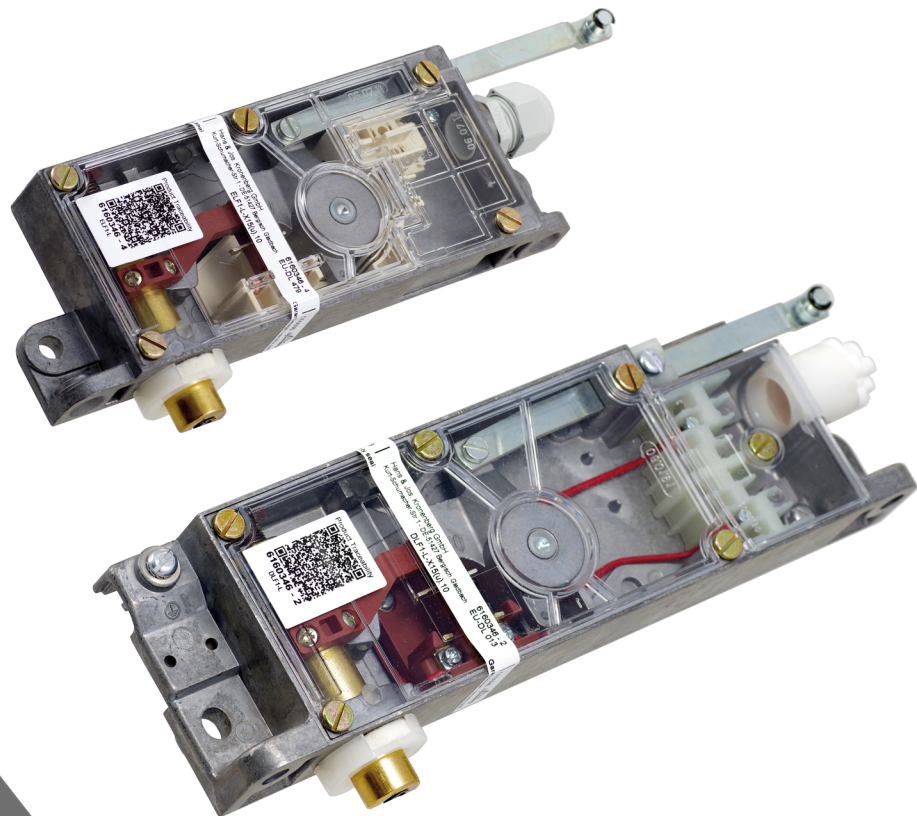




Door Interlocks DL(F) and EL(F)1

Operating instructions



Manufacturer

Hans & Jos. Kronenberg GmbH
D-51427 Bergisch Gladbach

Contact

Hans & Jos. Kronenberg GmbH
Kurt-Schumacher-Straße 1
D-51427 Bergisch Gladbach

T: +49 2204 / 207 -0
E: info@kronenberg-gmbh.de
W: kronenberg-gmbh.de

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General:

The drawings according to EC type approval certificate are part of the mounting instruction. They comprise the following information:

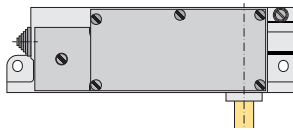
- dimensions
- fixing dimensions
- modes of operation
- emergency release
- variations and options
- customary positions
- penetration depth of the latch bolt
- function of the faulty closure device
- technical data

The door interlocks comply with all the requirements of the EN 81-20, EN 81-21, EN81-50 and EN 60947-5-1. This also includes the compliance with the necessary clearance and creepage distances.

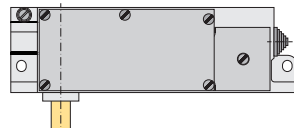
With the attachment of the test identification sign we confirm the compliance of the device with the type-tested model checked by the TÜV. A subsequent conversion into another version must not be carried out by a third party, as this leads to the loss of the approval. A rearrangement of the lateral annexed roller lever, the substitution of the roller lever or rubber roller bolt with the rubber roller is, however, permitted.

Operating Directions:

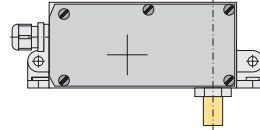
DL(F)1 - R



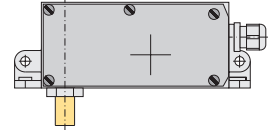
DL(F)1 - L



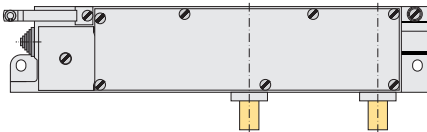
EL(F)1 - R



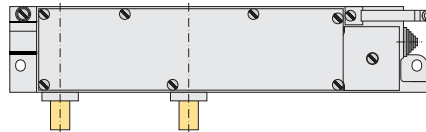
EL(F)1 - L



DL(F)2 - R



DL(F)2 - L



Maintenance:

Normally there is no maintenance necessary, because all parts are provided with high-quality lubricants. In extreme operating conditions we suggest in regular inspection periods:

1. The removal of rough contamination.
2. To check that the fastening screws are tightly fastened.
3. To check that the screw at the roller lever is tightly fastened.
4. To retighten terminals for electrical cables.
5. To check cable entries.
6. To lubricate again, if the lubricants have become ineffective.

Definition of the X-dimension:

X-dimension use:	The X-dimension is the length specification for the order-related production of the latch bolt.
scope:	this instruction applies to the following door lock systems: DL(F), EL(F)
measuring equipment:	A tape measure or similar measuring tools are sufficient.
tolerances:	X-dimension tolerance DL(F) and EL(F): X +1.5 mm
minimum length X-dimension:	the X-dimension must not be shorter than the following lengths: <ul style="list-style-type: none"> • door interlocks without oiled felt ring and holder: 5 mm • door interlocks with oiled felt ring and holder: 14 mm
maximum length X-dimension:	the X-dimension must not exceed the following lengths: <ul style="list-style-type: none"> • DL(F), EL(F): 90 mm

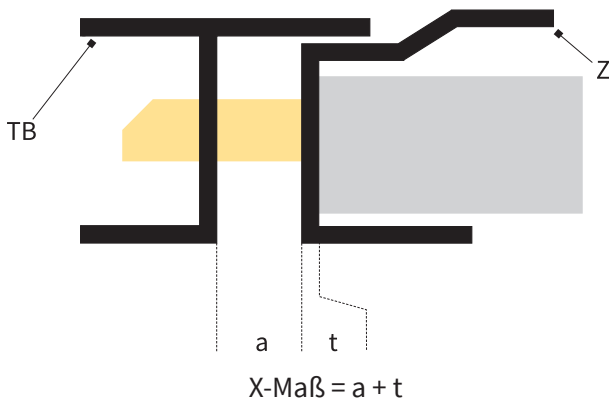
Measuring at door interlock installed:

If possible, we recommend to take the measurements at door interlock installed.
You will find these two variants of the installation on site:

Installation without support

proceeding:

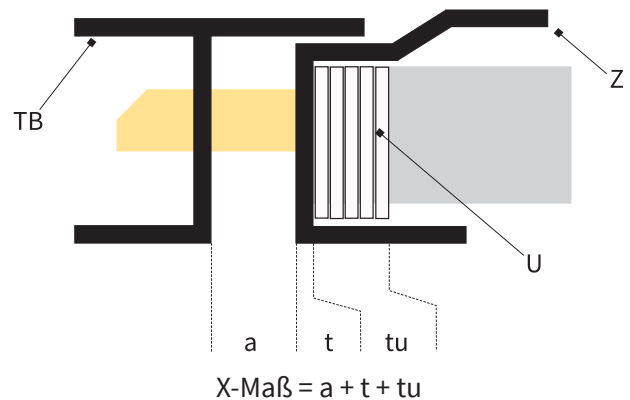
1. Measure the distance (a) between the door leaf (TB) and the frame (Z).
2. Measure the thickness (t) of the frame sheet.



Installation with support

proceeding:

1. Measure the distance (a) between the door leaf (TB) and the frame (Z).
2. Measure the thickness (t) of the frame sheet.
3. Measure the thickness (tu) of the support (U).



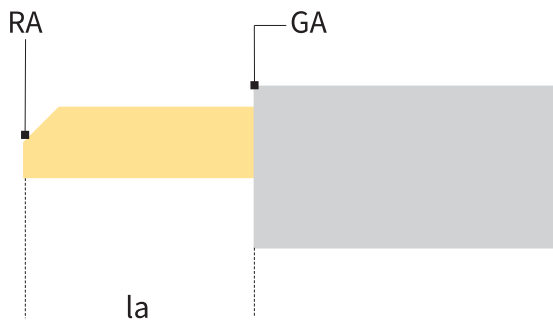
Measuring at door interlock uninstalled:

at uninstalled door interlock you can determine the X-dimension in two ways:

the latch bolt is extended

note: Ensure that the faulty closure device is cancelled at the door interlocks DLF and ELF1

proceeding: Measure the length (la) from the top edge of the latch bolt (RA) to the outside of the housing (GA).

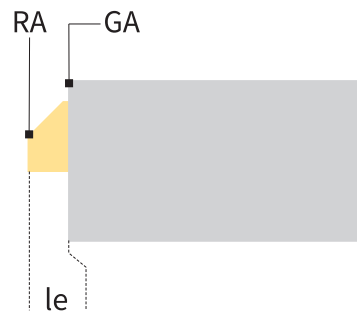


$X\text{-Maß} = la - 20 \text{ mm}$

the latch bolt is in the unlocking position

note: Ensure that the latch bolt is pushed in completely.

proceeding: Measure the length (le) from the top edge of the latch bolt (RA) to the outside of the housing (GA).

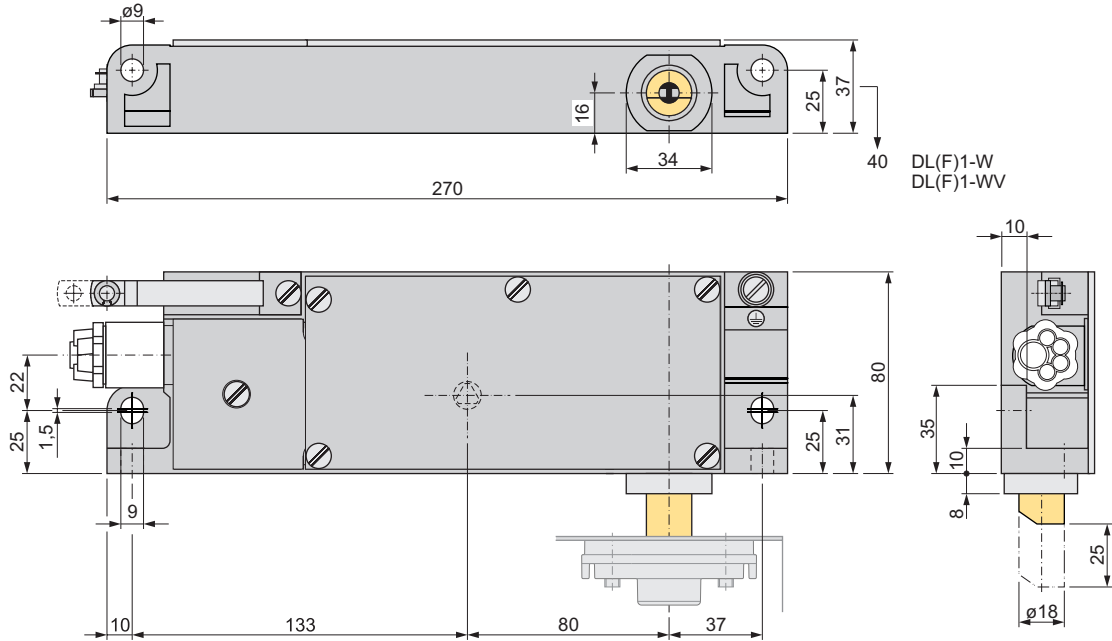


$X\text{-Maß} = le + 5 \text{ mm}$

Note: Within a lift installation different X-dimensions can occur.

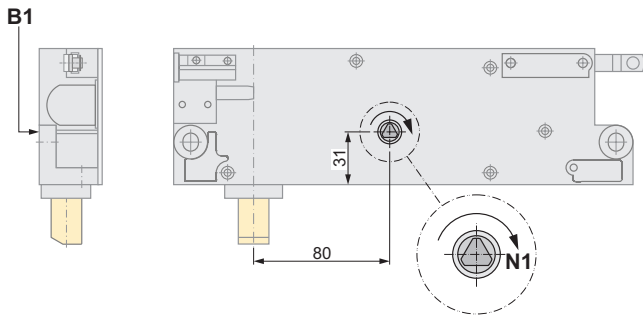
If several or all door interlocks at a lift installation are replaced, please check the X-dimension at the doors concerned!

