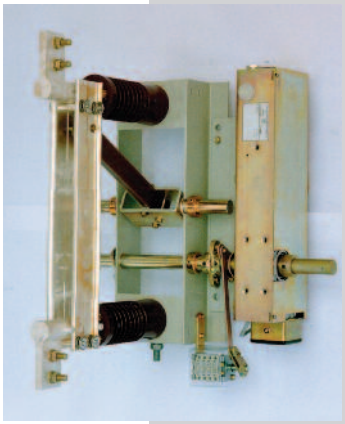
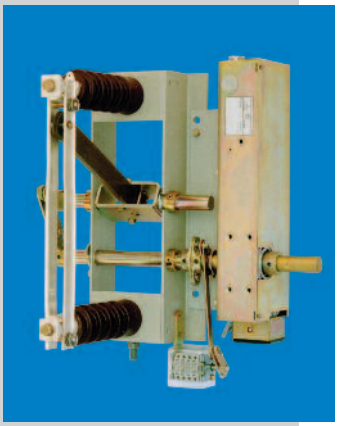
B
767.2

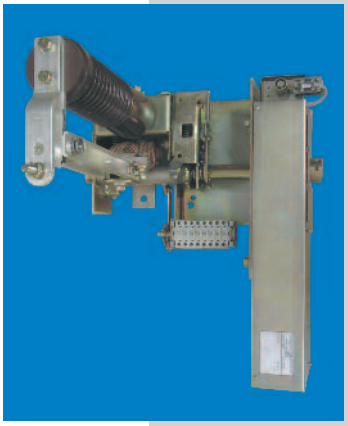
Operating, Assembly and Maintenance Instructions for

DRIESCHER - Indoor disconnectors for railway applications

- single-pole
- Rated voltage up to 27.5 kV
- Rated current up to 4000 A







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Railw

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DRIESCHER - Indoor disconnector and earthing switch for railways

nach EN 50152-2

Content

Warning

During the operation of these electrical switches certain parts are inevitably exposed to dangerous voltage and mechanical parts may move very quickly, also under remote control. There is a risk of serious injury to the body or to property if the warning notes are not correctly observed. Only appropriately trained personnel as defined in VDE 0105 regulations are to work on this equipment or in the vicinity thereof. These persons are to be completely familiar with all general regulations; VDE/IEC regulations, 5 safety regulations according to VDE, safety regulations, accident prevention regulations as well as all warnings and maintenance measures as specified in these operating instructions. Correct transport, appropriate storage, mounting and assembly as well as the correct operation and maintenance are prerequisites for the satisfactory and safe operation of this equipment.

General technical description

These Driescher indoor switches are specifically designed for railway applications and comply with the specifications in accordance with EN 50152-2.
The single-pole switches can be used for a rated voltage range of Un 15 kV to 27.5 kV depending on the design and for a rated current range of In 630 A to 4000 A.

Switch design:
In disconnectors the corresponding contact blades are directed operated by the operating shaft via actuating rods. For earthing switches there are two springs for a quick-make operation.
In the making process the operating shaft moves the contact tube including spring mechanism until the over/top dead-centre position is attained.
Through the continued movement of the operating shaft the two springs are relieved of pressure and the contact blades strike the contact jaw at high speed.
The baseframe as well as all steel parts are provided with a galvanized surface protection in compliance with QTL 0200, which provides excellent corrosion resistance.
The live parts are of electrolyte copper with elector silver plating in compliance with QTL 0200. For insulation to earth the insulators of cycloaliphatic cast resin are used, which have proved their worth for decades.

Transport and Storage

Unpack the switches carefully after delivery and look out for any damage caused during transportation. If you discover any damage please report this immediately and contact the shipping company.
After unpacking, clean all switchgear equipment and accessories and remove any soiling through packing material, make sure to protect all equipment from damage, moisture and contamination prior to installation.

Carefully clean switches and elements of the operating mechanism to remove dust and assembly swarf and clean all insulating parts with a clean dry cloth.
When transporting the switches only hold at the frame, **never** pick them up at the current paths (contact blades etc.) or at the switching mechanisms (e.g. latching mechanism. Fig. 7,8).

Operation conditions

The use of switchgears under normal operating conditions is specified in the EN 62271-1 as follows:

- The maximum ambient temperature is 40 °C, the average value over a period of 24 h is max. 35 °C. The minimum ambient temperature is –5 °C. For our indoor switches the class "Minus 5 indoors" is specified.
- Solar radiation has no significant impact.
- The altitude at the place of installation is max. 1000 m above sea level.
- The ambient air is to have no significant contamination through dust, smoke, corrosive and/or flammable gasses, fumes or salts.
- The following conditions apply with regard to humidity:

- average value of relative air moisture measured over 24 h is max. 95 %,
- average value of water vapour pressure over 24 h is max. 2.2 kPa;
- average value of the relative air moisture over a period of one month is max. 90%
- average value of the water vapour pressure over one month is max. 1.8 kPa;

Maintenance

General:

The indoor switches for railways manufactured by DRIESCHER comply with the EN specification EN 50152-2 valid at the time of the type tests.
This specification refers, among other things, to the individual switchgear standards of the disconnectors and earthing switches EN 62271-103.
The disconnectors and earthing switches are classified in compliance with the mechanical endurance test for Class 2 (corresponding to 3000 switching operations for disconnectors and 1000 switching operations for earthing switches).

Visual check, inspection

To carry out the annual visual inspection the switch does not have to be safety isolated. For indoor disconnectors and earthing switches check the following points to assess the general condition of the switch:

- Is there any external damage, wear (e.g. contact erosion etc.) or extreme contamination to be seen ?
- Does the switch attain the specified switching positions (ON and OFF) ?
- Are there any visible or audible discharge phenomena across isolating distances (e.g. sparking) ?

Repair work

Worn or damaged switch components are not to be repaired or reworked, but must be replaced with original DRIESCHER accessories.

Maintenance and repair measures as well as any subsequent conversion work is only to be carried out by the DRIESCHER-Service or by trained personnel authorised by us, due to the required skilled adjustment.

Maintenance

Prior to commencing work, the working area must be isolated and safeguarded observing the 5 safety regulations in compliance with DGUV V3 (regulations of the statutory insurance institute of the industry). Always observe the local safety regulations.

For indoor disconnectors:

Maintenance category	Maintenance interval
Inspection	Once a year (recommended)
Maintenance	after 1.000 switching operations at the latest or 10 years after delivery
Corrective maintenance	as required, after 3.000 switching operations at the latest or 20 years after delivery

For indoor earthing switches:

Maintenance category	Maintenance interval
Inspection	Once a year (recommended)
Maintenance	as required, 10 years after delivery at the latest
Corrective maintenance	as required, after 1000 switching operations at the latest or 20 years after delivery

Mounting:

Unless specified otherwise, the switches are designed for vertical assembly on frames or walls. Switches for horizontal installation or for assembly on ceilings are already appropriately adjusted at the factory and marked.
Always observe the following when mounting the switches:

- It is recommended to mount the switches on precision aligned cross-rails.
- Do not distort the baseframe of the switch when tightening the fastening bolts (min. M10) (use shims if necessary).
- When connecting the connecting rails or cable end fittings there must be no thrust, pulling or twisting forces acting on the switch connections (hold in place with a second wrench!) Tighten connecting bolts M12 to a torque of 70 Nm.
- After completing the mounting carry out several test switching operations in de-energized condition. Check that the disconnecting blade set (3) strike correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation).

