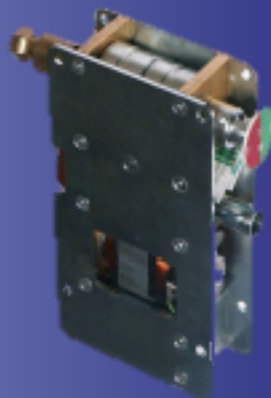
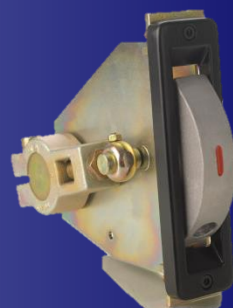


SZM
Schaltanlagen
Zubehör

Bad Muskau
ZUSCHA Boss



Reliable Switching of Higher Voltage Current drives



contents

1. 90.010/20 ball joint drive

- 1.1 selection equipment
- 1.2 dimension sheet ball joint drive
- 1.3 dimension sheet ball joint drive with interlock
- 1.4 depiction switch rods
- 1.5 drive interlock
- 1.6 selection clamping lever, compl. for drive shaft
- 1.7 selection bearing ahead
- 1.8 attachments ball joint drive
 - clamping lever, compl. for switchgear shaft (dm 30mm)
 - drive carrier for switchgear shaft (dm 30mm)
 - operating lever
- 1.9 designation examples for ball joint drive
- 1.10 depiction ball joint drive – standard equipment
- 1.11 depiction ball joint drive with the possibility to add a locking magnet

2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

- 2.1 order numbers
- 2.2 designation examples
- 2.3 94.071 manual drive with extension of locking magnet, auxiliary switch
- 2.4 94.106 key sign
- 2.5 94.040 telescopic shaft ahead, complete
- 2.6 94.045 telescopic shaft behind, complete
- 2.7 94.030 oscillating joint
- 2.8 94.050 universal joint
- 2.9 example assembling arrangement for rectilinear drive guide
- 2.10 SZM-adapter oscillating joint-clamping bock
- 2.11 94.060 operating lever, complete

3. 86.020/25 plug-in lever drive

- 3.1 dimension drawing – order number

4. 87.050/100/150 rotary drive

- 4.1 dimension drawing
- 4.2 order numbers
- 4.3 attachments rotary drive
 - drive extension
 - linkage complete
 - ball joint rod
 - operating lever

5. 93.010/20/30/40 double-linkage drive

- 5.1 order numbers
- 5.2 operating lever

6. 80.100/110/120 attachment kit for signaling switch

- 6.1 order numbers connection kit Flexzug-switch shaft and –signaling switch shaft
- 6.2 order number attachment kit for signaling switch

7. 79.004 clamping pairs for round busbars

- 7.1 order numbers

8. 83.010 shaft extension

- 8.1 order numbers

9. motor drive MD4

- 9.1 description / operating instructions / maintenance instructions
- 9.2 installation examples for motor drive

1. 90.010/20 ball joint drive

1.1 selection equipment

The ball joint drives are small dimensioned and therefore very well suited for almost all types of switches in matters of voltage gap. Furthermore they are available in different variants.

ball joint drive with stop and ball detent	90.010 -	
with an on the shaft adjustable bar symbol, black	01	for disconnecting switch
with an on the shaft adjustable bar symbol, red	02	for earthing switch
ball joint drive with stop and ball detent	90.020 -	for earthing switch
with milled catch, red designed (non-interchangeable)		
with flange at the bearing ahead	- K	
length drive shaft L in mm/ length switch rod X in mm	- 1000 / 500	
special dimensions possible e.g.	- 840 / 420	
lever radius on the clamping lever in mm	- H40	
(also special solution possible)	- H50	
	- H60	
	- H65	
	- H6 5/85	
	- H8 5/105	
isolated drive shaft dm 38mm	- ISO	
reinforced switch rod with M12 ball joint	- reinforced M12	
reinforced switch rod with M14x1,5 ball joint	- reinforced M14	
with long hole in the bearing ahead	- mL	
with guide strip at the bearing ahead	- Fl	
with interlock only at 90.010	-V	
bearing angle behind beveled on both sides	- Ws	
without bearing angle behind	- oW	
without ball detent	- oKR	

attachments:

81.015-02 clamping lever for disconnecting switch (for switchgear shaft dm 30mm; please refer dimension sheet 1.1)

78.001 drive carrier for earthing switch (for switchgear shaft dm 30mm; please refer d.s. 1.1)

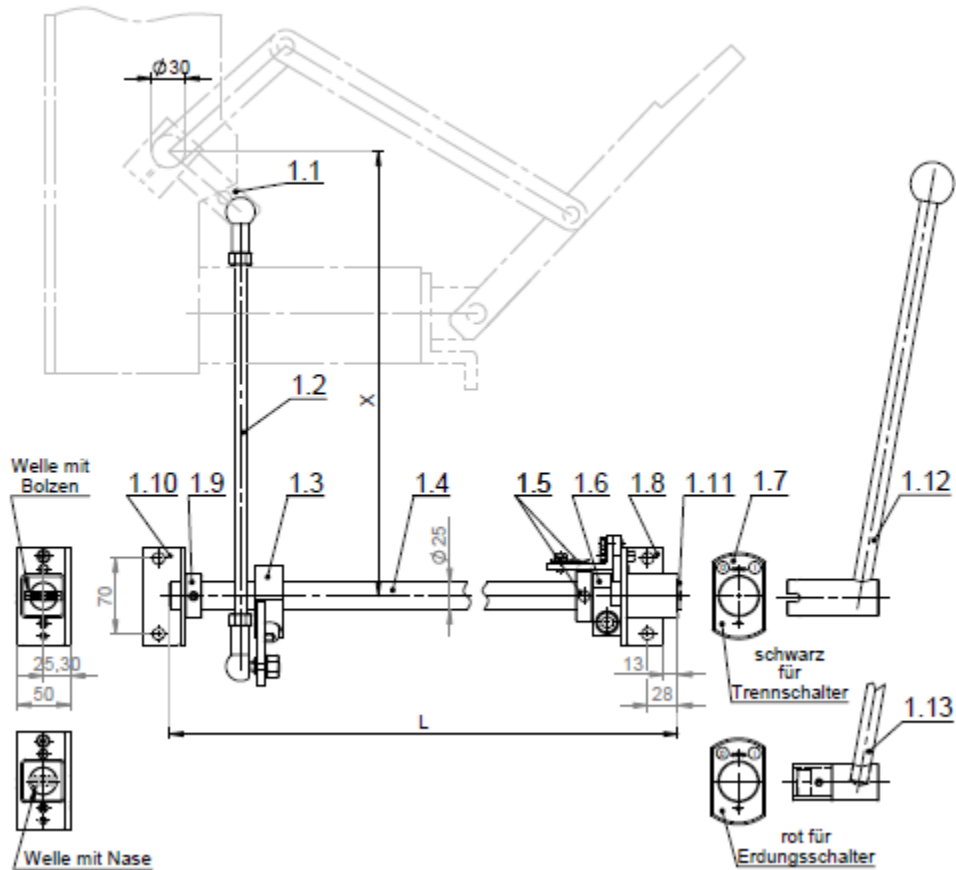
90.045 operating lever for disconnecting switch (please refer dimension sheet 1.12)