Dimensions and fixation: DLF1 / DL1 and DLF1/7 ; DL1/6
 DLF1-W / DL1-W
 DLF1-WV / DL1-WV



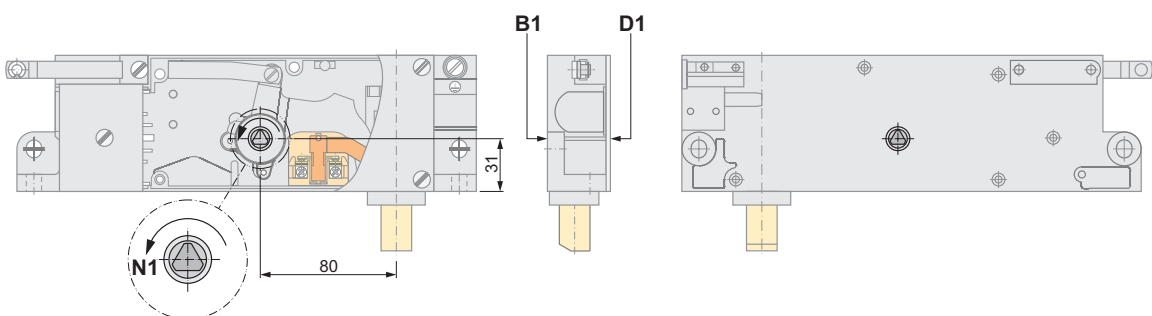
DL(F)1-W
DL(F)1-WV

emergency release base side at the tooth lever axis

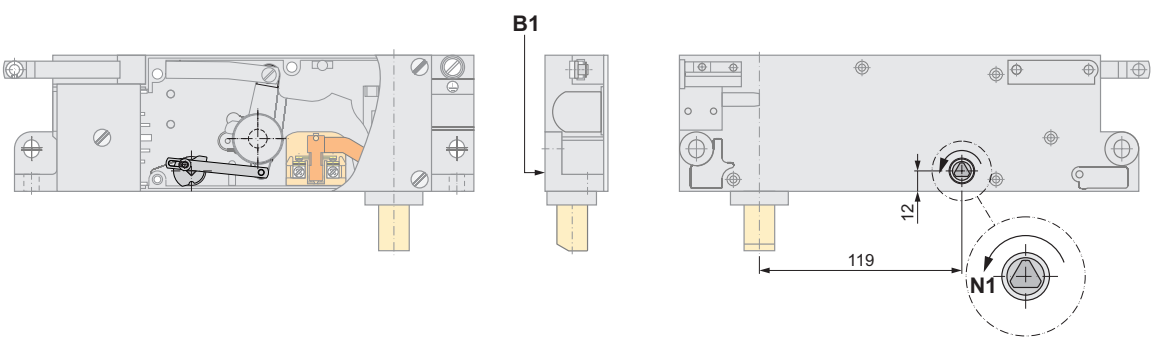


B1 base side
D1 cover side
N1 unlocking direction emergency release

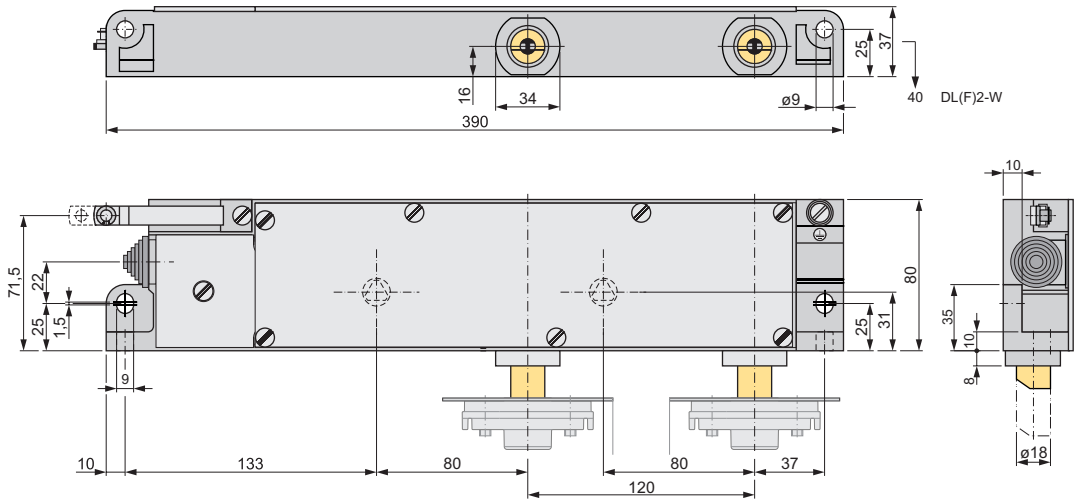
emergency release base side and cover side at the tooth lever axis in combination with actuation .10 (by pull rod)



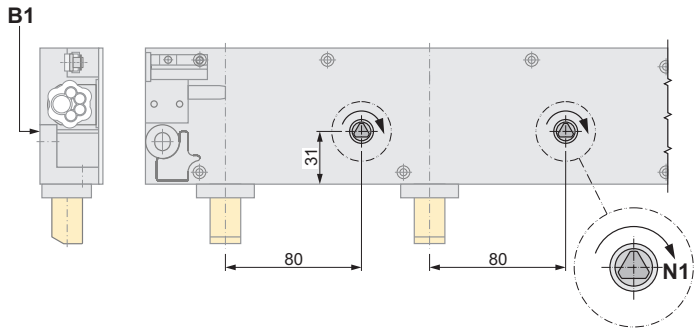
emergency release indirect base side



Dimensions and fixation: DLF2 / DL2
DLF2-W / DL2-W

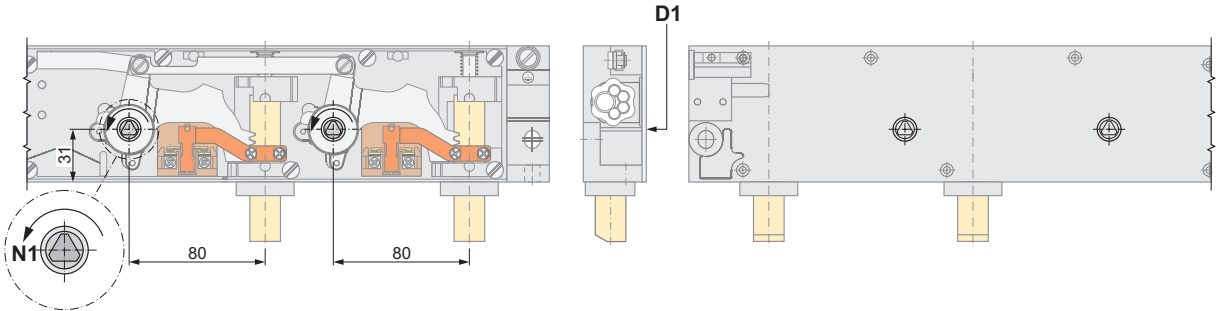


emergency release base side at the tooth lever axis

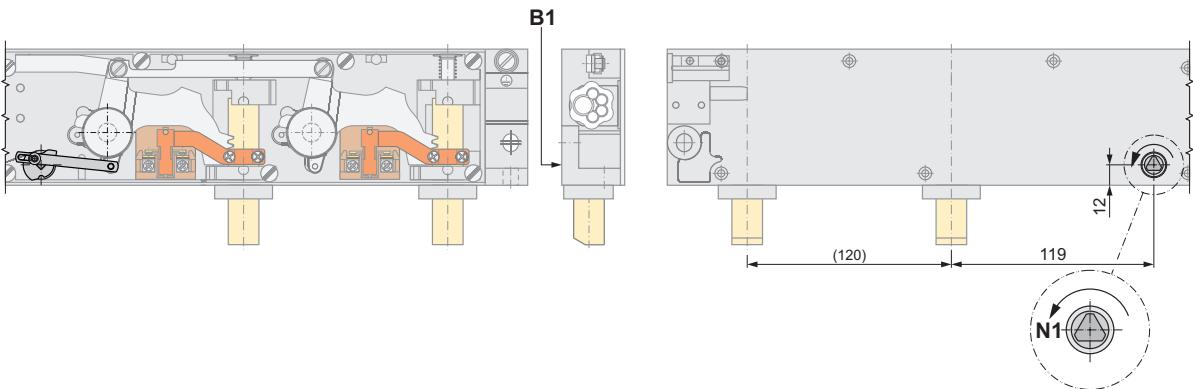


- B1** base side
- D1** cover side
- N1** unlocking direction emergency release

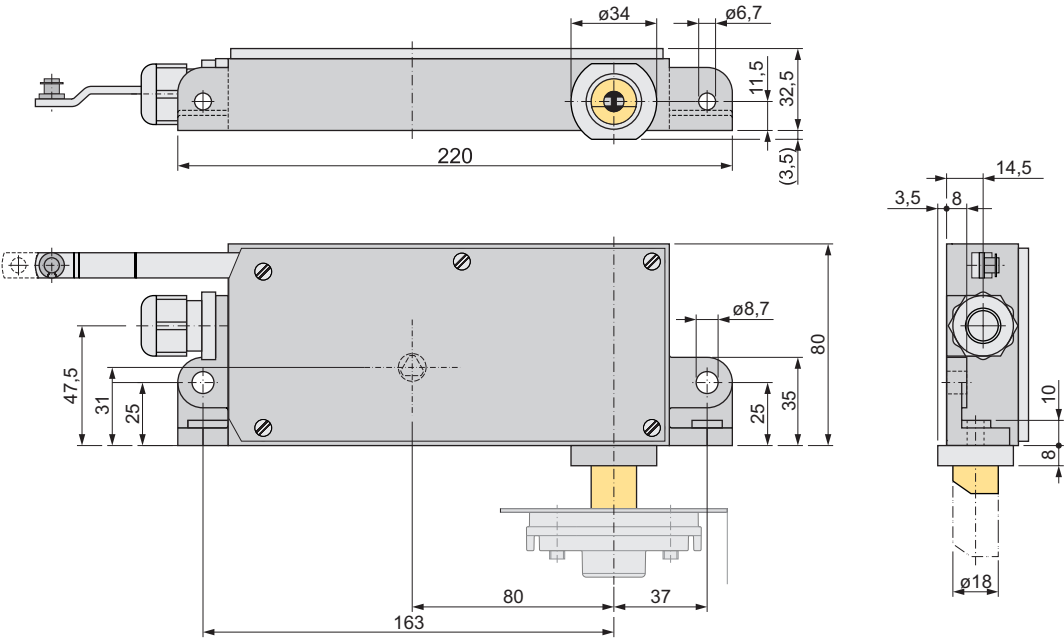
emergency release base side and cover side at the tooth lever axis in combination with actuation .10 (by pull rod)



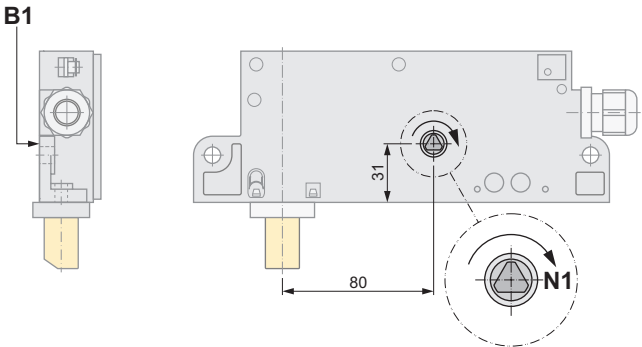
emergency release indirect base side



Dimensions and fixation: ELF1 / EL1

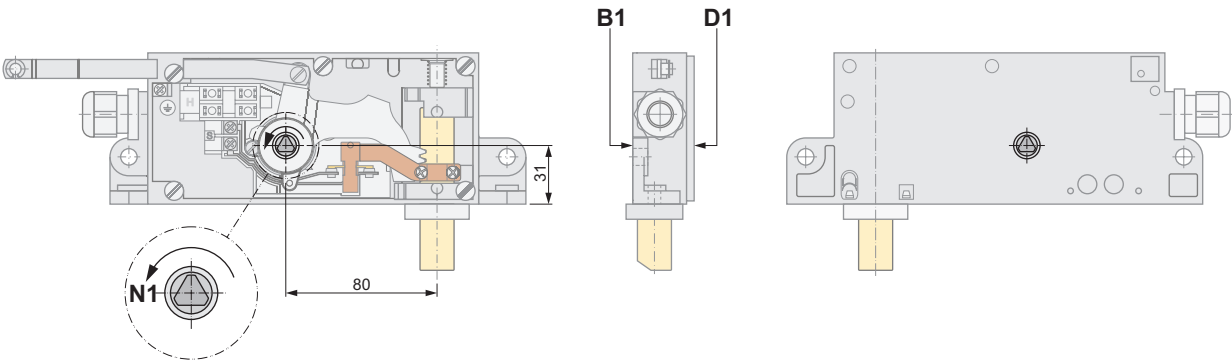


emergency release base side at the tooth lever axis

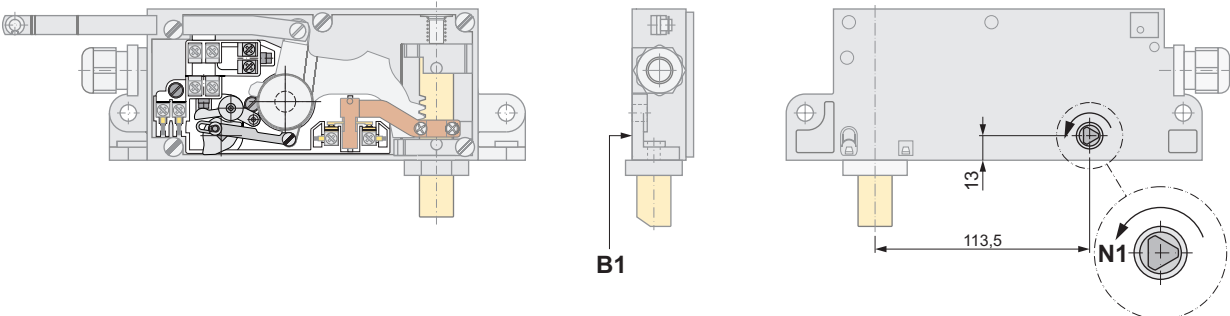


- B1** base side
- D1** cover side
- N1** unlocking direction emergency release

emergency release base side and cover side at the tooth lever axis in combination with actuation .10 (by pull rod)