Providing earthing connections

There are appropriate bores provided in the baseframe for taking up the earthing screw M12.
The minimum cross section of the connection wires for equipotential bonding should be 50 mm^2 .
When mounting on an earthed frame the required connection to earth can already be carried out using corresponding contact washers when fastening the switch.

Secondary connections

Provide the auxiliary switch connections as shown in the enclosed wiring diagram.
Secondary wires are to be shielded against the high voltage area.

Commissioning:

The function test must be carried out in off-load condition. In doing so, make sure that in the On and Off switching the end stop positions (9) of the operating shaft (11) are reliably attained.

Testing the motor-operated mechanism

At 85 % and 110 % of the rated supply voltage the motor-operated mechanism (7) must move the operating shaft (11) of the switch into the two end stop positions (9) (switching angle 90°) without impaired function.
In the course of this, check the correct make and break function of the switch.
The switch can be operated in de-energized condition using the emergency crank lever (see page 12, hand operated emergency crank).

Testing the auxiliary switch: (optional)

The auxiliary switches (6) are factory set and tested on all functions. A function check is to be done after the assembly works. Supposed that an auxiliary switch is mistakenly adjusted during transport or assembly works, it is to be checked and if necessary readjusted. Please contact DRIESCHER-Service.

Visual check / inspection

The required measures are specified on Page 3.
In addition to this, these indoor disconnectors are to be inspected after every switching operation under short circuit conditions.
The possible need for maintenance or repair cannot be ruled out due to the exceptional load.

Maintenance:

- Check all screw connections of the connecting rails and the switch mounting.
- Lubricate all friction bearings (5) of the operating shaft (11) with Rivolta S.K.D. 16 N.
- Clean connecting rails, insulators (1), actuating rods (10) with Rivolta M.T.X 60 forte (of Bremer & Leguil) and then dry them with a cloth.
- Check that the disconnecting blade set (3) strike correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation).
- Check wear of contact surfaces (3a) on the disconnecting blade set (3) and at the contact jaw (4), replace disconnecting blade set if necessary.[1)]
- If there is excessive wear of the silver plating (copper is visible) replace the contact parts (2, 3 and 4).[1)]
- Lubricate contact surfaces (3a and 4) with Rivolta S.K.D 4002 (of Bremer & Leguil).
- Prior to commissioning carry out several test switching operations and check for satisfactory switching function.

Figure on the right:

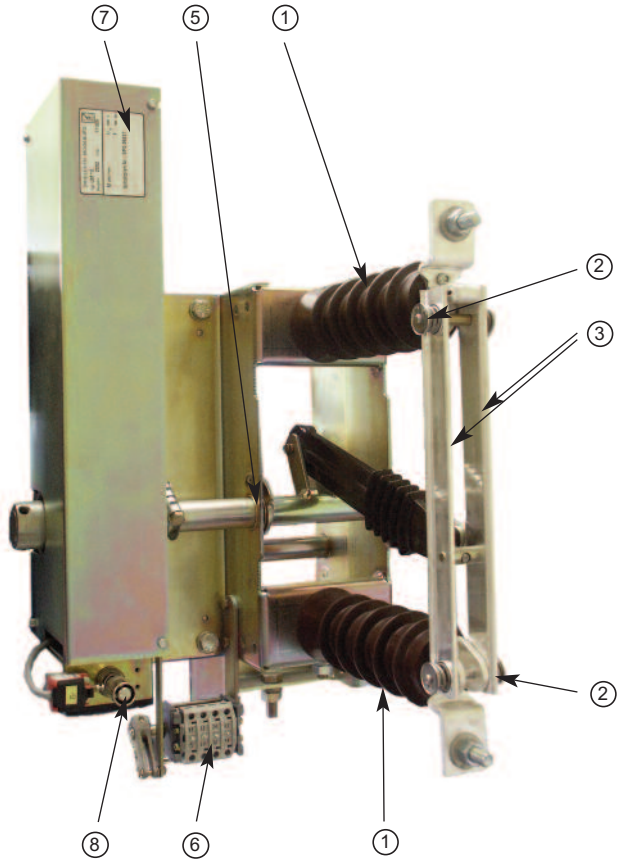
Indoor disconnector L31; Un 15 kV, In 1600 A

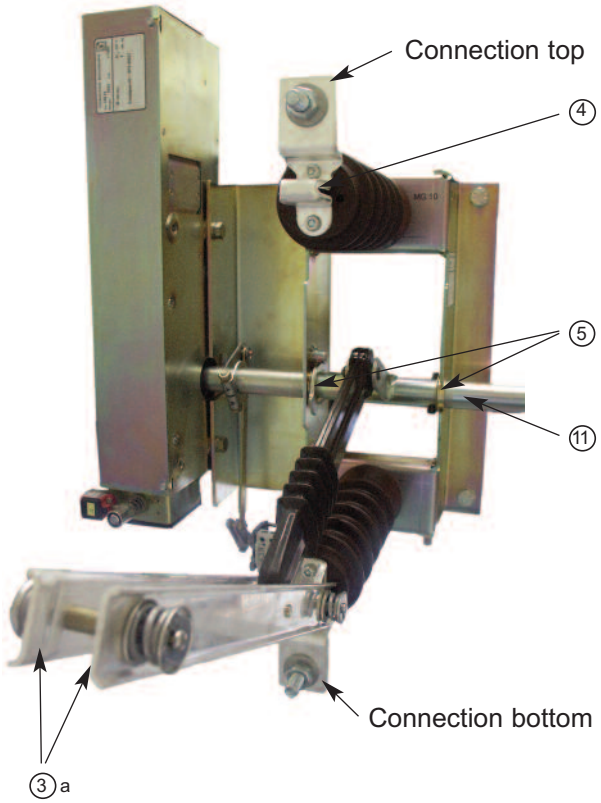
Without illustration:

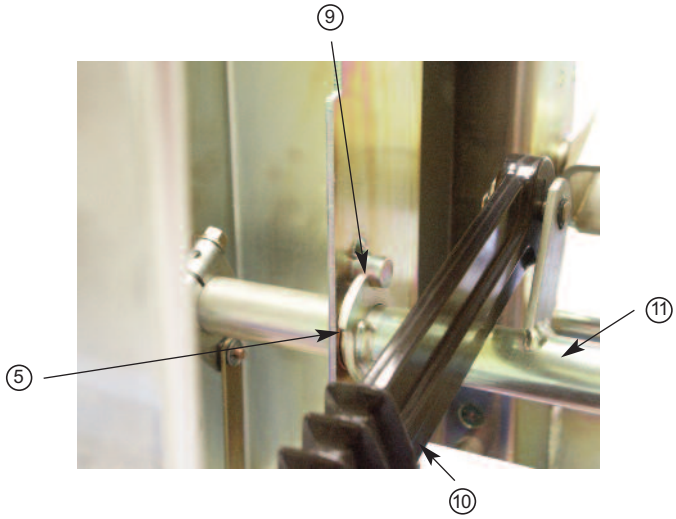
For disconnector L31 with a rated voltage of **Un 27.5 kV** and a rated current of **In 1250 A** the same steps are applied within the scope of the maintenance measures.
Apply a very thin film of lubricant Barrierta L55/1 (of Klüber Lubrication) to the contact surfaces of the contact jaws (4) and the contact blades (3).

