZONTAL SQUARE TUBE AS POWER CARRIER

Depending on the power supply, it may be necessary to mount the power carrier horizontally on the side panel.



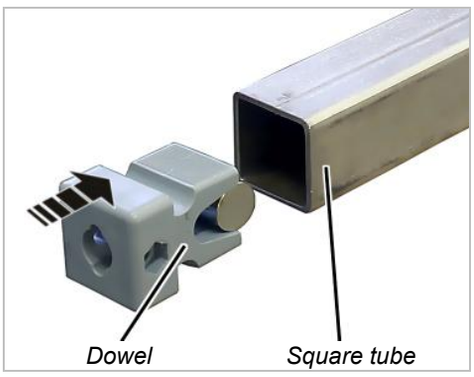
- Screw the HF/EF mounting onto the side panel with fillister-head screws M8x10 (2x) until hand-tight.
- Insert threaded brackets (2x) into the HF/EF mounting.
- Loosely screw in the M8 rib nuts (4x).



- Insert the horizontal square tube.
- Shorten the square tube as required.
- Screw on the M8 rib nuts (4x) until hand-tight.

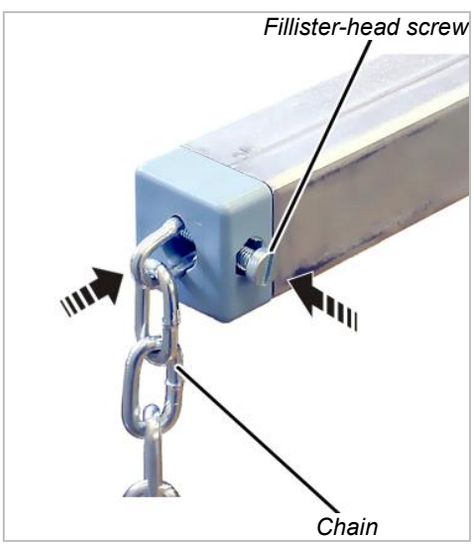
CONNECTING POWER CARRIER WITH POWER SUPPLY

ONLY FOR A FESTOON CABLE SYSTEM



➔ Insert a dowel in the horizontal or vertical square tube.

➔ Insert a screw in the dowel and screw in until the dowel sits tightly in the square tube.

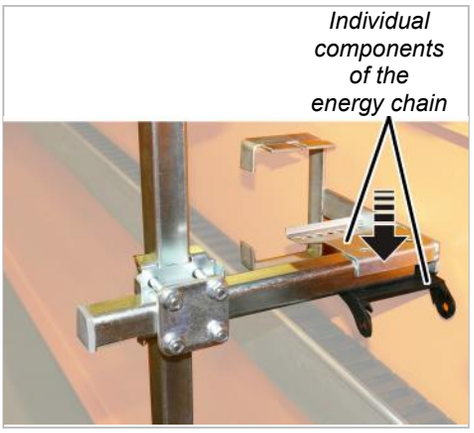


➔ Insert the chain into the dowel from the front.

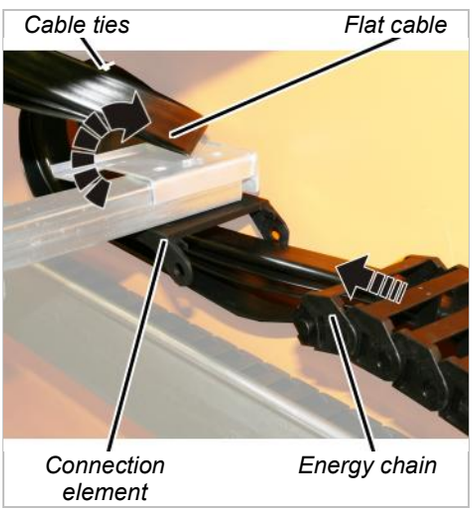
➔ Insert a fillister-head screw laterally into the dowel and screw until hand-tight with a self-locking nut.

➔ Connect the chain with the cable carrier of the festoon cable system.

ONLY WITH ENERGY CHAINS



➔ Fasten the individual components of the energy chain (deflection bracket and connection element) with bolts and SL safety clip to the carrying tube.



➔ Lead through the flat cable from the energy chain and guide in a curve around the deflection bracket.

➔ Fasten the flat cable with cable ties to the upper section of the deflection bracket.

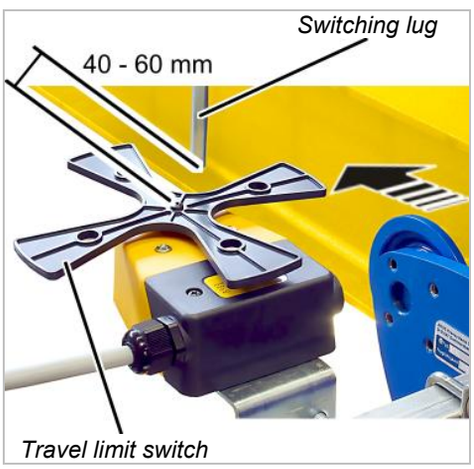
➔ Insert the energy chain into the connection element and click into place.

INSTALLING THE TRAVEL LIMIT SWITCH

ONLY WITH TRAVEL LIMIT SWITCH

The travel limit switch is mounted on one of the two side panels. It may be mounted on the same square tube as the power supply or on a separate square tube. It may also be mounted on a vertical or horizontal square tube.

DETERMINING THE POSITION

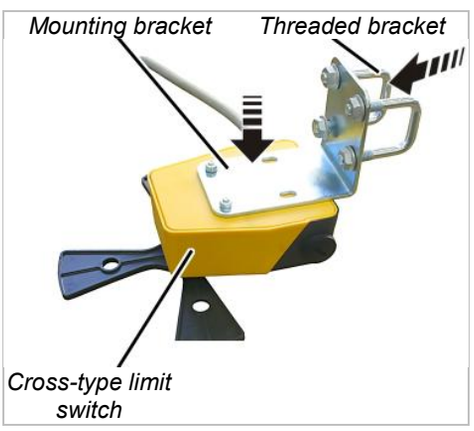


➔ Select the position of the travel limit switch so that the switching lug triggers the travel limit switch at a distance of 40 mm to 60 mm from the centre.

INSTALLING THE CROSS-TYPE LIMIT SWITCH

DANGER DUE TO MALFUNCTION!
If the cross-type limit switch is screwed on too tightly, the parts on the inside can become jammed and no longer function properly.

The tightening torque of 3 Nm must be precisely observed.

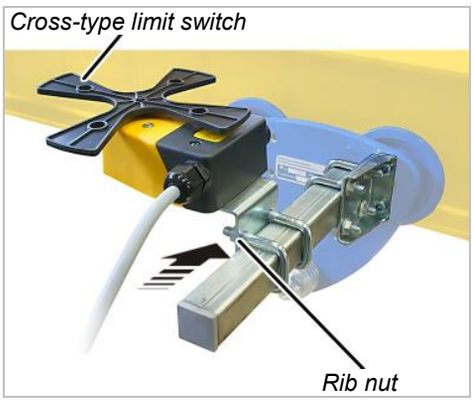


➔ Screw the mounting bracket onto the cross-type limit switch with the fillister-head screws M5x50 (2x).

➔ Screw on the mounting bracket using locking washers and M5 hex nuts (2x). 3 Nm.

➔ Insert threaded brackets (2x) in the mounting bracket.

➔ Loosely screw in the M8 rib nuts (4x).



➔ Turn the travel limit switch to position 0.

The position of the cross-type limit switch is marked with an arrow that can be rotated further, depending on the switching state.

➔ Hold the travel limit switch against the square tube so that the switching lug activates the travel limit switch.

➔ Screw the travel limit switch onto the vertical square tube using pipe clamps (2x). Tighten to 15 Nm

CONNECTING THE CROSS-TYPE LIMIT SWITCH

➔ Lay the connection cable.

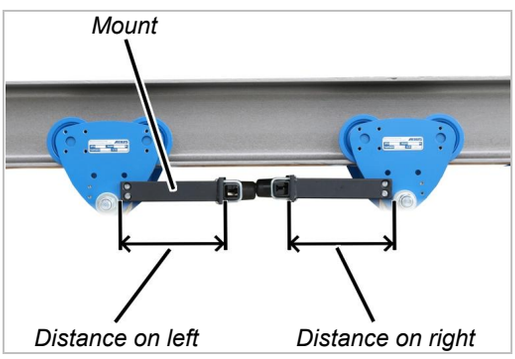
➔ Fasten the connection cable with cable ties, cable ducting and adhesive clips.

MOUNTING THE BUFFER RODS

The buffer rods prevent two trolleys (e.g. from two trolleys on one crane) from running into each other. They are made up of a metal frame on the side panels of the trolley and one rubber buffer each.

SHORTENING THE MOUNTS

Two different lengths are possible for the buffer rod mounts on the two trolleys depending on the trolley and chain hoist combination.

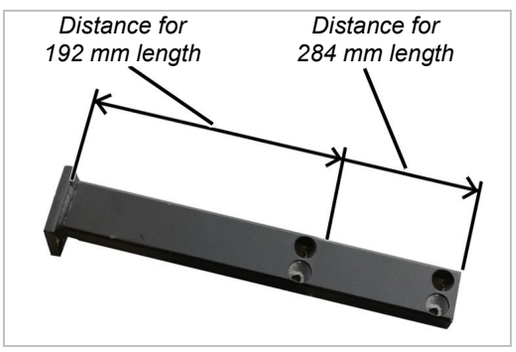


➔ Read off the required trolley and chain hoist combination from the table.

Trolley	Chain hoist combination Left / right	Mount on left	Mount on right
HF 3	GMC / GMC	192	192
	GMC / GM2	192	192
	GMC / GM4	192	192
	GM2 / GM2	192	192
	GM2 / GM4	192	192
	GM4 / GM4	192	192
HF 6	GM2 / GM2	192	192
	GM2 / GM4	192	192
	GM4 / GM4	192	192

Trolley	Chain hoist combination Left / right	Mount on left	Mount on right
HF 14 and EF 14	GM4 / GM4	192	284
	GM4 / GM6	192	284
	GM6 / GM6	284	284
HF 22 and EF 22	GM6 / GM6	192	284
	GM6 / GM8	192	284
	GM8 / GM8	284	284
HF 36 and EF 36	GM6 / GM6	192	192
	GM6 / GM8	192	284
	GM8 / GM8	284	284
EF 50	GM8 / GM8	192	284

At all four mounts:



➔ Depending on the previously determined length, prepare two mounts each for "distance left" and "distance right".

– Saw the mounts off at a right angle in the appropriate position for 192 mm length.

– Leave the mounts at their full length for 284 mm length.

➔ Deburr the sawed edge if necessary.

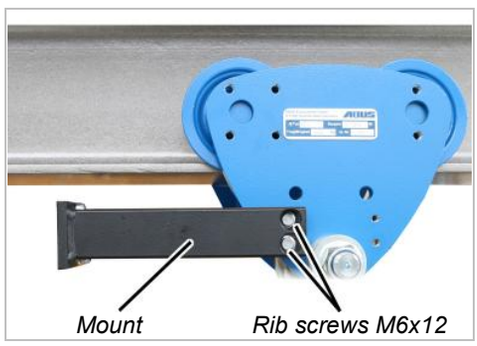
INSTALLING THE MOUNT

On both sides of the trolley and on both trolleys:

ONLY WITH HF3, HF6 AND HF/EF 14

➔ Hold the mounting plate against the hole pattern on the trolley side panel.

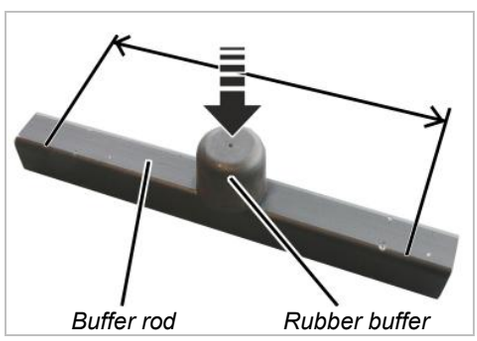
➔ Screw on the mounting plate with rib screws M6x12. Tighten to 19 Nm.