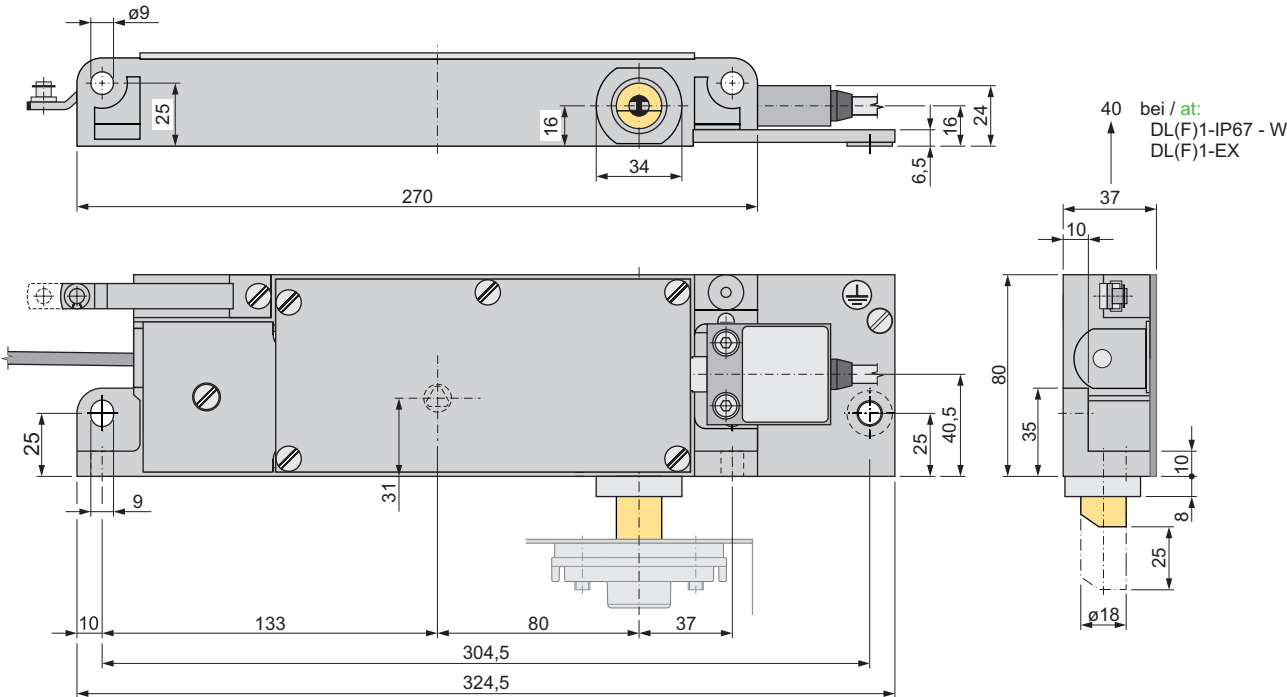
emergency release indirect base side with integrated monitoring according to EN 81-21



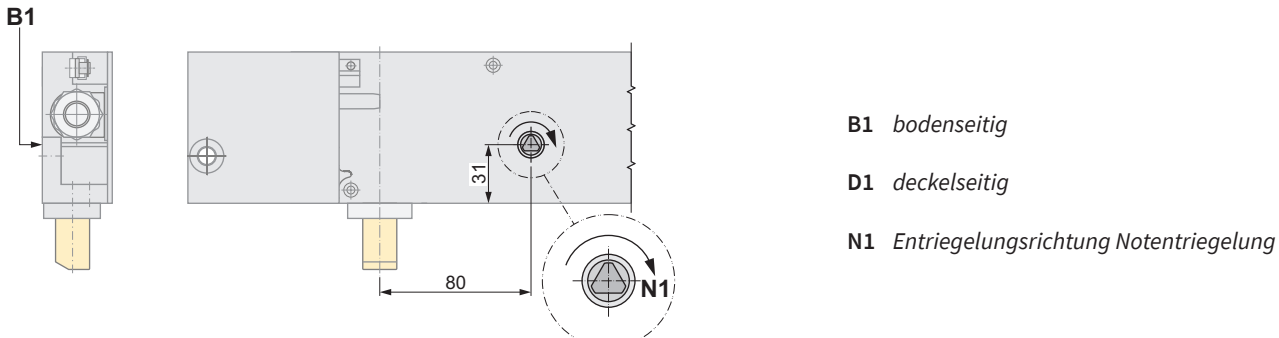
Dimensions and fixation:

DLF1-IP67 / DL1-IP67

DLF1-EX / DL1-EX

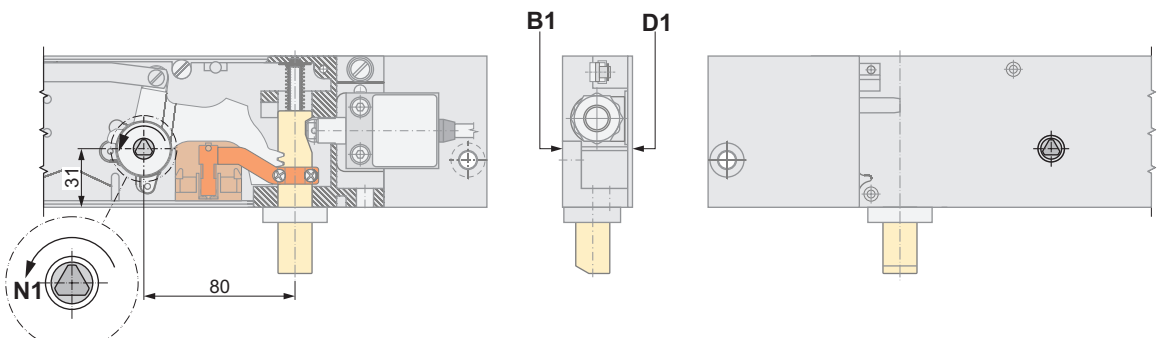


emergency release base side at the tooth lever axis

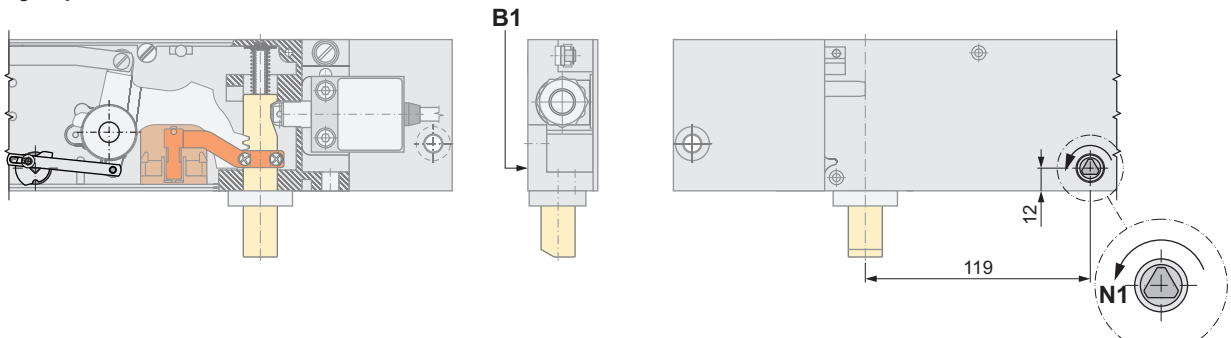


- B1** bodenseitig
- D1** deckelseitig
- N1** Entriegelungsrichtung Notentriegelung

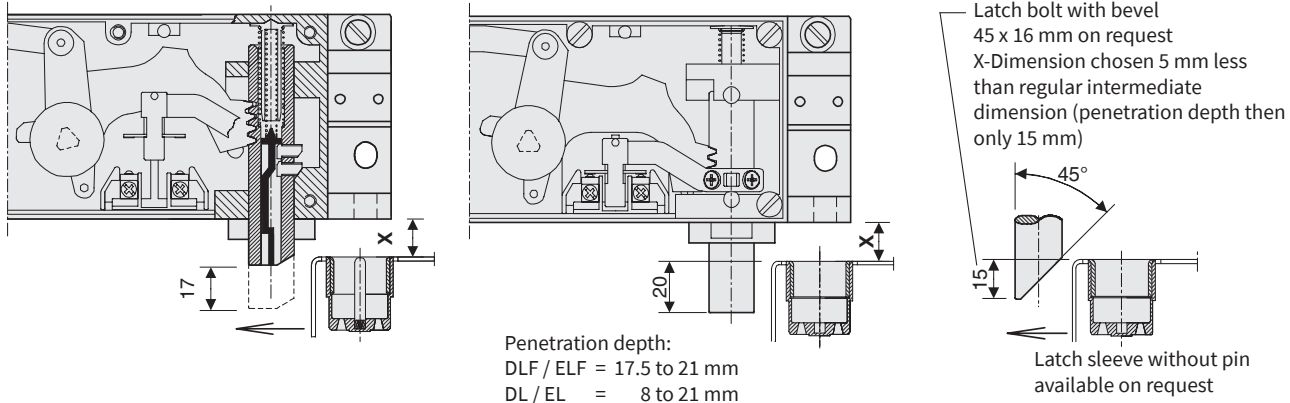
emergency release base side and cover side at the tooth lever axis, in combination with actuation .10 (by pull rod)



emergency release indirect base side



Closing of the door (with the latch bolt down):

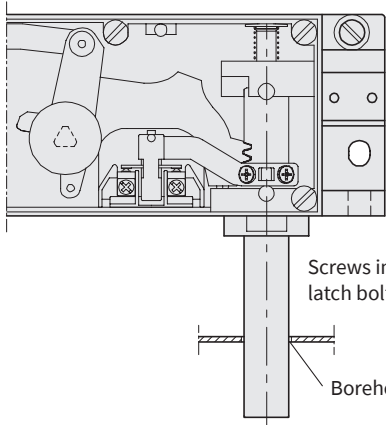


Closing of the door at DLF / ELF made incorrect, the faulty closure device keeps the latch bolt open about 17 mm before the final position, this not making the door locked contact.

Penetration depth:
DLF / ELF = 17.5 to 21 mm
DL / EL = 8 to 21 mm

The latch bolt on DL and EL standard version has no bevel. As an option the latch bolt will be beveled by 45° x 16 mm. The closing of the door is made only, if the door is beveled or the X-Dimension is chosen 5 mm smaller than regular intermediate dimension. The penetration depth is then 15 mm, which is sufficient (permitted is 8 to 21 mm).

Support of the latch bolt and fire protection:

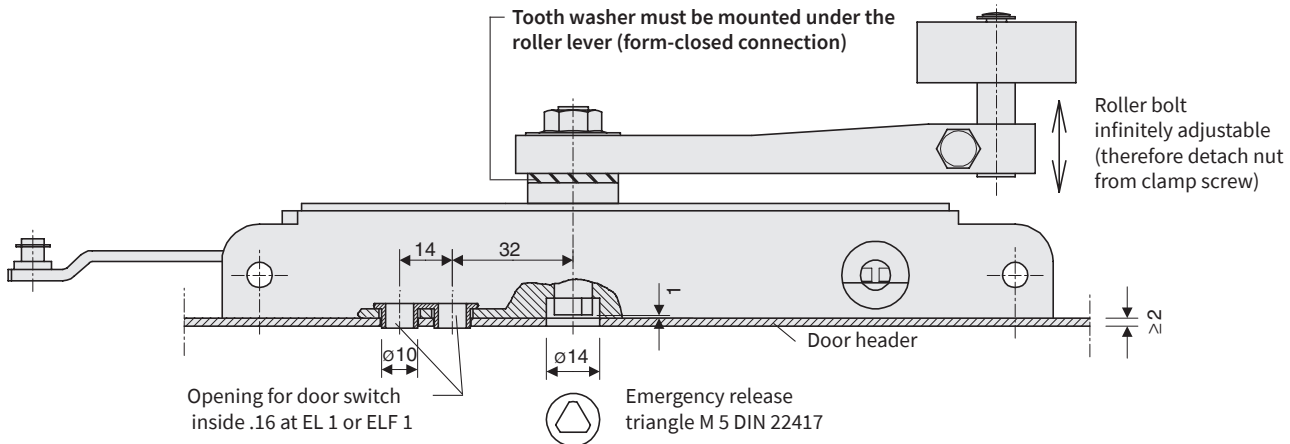


If the X-Dimension is 75 mm or more the latch bolt has to be supported additionally. Normally this will be made by an appropriate small hole in the door header.

The hole in the door header must keep the latch bolt open in case of fire. The screws that are diagonally placed in the latch bolt shall retain the bolt there. In case of fire the closing of the door has to be maintained. The door interlock may be destroyed in the process.

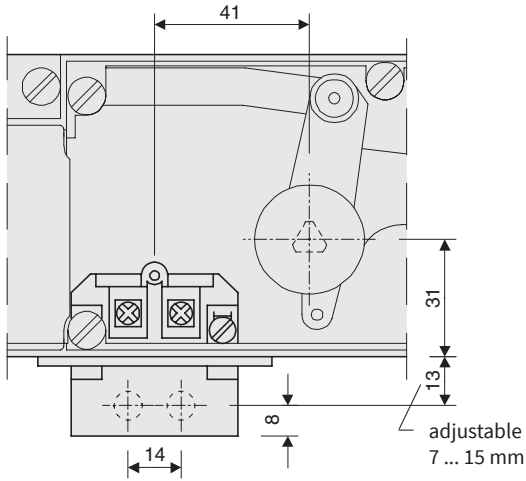
All plastic parts near the contact are self-extinguishing, so the door interlock will not become the cause of a fire.

Emergency release and roller lever:

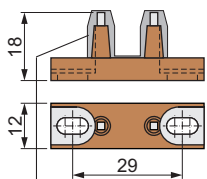


The European Norm EN 81 requires, that the triangle for the emergency release is placed minimal 3 mm back related to the front edge. The door interlock has to be set on spacers, if the sheet metal thickness of the door header is less than 2 mm.