1) *Always consult DRIESCHER-Service.*

Disconnector Type L31; Un 15 kV for In 630 A and Un 27.5 kV for In 630, 1250 A







① Insulators
② Pivot contact
③ Disconnecting blade set
③a Contact surface on disconnecting blade set
④ Contact jaw
⑤ Bearing points of operating shaft
⑥ Auxiliary switch
⑦ Motor-operated mechanism
⑧ Hand emergency operation of motordrive
⑨ Stop of operating shaft
⑩ Actuating rod
⑪ Operating shaft

Mounting:

Unless specified otherwise, the switches are designed for vertical assembly on frames or walls. Switches for horizontal installation or for assembly on ceilings are already appropriately adjusted at the factory and marked.
Always observe the following when mounting the switches:

- It is recommended to mount the switches on precision aligned cross-rails.
- Do not distort the baseframe of the switch when tightening the fastening bolts (min. M10) (use shims if necessary).
- When connecting the connecting rails or cable end fittings there must be no thrust, pulling or twisting forces acting on the switch connections (hold in place with a second wrench!) Tighten connecting bolts M12 to a torque of 70 Nm.
- After completing the mounting carry out several test switching operations in de-energized condition. Check that the contact blades (3) strike correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation).

Providing earthing connections

There are appropriate bores provided in the baseframe for taking up the earthing screw M12.
The minimum cross section of the connection wires for equipotential bonding should be 50 mm^2 .
When mounting on an earthed frame the required connection to earth can already be carried out using corresponding contact washers when fastening the switch.

Secondary connections

Provide the auxiliary switch connections as shown in the enclosed wiring diagram.
Secondary wires are to be shielded against the high voltage area.

Commissioning:

The function test must be carried out in off-load condition. In doing so, make sure that in the On and Off switching the end stop positions (9) of the operating shaft (11) are reliably attained.

Testing the motor-operated mechanism

At 85 % and 110 % of the rated supply voltage the motor-operated mechanism (7) must move the operating shaft (11) of the switch into the two end stop positions (9) (switching angle 90°) without impaired function.
In the course of this, check the correct make and break function of the switch.
The switch can be operated in de-energized condition using the emergency crank lever (see page 12, hand operated emergency crank).

Testing the auxiliary switch: (optional)

The auxiliary switches (6) are factory set and tested on all functions. A function check is to be done after the assembly works. Supposed that an auxiliary switch is mistakenly adjusted during transport or assembly works, it is to be checked and if necessary readjusted. Please contact DRIESCHER-Service.

Visual check / inspection

The required measures are specified on Page 3.
In addition to this, these indoor disconnectors are to be inspected after every switching operation under short circuit conditions.
The possible need for maintenance or repair cannot be ruled out due to the exceptional load.

Maintenance:

- Check all screw connections of the connecting rails and the switch mounting.
- Lubricate all friction bearings (5) of the operating shaft (11) with Rivolta S.K.D. 16 N.
- Clean connecting rails, insulators (1), actuating rods (10) with Rivolta M.T.X 60 forte (of Bremer & Leguil) and then dry them with a cloth.
- Check that the contact blades (3) strike correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation).
- Check wear of contact surfaces (3a) on the contact blade set (3) and at the contact jaw (4), replace contact blade set if necessary.[1)]
- If there is excessive wear of the silver plating (copper is visible) replace the contact parts (2, 3 and 4).[1)]
- Lubricate contact surfaces (3a and 4) with Barrierta (of Klüber Lubrication).
- Prior to commissioning carry out several test switching operations and check for satisfactory switching function.

Figure on the right:

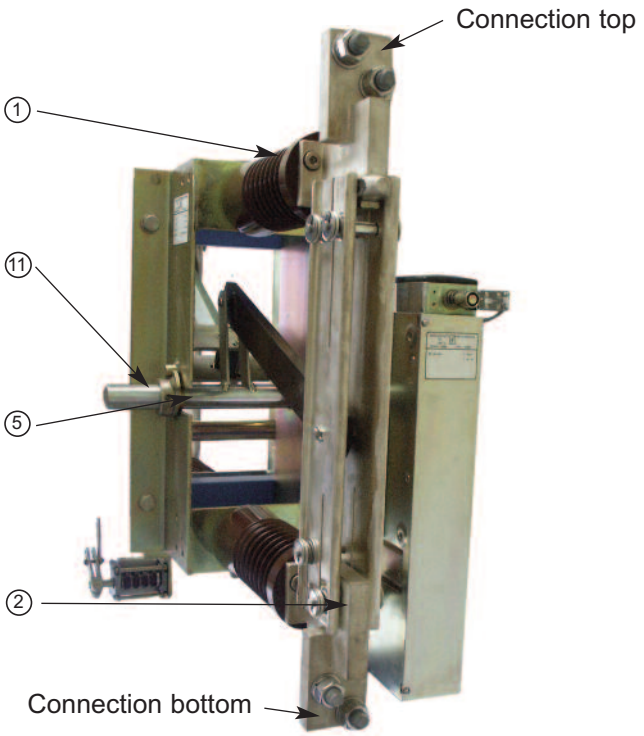
Indoor disconnector L31; Un 15 kV, In 630 A

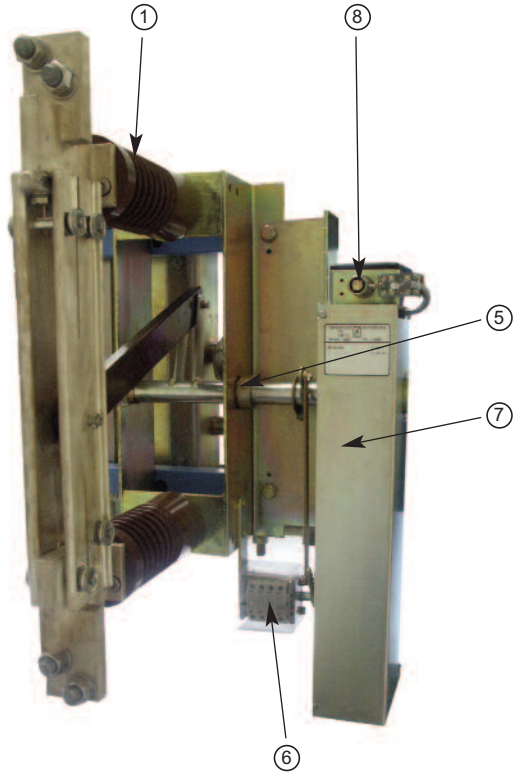
Without illustration:

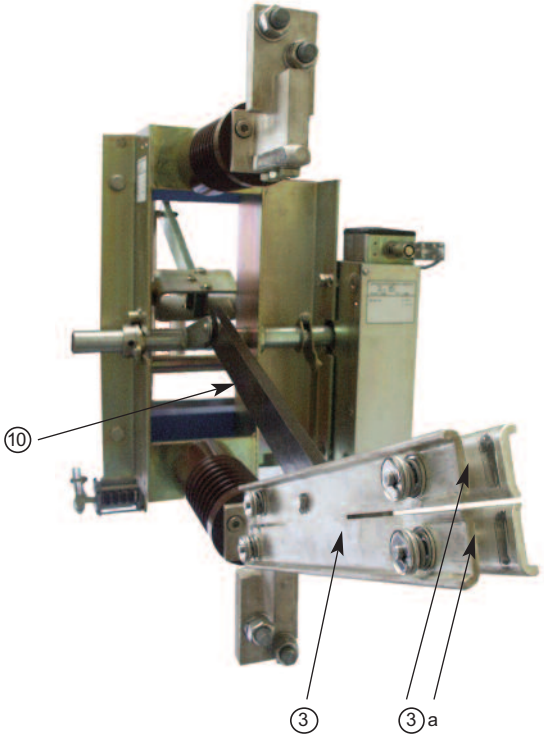
For disconnector L31 with a rated voltage of **Un 27.5 kV** and a rated current of **In 2500 A and 4000 A** the same steps are applied within the scope of the maintenance measures.
The disconnector L31, In 2500 A is equipped with two parallel In 1600 A main circuits.
The In 4000 A disconnector also has two parallel main circuits of larger dimensions and is almost of an identical design.