➔ Hold the mount against the hole pattern on the trolley side panel (or the mounting plate).

➔ Tighten the mount using rib screws M6x12 (2x each), only hand-tight at first.

SHORTENING THE BUFFER ROD

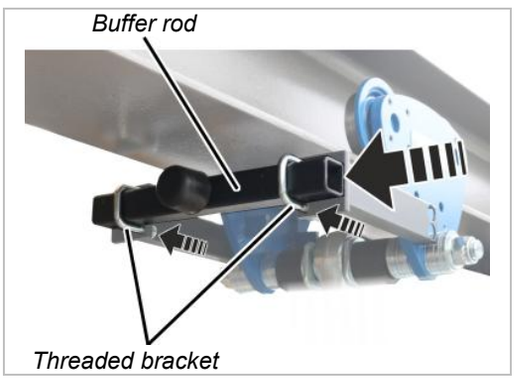


➔ Shorten the buffer rod evenly on both sides in accordance with the flange width.

The rubber buffer must be exactly in the centre of the buffer rod later.

➔ Screw the rubber buffer to the buffer rod using the self-locking nut M8. Tighten to 19 Nm.

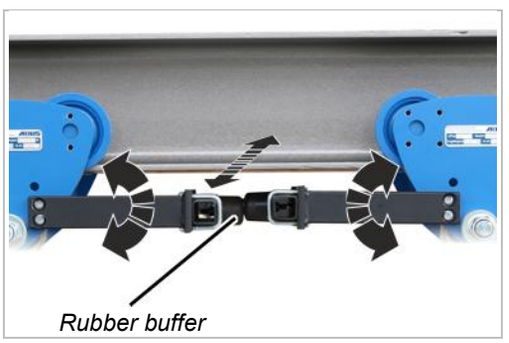
INSTALLING THE BUFFER ROD



➔ First screw the threaded bracket loosely to the mount using the self-locking nut M8.

➔ Slide the buffer rod into the threaded bracket on both sides.

ALIGNING THE BUFFER RODS



➔ Align the buffer rods to both trolleys. The rubber buffers must lie exactly over one another.

➔ Tighten the rib screws M6x12 (2x each) on the side panel. Tighten to 19 Nm.

➔ Screw the threaded bracket tight. Tighten to 25 Nm.

CONNECTING THE DRIVE TO AN ABUS CRANE

ONLY WITH ELECTRIC TROLLEY EF

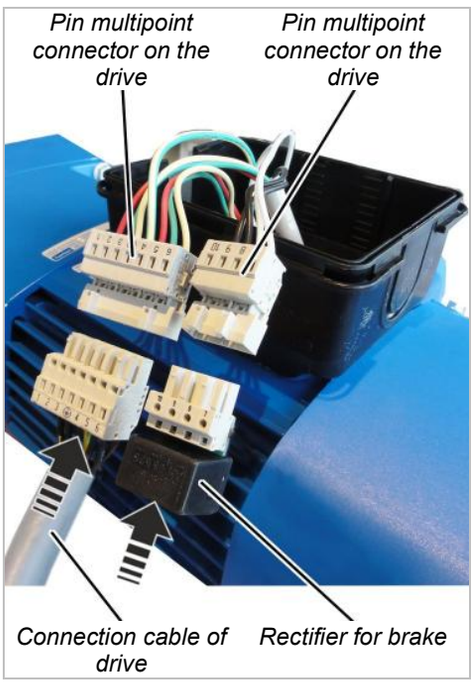
If the drive is to be connected to an ABUS crane installation, continue reading. If the drive is to be connected to a different installation: see “Connecting the drive to crane installations not made by ABUS”, page 25.

CHECKING THE MAINS SUPPLY

➔ Compare the operating voltage and frequency range on the type plate with the mains voltage and frequency of the local grid.

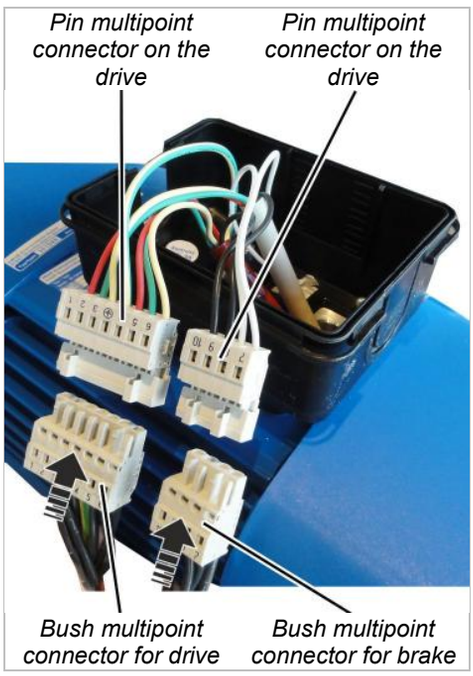
CONNECTING THE DRIVE

ONLY WITH CONTACTOR CONTROL

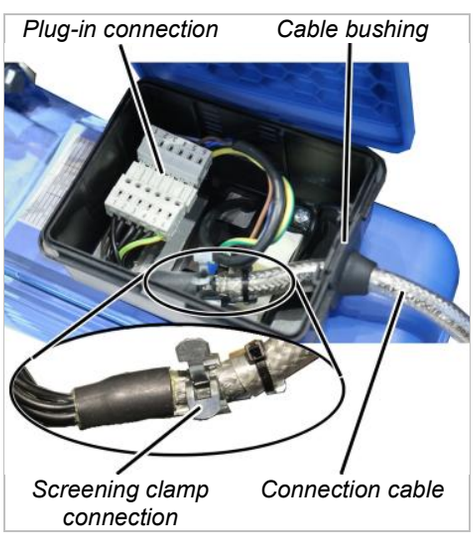


- Insert the connection cable for the drive in the pin multipoint connector on the drive.
- Insert the rectifier for the brake in the pin multipoint connector on the drive.
- Lay the plug-in connections and connection cable in the connector housing.

ONLY FOR FREQUENCY CONVERTER



- Insert the bush multipoint connector for the drive on the pin multipoint connector on the drive.
- Insert the bush multipoint connector for the brake on the pin multipoint connector on the drive.



- Push the front end of the connection cable (where the sheathing around the shield has been removed) into the screening clamp connection.
- Fasten the connection cable to the screening clamp connection using cable ties.
- Lay the plug-in connections and connection cable in the connector housing.
- Close the housing cover.

ELECTRIC TROLLEY EF

FUNCTIONAL TESTING

Once the crane installation is ready for operation:

➔ Test the function of the electric trolley.

If the drive runs in the wrong direction:

- Two phases in the power line of the crane installation are interchanged.

➔ If possible, correct the interchanged phases in the power line of the crane installation.

Otherwise:

➔ Switch two phases on the connection cable of the drive.

CONNECTING THE DRIVE TO CRANE INSTALLATIONS NOT MADE BY ABUS

ONLY WITH ELECTRIC TROLLEY EF

If the drive is to be connected to an installation not manufactured by ABUS, continue reading. If the drive is to be connected to an ABUS crane installation, see “Connecting the drive to an ABUS crane”, page 23.

– The drive is connected in the connector housing on the drive using a plug-in connection.

  The plug-in connection is available as a set, AN 105581.

– When connecting, ensure that the rectifier for the brake is provided with alternating current in the connector housing with the drive switched on. This will require a jumper in the circuitry.

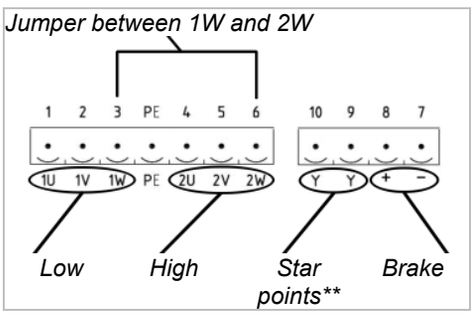
– The drive can be connected three ways: pole-changeable (high and low speeds), with only one of the two speeds, and through a frequency converter.

CHECKING THE MAINS SUPPLY

➔ Compare the operating voltage and frequency range on the type plate with the mains voltage and frequency of the local grid.

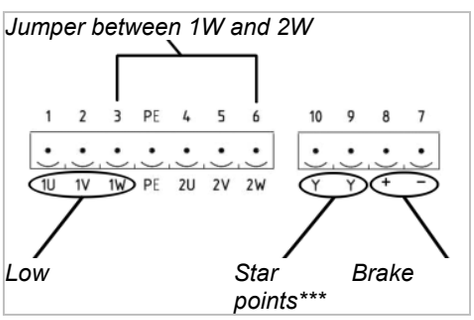
CONNECTING THE DRIVE

Low and high speed:



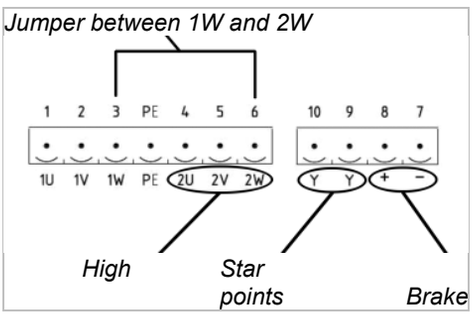
- ➔ Connect protective conductor.
- ➔ Connect contacts 1, 2 and 3 for low speed.
- ➔ Connect contacts 4, 5 and 6 for high speed.
- ➔ Provide jumper between contacts 3 and 6. This provides the rectifier power supply for the brake.

Low speed only:



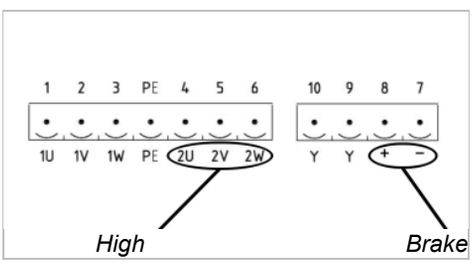
- ➔ Connect protective conductor.
- ➔ Connect contacts 1, 2 and 3 for low speed.
- ➔ Provide jumper between contacts 3 and 6. This provides the rectifier power supply for the brake.

High speed only:



- ➔ Connect protective conductor.
- ➔ Connect contacts 4, 5 and 6 for high speed.
- ➔ Provide jumper between contacts 3 and 6. This provides the rectifier power supply for the brake.

Motor control through frequency converter:



- ➔ Connect protective conductor.
- ➔ Connect contacts 4, 5 and 6 to the frequency converter for high speed.
- ➔ Connect contacts 7 and 8 for the brake control. The electrical circuit must be open at a frequency of 0 Hz.

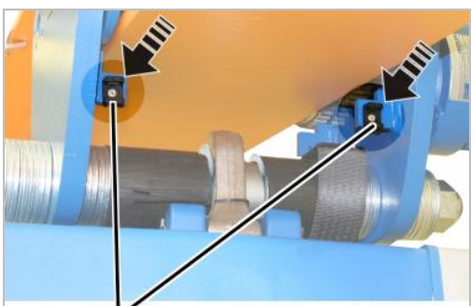
Brake performance data:

- — Drive EF 80 / 112: 195 VDC, 21 W
- — Drive EF 140: 195 VDC, 25 W

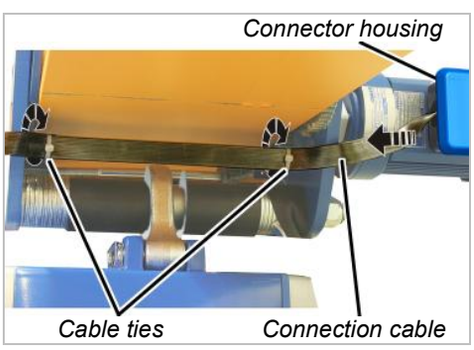
LAYING THE CONNECTION CABLE

ONLY WITH ELECTRIC TROLLEY EF

LAYING THE CONNECTION CABLE FOR THE DRIVE



➔ If necessary: fix the cable grips (2x) with rivets.



➔ Lay the connection cable from the connector housing along the cable grips to the other side of the trolley.

➔ Fasten the connection cable to the cable grips with cable ties.

➔ Lay the connection cable with all other connection cables (e.g. from the chain hoist) along the power carrier and fasten with cable ties.