90.050 operating lever for earthing switch (please refer dimension sheet 1.13)

1. 90.010/20 ball joint drive

1.2 dimension sheet ball joint drive

81.015-02 clamping lever for disconnecting switch (for switchgear shaft dm 30mm)



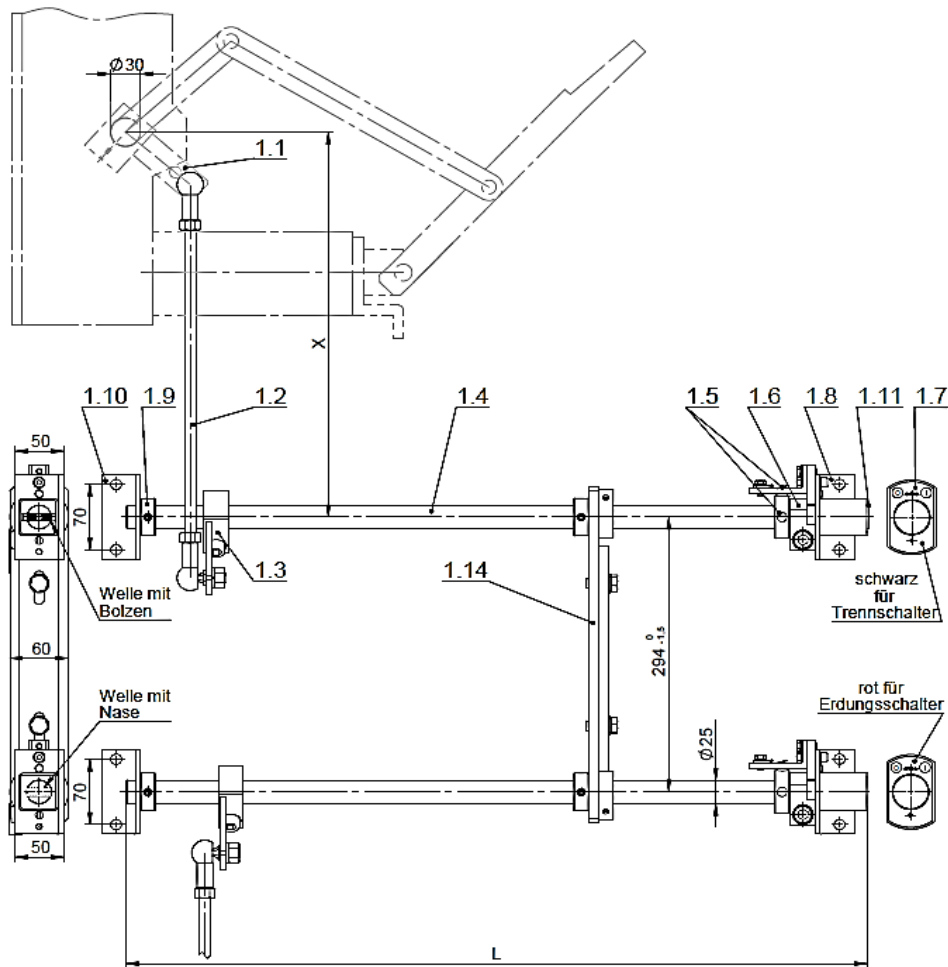
ball joint drive

- 1.1 clamping lever or drive carrier for switchgear shaft dm 30 mm
- 1.2 switch rod (threaded rod M12 with ball joint on both sides)
- 1.3 clamping lever for drive shaft
- 1.4 drive shaft (dm. 25 mm steel shaft;insulating shaft on demand)
- 1.5 ball detent (for disconnecting and earthing switch)
- 1.6 90° stop ON-OFF
- 1.7 indicating sign black or red
- 1.8 bearing (bores dm. 11 mm for fixing with screws M10)
- 1.9 adjusting collar
- 1.10 bearing angle (bores dm. 11 mm for fixing with screws M10)
- 1.11 bar sign black for load break switch and disconnecting switch
catch red designed for earthing switch
- 1.12 operating lever for load break switch and disconnecting switch
- 1.13 operating lever for earthing switch

1. 90.010/20 ball joint drive

1.3 dimension sheet ball joint drive with interlock

81.015-02 clamping lever for disconnecting switch (for switchgear shaft dm 30mm)



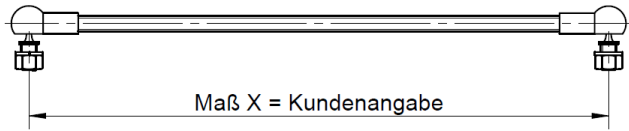
ball joint drives with interlock

- 1.1 clamping lever or drive carrier for switchgear shaft dm 30 mm
- 1.2 switch rod (threaded rod M12 with ball joint on both sides)
- 1.3 clamping lever for drive shaft
- 1.4 drive shaft (dm. 25 mm steel shaft; insulating shaft on demand)
- 1.5 ball detent (for disconnecting and earthing switch)
- 1.6 90° stop ON-OFF
- 1.7 indicating sign black or red
- 1.8 bearing
- 1.9 adjusting collar
- 1.10 bearing angle
- 1.11 bar sign black for load break switch and disconnecting switch
catch red designed for earthing switch
- 1.14 interlock

1. 90.010/20 ball joint drive

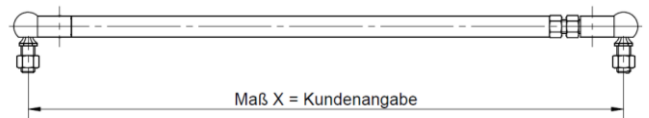
1.4 depiction switch rods

switch rod with threaded rod M12



reinforced switch rod M12 or M14x1,5

If the dimension X over 500 mm is needed or a very difficult to switch device is operated, a reinforced switch rod M12 or M14x1,5 is recommended.

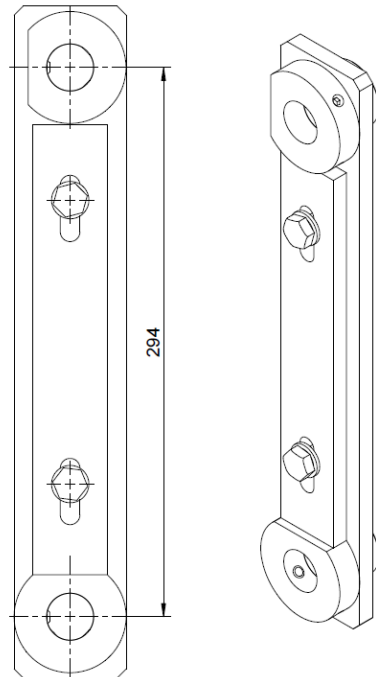


depicted reinforced switch rod M14x1,5.