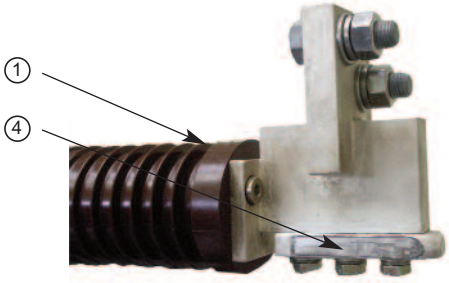
[1)] *Always consult DRIESCHER-Service.*

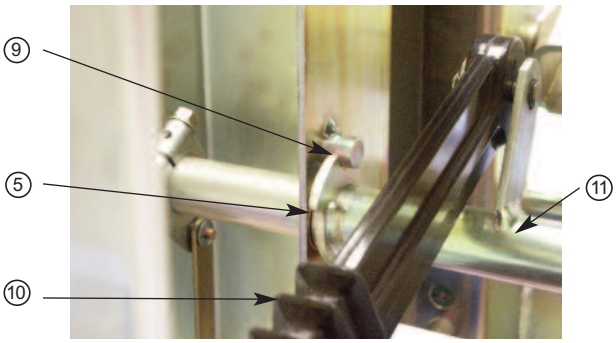
Disconnector Type L31; Un 15 kV for In 1600 A and Un 27.5 kV for In 1600 A, 2500 A, 4000 A











① Insulators
② Pivot contact
③ Disconnecting blade set
③a Contact surface on disconnecting blade set
④ Contact jaw
⑤ Bearing points of operating shaft
⑥ Auxiliary switch
⑦ Motor-operated mechanism
⑧ Hand emergency operation of motordrive
⑨ Stop of operating shaft
⑩ Actuating rod
⑪ Operating shaft

Mounting:

Unless specified otherwise, the switches are designed for vertical assembly on frames or walls. Switches for horizontal installation or for assembly on ceilings are already appropriately adjusted at the factory and marked.
Always observe the following when mounting the switches:

- It is recommended to mount the switches on precision aligned cross-rails.
- Do not distort the baseframe of the switch when tightening the fastening bolts (min. M10) (use shims if necessary).
- When connecting the connecting rails or cable end fittings there must be no thrust, pulling or twisting forces acting on the switch connections (hold in place with a second wrench!) Tighten connecting bolts M12 to a torque of 70 Nm.
- After completing the mounting carry out several test switching operations in de-energized condition. Check that the contact blades (3) strikes correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation).

Providing earthing connections

There are appropriate bores provided in the baseframe for taking up the earthing screw M12.
The minimum cross section of the connection wires for equipotential bonding should be 50 mm^2 .
When mounting on an earthed frame the required connection to earth can already be carried out using corresponding contact washers when fastening the switch.

Secondary connections

Provide the auxiliary switch connections as shown in the enclosed wiring diagram.
Secondary wires are to be shielded against the high voltage area.

Commissioning:

The function test must be carried out in off-load condition. In doing so, make sure that in the On and Off switching the end stop positions (9) of the operating shaft (11) are reliably attained.

Testing the motor-operated mechanism

At 85 % and 110 % of the rated supply voltage the motor-operated mechanism (7) must move the operating shaft (11) of the switch into the two end stop positions (9) (switching angle 90°) without impaired function.
In the course of this, check the correct make and break function of the switch.
The switch can be operated in de-energized condition using the emergency crank lever (see page 12, hand operated emergency crank).

Testing the auxiliary switch: (optional)

The auxiliary switches (6) are factory set and tested on all functions. A function check is to be done after the assembly works. Supposed that an auxiliary switch is mistakenly adjusted during transport or assembly works, it is to be checked and if necessary readjusted. Please contact DRIESCHER-Service.

Visual check / inspection

The required measures are specified on Page 3.
In addition to this, these indoor disconnectors are to be inspected after every switching operation under short circuit conditions.
The possible need for maintenance or repair cannot be ruled out due to the exceptional load.

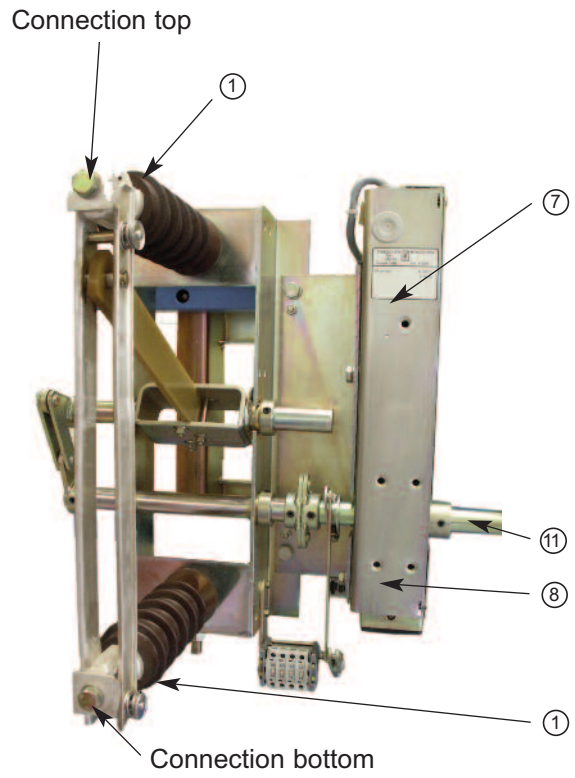
Maintenance:

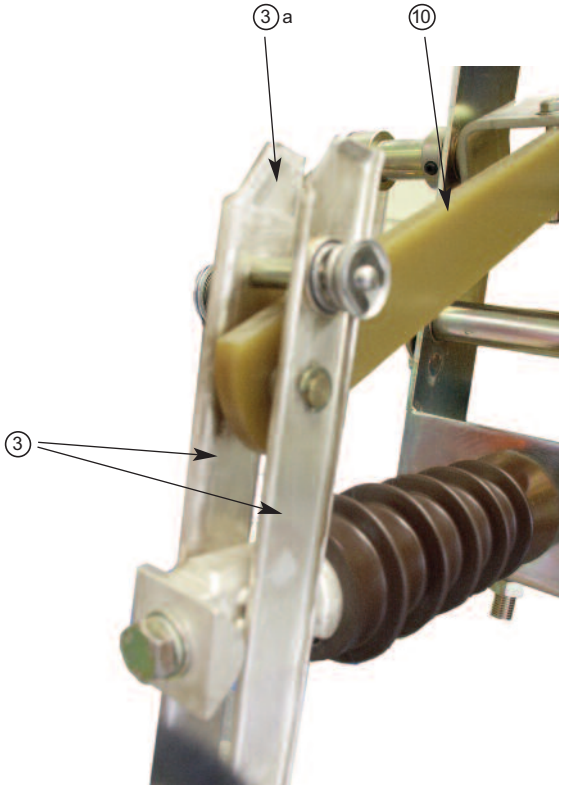
- Check all screw connections of the connecting rails and the switch mounting.
- Lubricate all friction bearings (5) of the operating shaft (11) with Rivolta S.K.D. 16 N.
- Clean connecting rails, insulators (1), actuating rods (10) with Rivolta M.T.X 60 forte (of Bremer & Leguil) and then dry them with a cloth.
- Check that the contact blades (3) strikes correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation).
- Check wear of contact surfaces (3a) on the contact blades (3) and at the contact jaw (4), replace contact blade if necessary.[1)]
- If there is excessive wear of the silver plating (copper is visible) replace the contact parts (2, 3 and 4).[1)]
- Lubricate contact surfaces (3a and 4) with Barrierta (of Klüber Lubrication).
- Prior to commissioning carry out several test switching operations and check for satisfactory switching function.