Door switch:

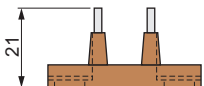


.6
Door switch
actuation from the base side



PZ 18
will be delivered at .6 or .7
and at .60 or .70

Remove setting-device after adjustment



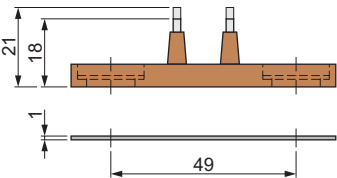
PZ 21 21 mm high



PZ-U 1 pad 1mm



PZ-U 5 pad 5 mm

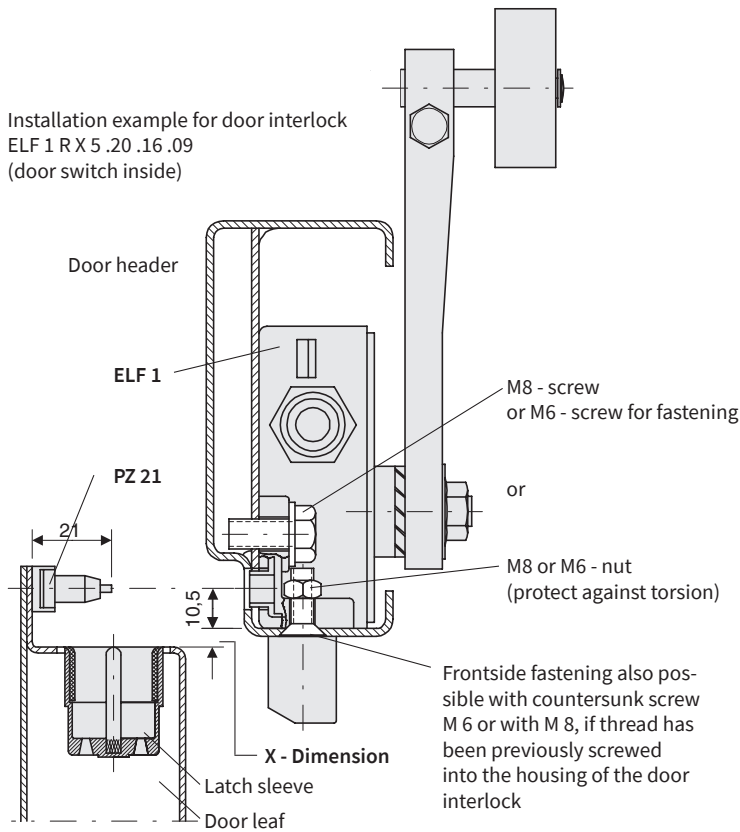


DZ 18 18 mm high

DZ 21 21 mm high

DZ-U 1 pad 1mm

Installation example for door interlock
ELF 1 R X 5 .20 .16 .09
(door switch inside)

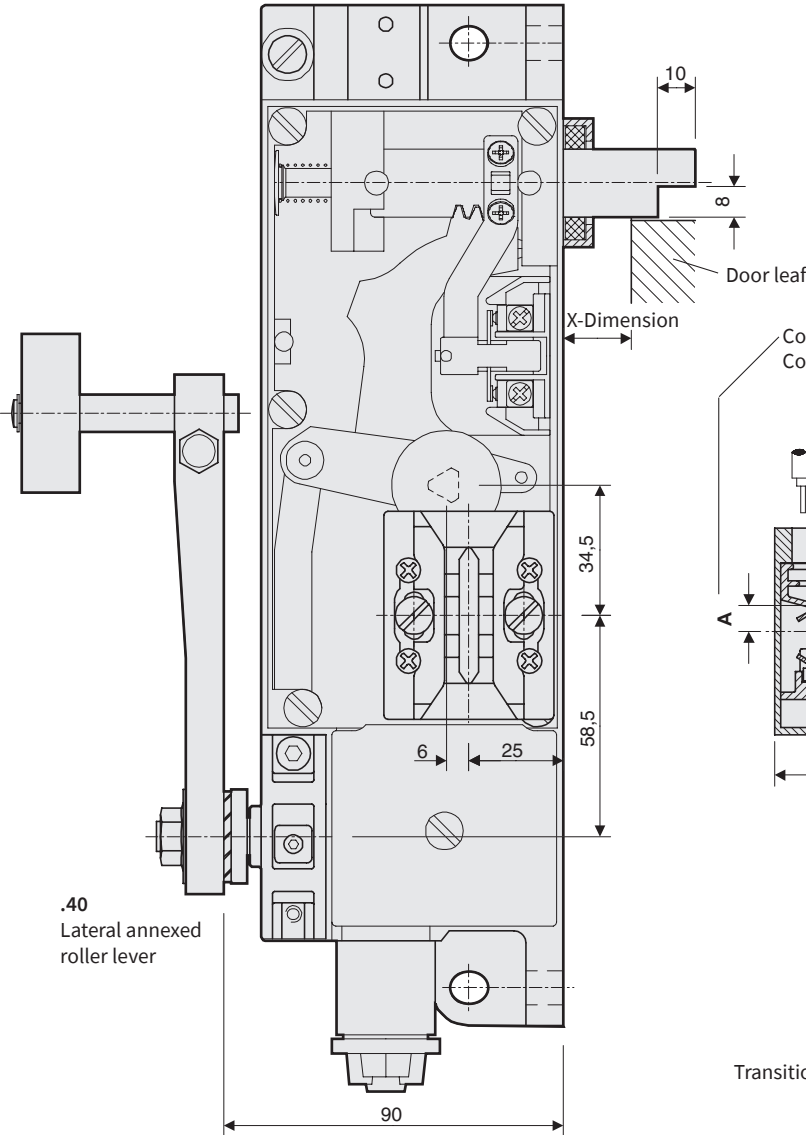


At the water- and explosion-proof version the installation of a door closed contact is not possible, because herewith the required level of protection can not be reached.
A separate door contact has to be mounted:
WZ at IP54
WZA at IP67
WZF2-EX at explosion-protected version

Auxiliary Switches:

Auxiliary switches can be installed on request. The version .9/01 signals the retracted latch bolt (open position).
The versions IP67 and EX have this signal contact as standard, but then the latch bolt has not completely released the door yet.

Service lift with door switch .8:



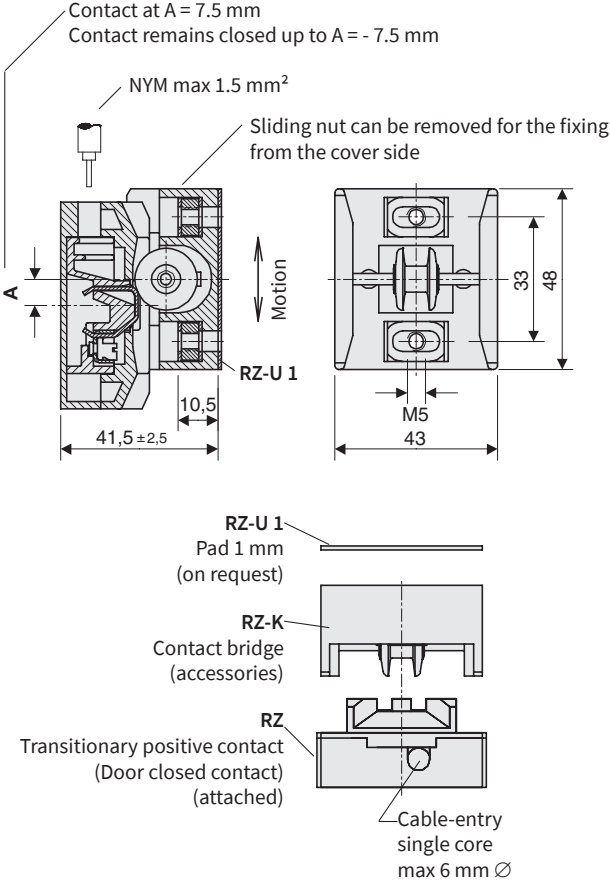
DL 1.40 or DL 1.50

Operating position only possible as shown (latch bolt horizontal above)

Order Information:

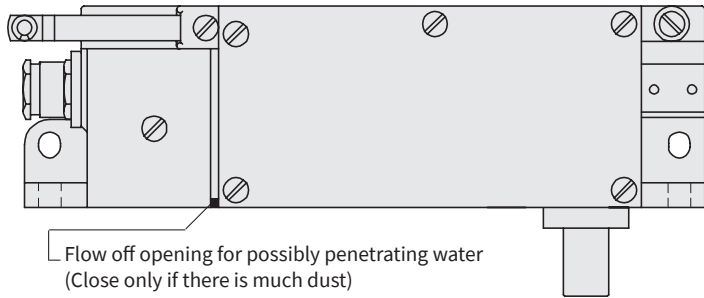
.8 transitional positive contact

ANS-ST latch bolt with graduated stay-put feature



.40
Lateral annexed roller lever

Water-protected version:

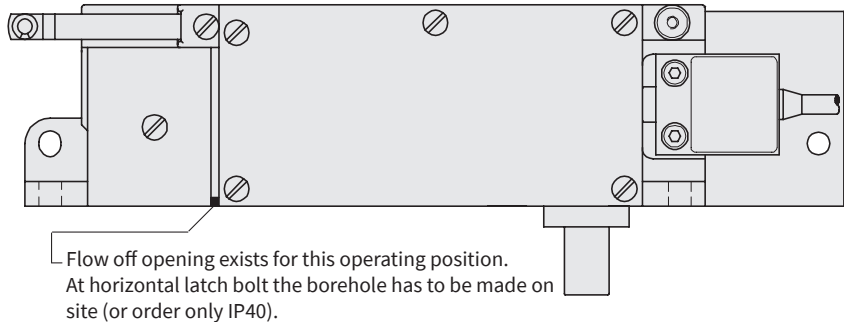


DL1-W; DLF1-W; DL2-W; DLF2-W

IP54 is only valid for opposite operating position (IP51 at horizontal latch bolts)

Special versions available:

- a) Latch bolt made of stainless steel
- b) Steel parts made of stainless steel (some parts excluded)
- c) Aluminium parts technically anodized
- d) Enhanced bearing tolerance for low temperatures of -30 °C
- e) Wiper ring at latch bolt for dust load

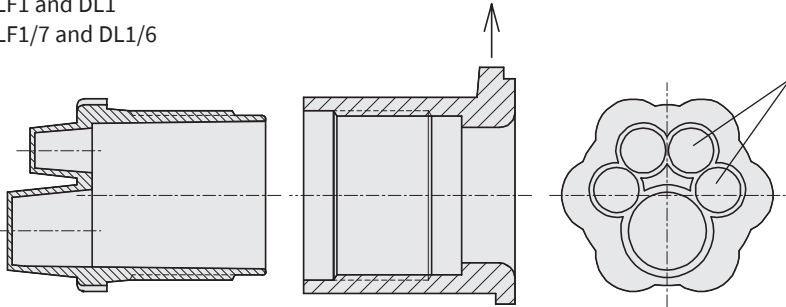


**DLF1-IP67 - W; DLF1-IP67 - W
DL1-EX; DLF1-EX**

IP67 is also valid at horizontal latch bolts

Cable entry:

cable entry PG16 at
DLF1 and DL1
DLF1/7 and DL1/6

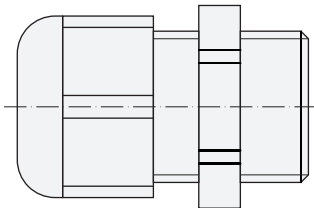


Special cable gland for four single-core and / or multi-core cable

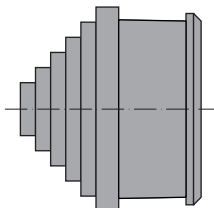
Tube insertion piece with inner thread PG16

Open lead-in nozzles on request. Safety cables have to be jacketed, e.g. NYM 1.5 mm². The cable insertion and the electrical connection may only be made by a qualified electrician!

cable entry M20 x 1.5 at
ELF und EL

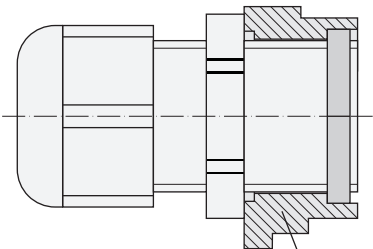


cable entry with rubber grommet at
DLF2 and DL2



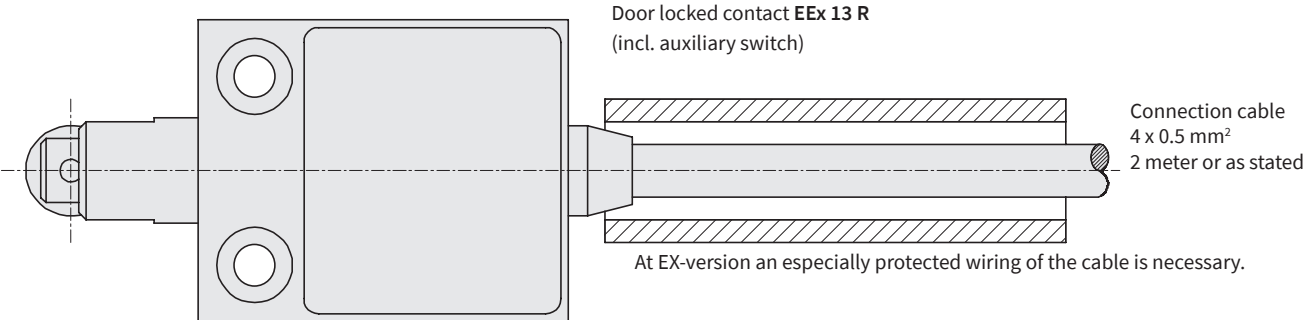
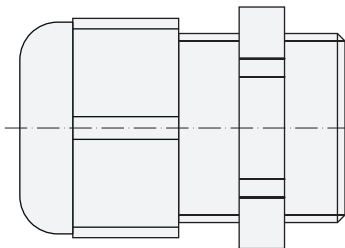
The rubber grommet is provided with several steps on the cable entry side. Depending on the cable thickness, cut away the corresponding step with a sharp knife. When using a standard cable, cutting away the inner step should be sufficient.

cable entry PG13.5 at
DLF1-W and DL1-W
DLF1-WW and DL1-WW



tube insertion flange

cable entry M25 x 1.5 at
DLF2-W and DL2-W



Door locked contact EEx 13 R (incl. auxiliary switch)

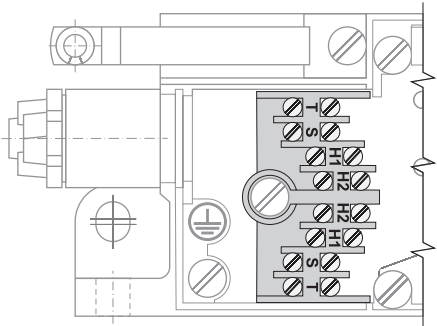
Connection cable 4 x 0.5 mm² 2 meter or as stated

At EX-version an especially protected wiring of the cable is necessary.