The connection cables lead from the power carrier to the power supply. Depending on the crane, this is either a conductor system, an energy chain or a festoon cable system.

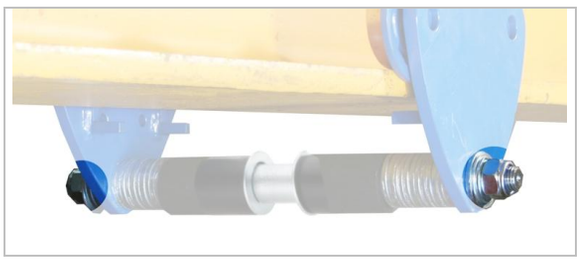
OVERVIEW OF SCREW TIGHTENING TORQUES

ONLY WITH ELECTRIC TROLLEY EF

DRIVE

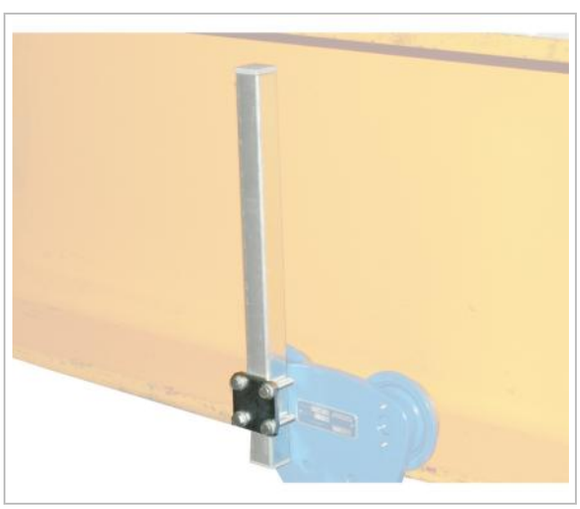
- Rib screw M6x20
- 4x per drive
- 10 Nm

SELF-LOCKING NUTS OF TRAVELLING GEAR BOLTS



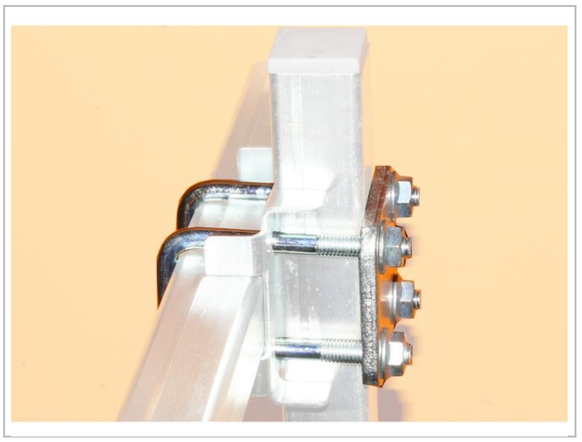
Size	Type, size and length	Number	Tightening torque
HF 3	Self-locking M12 nut	2x	70 Nm
HF 6	Self-locking M16 nut	2x	90 Nm
HF 14 and EF 14	Self-locking M20 nut	2x	130 Nm
HF 22 and EF 22	Self-locking M24 nut	2x	160 Nm
HF 36 and EF 36	Self-locking M30 nut	2x	200 Nm
EF 50	Self-locking M36 nut	2x	300 Nm

VERTICAL SQUARE TUBE



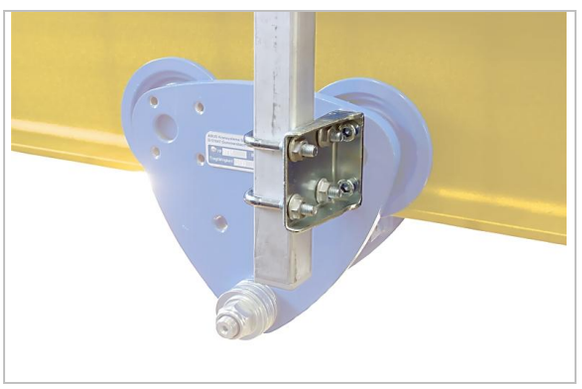
- Rib screw M8x45
- 4x per pipe clamp
- Screw until hand-tight

HORIZONTAL SQUARE TUBE



- Rib nut M8
- 4x per pipe clamp
- Screw until hand-tight

VERTICAL OR HORIZONTAL SQUARE TUBE WITH HF/EF MOUNTING



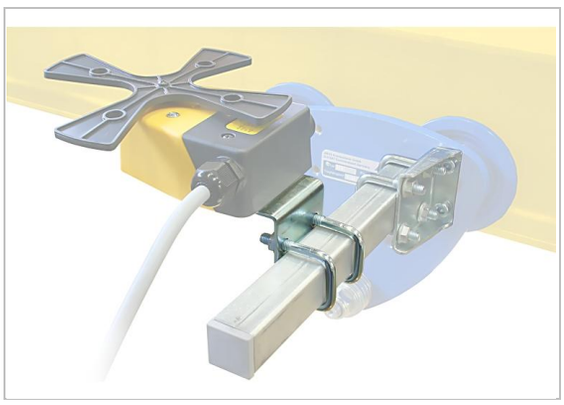
On side panel:

- Fillister-head screw M8x20
- 2x per HF/EF mounting
- Screw until hand-tight.

On vertical square tube:

- Rib nut M8
- 4x per pipe clamp
- Screw until hand-tight

CROSS-TYPE LIMIT SWITCH



- Rib nut M8
- 4x per pipe clamp
- Screw until hand-tight

INSPECTION

THIS SECTION APPLIES TO ANYONE WHO INSPECTS AND ACCEPTS THE CRANE IN ACCORDANCE WITH OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS

The crane with trolley must be regularly inspected in order to guarantee safe operation. The end user is responsible for this regular inspection.

AT THE START

TEST INTERVALS

The regular inspection is performed at least once annually.

Under certain conditions, more frequent regular inspections may be necessary. Reasons include:

- Frequent operation at the load capacity
- Working in multiple shifts
- Frequent use
- Dusty or chemically aggressive environment

The end user is responsible for checking the requirements and determining the test intervals. ABUS will gladly assist you if questions arise.

REQUIREMENTS FOR THE EXAMINER

The end user of the crane is responsible for the proper qualifications of the examiner.

DANGER TO PERSONS!
Persons can be injured if the test is performed incorrectly.

If personnel other than that of the ABUS company are employed to perform the test, it is the end user's responsibility to ensure that these persons are adequately qualified.

Examples of qualified persons:

- Persons with comprehensive knowledge from specialist training in engineering and in the electrical systems of cranes.
- Persons with sufficient experience in the operation, installation and maintenance of cranes.
- Persons with comprehensive knowledge regarding the relevant technical rules, directives and safety regulations applicable in the respective country.
- Persons receiving regular training from ABUS.

SCOPE OF THE INSPECTION

The qualified person inspecting the crane with trolley is responsible for the type of test as well as its scope.

OVERVIEW: CHECKING THE TROLLEY

In addition to the points described here, all points outlined in the other supplied product manuals must also be checked.

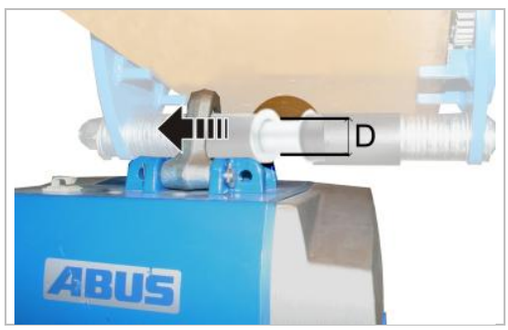
The decision as to whether the trolley is in a perfect condition may only be made by the examiner. Any inadequacies, if found, must be eliminated. The examiner decides whether the trolley will then need to be tested again.

If locally applicable regulations specify further tests, these are likewise to be carried out.

Additionally, at least the following points must be checked:

- ➔ Check travelling gear bolt. See “Checking the travelling gear bolt”, page 31.
- ➔ Check the clearance between wheel flange and rail. See “Checking the clearance between wheel flange and rail”, page 32.
- ➔ Only with electric trolley EF: Check the air gap and brake lining thickness. See “Inspecting the brake on the drive with the helical gear unit”, page 32.
- ➔ Only with electric trolley EF: Check the lubrication of the gear rims. The gear rims must be lubricated. The lubricant should be clean. If it is dirty, clean the gear rims and lubricate them. See “Lubricants”, page 50.
- ➔ Only with electric trolley EF: Check the gear rims. The gear rims should not be worn, deformed or otherwise damaged. If they are, replace the wheels.

CHECKING THE TRAVELLING GEAR BOLT



- ➔ Raise the chain hoist and push it to the side in order to expose the travelling gear bolt.
- ➔ Check the diameter of the travelling gear bolt D over the entire breadth. The measured value may not fall below the minimum value listed in the table.

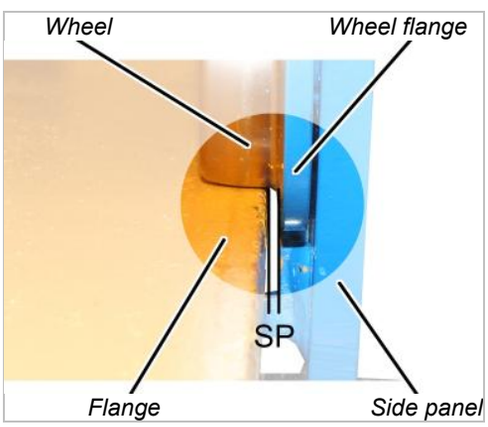
Trolley	Ø Travelling gear bolt D new	Ø Travelling gear bolt D min
HF 3	22 mm	19 mm
HF 6	30 mm	26 mm
HF 14 EF 14	34 mm	30 mm
HF 22 EF 22	50 mm	44 mm
HF 36 EF 36	60 mm	54 mm
EF 50	70 mm	67 mm

- ➔ If the travelling gear bolt is thinner than “D min.” on one side, exchange it for a new one.
- ➔ Slide the chain hoist back to the middle of the travelling gear bolt between the distance rings.

CHECKING THE CLEARANCE BETWEEN WHEEL FLANGE AND RAIL

Overview:

	Maximum value
Clearance between wheel flange and rail SP	2 mm on each side



➔ Measure the clearance between wheel flange and rail SP (the distance between the rail flange and the wheel flange) on both sides of the trolley. The measured value may not be larger than 2 mm on either side.

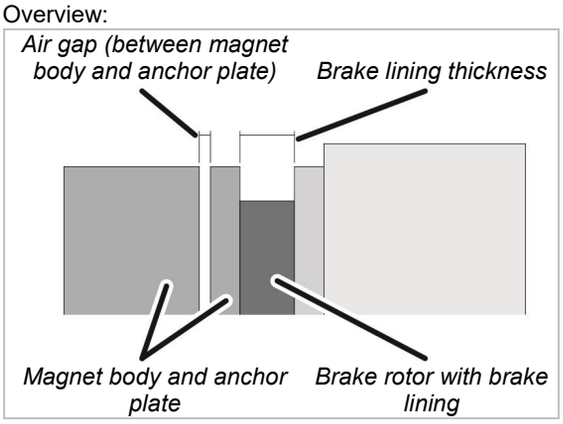
➔ If the clearance SP between the wheel flange and rail is too large, it must be readjusted by removing a number of distance rings. See “Setting the clearance between wheel flange and rail”, page 38.

INSPECTING THE BRAKE ON THE DRIVE WITH THE HELICAL GEAR UNIT

To check the brake, a measurement is made of the air gap between magnet body and anchor plate, as well as the brake lining thickness.

The illustrations show the check on the air gap and brake lining thickness on a drive of size 80. Checks on larger or smaller drives are carried out in the same way.