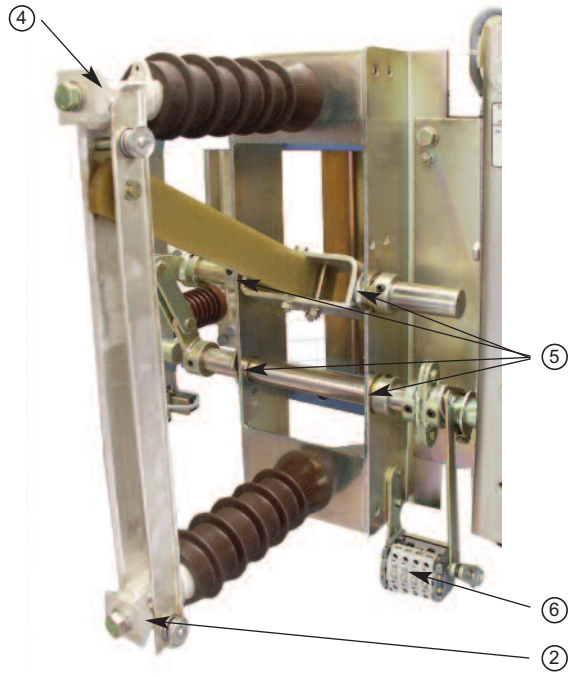
Figure on the right:
Indoor In-line disonnector L31;
Un 15 kV, In 630 A

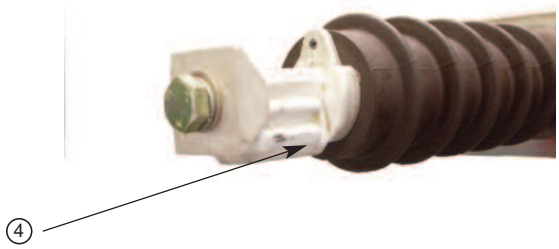
1) *Always consult DRIESCHER-Service.*

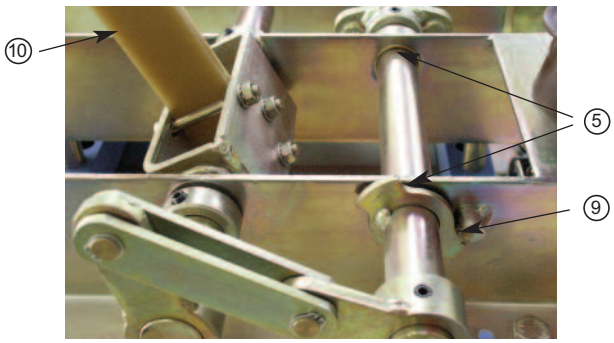
Indoor-In-line Disconnector Type L31; Un 15 kV for In 630 A











① Insulators
② Slide contact
③ Disconnecting blade set
③a Contact surface on disconnecting blade set
④ Contact jaw
⑤ Bearing points of operating shaft
⑥ Auxiliary switch
⑦ Motor-operated mechanism
⑧ Hand emergency operation of motordrive
⑨ Stop of operating shaft
⑩ Actuating rod
⑪ Operating shaft

Mounting:

Unless specified otherwise, the switches are designed for vertical assembly on frames or walls. Switches for horizontal installation or for assembly on ceilings are already appropriately adjusted at the factory and marked.
Always observe the following when mounting the switches:

- It is recommended to mount the switches on precision aligned cross-rails.
- Do not distort the baseframe of the switch when tightening the fastening bolts (min. M10) (use shims if necessary).
- When connecting the connecting rails or cable end fittings there must be no thrust, pulling or twisting forces acting on the switch connections (hold in place with a second wrench!) Tighten connecting bolts M12 to a torque of 70 Nm.
- After completing the mounting carry out several test switching operations in de-energized condition. Check that the contact blades (3) strikes correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation).

Providing earthing connections

There are appropriate bores provided in the baseframe for taking up the earthing screw M12.
The minimum cross section of the connection wires for equipotential bonding should be 50 mm^2 .
When mounting on an earthed frame the required connection to earth can already be carried out using corresponding contact washers when fastening the switch.

Secondary connections

Provide the auxiliary switch connections as shown in the enclosed wiring diagram.
Secondary wires are to be shielded against the high voltage area.

Commissioning:

The function test must be carried out in off-load condition. In doing so, make sure that in the On and Off switching the end stop positions (9) of the operating shaft (11) are reliably attained.

Testing the motor-operated mechanism

At 85 % and 110 % of the rated supply voltage the motor-operated mechanism (7) must move the operating shaft (11) of the switch into the two end stop positions (9) (switching angle 90°) without impaired function.
In the course of this, check the correct make and break function of the switch.

The switch can be operated in de-energized condition using the emergency crank lever (see page 12, hand operated emergency crank).

Testing the auxiliary switch: (optional)

The auxiliary switches (6) are factory set and tested on all functions. A function check is to be done after the assembly works. Supposed that an auxiliary switch is mistakenly adjusted during transport or assembly works, it is to be checked and if necessary readjusted. Please contact DRIESCHER-Service.

Visual check / inspection

The required measures are specified on Page 3.
In addition to this, these indoor disconnectors are to be inspected after every switching operation under short circuit conditions.
The possible need for maintenance or repair cannot be ruled out due to the exceptional load.

Maintenance:

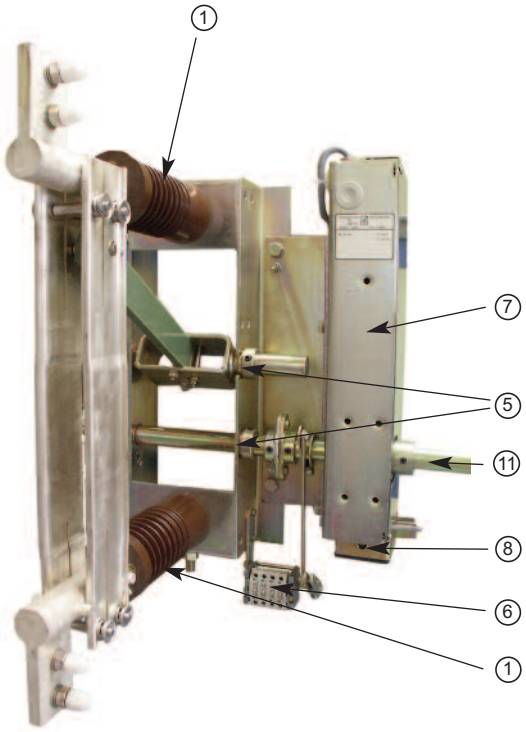
- Check all screw connections of the connecting rails and the switch mounting.
- Lubricate all friction bearings (5) of the operating shaft (11) with Rivolta S.K.D. 16 N.
- Clean connecting rails, insulators (1), actuating rods (10) with Rivolta M.T.X 60 forte (of Bremer & Leguil) and then dry them with a cloth.
- Check that the contact blades (3) strikes correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation).
- Check wear of contact surfaces (3a) on the contact blades (3) and at the contact jaw (4), replace contact blade if necessary.[1)]
- If there is excessive wear of the silver plating (copper is visible) replace the contact parts (2, 3 and 4).[1)]
- Lubricate contact surfaces (3a and 4) with Barrierta (of Klüber Lubrication).
- Prior to commissioning carry out several test switching operations and check for satisfactory switching function.