Electrical connections:

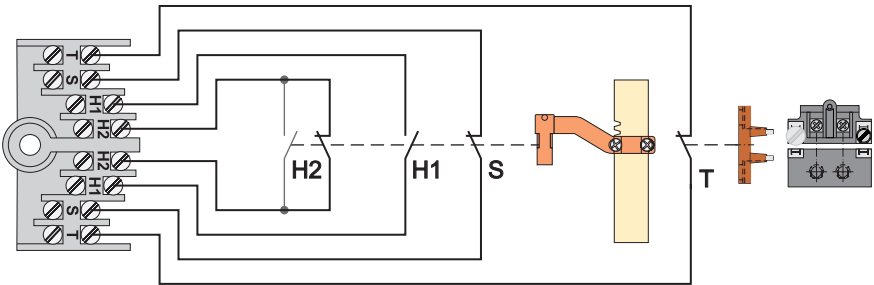
DLF1 / DL1 / DLF2 / DL2:

standard assignment for the contact block



- S connecting terminals
switch for locking mechanism
- H1 connecting terminals
auxiliary switch (as option)
- H2 connecting terminals
auxiliary switch (as option)
- T connecting terminals
door switch (as option)

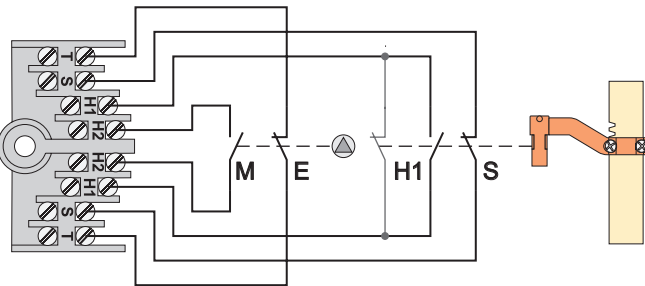
with auxiliary switch and door switch



- S switch for locking mechanism,
positively opening
- H1 auxiliary switch (as option)
- H2 auxiliary switch (as option),
normally closed
or normally open contact
- T door switch (as option)

DLF1 / DL1 / DLF2 / DL2: .2/11 .90/01

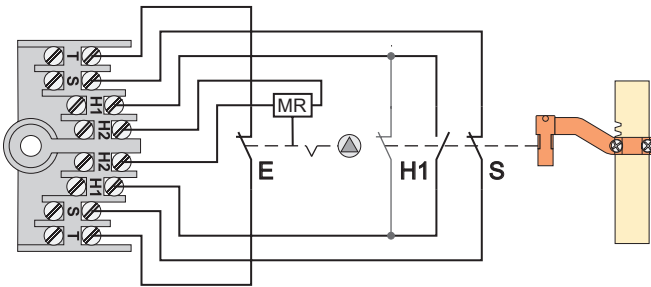
with integrated monitoring of the emergency release according to EN 81-21 and auxiliary switch



- S switch for locking mechanism,
positively opening
- E (T) electrically monitored
emergency release,
positively opening
- M (H2) signal contact
emergency release (as option)
- H1 auxiliary switch (as option),
normally closed
or normally open contact

DLF1 / DL1 / DLF2 / DL2: .2/01MR .90/01

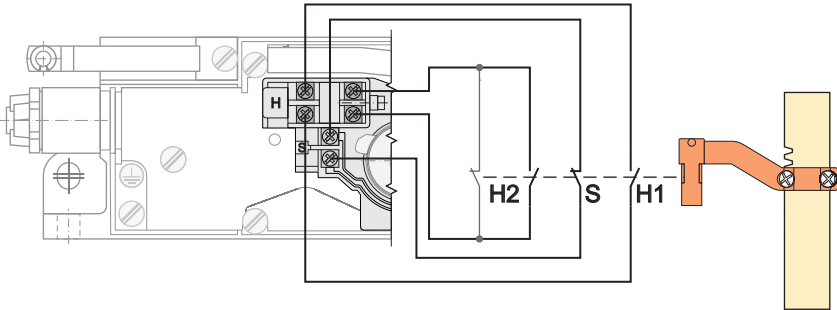
with integrated monitoring of the emergency release according to EN 81-21, detent function and auxiliary switch



- S switch for locking mechanism,
positively opening
- E (T) electrically monitored
emergency release,
positively opening
- MR (H2) magnetic unlocking
- H1 auxiliary switch (as option),
normally closed
or normally open contact

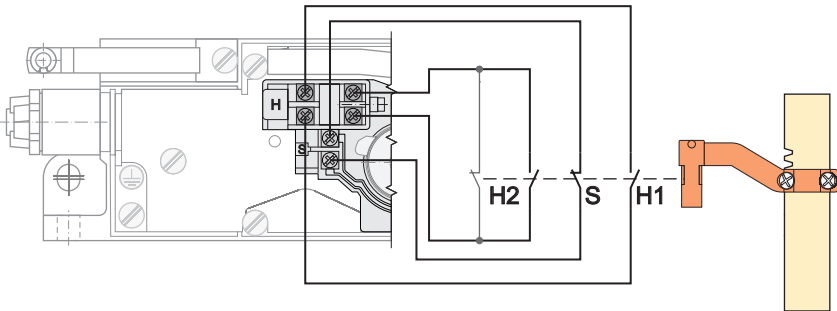
Electrical connections:

DLF1/7, DL1/6, ELF1, EL1:
with auxiliary switch



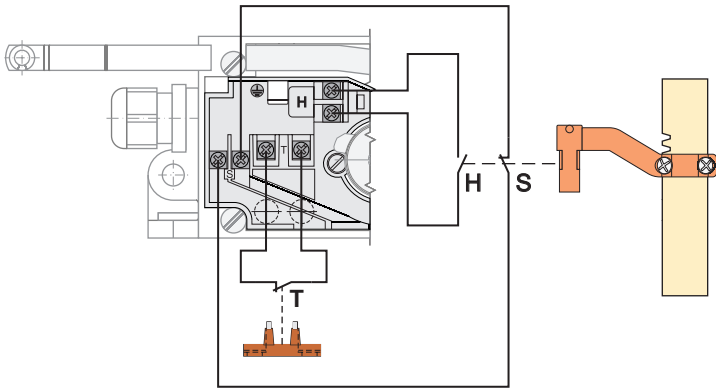
- S** switch for locking mechanism, positively opening
- H1** auxiliary switch (as option)
- H2** auxiliary switch (as option), normally closed or normally open contact

DLF1/7, DL1/6, ELF1, EL1:
with auxiliary switch and door switch(.6, .7, .26, .27)



- S** switch for locking mechanism, positively opening
- H1** auxiliary switch (as option)
- H2** auxiliary switch (as option), normally closed or normally open contact
- T** door switch (as option)

ELF1, EL1:
with auxiliary switch and door switch (.16)

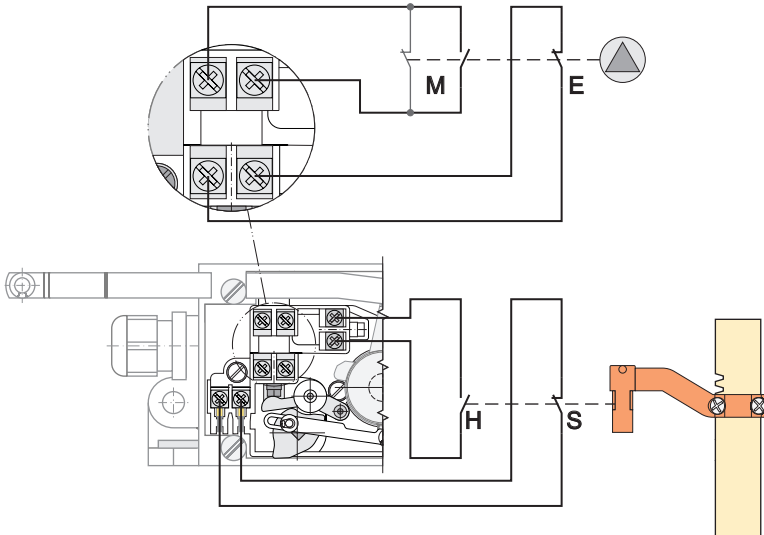


- S** switch for locking mechanism, positively opening
- H** auxiliary switch (as option)
- T** door switch (as option)

Electrical connections:

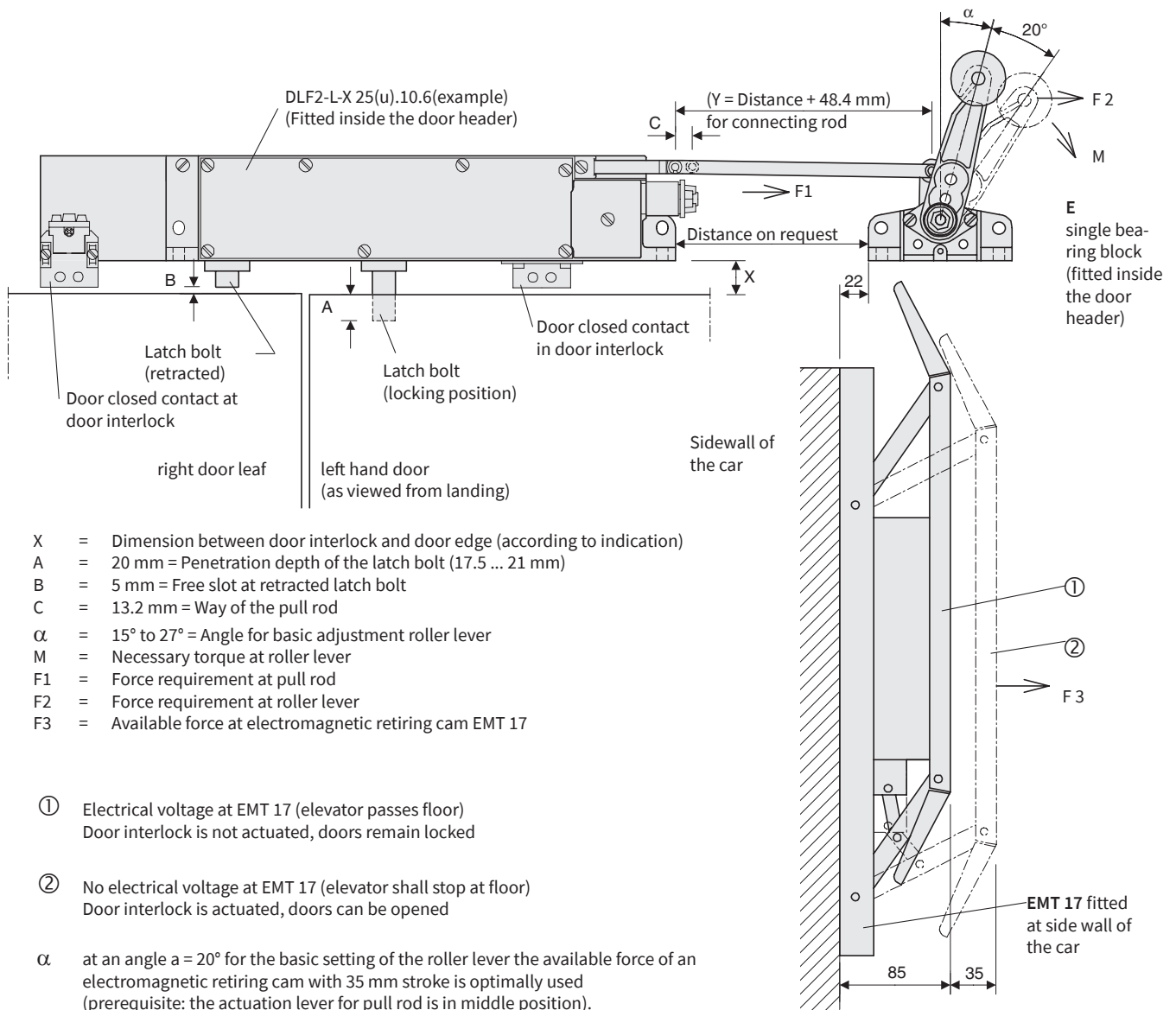
ELF1, EL1: .2/11 or .2/02

with integrated monitoring of the emergency release according to EN 81-21 and auxiliary switch



- S switch for locking mechanism,
positively opening
- H auxiliary switch (as option)
- E electrically monitored
emergency release, positively opening
- M signal contact emergency release (as option),
positively opening contact
or normally open contact