1.5 drive interlock

90.080-A294 drive interlock for ball joint drive

(installation depiction please refer dimension sheet ball joint drive with interlock)

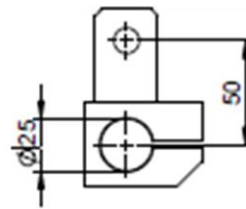


1. 90.010/20 ball joint drive

1.6 selection clamping lever, compl. for drive shaft:

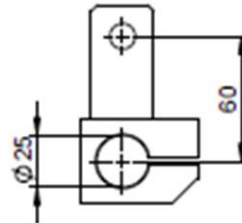
81.015-12 clamping lever, complete

- for drive shaft $\varnothing 25\text{mm}$
lever radius $H=50\text{mm}$.



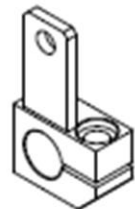
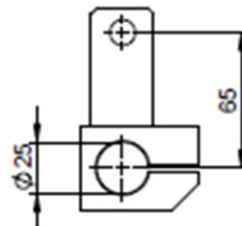
81.015-07 clamping lever, complete

- for drive shaft $\varnothing 25\text{mm}$
lever radius $H=60\text{mm}$.



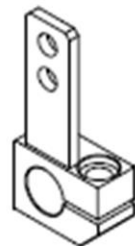
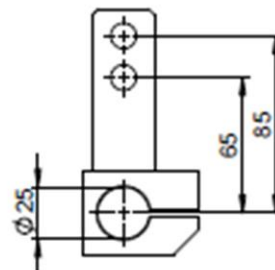
81.015-11 clamping lever, complete

- for drive shaft $\varnothing 25\text{mm}$
lever radius $H=65\text{mm}$.



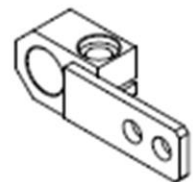
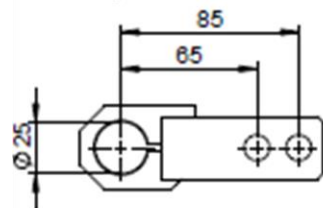
81.015-01 clamping lever, complete

- for drive shaft $\varnothing 25\text{mm}$
lever radius $H=65/85\text{mm}$.



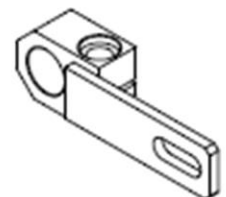
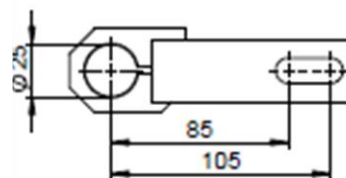
81.015-04 clamping lever, complete

- for drive shaft $\varnothing 25\text{mm}$
lever radius $H=65/85\text{mm}$.



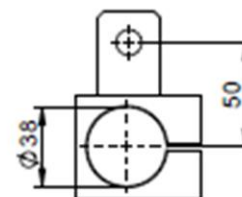
81.015-19 clamping lever, complete

- for drive shaft $\varnothing 25\text{mm}$
lever radius $H=85/105\text{mm}$.



81.015-18 clamping lever, complete.

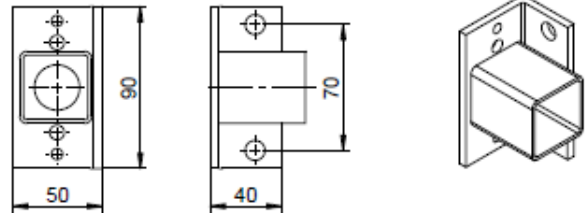
- For isolated drive shaft $\varnothing 38\text{mm}$
lever radius $H=50\text{mm}$.



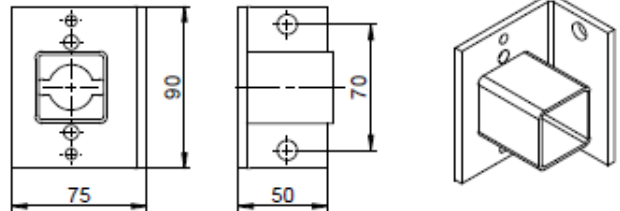
1. 90.010/20 ball joint drive

1.7 selection bearing ahead:

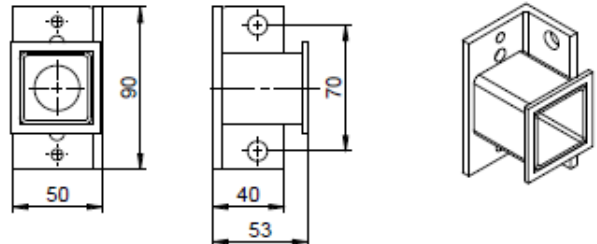
91.063-01 bearing ahead
- for drive shaft dm 25mm.



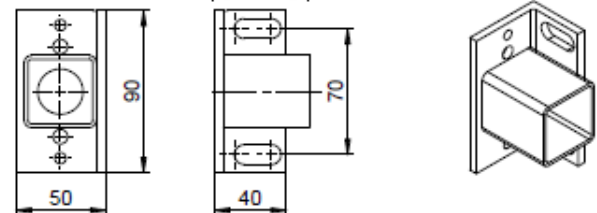
91.063-02 bearing ahead
- for isolated drive shaft dm 38mm.



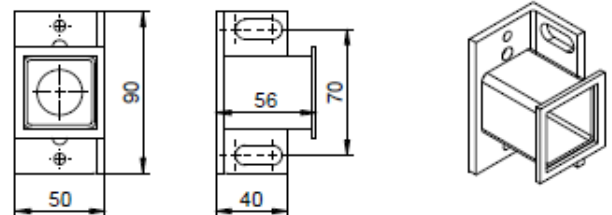
91.063-03 bearing ahead
- for drive shaft dm 25mm
with flange.



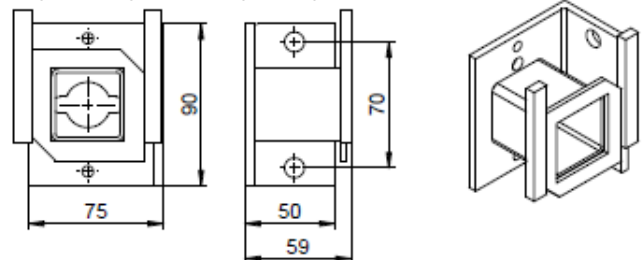
91.063-04 bearing ahead
- for drive shaft dm 25mm
with long hole.



91.063-10 bearing ahead
- for drive shaft dm 25mm
with flange and long hole.



91.063-07 bearing ahead
- for isolated drive shaft dm 38mm
with flange and guide strip.