Overview:



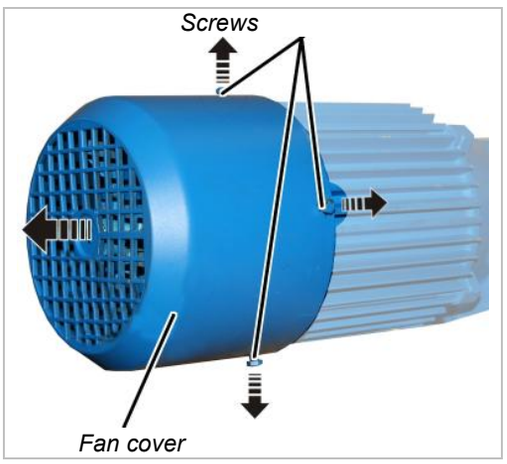
Dimension	Size 80 / 112	Size 140
Maximum air gap	1.3 mm	1.3 mm
Minimum air gap	0.3 mm	0.3 mm
Brake lining thickness, new	7.5 mm	8.5 mm
Brake lining thickness, minimum	4.5 mm	5.5 mm

Due to the wear of the brake lining as the motor is braked, the brake rotor gradually becomes thinner. The anchor plate is thereby pressed ever further toward the brake rotor during braking and the air gap thus becomes wider. If the air gap has reached its maximum width, a gap limiter prevents the anchor plate from being pressed any further, thus ensuring that the anchor plate is reliably ventilated. When the gap limiter is employed, the braking effectiveness gradually lessens.

This is the point at which the air gap must be readjusted at the latest. If the minimum lining thickness has been reached, the brake rotor must be replaced.

If the width of the air gap is within the permitted range but usage behaviour leads to the expectation that the air gap will be wider than permitted before the next regular inspection, the air gap must be readjusted now.

TAKING OFF THE FAN COVER

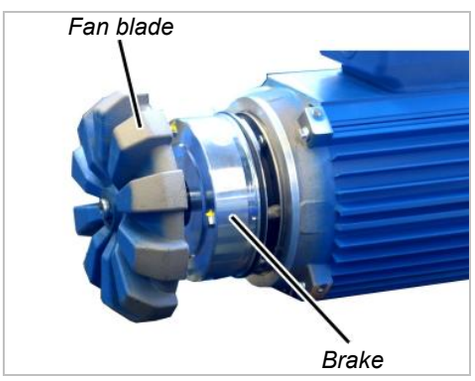


➔ Unscrew and remove screws (4x).

➔ Take off the fan cover.

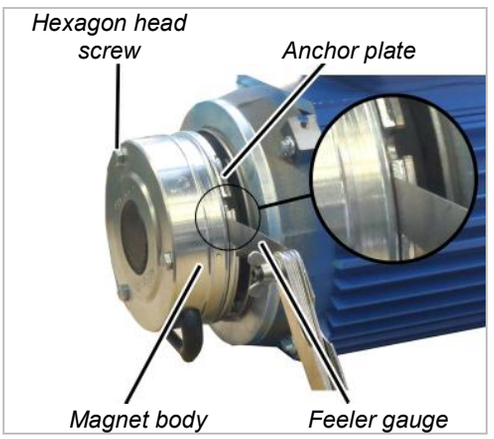
ONLY WITH SIZE 140

The size 140 drive has a cast fan blade which is used as an oscillating weight.



➔ The fan blade does not have to be removed for the examination of air gap and brake lining thickness.

CHECKING THE AIR GAP



➔ Insert the feeler gauge next to one of the hexagon head screws in the air gap between magnet body and anchor plate and measure the distance.

➔ If the air gap has reached the maximum width of the operating range, adjust the brake. See “Adjusting the air gap at the brake on the drive with the helical gear unit”, page 38.

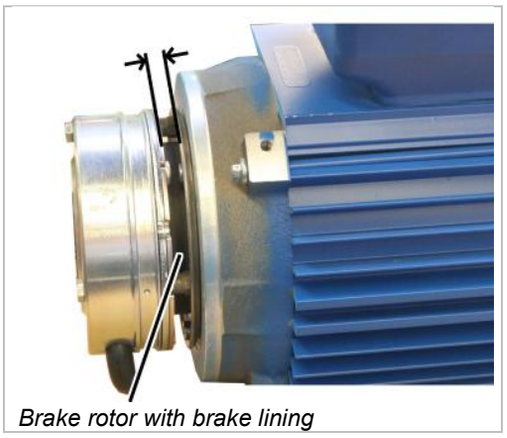
Dimension	Size 80 / 112	Size 140
Maximum air gap	1.3 mm	1.3 mm
Minimum air gap	0.3 mm	0.3 mm

If the width of the air gap is within the permitted range but usage behaviour leads to the expectation that the air gap will be wider than permitted before the next regular inspection, the air gap must be readjusted now.

➔ Repeat the steps for all hexagon head screws (3x).

➔ Clean the entire brake with compressed air.

MEASURING BRAKE LINING THICKNESS



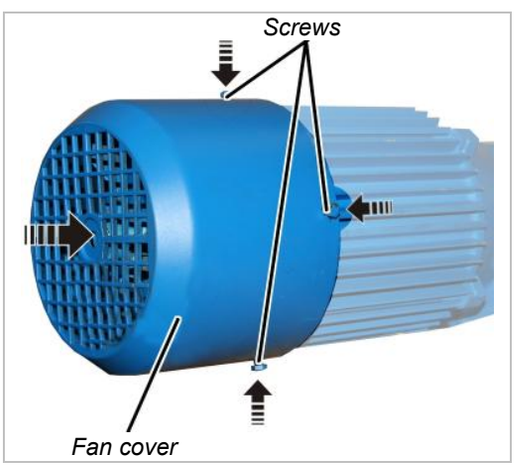
Brake rotor with brake lining

➔ Check the thickness of the brake lining with a calliper.

Dimension	Size 80 / 112	Size 140
Brake lining thickness, new	7.5 mm	8.5 mm
Brake lining thickness, minimum	4.5 mm	5.5 mm

➔ If the brake lining is thinner than permitted, replace the brake rotor. See “Replacing brake rotor and anchor plate on drive with the helical gear unit”, page 42.

CLOSING THE MOTOR



➔ Attach fan cover.

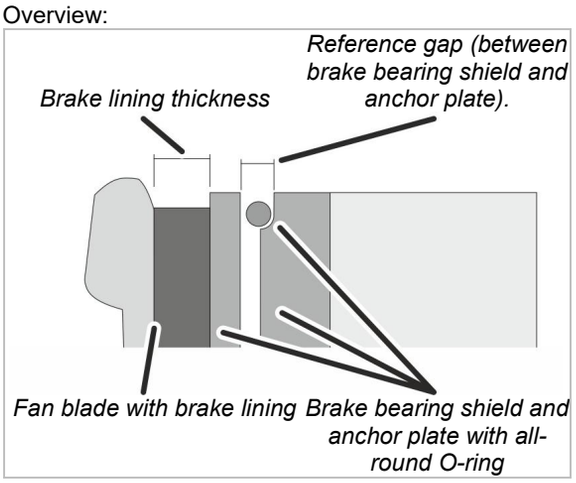
➔ Tighten screws (4x).

INSPECTING THE BRAKE ON THE DRIVE WITH THE PLANETARY GEAR UNIT

To check the brake, the reference gap between the brake bearing shield and anchor plate is measured, as well as the brake lining thickness.

A step (for the O-ring) makes the air gap (distance between brake bearing shield and anchor plate) difficult to access. Therefore a reference gap is measured outside on the motor in order to obtain information on the width of the air gap.

Overview:

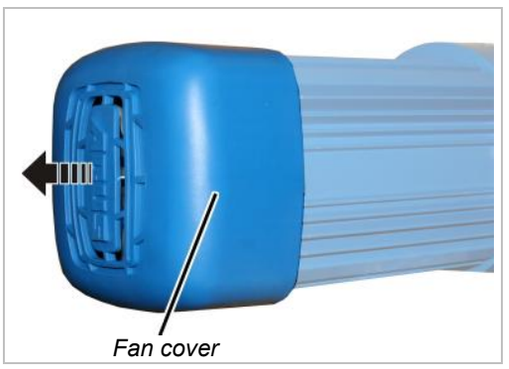


Dimension	Value
Reference gap between anchor plate and brake bearing shield	Between 3.1 mm and 3.7 mm
Brake lining thickness	At least 2 mm
Brake lining thickness	New: 4 mm

If the reference gap is wider than permitted, the brake must be readjusted. If the minimum brake lining thickness is reached, the fan blade with brake lining must be replaced.

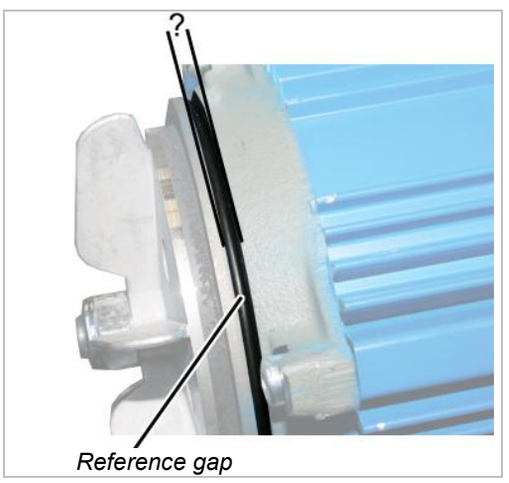
If the width of the reference gap is within the permitted range but usage behaviour leads to the expectation that the reference gap will be wider than permitted before the next regular inspection, the fan blade with brake lining must be replaced now.

TAKING OFF THE FAN COVER



➔ Take off the fan cover.

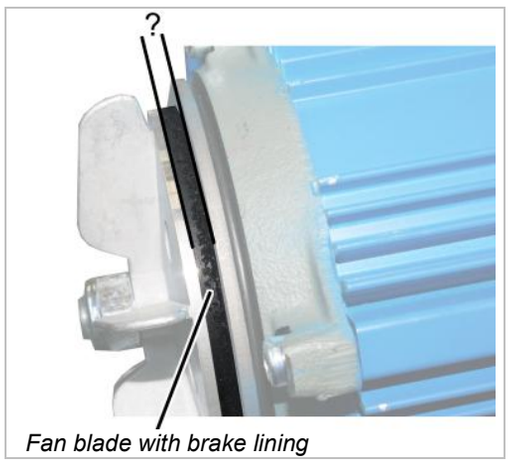
MEASURING THE REFERENCE GAP



➔ Measure the distance between brake bearing shield and anchor plate.

➔ If the reference gap is larger than 3.7 mm: Adjust the brake. See “Adjusting the air gap at the brake on the drive with the helical gear unit”, page 38.

MEASURING BRAKE LINING THICKNESS

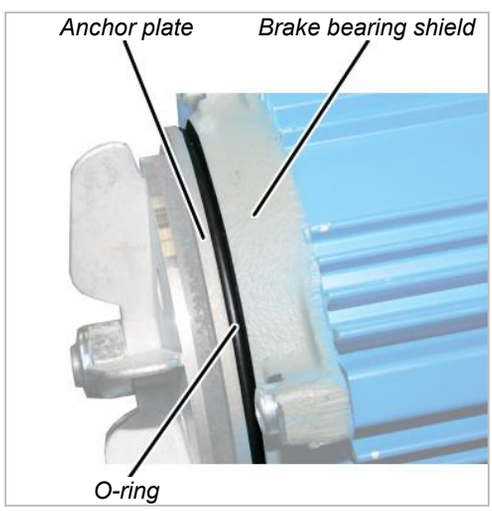


➔ Check the thickness of the brake lining with a calliper.

If the brake lining is less than 2 mm thick: replace the fan blade with brake lining.

CHECKING THE O-RING

The area between the brake bearing shield and the anchor plate (reference gap) is protected from dust by an O-ring. The O-ring must not become damaged or missing.

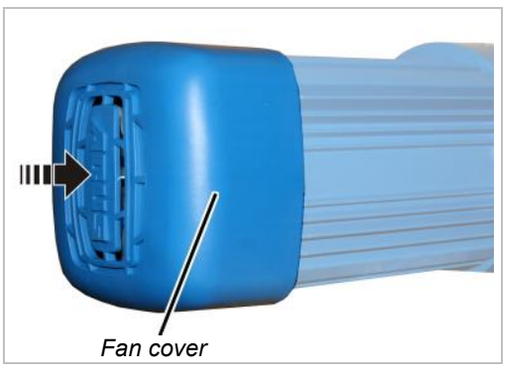


➔ Check the O-ring (between brake bearing shield and anchor plate).