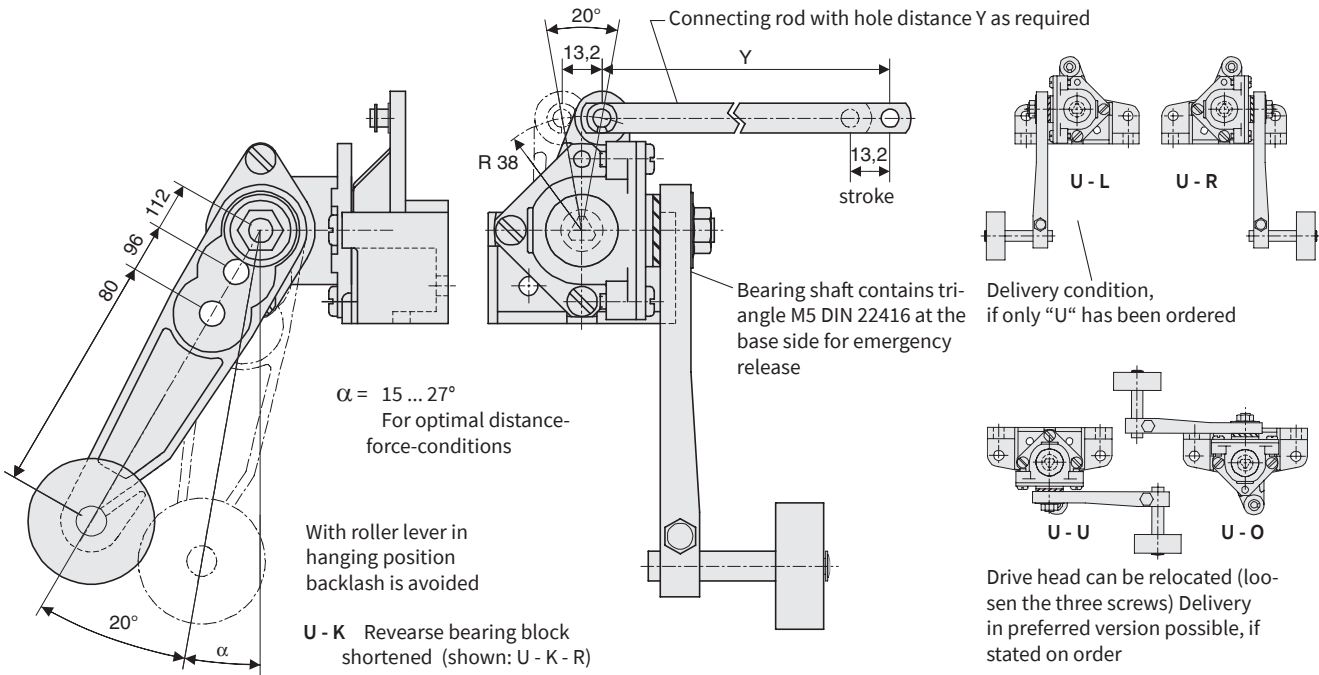
Actuation forces:



Forces	F1 [N]	M [Nm]	F2 [N]	F3 [N]	
	typical force requirement at the pull rod	necessary torque at the roller lever	typical force requirement at the roller lever ($\alpha = 20^\circ$)	available force of the EMT 17	available force of the RKMO
DL(F)1, EL(F)1, DLF1/7, DL1/6, DL(F)1-IP67, DL(F)1-EX	40	1.5	17.5	45	65
DL(F)1-W, DL(F)1-WV	45	1.7	20	45	65
DL(F)2	60	2.3	27	45	65
DL(F)2-W	65	2.5	29	45	65

Accessories:

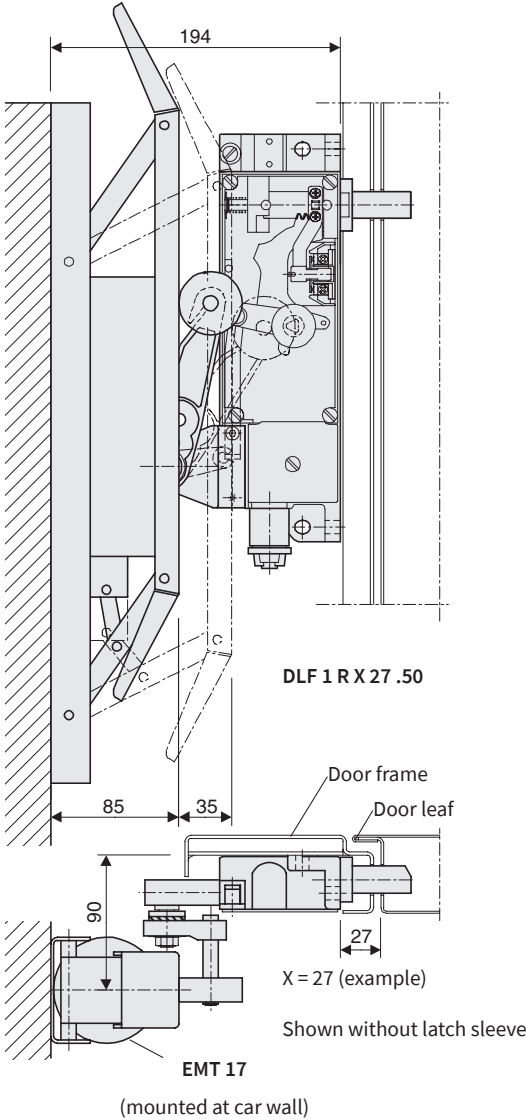
Reverse bearing block U



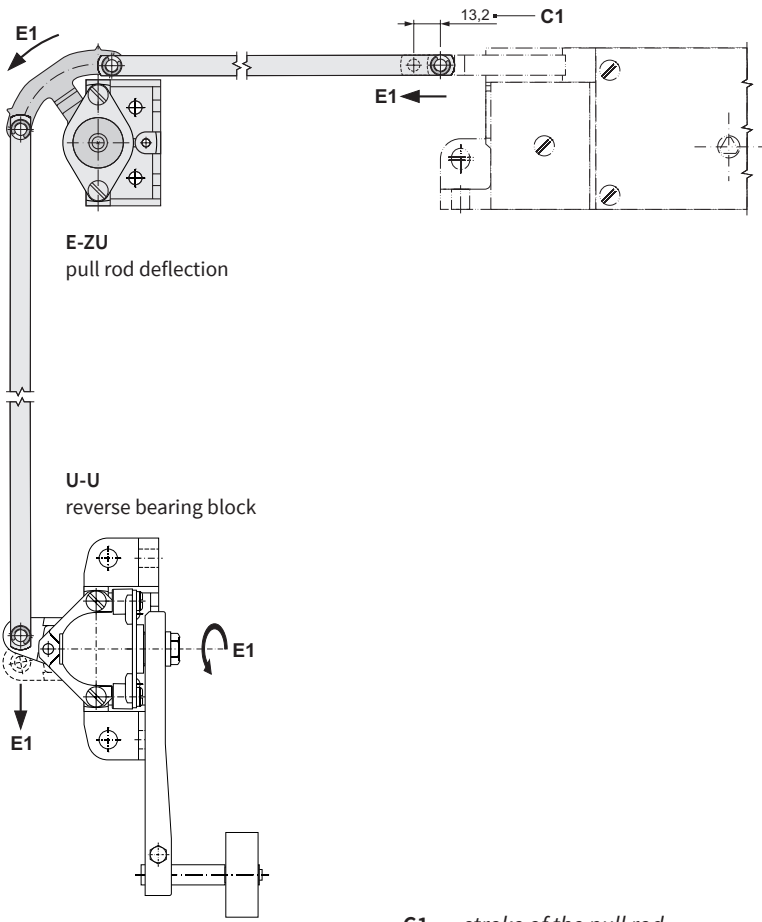
If the roller lever is relocated to 96 mm the distance is minimized by appr. 14.3% and the force requirement is accordingly higher. Relocated to 80 mm the difference is about 28.6%.

Accessories:

lateral annexed roller lever .50



pull rod deflection E-ZU

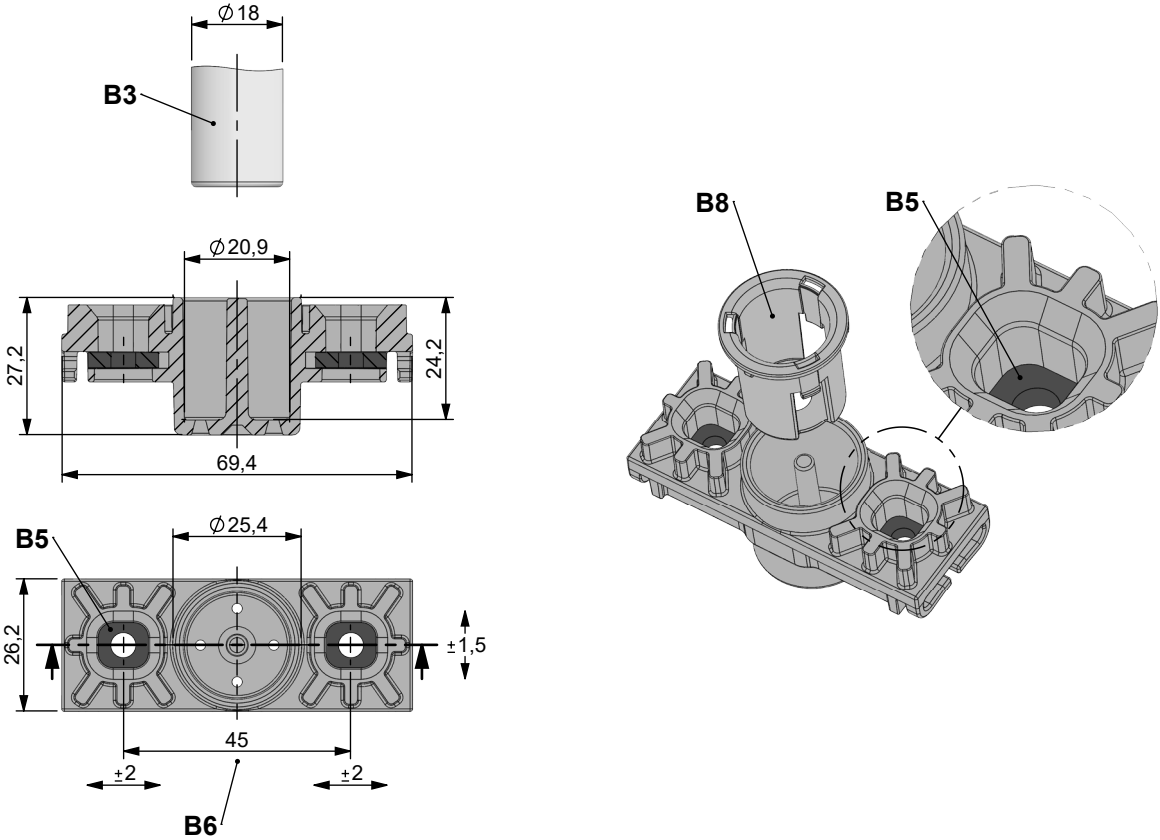


C1 stroke of the pull rod
E1 unlocking direction

Accessories:

latch plate BE

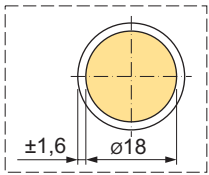
latch plate for up to 1.5 mm sheet thickness
 Optimal functionality of the latch plate is achieved with a projection of 0.5 up to 1 mm over the door leaf.
 Thus on optimal closing ability of the door is ensured.



adjustment range of the sliding nut (B5) within the take-up device

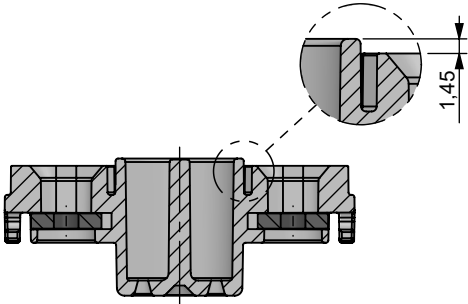


sliding area latch bolt (B3) in the latch plate

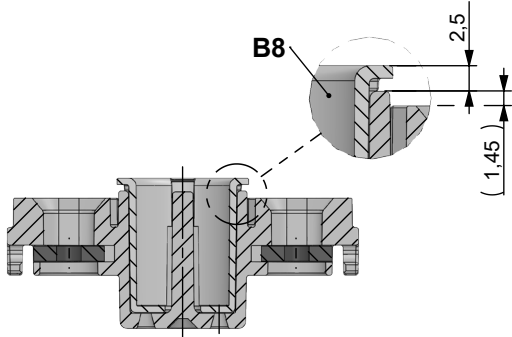


- B3** latch bolt
- B5** sliding nut with thread M6
- B6** inside micrometer of the sliding nuts
- B8** adjusting ring,
as option for versions BE-J and BE7-J

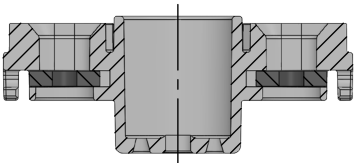
BE
latch plate for up to 1.5 mm sheet thickness



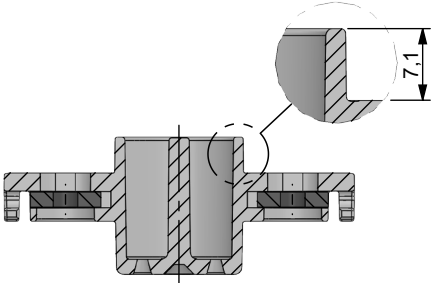
BE-J
latch plate for up to 1.5 mm sheet thickness, with adjusting ring