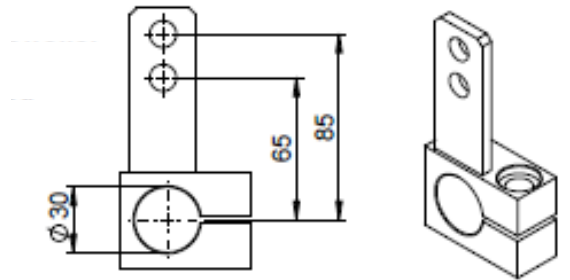


1. 90.010/20 ball joint drive

1.8 attachments ball joint drive:

selection clamping lever, compl. for switchgear shaft:

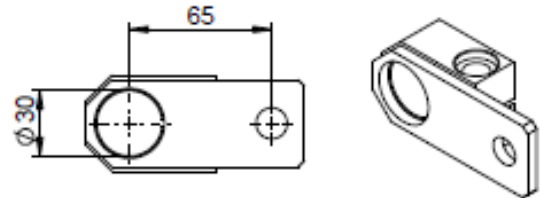
- switchgear shaft \varnothing 30mm
lever radius H=65/85mm.



special versions:

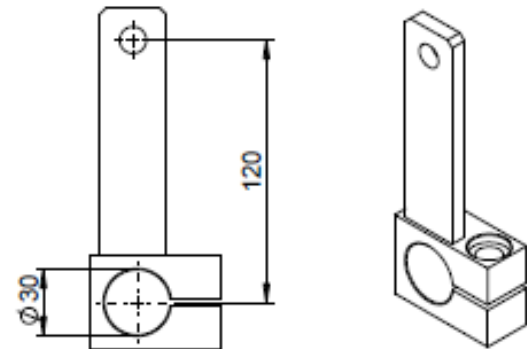
81.015-03 clamping lever, complete

- switchgear shaft \varnothing 30mm
lever radius H=65mm.



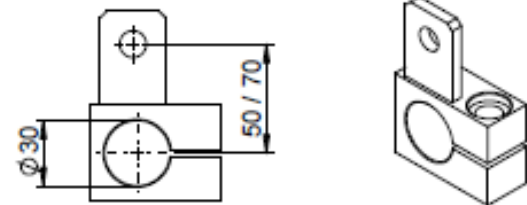
81.015-13 clamping lever, complete

- switchgear shaft \varnothing 30mm
lever radius H=120mm.



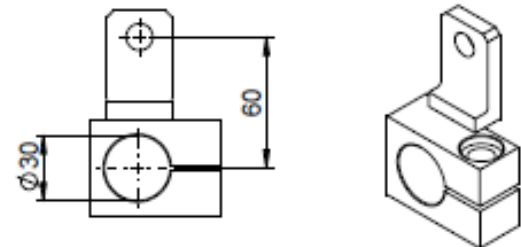
81.015-17 clamping lever, complete

- switchgear shaft \varnothing 30mm
lever radius H=50 or 70mm.



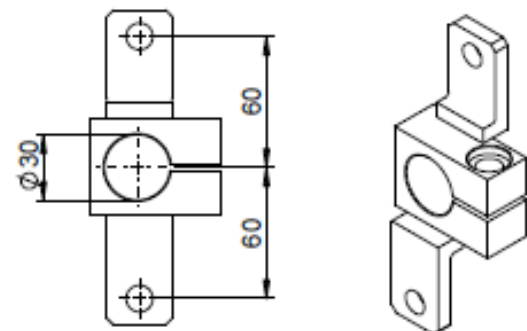
81.015-21 clamping lever, complete

- switchgear shaft \varnothing 30mm
lever radius H=60mm.



81.015-22 clamping lever, complete

- switchgear shaft \varnothing 30mm
lever radius 2x H=60mm.



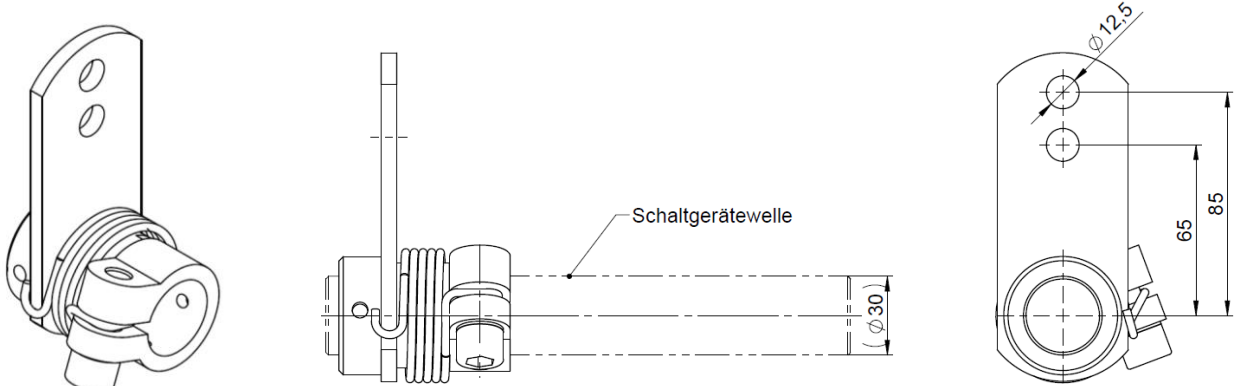
1. 90.010/20 ball joint drive

selection drive carrier:

78.001-long drive carrier (lever radius H=65/85mm)

78.001-short drive carrier (lever radius H=50mm)

78.001-medium drive carrier (lever radius H=70mm)



depicted 78.001-long drive carrier

90.045 operating lever for disconnecting switch

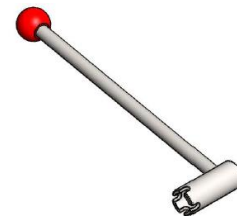
for ball joint drive

with order number 90.010-01 with black ball



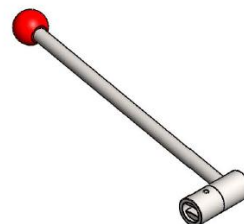
for ball joint drive

with order number 90.010-02 with red ball



90.050 operating lever for earthing switch

for ball joint drive with order number 90.020



1. 90.010/20 ball joint drive

1.9 designation examples for ball joint drive

90.010-01-K-1000/500-H65-mL-Ws

ball joint drive for disconnecting switch with stop ON-OFF, ball detent, adjustable bar symbol black, flange at bearing ahead,
drive shaft steel $d_m = 25$ mm and $L = 1000$ mm,
switch rod with ball joints M12 on both sides and $X = 500$ mm, clamping lever with lever radius = 65 mm, long holes in the bearing ahead, bearing angles behind beveled on both sides, indicating sign black.

suitable for this: operating lever for disconnecting switch (90.045 black)

90.020-K-1200/800-H50-ISO-FL

ball joint drive for earthing switch (non-interchangeable) with stop ON-OFF, ball detent, display red, flange at bearing ahead,
isolated drive shaft $d_m = 38$ mm and $L = 1200$ mm,
switch rod with ball joints M12 on both sides and $X = 800$ mm, clamping lever for drive shaft $d_m 38$ mm with lever radius = 50 mm, extra guide slips at the flange at bearing ahead, indicating sign red.

suitable for this: operating lever for earthing switch (90.050)

90.010-02-1000/2000-H65/85-reinforced M12

ball joint drive for earthing switch with stop ON-OFF, ball detent, adjustable bar symbol red,
drive shaft steel $d_m = 25$ mm and $L = 1000$ mm,
reinforced switch rod with ball joints M12 on both sides and $X = 2000$ mm, clamping lever with lever radius = 65 and 85 mm, indicating sign red.