The O-ring must not be torn, dented or damaged in any other way, nor be missing completely.

If the O-ring is damaged or missing, fit a new O-ring.

CLOSING THE FAN COVER



➔ Attach fan cover.

MAINTENANCE

THIS SECTION APPLIES TO ANYONE WHO MAINTAINS, REPAIRS OR MODIFIES THE CRANE.

The end user of the crane is responsible for the selection and proper qualifications of the maintenance personnel.

DANGER TO PERSONS!
Persons can be injured if the crane is incorrectly serviced.

If personnel other than that of the ABUS company are employed to perform maintenance on the crane, it is the end user's responsibility to ensure that these persons are adequately qualified. Follow the procedures described here precisely.

Examples of qualified persons:

- Persons with comprehensive knowledge from specialist training in engineering and in the electrical systems of cranes.
- Persons with sufficient experience in the operation, installation and maintenance of cranes.
- Persons with comprehensive knowledge regarding the relevant technical rules, directives and safety regulations applicable in the respective country.
- Persons receiving regular training from ABUS.

ABUS assumes no liability for damage due to incorrectly performed maintenance work done by unqualified personnel.

ABUS recommends having the maintenance work performed by ABUS Service.

Use only original ABUS replacement parts. Otherwise, all warranty claims will be rendered invalid.

INSTRUCTIONS REGARDING SAFETY WHEN PERFORMING MAINTENANCE WORK

Observe the following safety instructions for any maintenance work on the crane with trolley:

- Switch off the mains switch. Secure the switch to ensure it cannot be turned back on accidentally.
- Unplug the mains disconnector plug from the socket on the crane panel. Secure the socket with a padlock to ensure it is not plugged back in accidentally.
- Use suitable lifting platforms and fall protection equipment.
- Adequately cordon off the operating range around the lifting platform.
- Switch off any other cranes using the same crane track or cranes working above or below the crane undergoing maintenance. Secure the switches to ensure they cannot be turned back on accidentally. Otherwise, other cranes could overturn the hoisting platform or crash into the crane undergoing maintenance.
- Notify personnel in the area that maintenance work will be performed.
- Only trained electricians should work on the crane electrical system!
- Even after the emergency stop button has been pressed, life-threatening high voltages are still present in the panels.

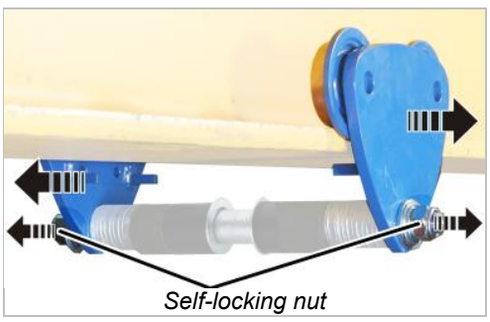
These safety instructions apply especially to the drive:

- Do not permanently remove the fan cover! If the fan cover is removed, hazardous areas (fast-rotating fan blades) are no longer protected. As a result of this people can be injured! Remount the fan cover after working on the drive. Do not permanently remove the fan cover to improve cooling.

SETTING THE CLEARANCE BETWEEN WHEEL FLANGE AND RAIL

If the clearance between the wheel flange and rail is greater than 2 mm on each side, distance rings must be removed from the travelling gear bolt in order to adapt the width.

➔ Secure the chain hoist and trolley, e.g. with a tension belt. The trolley should be prevented from rolling away or falling down.



Self-locking nut

➔ Release self-locking nuts.

➔ Remove washer and individual distance rings from the travelling gear bolt.

➔ Take the side panels off the travelling gear bolt.

➔ Remove 2.5 mm and 5 mm distance rings from the travelling gear bolt identically on the left and right until the tolerance is once again in the permissible range.

There must always be the same number of distance rings of the same thickness on the left and right. This will ensure that the chain hoist rests centrally under the trolley and distributes its weight evenly on all wheels.

➔ Reattach side panels, individual distance rings and washers.

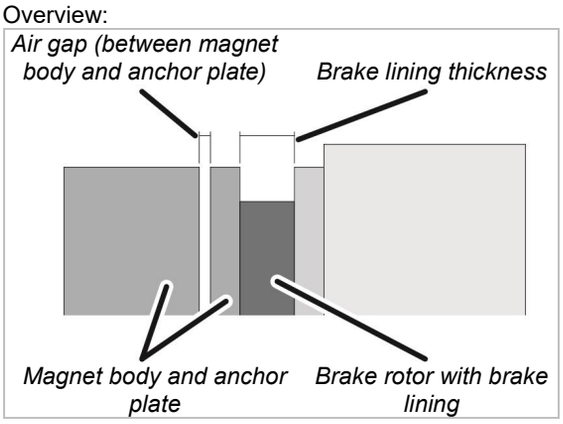
➔ Screw on the side panels with new self-locking nuts.

Size	Type	Tightening torque
HF 3	M12	70 Nm
HF 6	M16	90 Nm
HF 14 and EF 14	M20	130 Nm
HF 22 and EF 22	M24	160 Nm
HF 36 and EF 36	M30	200 Nm
EF 50	M36	300 Nm

ADJUSTING THE AIR GAP AT THE BRAKE ON THE DRIVE WITH THE HELICAL GEAR UNIT

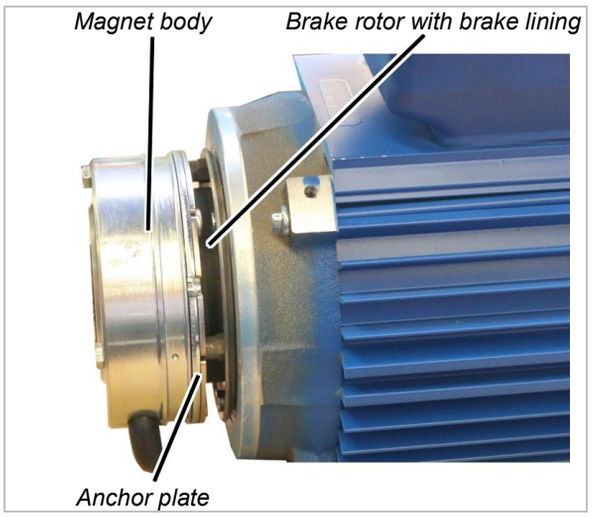
If the air gap is wider than permitted, it must be readjusted.

Overview:



Dimension	Size 80 / 112	Size 140
Maximum air gap	1.3 mm	1.3 mm
Minimum air gap	0.3 mm	0.3 mm
Brake lining thickness, new	7.5 mm	8.5 mm
Brake lining thickness, minimum	4.5 mm	5.5 mm

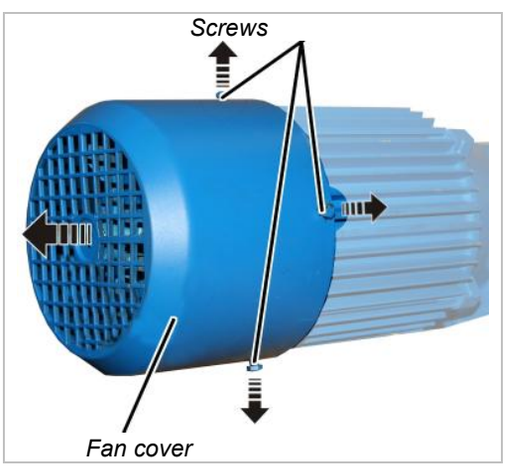
Due to the wear of the brake lining as the motor is braked, the brake rotor gradually becomes thinner. The anchor plate is thereby pressed ever further toward the brake rotor during braking and the air gap thus becomes wider. If the air gap has reached its maximum width, a gap limiter prevents the anchor plate from being pressed any further, thus ensuring that the anchor plate is reliably ventilated. When the gap limiter is employed, the braking effectiveness gradually lessens.



As soon as the travel motor stops running, the anchor plate presses against the brake rotor through spring force, braking the travel motor. An air gap appears between magnet body and anchor plate. When the travel motor starts up, the magnet body pulls the anchor plate off the brake rotor, allowing the travel motor to freely turn.

If the brake lining is worn, the air gap will be larger. See “Inspecting the brake on the drive with the helical gear unit”, page 32. If the air gap is larger than maximally permitted, the brake must be readjusted. If the brake rotor is too thin due to wear, it must be replaced. See “Inspecting the brake on the drive with the helical gear unit”, page 32.

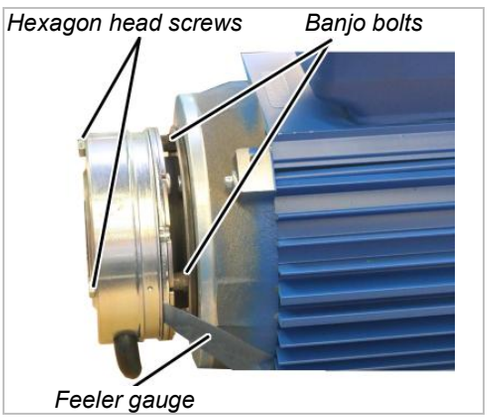
TAKING OFF THE FAN COVER



➔ Unscrew and remove screws (4x).

➔ Take off the fan cover.

SETTING THE AIR GAP



➔ Unscrew the hexagon head screws (3x) by a half turn.

➔ Screw in the banjo bolts (3x) by a half turn in the direction of the magnet body.

➔ Read off the minimum width of the air gap from the table.

Dimension	Size 80 / 112	Size 140
Maximum air gap	1.3 mm	1.3 mm
Minimum air gap	0.3 mm	0.3 mm

➔ Insert the appropriate feeler gauge directly next to one of the hexagon head screws in the air gap between magnet body and anchor plate.

➔ Tighten the hexagon head screws so that the feeler gauge can still be pulled from the air gap.

● The air gap on this hexagon head screw is now adjusted to the minimum width.

➔ Repeat the steps for all hexagon head screws (3x).

➔ Screw the banjo bolts (3x) in the direction of the motor until hand-tight.

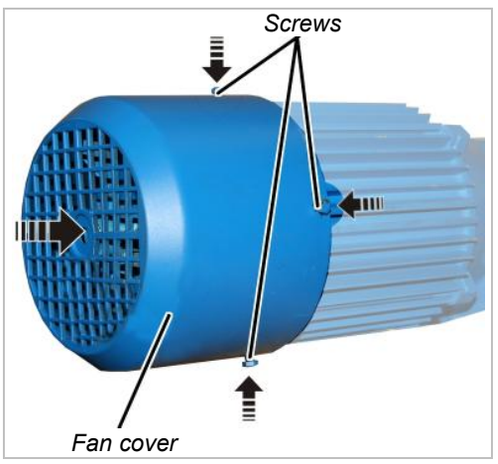
➔ Tighten the hexagon head screws (3x).

Size	Size and length	Tightening torque
Size 80 / 112	M4x45	3 Nm
Size 140	M5x55	6 Nm

● The brake is fixed with screws.

➔ Check the air gap next to all three hexagon head screws. If different than the minimum width, repeat the adjustment.

CLOSING THE MOTOR



➔ Attach fan cover.

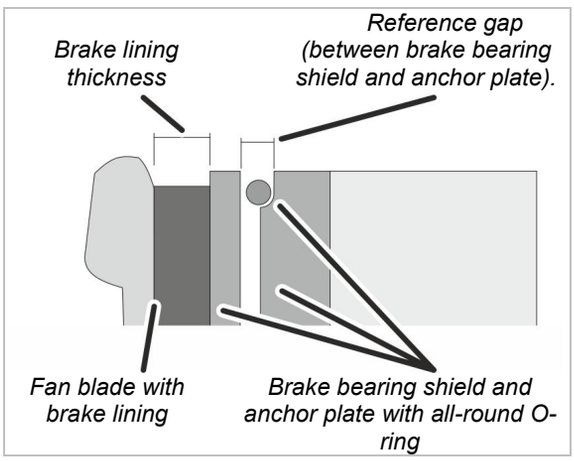
➔ Tighten screws (4x).

ADJUSTING THE AIR GAP AT THE BRAKE ON THE DRIVE WITH THE PLANETARY GEAR UNIT

If the air gap is wider than permitted, it must be readjusted.