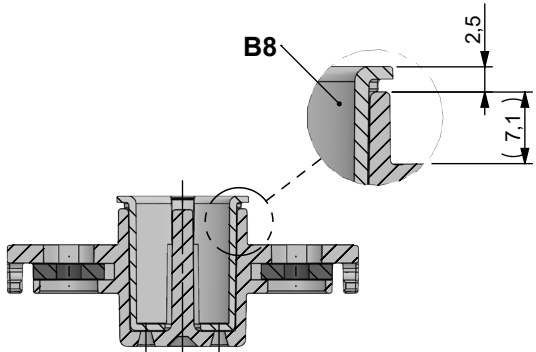
BE-0
latch plate without pin



BE7
latch plate for up to 7 mm sheet thickness



BE7-J
latch plate for up to 7 mm sheet thickness, with adjusting ring

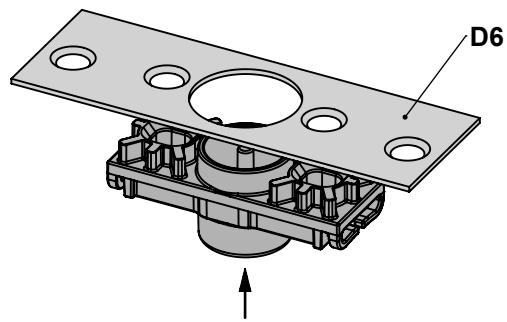
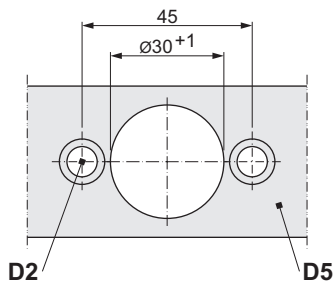


B8 adjusting ring,
remove after assembly / adjustment

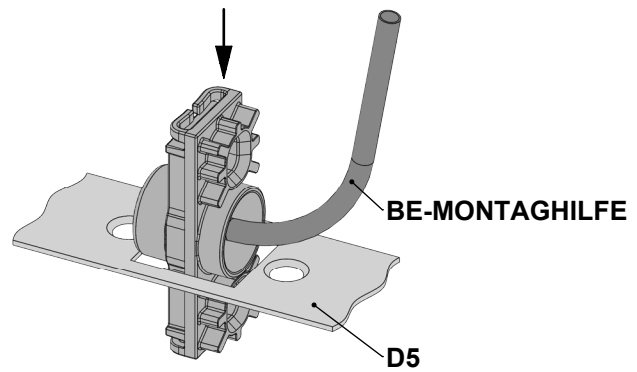
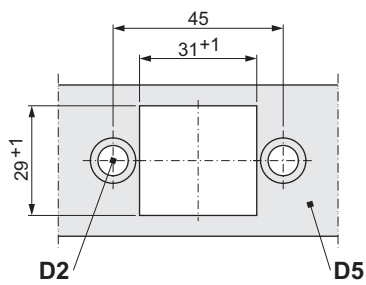
cutout dimensions:

for different installation options

at accessibility from both sides

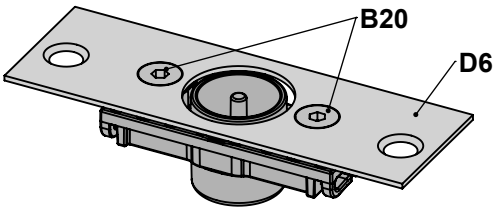
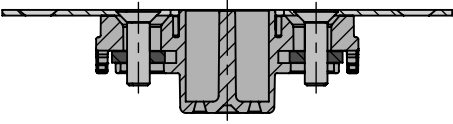


at accessibility only from the outside



- D2 countersink for screw M6
- D5 door leaf
- D6 separate mounting plate
(on site or produced order-related)

exemplary arrangement:



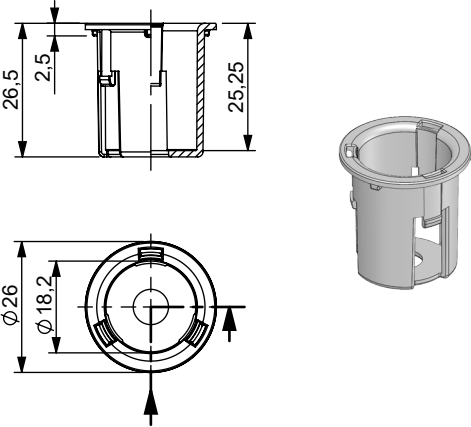
B20 countersunk screw DIN 7991-M6x20
(accessories - please order separately)

D6 separate mounting plate
(on site or produced order-related)

accessories:

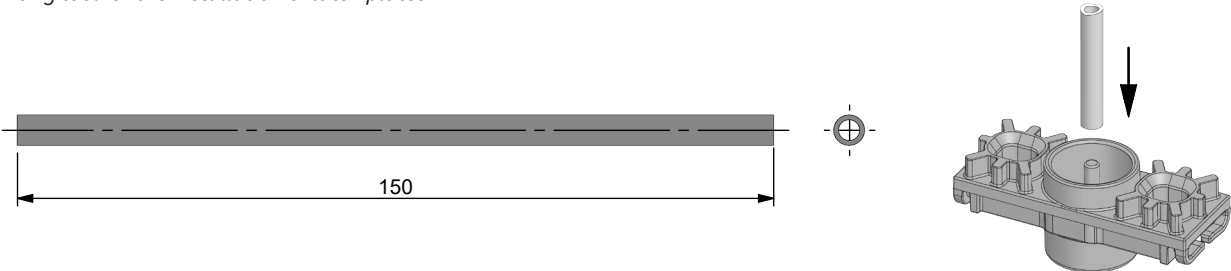
BE-JUSTIERRING

adjusting ring for latch plate BE



BE-MONTAGEHILFE

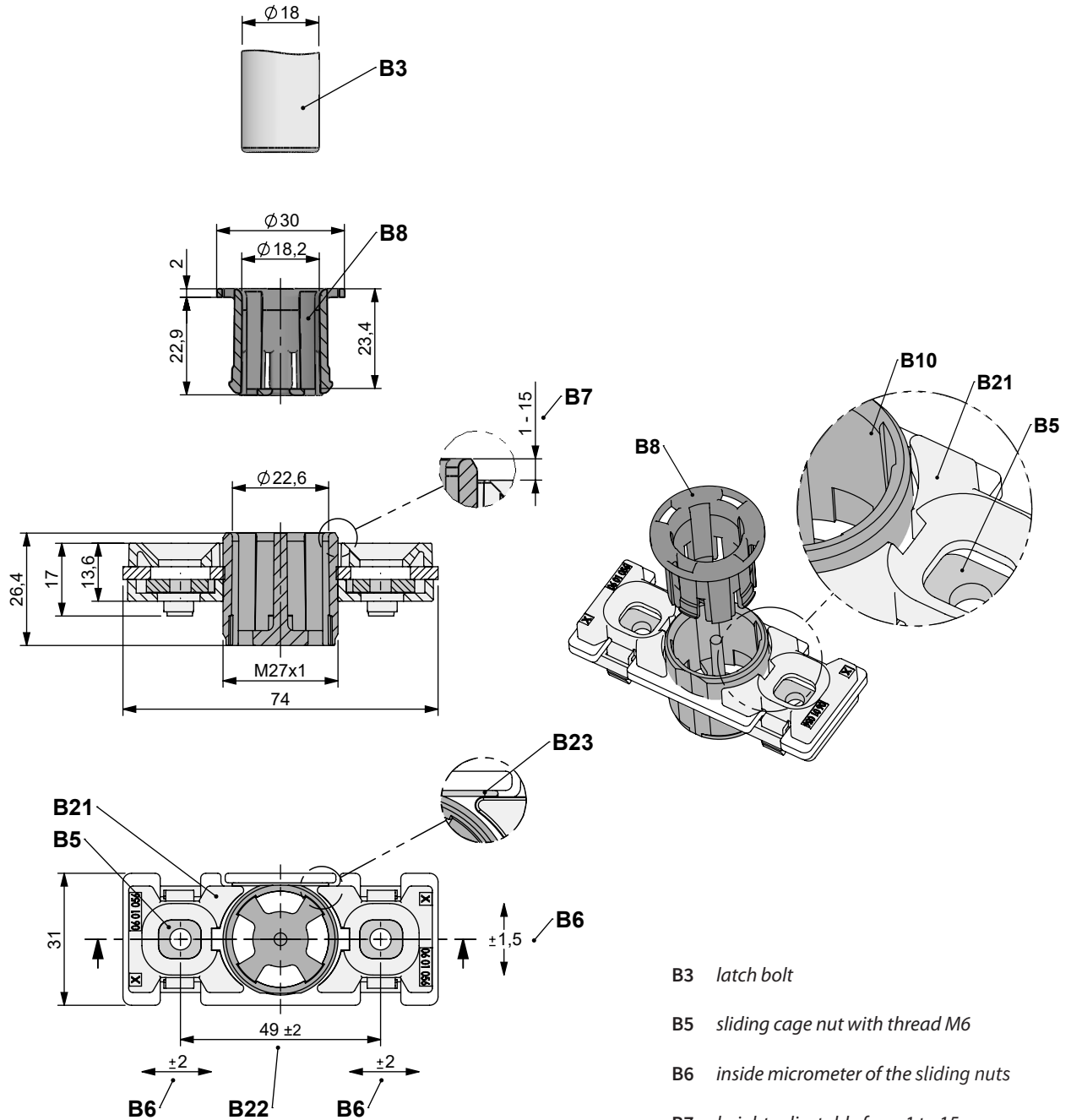
mounting tool for the installation of latch plates



Accessories:

latch plate BL-V

latch plate with height adjustment and large bolt clearance



B3 latch bolt

B5 sliding cage nut with thread M6

B6 inside micrometer of the sliding nuts

B7 height adjustable from 1 to 15 mm

B8 adjusting ring,
remove after assembly / adjustment

B10 center part

B21 sliding nut take-up device

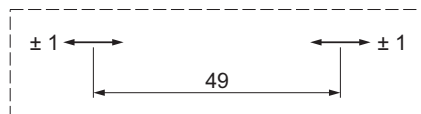
B22 inside micrometer of the take-up devices
of the sliding nuts

B23 anti-rotation protection

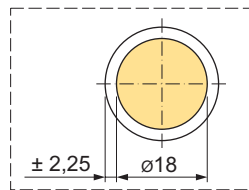
adjustment range of the sliding nut (B5) within the take-up device



adjustment range of the sliding nut take-up device (B21)



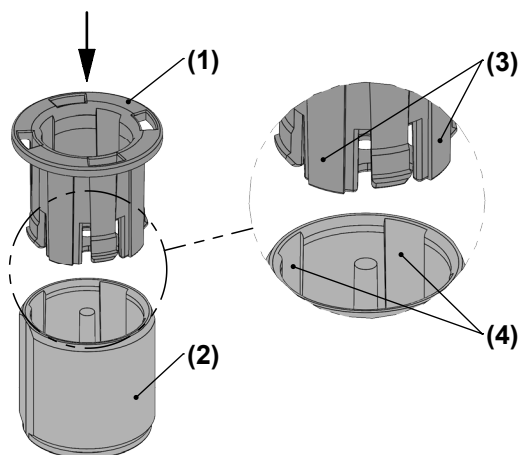
sliding area latch bolt (B3) in the latch plate



height adjustment:

The adjusting ring can also be used for the tool-free height adjustment of the center part. For the force-fit transmission of the rotary movement the center part and the adjusting ring are therefore provided with bars and notches.

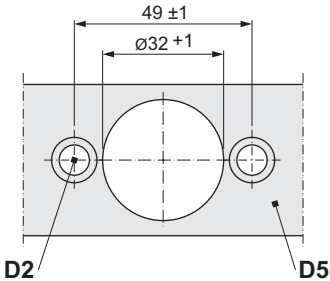
When inserting the adjusting ring (1), position it in such a way that the bars (3) engage in the notches (4) of the center part (2).



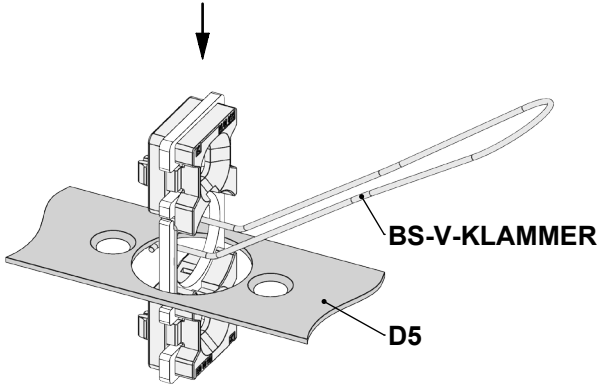
- (1) adjusting ring
- (2) center part with external thread
- (3) bars, 4x at the circumference of the adjusting ring available
- (4) notches, 4x in the inner area of the center part

cutout dimensions:

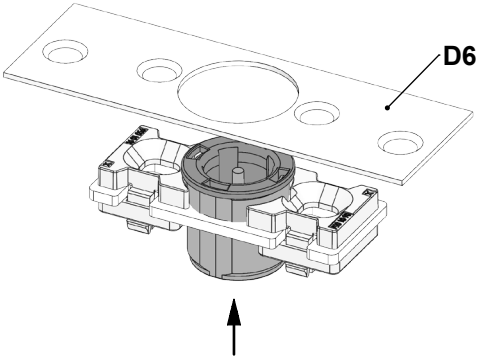
for different installation options



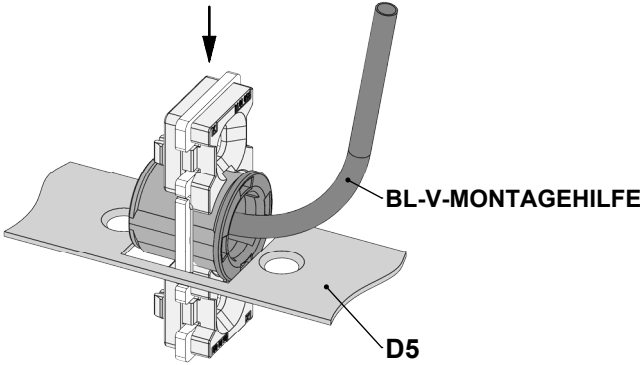
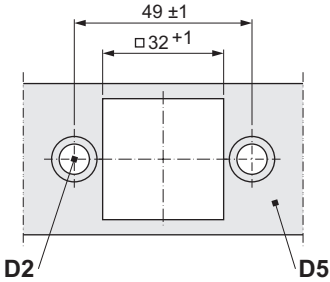
variant door leaf



variant mounting plate

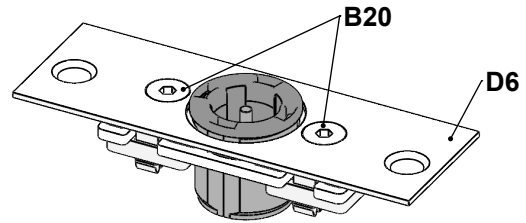
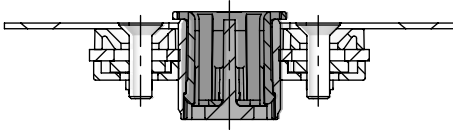


for assembly from the outside including center part



- D2 countersink for screw M6
- D5 door leaf
- D6 separate mounting plate
(on site or produced order-related)

exemplary arrangement:



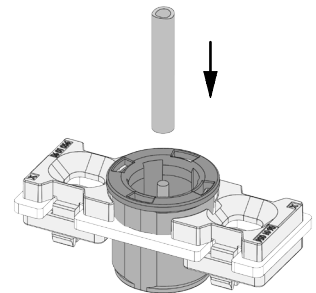
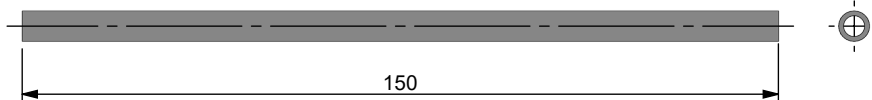
B20 countersunk screw DIN 7991-M6x20
(accessories - please order separately)

D6 separate mounting plate
(on site or produced order-related)

accessories:

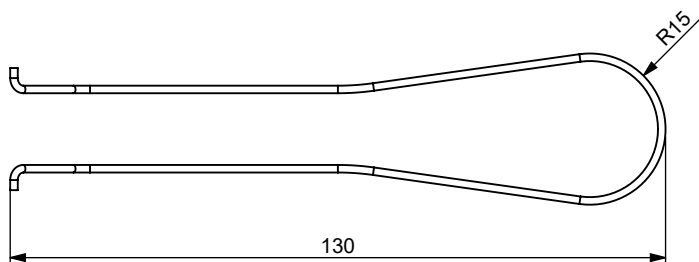
BL-V-MONTAGEHILFE

mounting tool for the installation of latch plates



BS-V-KLAMMER

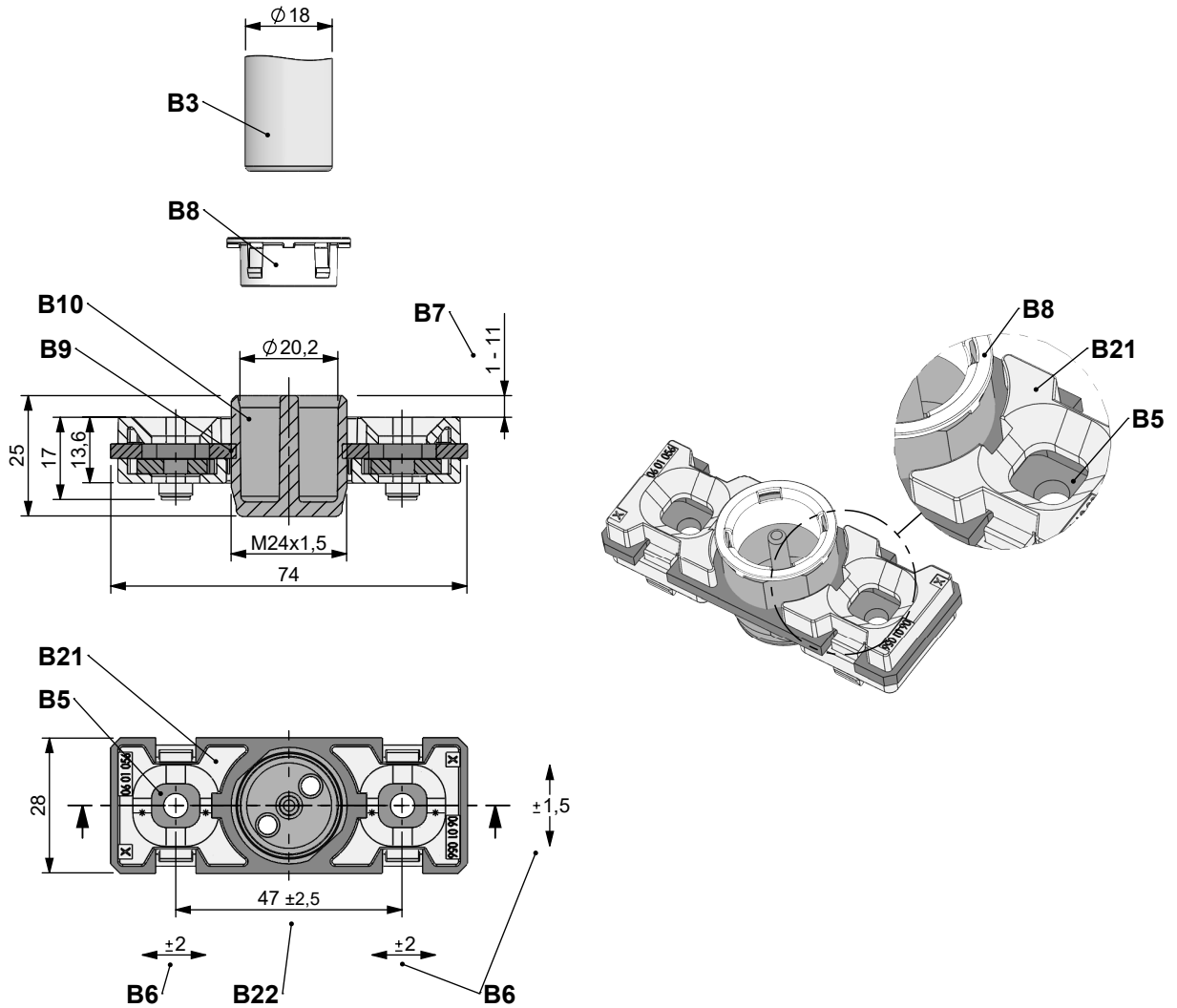
mounting tool for latch plates BL-V, BS-V



Accessories:

latch plate BS-V

latch plate with height adjustment



B3 latch bolt

B5 sliding cage nut with thread M6

B6 inside micrometer of the sliding nuts

B7 height adjustable from 1 to 11 mm

B8 adjusting ring,
remove after assembly / adjustment

B9 secure thread against
autonomous rotation

B21 sliding nut take-up device

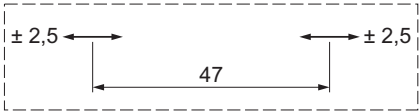
B22 inside micrometer of the take-up devices
of the sliding nuts

B23 anti-rotation protection

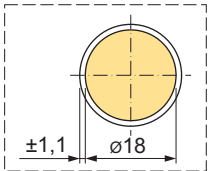
adjustment range of the sliding nut (B5) within the take-up device



adjustment range of the sliding nut take-up device (B21)

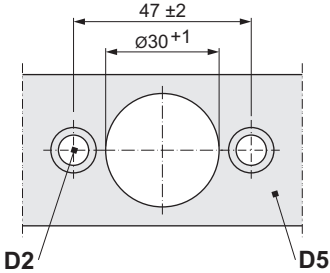


sliding area latch bolt (B3) in the latch plate

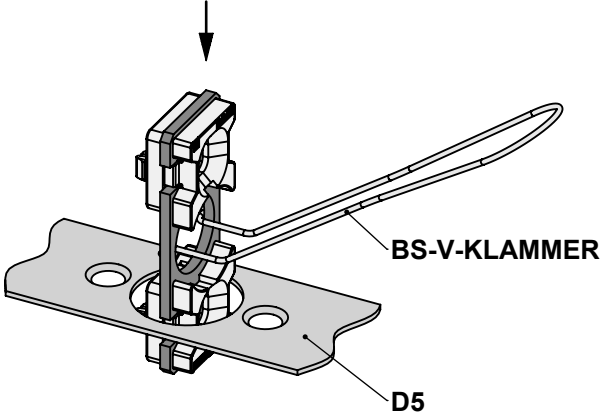


cutout dimensions:

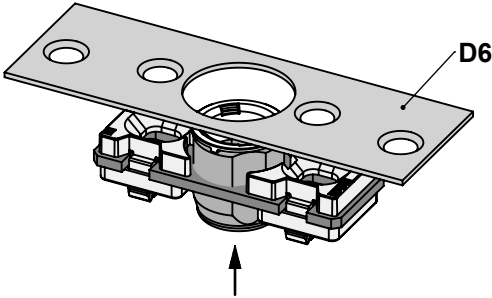
for different installation options



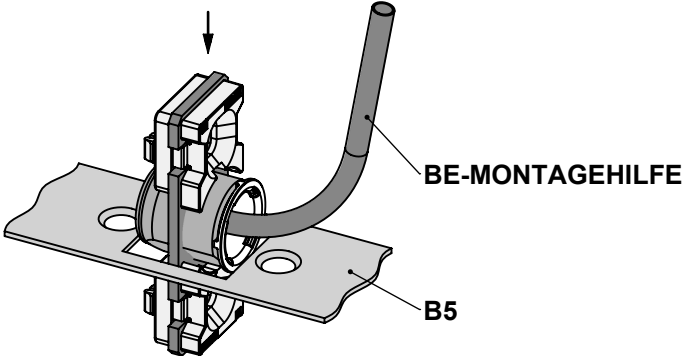
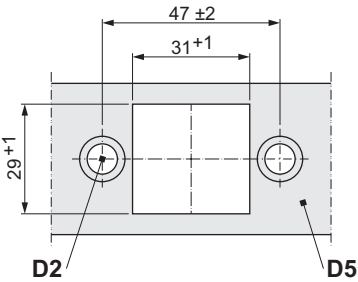
variant door leaf



variant mounting plate

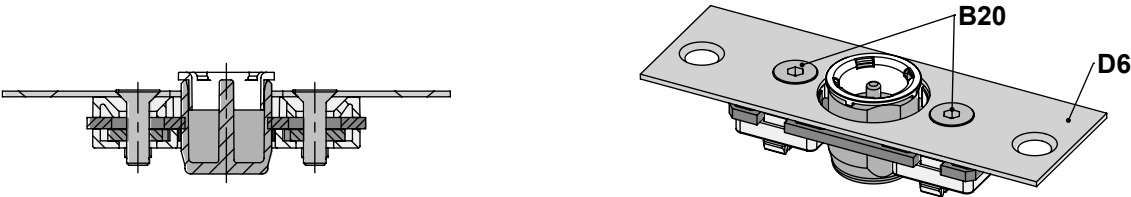


for assembly from the outside, including center part



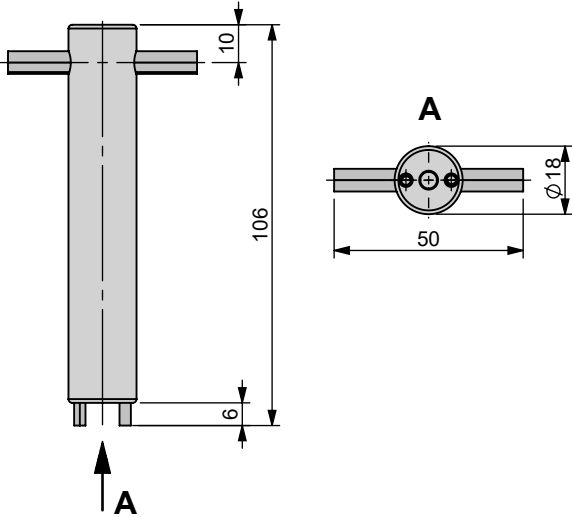
- D2 countersink for screw M6
- D5 door leaf
- D6 separate mounting plate (on site or produced order-related)

exemplary arrangement:



accessories:

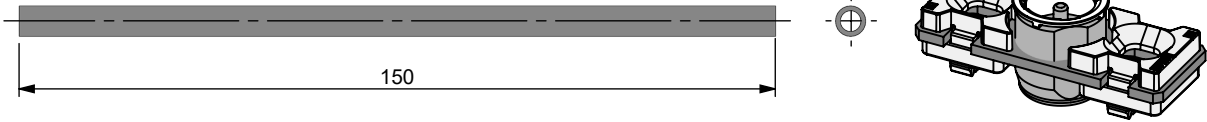
BS-DREH
tool for height adjustment of the latch plates BS-V



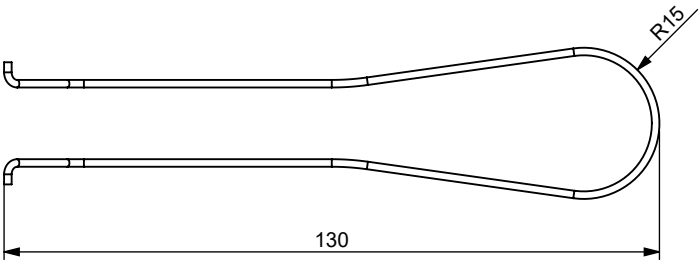
B20 countersunk screw DIN 7991-M6x20
(accessories - please order separately)

D6 separate mounting plate
(on site or produced order-related)

BE-MONTAGEHILFE
mounting tool for the installation of latch plates



BS-V-KLAMMER
mounting tool for latch plates BL-V, BS-V





Hans & Jos. Kronenberg GmbH

Kurt-Schumacher-Str. 1 | D-51427 Bergisch Gladbach

T: +49 2204 / 207-0 | **E:** info@kronenberg-gmbh.de