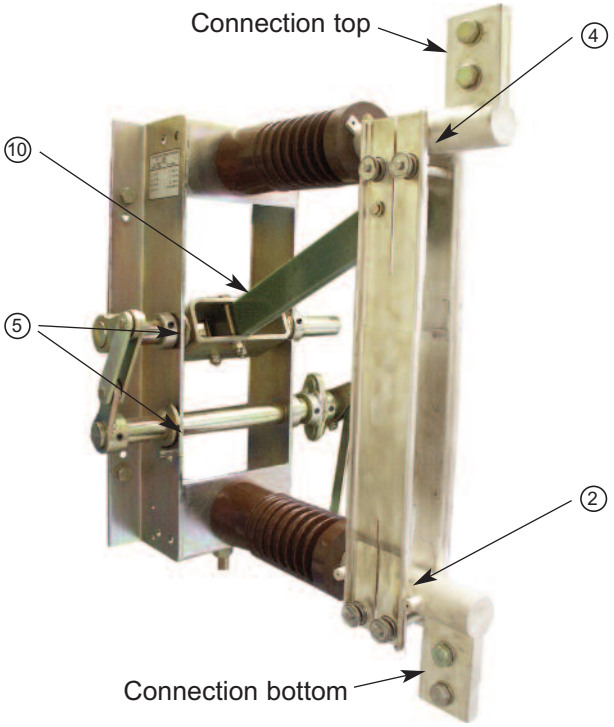
Figure on the right:

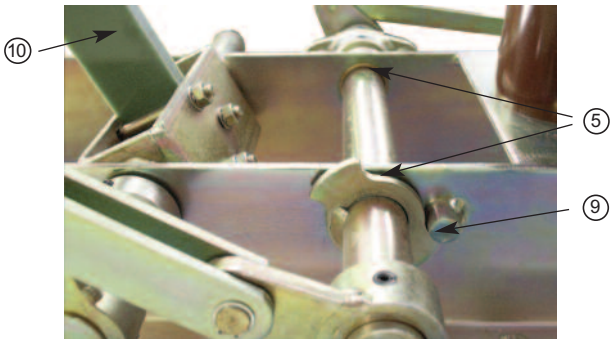
Indoor disconnector L31; Un 15 kV, In 1600 A

[1)] *Always consult DRIESCHER-Service.*

Indoor - In-line Disconnector Type L31; Un 15 kV for In 1600 A







① Insulators
② Pivot contact
③ Disconnecting blade set
③a Contact surface on disconnecting blade set
④ Contact jaw
⑤ Bearing points of operating shaft
⑥ Auxiliary switch
⑦ Motor-operated mechanism
⑧ Hand emergency operation of motordrive
⑨ Stop of operating shaft
⑩ Actuating rod
⑪ Operating shaft

Mounting:

Unless specified otherwise, the switches are designed for vertical assembly on frames or walls. Switches for horizontal installation or for assembly on ceilings are already appropriately adjusted at the factory and marked.
Always observe the following when mounting the switches:

- It is recommended to mount the switches on precision aligned cross-rails.
- Do not distort the baseframe of the switch when tightening the fastening bolts (min. M10) (use shims if necessary).
- When connecting the connecting rails or cable end fittings there must be no thrust, pulling or twisting forces acting on the switch connections (hold in place with a second wrench!) Tighten connecting bolts M12 to a torque of 70 Nm.
- After completing the mounting carry out several test switching operations in de-energized condition. Check that the earthing blad set (3) strikes correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation from ON into OFF condition).

Providing earthing connections

A silver-plated Cu rail with appropriately drilled holes is provided for connection to the earth potential.

Secondary connections

Provide the auxiliary switch connections as shown in the enclosed wiring diagram.
Secondary wires are to be shielded against the high voltage area.

Commissioning:

The function test must be carried out in off-load condition. In doing so, make sure that in the On and Off switching the end stop positions (9) of the operating shaft (11) are reliably attained.

Testing the motor-operated mechanism

At 85 % and 110 % of the rated supply voltage the motor-operated mechanism (7) must move the operating shaft (11) of the switch into the two end stop positions (9) (switching angle 90°) without impaired function.
In the course of this, check the correct make and break function of the switch.
The switch can be operated in de-energized condition using the emergency crank lever (see page 12, hand operated emergency crank).

Testing the auxiliary switch: (optional)

The auxiliary switches (6) are factory set and tested on all functions. A function check is to be done after the assembly works. Supposed that an auxiliary switch is mistakenly adjusted during transport or assembly works, it is to be checked and if necessary readjusted. Please contact DRIESCHER-Service.

Visual check / inspection

The required measures are specified on Page 3.
In addition to this, these indoor disconnectors are to be inspected after every switching operation under short circuit conditions respectively short circuit making conditions.
The possible need for maintenance or repair cannot be ruled out due to the exceptional load.

Maintenance:

- Check all screw connections of the connecting rails and the switch mounting.
- Lubricate all friction bearings (5) of the operating shaft (11) with Rivolta S.K.D. 16 N.
- Clean connecting rails and the insulator (1), actuating rods (10) with Rivolta M.T.X 60 forte (of Bremer & Leguil) and then dry them with a cloth.
- Check that the earthing blad set (3) strikes correctly in the centre of the contact jaw (4) (by applying slow manual emergency operation from ON into OFF condition).
- Check wear of contact surfaces (3a) on the earthing blad set (3) and at the contact jaw (4), replace earthing blade if necessary.[1)]
- If there is excessive wear of the silver plating (copper is visible) replace the contact parts (3 and 4).[1)]
- Lubricate contact surfaces (3a and 4) with Barrierta (of Klüber Lubrication).
- Prior to commissioning carry out several test switching operations and check for satisfactory function.

Figure on the right:

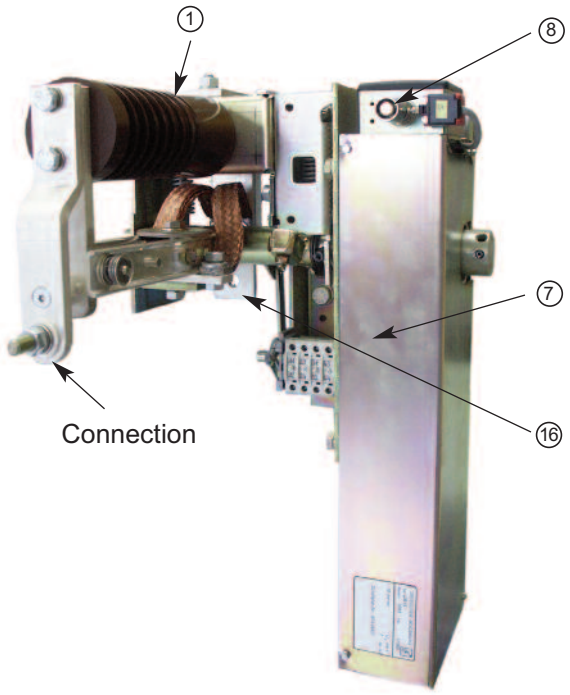
Indoor earthing switch L31; Un 15 kV

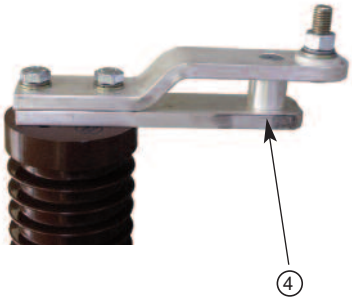
Caution:

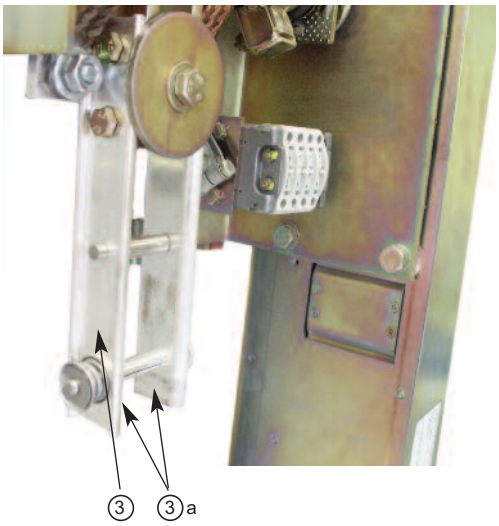
The earthing switch has a quick-make mechanism including spring actuators which accelerate the earthing blades into the contact jaw.