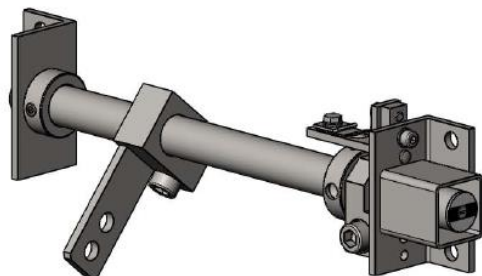
Suitable for this: operating lever for disconnecting switch (90.045 red)

1. 90.010/20 ball joint drive

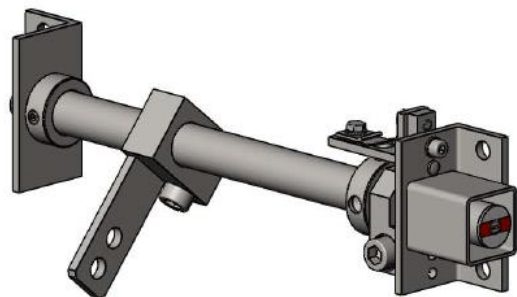
1.10 depiction ball joint drive – standard equipment

90.010/20 ball joint drive – standard equipment

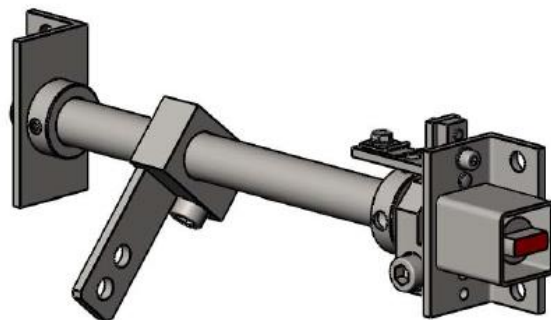
90.010-01-L/X-H65/85 ball joint drive for disconnecting switch with stop ON-OFF, ball detent, adjustable bar symbol black, drive shaft steel $d_m=25\text{mm}$ with length = L and switch rod length = X (switch rod not depicted), clamping lever with lever radius 65/85 mm and indicating sign black (not depicted).



90.010-02-L/X-H65/85 ball joint drive for earthing switch with stop ON-OFF, ball detent, adjustable bar symbol red, drive shaft steel $d_m=25\text{mm}$ with length = L and switch rod length = X (switch rod not depicted), clamping lever with lever radius 65/85 mm and indicating sign red (not depicted).



90.020-L/X-H65/85 ball joint drive for earthing switch (non-interchangeable) with stop ON-OFF, ball detent, display red, drive shaft steel $d_m=25\text{mm}$ with length = L and switch rod length = X (switch rod not depicted), clamping lever with lever radius 65/85 mm and indicating sign red (not depicted)

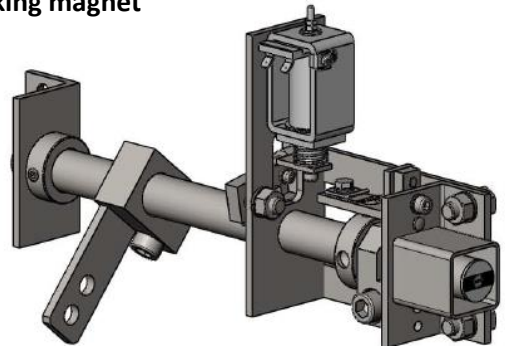


1. 90.010/20 ball joint drive

1.11 depiction ball joint drive with the possibility to add a locking magnet

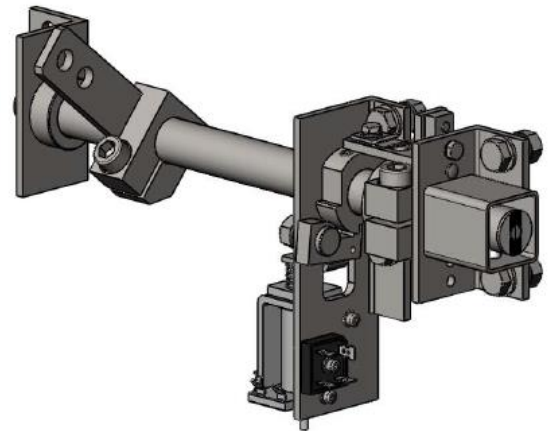
90.000-36-01

ball joint drive with extension locking magnet above



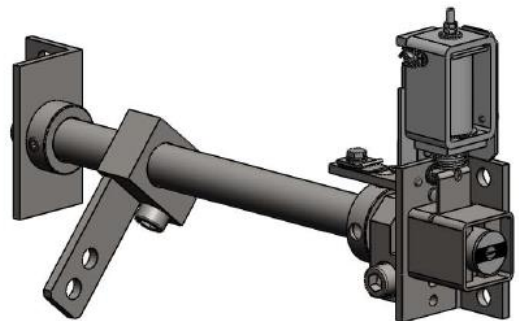
90.000-36-02

ball joint drive with extension locking magnet below



90.000-37

ball joint drive with extension locking magnet - interlock



2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

2.1 order numbers:

94.010 - __ / __ / __ / __ / __

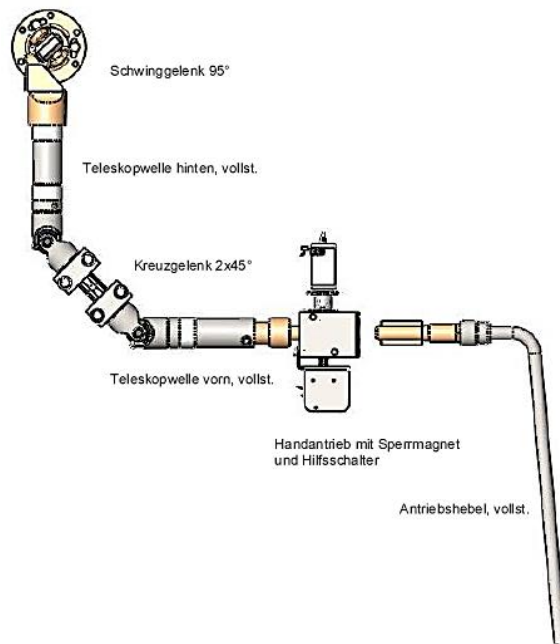
94.071-01 manual drive with locking magnet and auxiliary switch	01
94.071-02 manual drive with locking magnet	02
94.071-03 manual drive with auxiliary switch	03
(dimensions and parameters please refer	
94.071 manual drive with extension of locking magnet , auxiliary switch)	
94.040-01 telescopic shaft ahead, compl.	01
94.040-02 telescopic shaft ahead, compl.	02
94.040-03 telescopic shaft ahead, compl.	03
94.040-04 telescopic shaft ahead, compl.	04
94.040-05 telescopic shaft ahead, compl.	05
94.040-06 telescopic shaft ahead, compl.	06
94.040-08 telescopic shaft ahead, compl.	08
94.040-09 telescopic shaft ahead, compl.	09
94.040-10 telescopic shaft ahead, compl.	10
94.040-11 telescopic shaft ahead, compl.	11
(dimensions and parameters please refer	
94.040 telescopic shaft ahead, compl.)	
94.050-01 universal joint 90°	01
94.050-02 universal joint 2x45°	02
94.050-03 universal joint 45°	03
(dimensions and parameters please refer	
94.050 universal joint)	
94.045-01 telescopic shaft behind, compl.	01
94.045-02 telescopic shaft behind, compl.	02
94.045-03 telescopic shaft behind, compl.	03
94.045-04 telescopic shaft behind, compl.	04
94.045-05 telescopic shaft behind, compl.	05
94.045-06 telescopic shaft behind, compl.	06
94.045-07 telescopic shaft behind, compl.	07
94.045-08 telescopic shaft behind, compl.	08
(dimensions and parameters please refer	
94.045 telescopic shaft behind, compl.)	
94.030-01 oscillating joint 95° with spline shaft pick-up	01
94.030-02 oscillating joint 115° with spline shaft pick-up	02
94.030-03 oscillating joint 95° with hex pick-up	03
94.030-04 oscillating joint 115° with hex pick-up	04
(dimensions and parameters please refer 94.030 oscillating joint)	