Overview:

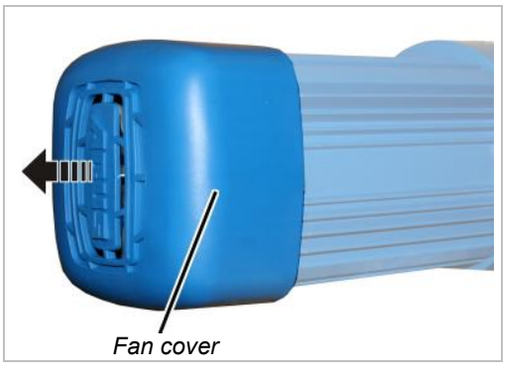
Dimension	Value
Reference gap between brake bearing shield and anchor plate.	Between 3.1 mm and 3.7 mm
Air gap	Setting 0.4 mm



As soon as the travel motor stops running, the anchor plate presses against the fan blade with brake lining through spring force, braking the travel motor. This results in an air gap (which can be measured from the outside by means of the reference gap) between the brake bearing shield and the anchor plate. When the travel motor starts up, the magnet body in the brake bearing shield pulls the anchor plate off the fan blade with the brake lining, allowing the travel motor to freely turn.

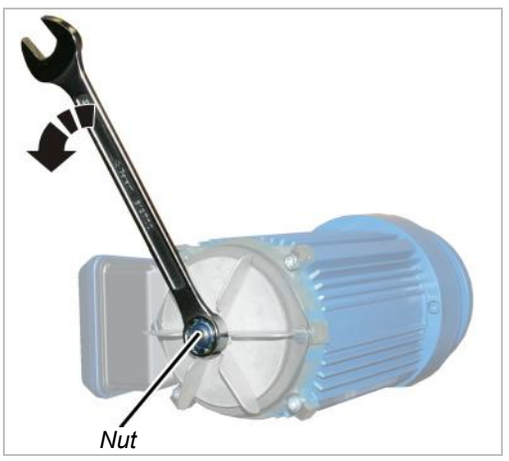
If the brake lining is worn, the air gap will be larger. See “Inspecting the brake on the drive with the helical gear unit”, page 32. If the air gap is larger than maximally permitted, the brake must be readjusted. The brake lining must also be replaced if it is worn too thin. See “Replacing fan blade with brake lining and anchor plate on drive with the planetary gear unit”, page 44.

TAKING OFF THE FAN COVER



➔ Take off the fan cover.

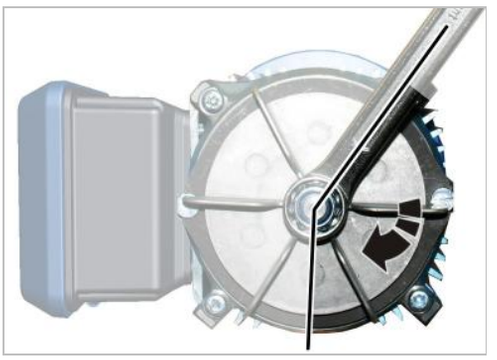
SETTING THE AIR GAP



➔ Hold the fan blade firmly and screw the self-locking nut until hand-tight. The fan blade should just be tight enough that it almost cannot be turned.

- The air gap is now set to 0 mm. This serves as the starting point for the following setting.

The self-locking nut is now released in order to optimally adjust the air gap of the brake. The releasing of the self-locking nut is oriented to the individual segments of the fan blade.

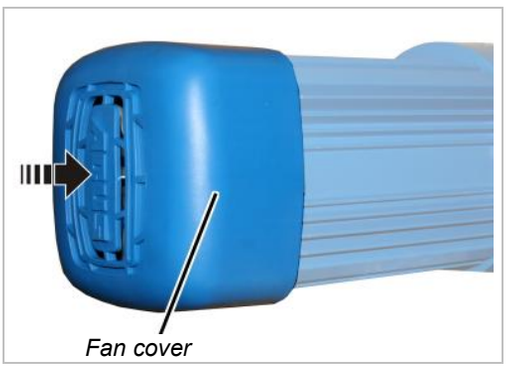


➔ Hold the fan blade firmly and release the self-locking nut by the amount of two and one half segments of the fan blade.

- The air gap is now set to the optimal width of 0.4 mm.

To make sure, check that the distance between the brake bearing shield and the anchor plate (reference gap) is between 3.1 mm and 3.7 mm. See “Inspecting the brake on the drive with the helical gear unit”, page 32.

CLOSING THE FAN COVER



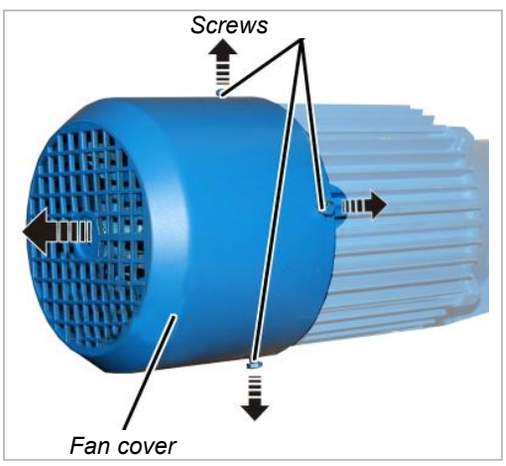
➔ Attach fan cover.

REPLACING BRAKE ROTOR AND ANCHOR PLATE ON DRIVE WITH THE HELICAL GEAR UNIT

If the brake rotor on the drive is thinner than permitted, the brake rotor must be replaced. When replacing the brake rotor, it is recommended that the anchor plate be replaced as well.

The illustrations show replacement of the components on a drive of size 80. Replacement on larger or smaller drives is carried out in the same way.

TAKING OFF THE FAN COVER

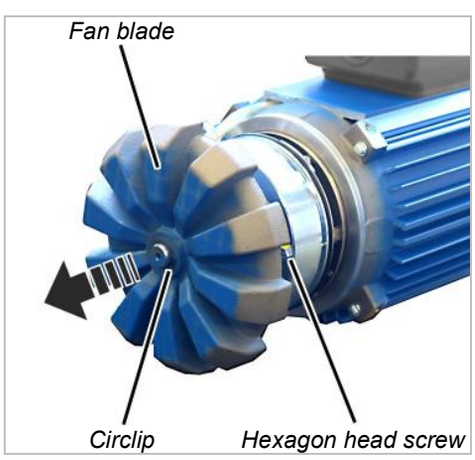


➔ Unscrew and remove screws (4x).

➔ Take off the fan cover.

ONLY WITH SIZE 140

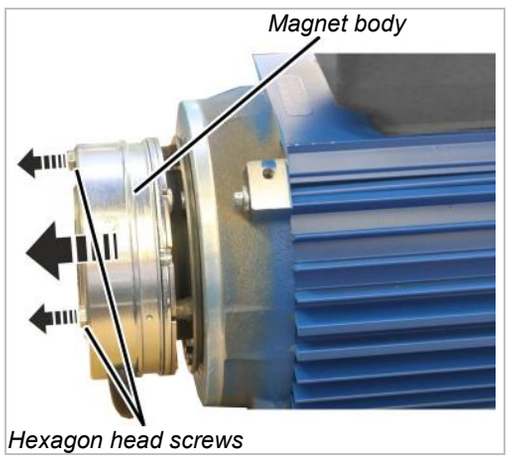
REMOVING THE FAN BLADE



➔ Take the circlip off.

➔ Pull the fan blade from the motor shaft.

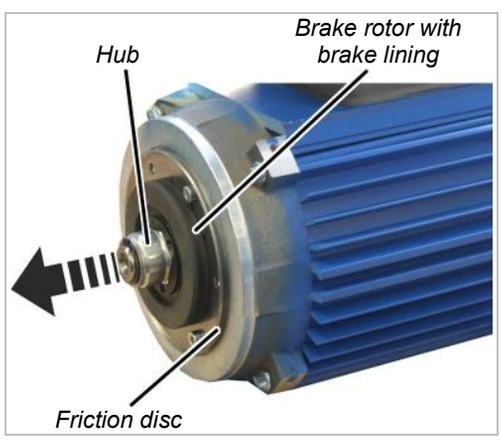
DISASSEMBLING THE MAGNET BODY



➔ Unscrew and remove the hexagon head screws (3x).

➔ Take off the magnet body.

➔ Unplug the plug-in connection on the magnet body.



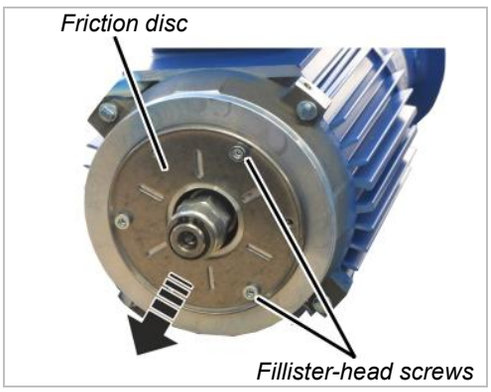
➔ Pull the brake rotor from the hub.

➔ Clean the entire brake with compressed air.

REMOVING AND FITTING THE FRICTION DISC

If necessary:

If necessary or required, the friction disc can now be removed and a new one fitted.



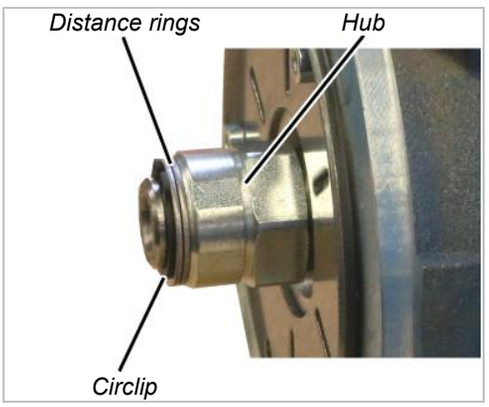
- Loosen the fillister-head screws (3x).
- Take the friction disc off.
- Attach a new friction disc.
- Tighten the fillister-head screws (3x).

Size	Size and length	Tightening torque
Size 80 / 112	M4x12	3 Nm
Size 140	M5x10	6 Nm

REMOVING AND FITTING THE HUB

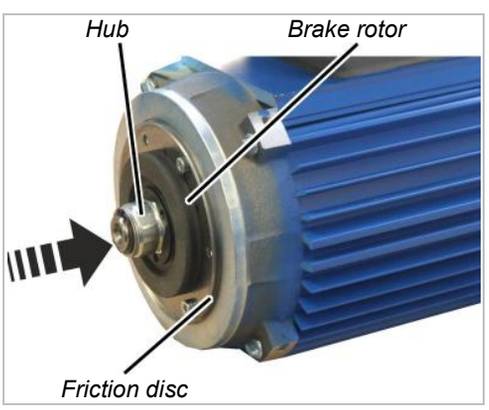
If necessary:

If necessary or required, the hub can now be removed and a new one fitted.



- Remove the circlip.
- Only with size 80/112: Take off the distance rings (2x).
- Pull off the hub.
  - The feather key on the motor shaft is clamped to the motor shaft.
- Slide the new hub over the feather key onto the shaft.
- Only with size 80/112: Slide distance rings (2x) up.
- Attach circlip.

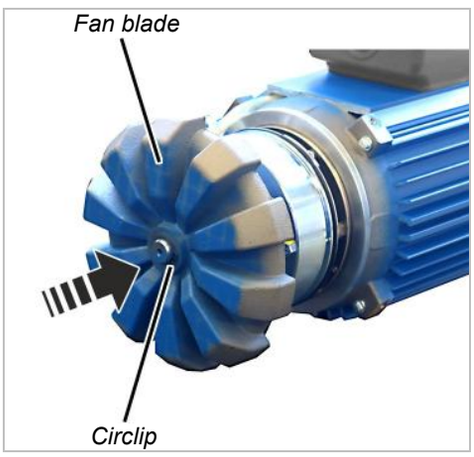
MOUNTING THE BRAKE ROTOR



- Push the new brake rotor onto the hub.
- Attach the magnet body and bolt it on until hand-tight.
- Adjust the brake. See “Adjusting the air gap at the brake on the drive with the helical gear unit”, page 38.