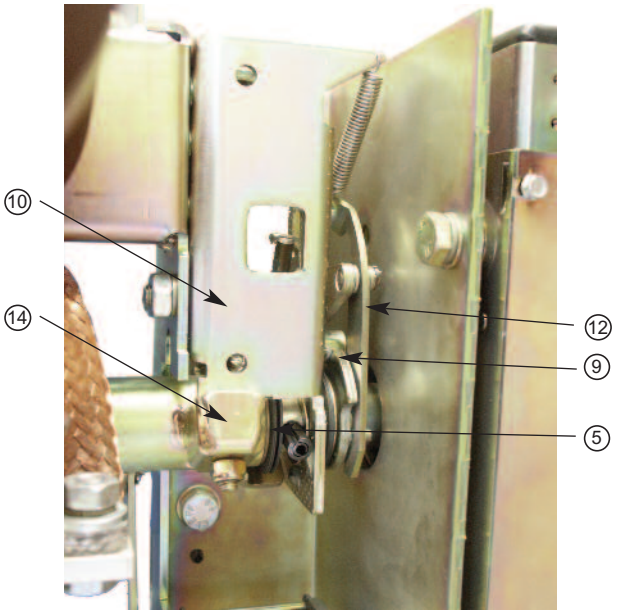
[1)] *Always consult DRIESCHER-Service.*

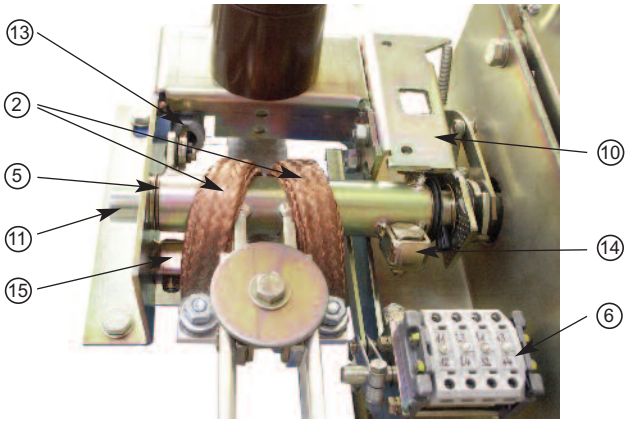
Indoor - Earthing switch Type L 31; Un 15 kV and 27,5 kV











① Insulator
② flexible strip
③ Earthing blade set
③a Contact surface on earthing blade set
④ Contact jaw
⑤ Bearing points of operating shaft
⑥ Auxiliary switch
⑦ Motor-operated mechanism
⑧ Hand emergency operation of motordrive
⑨ Stop of operating shaft
⑩ Case with switch spring 1
⑪ Operating shaft
⑫ Latching mechanism
⑬ Switch spring 2
⑭ Stop position damping 1
⑮ Stop position damping 2
⑯ Earthing contact

Measures for maintenance on the indoor motor drive, Type UM 10

1. Visual check, inspection

The mounted motor-operated mechanisms are designed for a service live of 10000 switching operations. In the annual visual inspection you should inspect and assess the general condition of the motor-operated mechanism on the inside and outside. When doing so, pay attention to the following points:

- General inspection for traces of external damage
- Does the operating shaft extend right into both end stop positions ?

If any deviations are ascertained within the scope of the visual inspection, appropriate further measures must be taken.

2. Maintenance

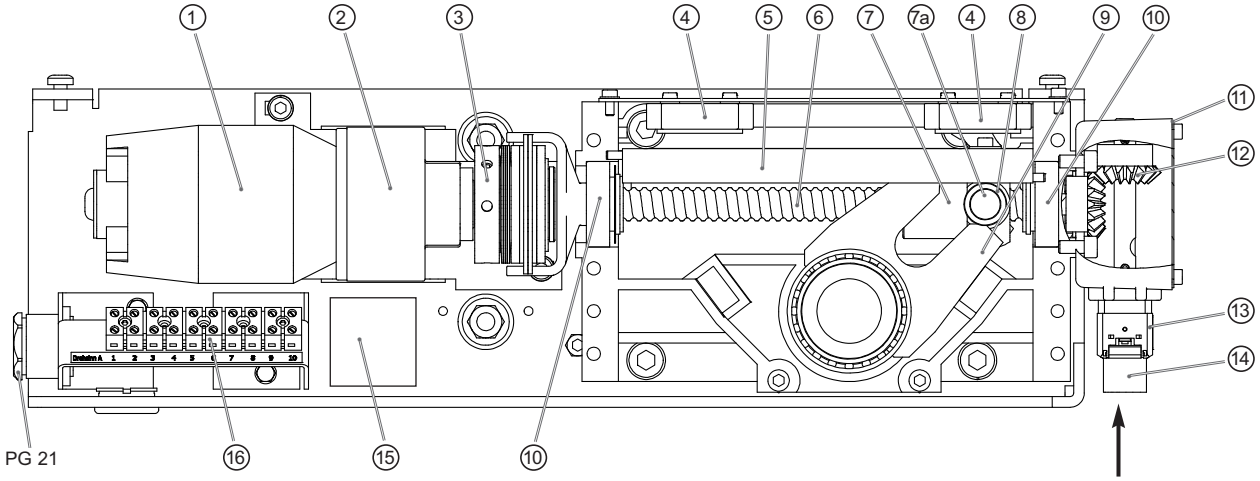
Under normal ambient conditions, the motor drive is maintenance-free up to 10000 switching operations. At unfavorable conditions and/or increased mechanical loads, a maintenance service is recommended after 5000 switching operations.
This includes the following work in addition to the visual inspection.

Lubricate the following components with the lubricant Isoflex NBU 15 (of Klüber Lubrication):

- Guide rollers (8) on both sides on the driver pin (7a), as well as the guide rails (5) and forked link (9) interacting with the guide rollers.
- Ball-and-screw spindle drive (6), as well as both roller bearings (10).
- Bevel gearing (12) and sliding sleeve (14) on the manual emergency operating mechanism (for this purpose the cover (11) first has to be removed.