2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

2.2 designation examples:

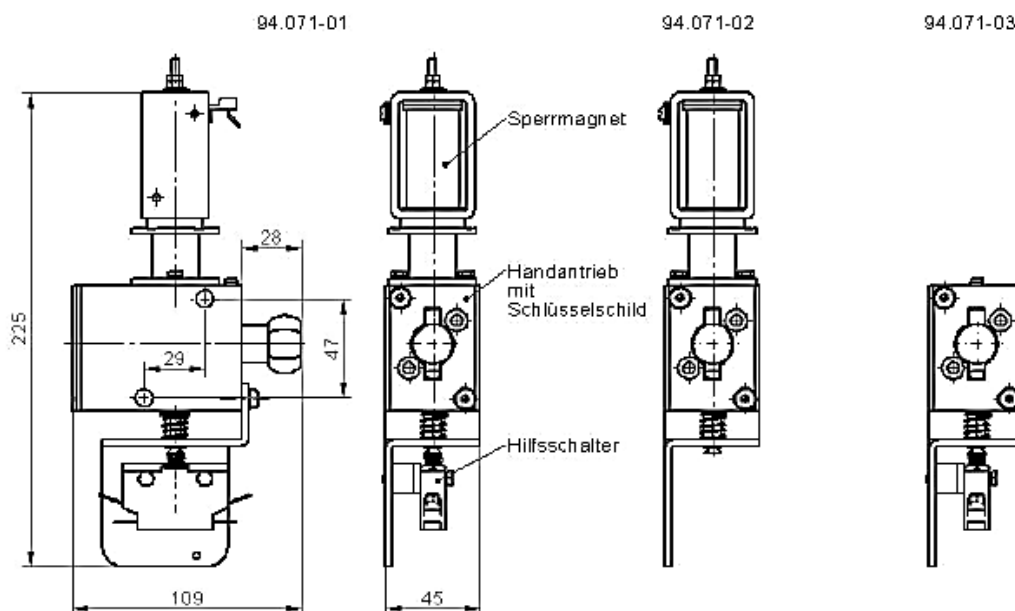
94.010-01/01/02/01/01 telescopic shaft drive with

- 01 - 94.071-01 manual drive with locking magnet and auxiliary switch
- 01 - 94.040-01 telescopic shaft ahead, compl. (length 190 to 230 mm)
- 02 - 94.050-02 universal joint 2x45°
- 01 - 94.045-01 telescopic shaft behind, compl. (length 166 to 266 mm)
- 01 - 94.030-01 oscillating joint 95° with spline shaft pick-up



2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

2.3 94.071 manual drive with extension of locking magnet, auxiliary switch



order numbers:

94.071 - __ / __

94.071-01 manual drive with locking magnet and auxiliary switch

0 1 / __

94.071-02 manual drive with locking magnet

0 2 / __

78.302-01 locking magnet 24 V DC

0 1 _

78.302-02 locking magnet 60 V DC

0 2 _

78.302-03 locking magnet 110 V DC

0 3 _

78.302-04 locking magnet 230 V DC

0 4 _

78.302-05 locking magnet 125 V DC

0 5 _

78.302-06 locking magnet 48 V DC

0 6 _

78.302-07 locking magnet 110 V AC (with rectifier FB)

0 7 _

78.302-08 locking magnet 230 V AC (with rectifier FB)

0 8 _

94.071-03 manual drive with auxiliary switch

0 3 / 0 0 _

94.106-01 key sign

1

94.106-02 key sign

2

94.106-03 key sign

3

94.106-04 key sign

4

94.106-05 key sign

5

94.106-06 key sign

6

94.106-07 key sign

7

94.106-08 key sign

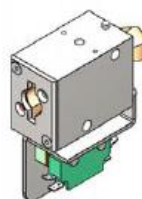
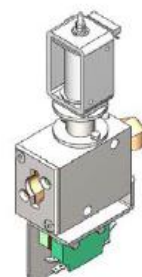
8

(dimensions and parameters please refer 94.106 key sign)

designation example:

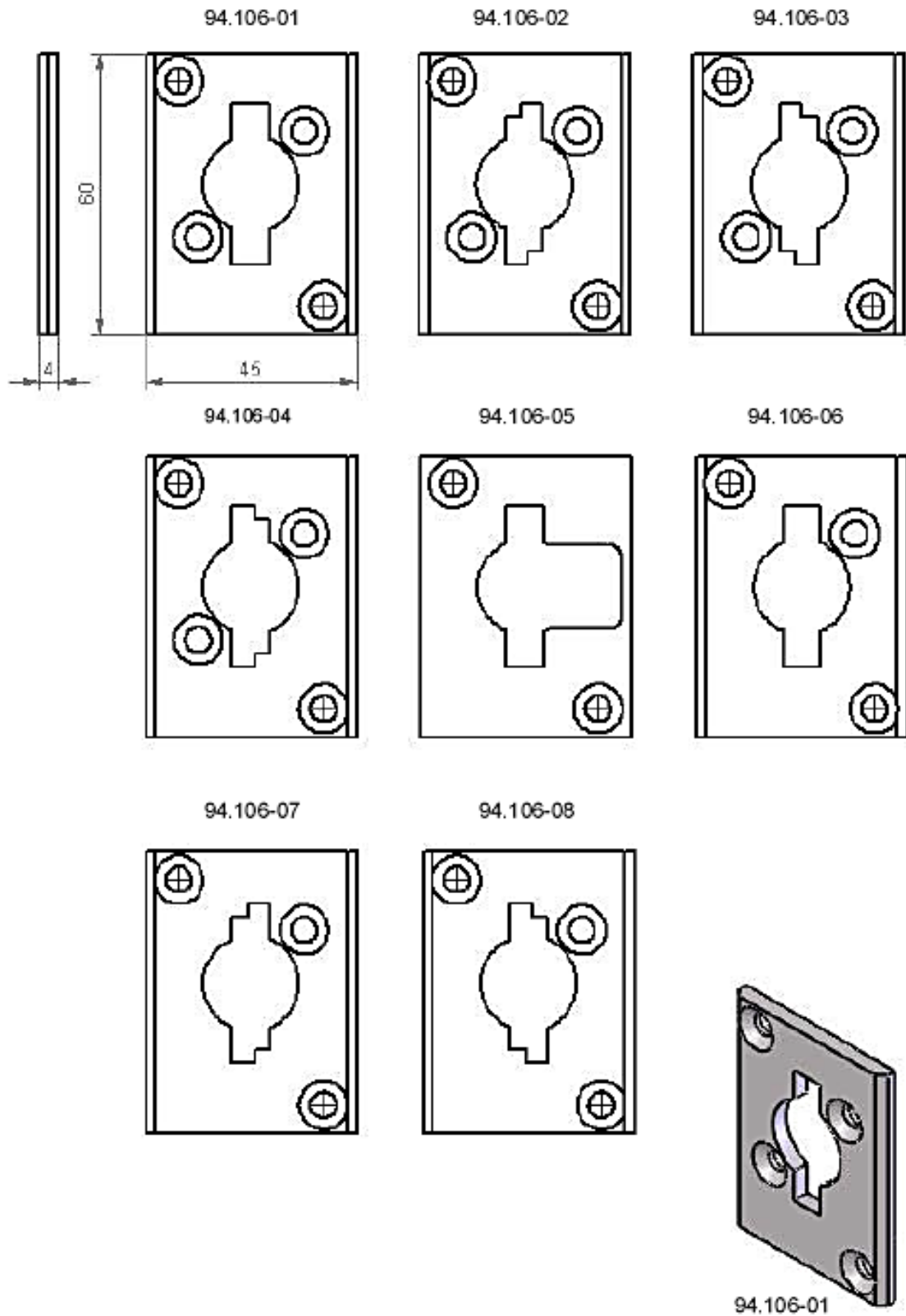
94.071-02/021 manual drive with locking magnet 60 V DC (without auxiliary switch)