ONLY WITH SIZE 140

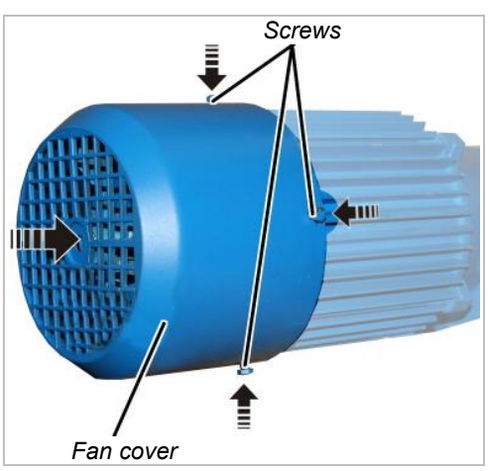
FITTING THE FAN BLADE



➔ Slide the fan blade onto the motor shaft.

➔ Slide the circlip onto the motor shaft.

CLOSING THE MOTOR



➔ Attach fan cover.

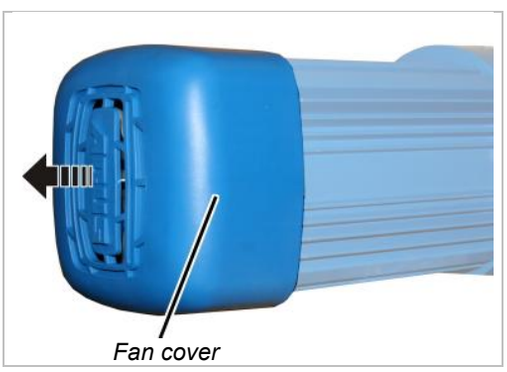
➔ Tighten screws (4x).

REPLACING FAN BLADE WITH BRAKE LINING AND ANCHOR PLATE ON DRIVE WITH THE PLANETARY GEAR UNIT

If the brake lining on the drive is thinner than permitted, then the fan blade with brake lining must be replaced.

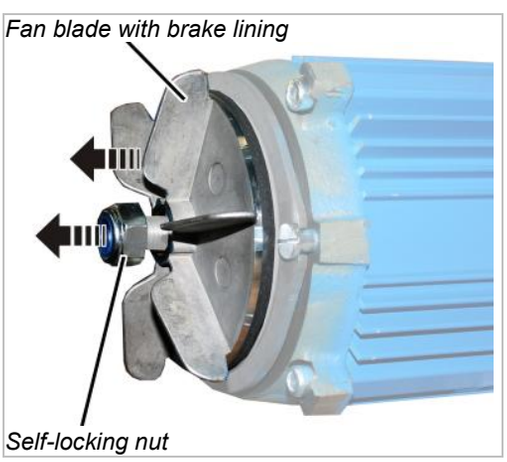
When replacing the fan blade with brake lining, it is recommended that the anchor plate be replaced as well.

TAKING OFF THE FAN COVER



➔ Take off the fan cover.

REMOVING THE FAN BLADE WITH BRAKE LINING

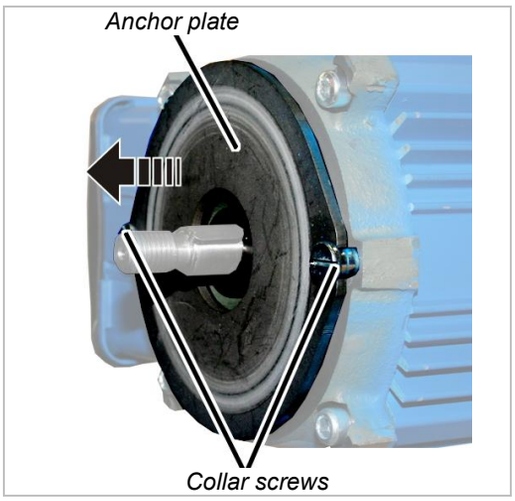


➔ Hold the fan blade firmly and unscrew the self-locking nut.

➔ Remove the fan blade with brake lining.

REMOVING THE ANCHOR PLATE

When replacing the fan blade with brake lining, it is useful to replace the anchor plate as well. If the anchor plate is not to be replaced, this section may be skipped.



➔ Screw the collar screws (2x) out.

- The anchor plate is pressed away from the motor. It is tensioned by a spring.

➔ Remove the anchor plate. Ensure that the compression springs do not fall out.

REPLACING THE O-RING, PLATE SPRINGS, COMPRESSION SPRINGS AND FEATHER KEY

If the O-ring, plate springs, compression springs or the feather key are missing or damaged, they must be replaced. If the components are in a good condition, this section may be skipped.

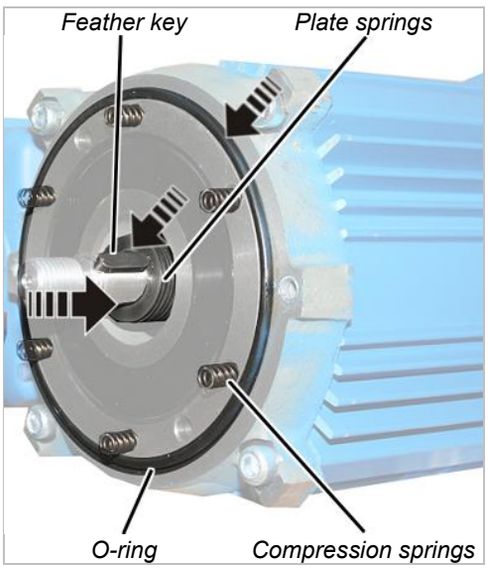
Removing damaged components:

➔ Pull the plate springs and feather key from the motor shaft.

➔ Pull the O-ring and compression springs from the brake bearing shield.

Replacing components:

➔ Assemble the plate springs as shown in the illustration.



➔ Push the plate springs onto the motor shaft.

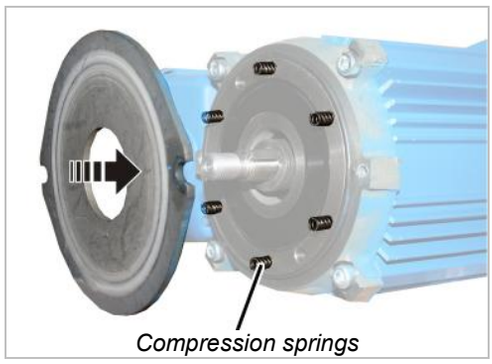
➔ Insert the feather key.

➔ Place the O-ring into the groove on the brake bearing shield.

➔ Insert the compression springs.

Type & size	Power (see type plate)	Number of compression springs
E 100	0.12 kW	4
E 130 / AZP 130	0.18 kW	4
E 160 / AZP 130	0.28 kW	6
AZP 130	0.37 kW	8
E 200 / AZP 160	0.48 kW	4
AZP 200 / AZP 280	0.65 kW	4
AZP 200 / AZP 280	0.80 kW	6
AZP 280	1.10 kW	8

INSTALLING THE ANCHOR PLATE



➔ Insert new anchor plate and press it against the compression springs.

➔ Clean the collar screw thoroughly.

The collar screws were previously bolted with a thread lock coating or a thread lock. The residues must be completely removed before the collar screw may be used again.

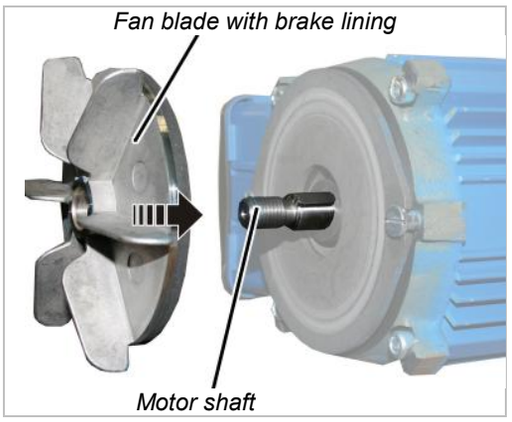
➔ Apply thread lock (medium-strength) to the thread of the collar screw.

When doing so, ensure that not too much thread lock is applied so that it does not emerge out of the thread.

If a thread lock coating has been applied to the collar screw, no thread lock may be used!

➔ Tighten the collar screws (2x). 5–7 Nm.

MOUNTING THE FAN BLADE WITH BRAKE LINING

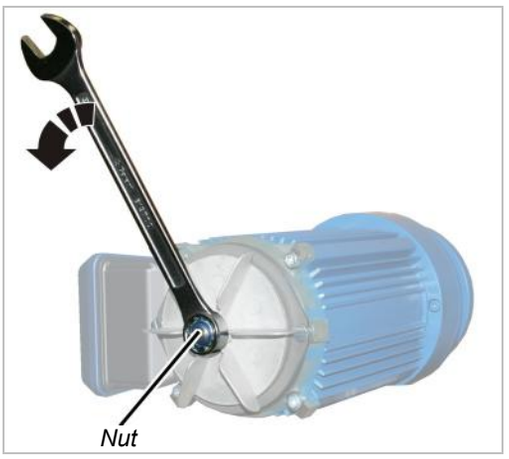


➔ Slide the new fan blade with brake lining onto the motor shaft.

➔ Screw the new self-locking nut loosely to the motor shaft.

Do not use the old self-locking nut.

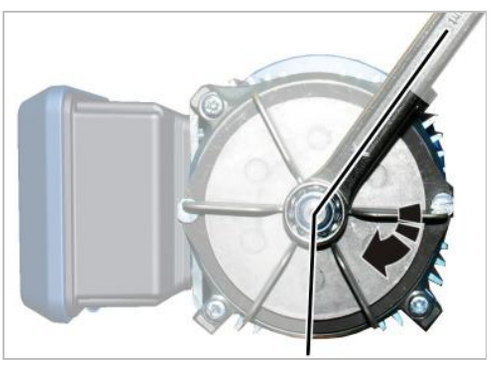
SETTING THE AIR GAP



➔ Hold the fan blade firmly and screw the self-locking nut until hand-tight. The fan blade should just be tight enough that it almost cannot be turned.

- The air gap is now set to 0 mm. This serves as the starting point for the following setting.

The self-locking nut is now released in order to optimally adjust the air gap of the brake. The releasing of the self-locking nut is oriented to the individual segments of the fan blade.

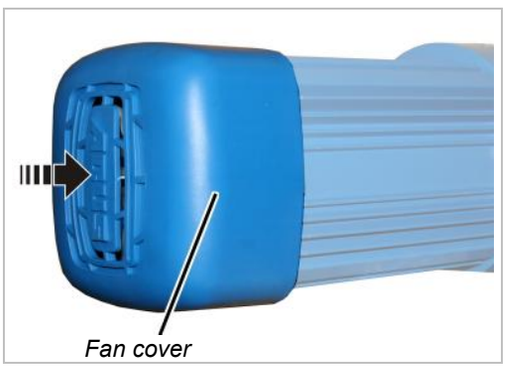


➔ Hold the fan blade firmly and release the self-locking nut by the amount of two and one half segments of the fan blade.

- The air gap is now set to the optimal width of 0.4 mm.

To make sure, check that the distance between the brake bearing shield and the anchor plate (reference gap) is between 3.1 mm and 3.7 mm. See “Inspecting the brake on the drive with the helical gear unit”, page 32.

CLOSING THE FAN COVER



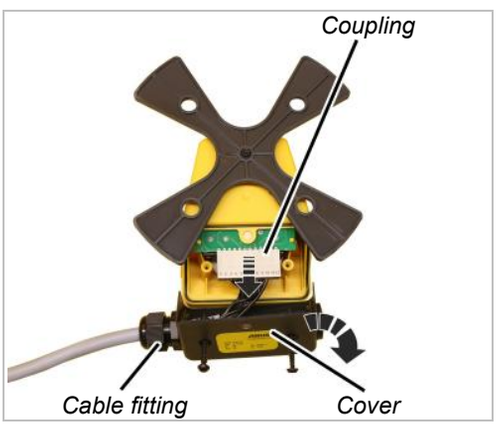
➔ Attach fan cover.

REPLACING THE CROSS-TYPE LIMIT SWITCH

If the cross-type limit switch is damaged, it must be replaced. The plug-in connection allows you to carry out the replacement without any wiring work.