Caution!
To ensure satisfactory operation of the friction clutch (3) it **is not to come into contact with lubricant.**

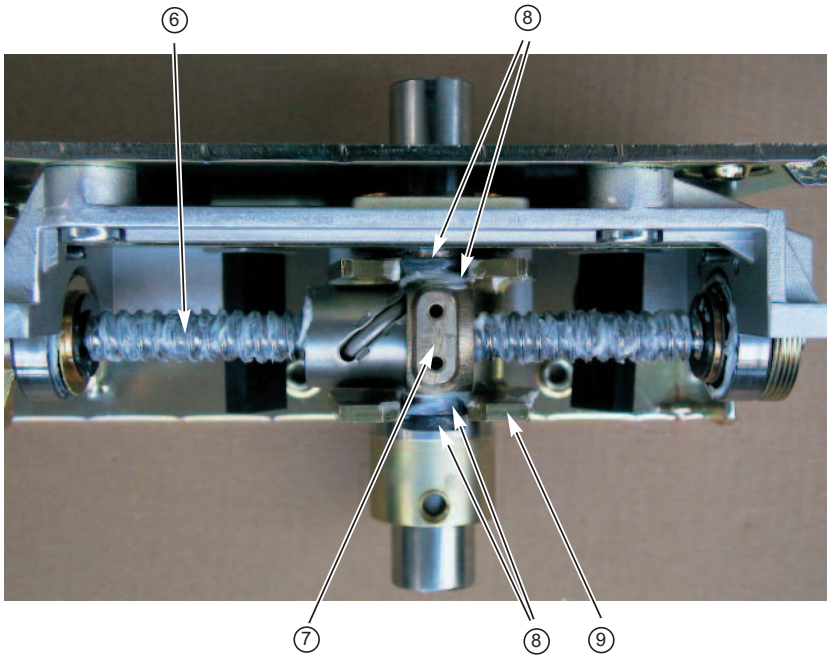
- The series motor (1) incl. gearing (2) has life time lubrication.
- Function check of the limit switch (4) and the interrupt contact (13).

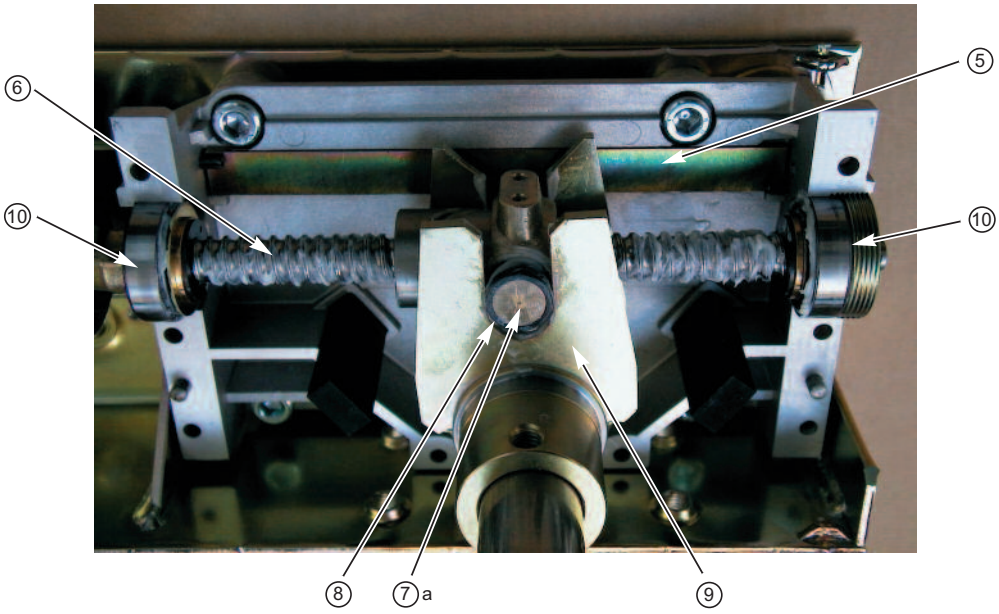


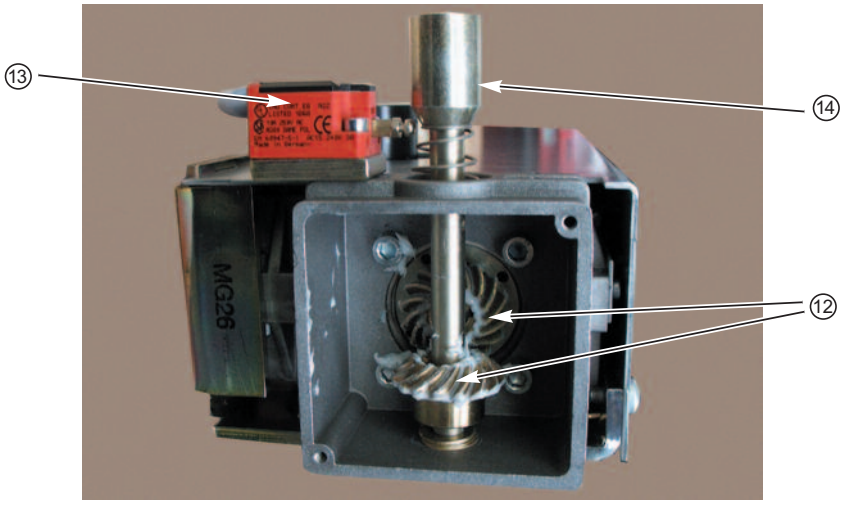
① Series motor
② Gearing
③ Friction clutch
④ Limit switch
⑤ Guide rails
⑥ Ball-and-screw spindle drive
⑦ Driver
⑦a Driver pin
⑧ Guide rollers
⑨ Forked link
⑩ Roller bearing
⑪ Cover
⑫ Bevel bearing
⑬ Interrupt contact of motor voltage with manual emergency operation
⑭ Sliding sleeve
⑮ Control elements (Relays)
⑯ Terminal connection

Emergency Hand-crank
Only für indoor application !

Measures for maintenance on the indoor motor drive, Type UM 10

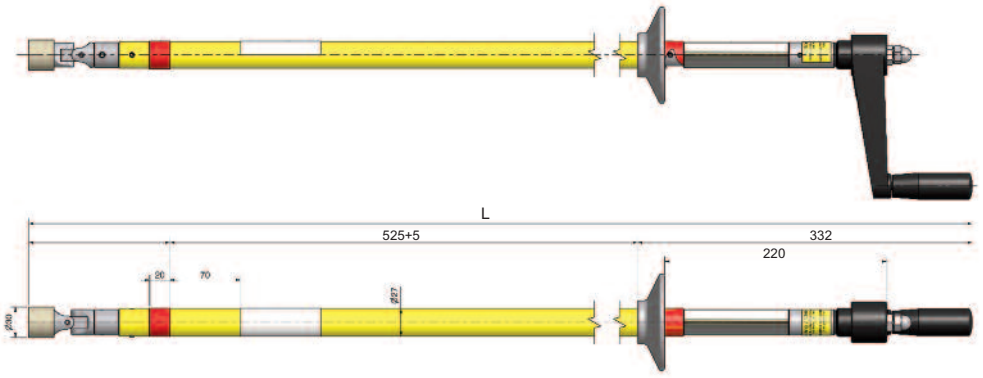






Overview of used hand emergency cranks for motor-operated mechanism

Only for indoor application !



L: Length	Part-no.:	Drawing-no.:
182 mm	2-77601001	036348-001-01
1000 mm	2-77060125	108317-001-02
1200 mm	2-77060134	108317-002-02
1630 mm	2-77060123	111071-001-01
1875 mm	2-77060121	104809-001-01
2375 mm	2-77060126	111076-001-02

Overview of used lubricants

Part-no.:	Lubricant designation/Type	Manufacturer
1-49007110	Rivolta S.K.D. 16 N	Fa. Bremer & Leguil
1-49007100	Rivolta S.K.D. 4002	Fa. Bremer & Leguil
1-49007015	Isoflex NBU 15	Fa. Klüber Lubrication
1-49009100	Rivolta M.T.X. 60 forte	Fa. Bremer & Leguil

Service

Our specialist staff are ready to assist you on the phone, also out of office hours, should any malfunctions occur or if you have queries regarding compatibility, assembly or maintenance.
Please always specify the data on the type plates.
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