and key sign 94.106-01



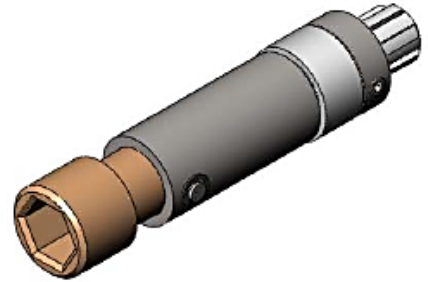
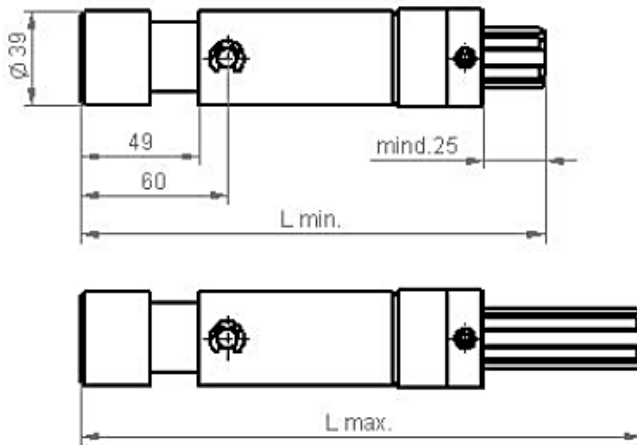
2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

2.4 key sign



2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

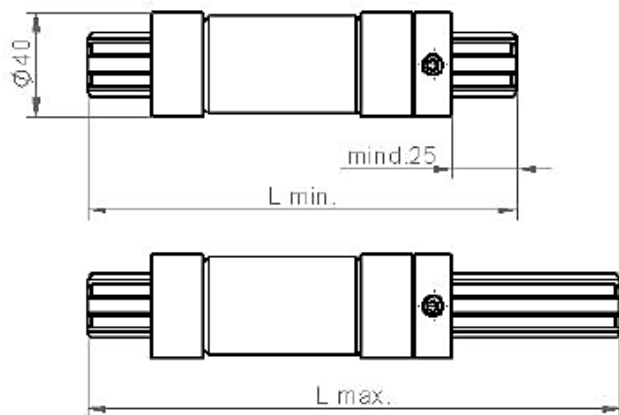
2.5 94.040 telescopic shaft ahead, compl.



	adjustable length in mm min. - max.
94.040-01 telescopic shaft ahead, compl.	190 - 230
94.040-02 telescopic shaft ahead, compl.	230 - 310
94.040-03 telescopic shaft ahead, compl.	310 - 470
94.040-04 telescopic shaft ahead, compl.	470 - 790
94.040-05 telescopic shaft ahead, compl.	790 - 1430
94.040-06 telescopic shaft ahead, compl.	1430 - 2710
94.040-08 telescopic shaft ahead, compl.	310 - 440
94.040-09 telescopic shaft ahead, compl.	460 - 630
94.040-10 telescopic shaft ahead, compl.	1115 - 2080
94.040-11 telescopic shaft ahead, compl.	150 - 170
94.040-12 telescopic shaft ahead, compl.	1110 - 1565
special lengths according to customer requirements possible.	

2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

2.6 94.045 telescopic shaft behind, compl.



94.045-01 telescopic shaft behind, compl.

adjustable length in mm
min. - max.

166 - 206

94.045-02 telescopic shaft behind, compl.

206 - 286

94.045-03 telescopic shaft behind, compl.

286 - 446

94.045-04 telescopic shaft behind, compl.

446 - 766

94.045-05 telescopic shaft behind, compl.

766 - 1406

94.045-06 telescopic shaft behind, compl.

1406 - 2686

94.045-07 telescopic shaft behind, compl.

446 - 606

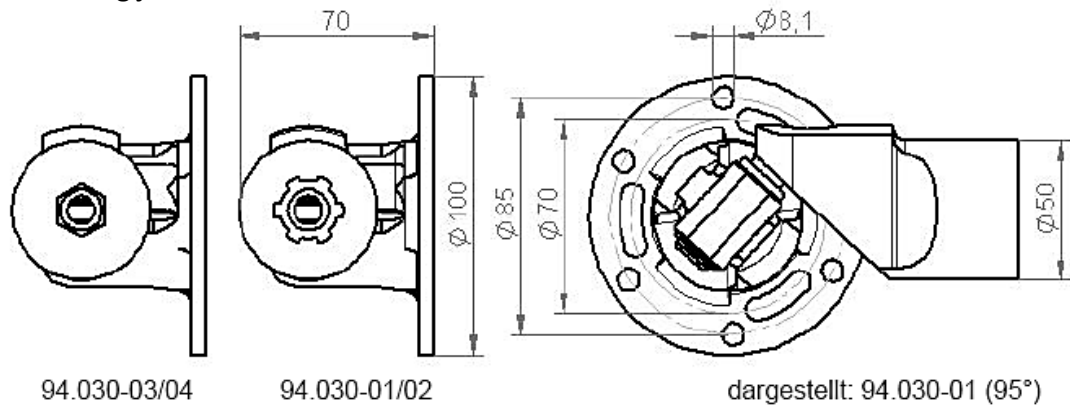
94.045-08 telescopic shaft behind, compl.

286 - 366

special lengths according to customer requirements possible.