DANGER DUE TO MALFUNCTION!
If the cross-type limit switch is screwed on too tightly, the parts on the inside can become jammed and no longer function properly.

The tightening torque of 3 Nm must be strictly observed.



➔ Unscrew and remove the screws (2x) on the cover.

➔ Remove the cover.

➔ Disconnect the coupling of the connecting cable from the circuit board.

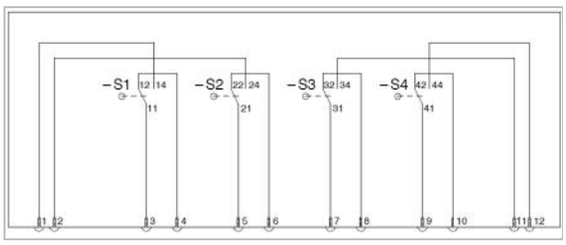
The cable fitting on the cover does not need to be unscrewed. The existing cover can be fitted with the attached connection cable to a new cross-type limit switch.

➔ Insert the coupling onto the new cross-type limit switch.

➔ Close the cover.

➔ Tighten screws (2x). 3 Nm.

WIRING DIAGRAM OF THE CROSS-TYPE LIMIT SWITCH



- The contact numbering shown on the wiring diagram starts on the left ascending from 1.
- The designation of the microswitches starts on the left of the installation position with S1.

Position arrow	Switch position	S1 closed	S1 open	S2 closed	S2 open	S3 closed	S3 open	S4 closed	S4 open
0	0°	3.4		5.6		7.8		9.10	
1	90°	3.4		5.6			7.11	9.10	
2	180°	3.4		5.6			7.11		9.12
3	270°		3.1	5.6		7.8			9.12
4	360°		3.1		5.2	7.8		9.10	
5	450°	3.4			5.2	7.8		9.10	
0	540°	3.4		5.6		7.8		9.10	

ABUS SERVICE

ONLY IN GERMANY

➔ If available, have the product number, serial number and customer number handy.

➔ Call the ABUS Service Centre:

– Phone: +49-2261-37-237

➔ If calling outside the usual business hours, leave a message on the answering machine.

● ABUS Service will return your call promptly.

➔ If necessary, send a description of the problem by fax or e-mail:

– Fax: +49-2261-37-265

– E-mail: service@abus-kransysteme.de

ONLY OUTSIDE GERMANY

➔ Call the local ABUS branch or crane service partner.

Your local ABUS branch or crane service partner will provide details of contact data, contacts and availability.

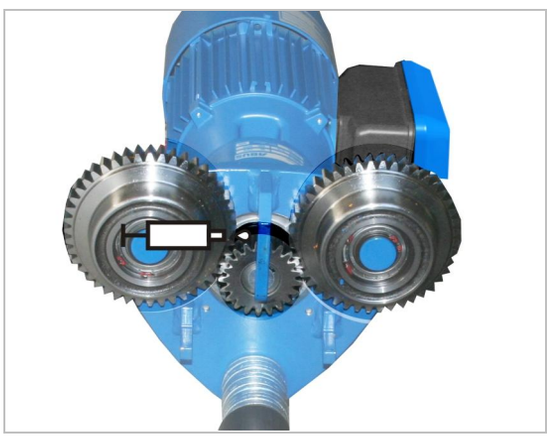
LUBRICANTS

Note:

Synthetic lubricants may not be mixed with mineral-based lubricants!

ONLY WITH ELECTRIC TROLLEY EF

GEAR RIMS ON THE WHEEL



On-site lubrication with “High-Lub LT1 EP”, ABUS item number 318490.

Lubrication ex works with “High-Lub LT1 EP”, ABUS item number 317880.

Quantity: Apply a liberal coating of lubricant using a brush.

Alternative:

- “High-Lub °318490 (cartridge with 400 g)”

Lubricate the gear rim for:

- Removing and fitting the drive
- General overhaul

➔ Regularly check that the gear rims are completely lubricated and the lubricant is not dirty.

➔ If the lubricant is dirty: Clean the gear rims and reapply lubricant.

For details, see “Lubricating the gear rim

”, page 16.

GEAR UNIT ON DRIVE WITH THE HELICAL GEAR UNIT

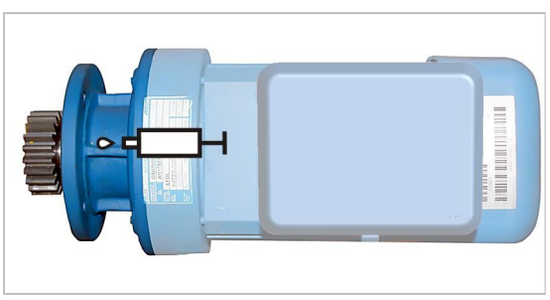
Lubrication ex works using lubricant with the standard designation GP 00 K-45 (DIN 51502)

Quantity:

- Size 80/112: 130 cm³
- Size 140: 200 cm³

➔ The gear unit is lubricated ex works for its entire length of service.

GEAR UNIT ON DRIVE WITH THE PLANETARY GEAR UNIT



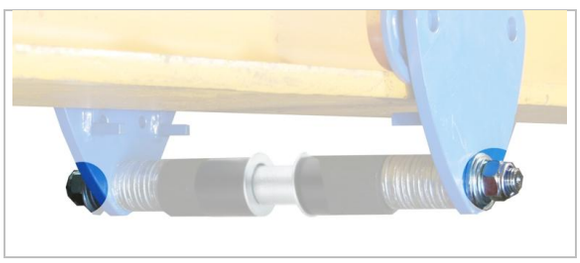
Lubrication ex works using lubricant with the standard designation KOK-35 (DIN 51502)

Quantity: 50 g

➔ The gear unit is lubricated ex works for its entire length of service.

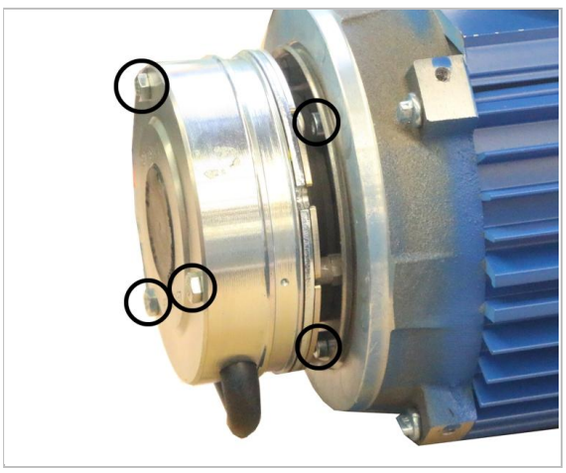
OVERVIEW OF SCREW TIGHTENING TORQUES

SELF-LOCKING NUTS OF TRAVELLING GEAR BOLTS



Size	Type, size and length	Number	Tightening torque
HF 3	Self-locking M12 nut	2x	70 Nm
HF 6	Self-locking M16 nut	2x	90 Nm
HF 14 and EF 14	Self-locking M20 nut	2x	130 Nm
HF 22 and EF 22	Self-locking M24 nut	2x	160 Nm
HF 36 and EF 36	Self-locking M30 nut	2x	200 Nm
EF 50	Self-locking M36 nut	2x	300 Nm

BRAKE



On the brake:

Size	Size and length	Tightening torque
Size 80 / 112	M4x45	3 Nm
Size 140	M5x55	6 Nm

On the friction disc:

Size	Size and length	Tightening torque
Size 80 / 112	M4x12	3 Nm
Size 140	M5x10	6 Nm

ELIMINATING ERRORS ON THE TROLLEY

If the crane with trolley is not working or functions other than as expected, this may be due to a malfunction on the trolley.

Fault	Possible cause	Eliminating the fault
Only for electric trolley EF: Trolley does not run in either direction, drive does not audibly switch on when activated on the pendant control	No mains voltage.	Check the electrical connection. See “Connecting the drive to an ABUS crane”, page 23 or “Connecting the drive to crane installations not made by ABUS”, page 25.
	Electrical connection is not correct.	Check the rotary field and phases. See “Connecting the drive to an ABUS crane”, page 23 or “Connecting the drive to crane installations not made by ABUS”, page 25.
	Fuses are defective.	Check fuses.
	Plug-in connection is not properly inserted.	Ensure the plug-in connection is fully inserted. See “Connecting the drive to an ABUS crane”, page 23 or “Connecting the drive to crane installations not made by ABUS”, page 25.
	Broken conductor in the control cable.	Replace the control cable.
	Pendant control is defective.	Replace the pendant control.
Only for electric trolley EF: Trolley does not run in either direction, drive audibly switches on when activated on the pendant control.	Electrical connection is defective (2-phase running).	Check the electrical connection. See “Connecting the drive to an ABUS crane”, page 23 or “Connecting the drive to crane installations not made by ABUS”, page 25.
	Fuse is defective.	Check the electrical connection.
	Connections on the drive: brake and star points are interchanged.	Connect the drive correctly. See “Connecting the drive to an ABUS crane”, page 23 or “Connecting the drive to crane installations not made by ABUS”, page 25.
	Contactor is defective.	Replace contactor.
Only for electric trolley EF: Trolley starts sluggishly.	Brake does not disengage.	See next point.
Only for electric trolley EF: Brake does not disengage.	Electronics for brake are defective.	Measure the DC voltage on the brake. The voltage must be 180 V. If it is not, replace the electronics for the brake.
	Brake coil is defective.	Measure the electrical throughput. If the brake coil has no throughput, replace it.

Fault	Possible cause	Eliminating the fault
Only for electric trolley EF: Trolley only runs in one direction.	Switch block in pendant control is defective.	Replace the switch block.
	Broken conductor in the control cable.	Replace the control cable.
	Contactor is defective.	Replace contactor.
	I-beam declines too far in one direction.	Align I-beam.
	If present: Travel limit switch activated.	Check the travel limit switch.
Trolley is not running smoothly.	Flange is heavily soiled.	Clean the flange.
	Debris on flange.	Remove debris.
	Bearing on wheel is defective.	Replace bearing or side panel.

DECLARATION OF INCORPORATION

This declaration is valid as a Declaration of Incorporation in terms of the machinery directive of Appendix II 1B if the trolley is installed in another machine. It is then prohibited to put the trolley into service until it has been ascertained that the equipment into which the trolley is to be installed meets all requirements of the EU directive versions applicable at the time of issuance. If the trolley is part of an ABUS crane installation, the Declaration of Conformity in the test log book of the crane is valid. The declaration here is then invalid.

Manufacturer	ABUS Kransysteme GmbH Sonnenweg 1 51647 Gummersbach, Germany	
Product	**ABUS Push Trolley HF and ABUS Electric Trolley EF in standard series version**	
Year of construction	From 2015	
Order number	See title page	
Person responsible for putting together the special technical documentation	Daniel Isenbeck Head of Technology and Development ABUS Kransysteme GmbH Sonnenweg 1 51647 Gummersbach, Germany	
We hereby declare than the product specified above complies with all requirements in the EU directives listed here in the version applicable at the time of issuance.	2006/42/EC 2014/35/EU 2014/30/EU	Machinery Low voltage Electromagnetic compatibility
In particular, the harmonised standards and national standards, directives and specifications and any other applicable standards have been applied.	EN ISO 12100 EN 61000-6-4 EN 61000-6-2 EN 60204-32 DIN EN 14492-2 FEM 9.681	Safety of machinery, devices and systems Electromagnetic compatibility; Emission standard for industrial environments Electromagnetic compatibility; Immunity for industrial environments Electrical equipment of machines, hoisting equipment Cranes, power-driven winches and hoists Selection of travel motors

Technical documentation is available in full.

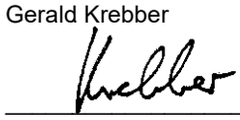
The corresponding operating manuals are available in the national language of the user.

With our department for “Technical Documentation”, we have committed ourselves to submitting the specific documentation for the incomplete machine in response to a reasoned request by the market surveillance authorities.

Gummersbach, 11 April 2025

Head of the Development department

Gerald Krebber



Signature of the authorised person

The content of this declaration complies with EN ISO 17050.

ABUS Kransysteme GmbH supports a quality management system in accordance with DIN EN ISO 9001.

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2025-04-11