2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

2.7 94.030 oscillating joint

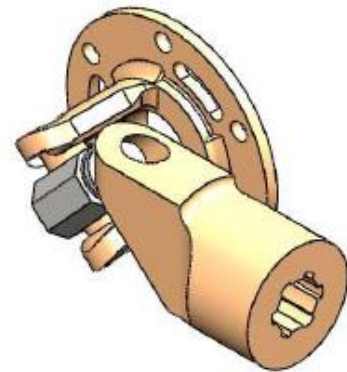


94.030-01 oscillating joint 95° with spline shaft pick-up

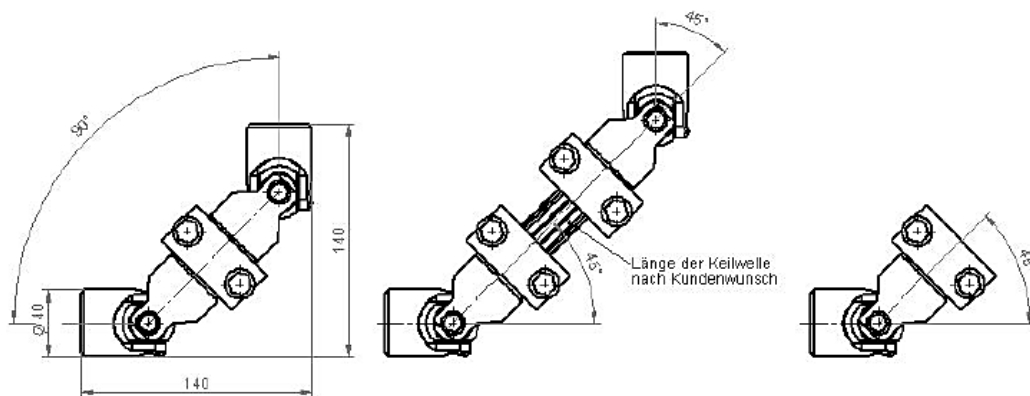
94.030-02 oscillating joint 115° with spline shaft pick-up

94.030-03 oscillating joint 95° with hex pick-up

94.030-04 oscillating joint 115° with hex pick-up



2.8 94.050 universal joint



94.050-01 Kreuzgelenk 90°

94.050-02 Kreuzgelenk 2x45°

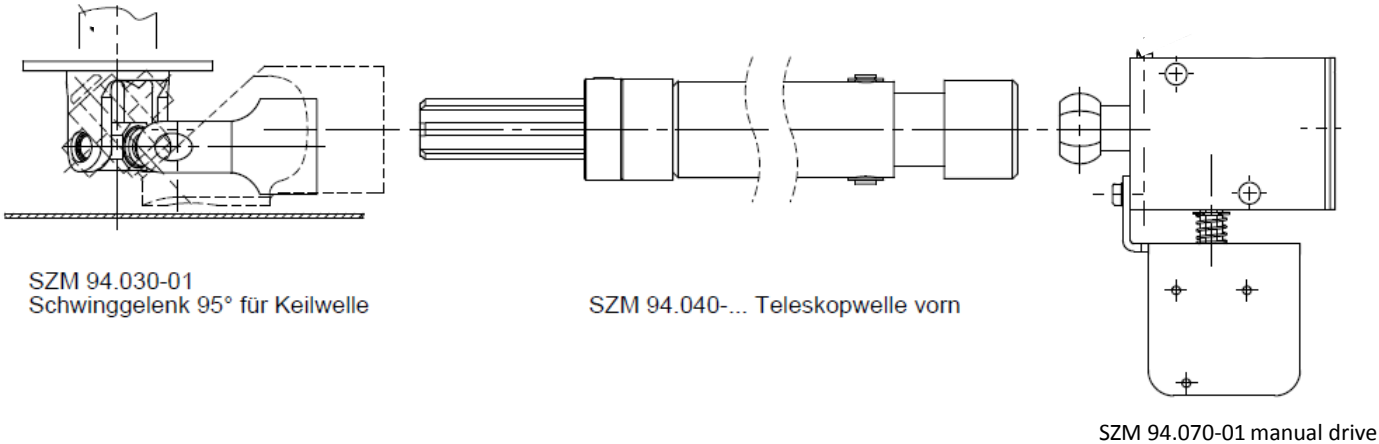
94.050-03 Kreuzgelenk 45°

2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

2.9 example assembling arrangement for rectilinear drive guide:

switch shaft of the switchgear coupled by means of an adapter (SZM-adapter oscillating joint – clamping bock for switch shaft dm 30mm) or with the perforated disc of the switchgear

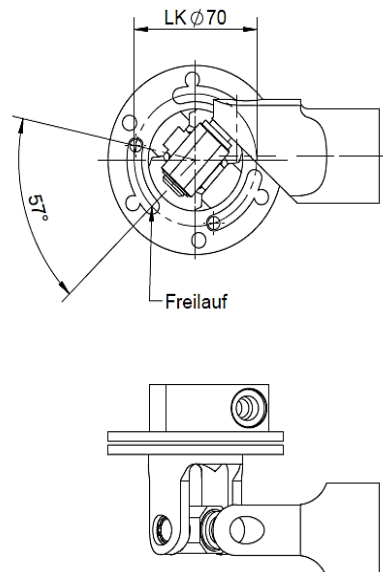
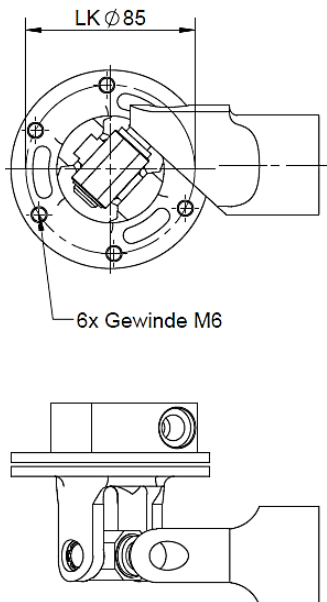
clamping pin for limiting the switching angle 180° (provided with the delivery and intended for subsequent installation: knock into manual drive above or bellow, depending on the desired direction of switching or rather mounting position)



2.10 SZM-adapter oscillating joint – clamping bock

94.175 clamping bock for disconnecting switch oscillating joint 95° in the LKD=85mm connection with the adapter oscillating joint – clamping bock (LKD=85mm) for switchgears

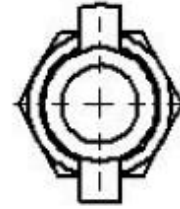
94.180 clamping bock for earthing switch oscillating joint 95° in the LKD=70mm (long holes) connection with the adapter oscillating joint – clamping bock (LKD=70mm) for switchgears with realizing free wheel in the drive linkage (free wheel extended from 30° to 57° here)



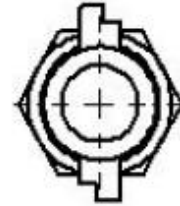
2. 94.010 telescopic shaft drive with oscillating joint, universal joint and manual drive

2.11 94.060 operating lever, compl.

94.060-01 operating lever, compl.



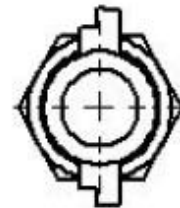
94.060-02 operating lever, compl.



94.060-03 operating lever, compl.



94.060-04 operating lever, compl.



depicted:

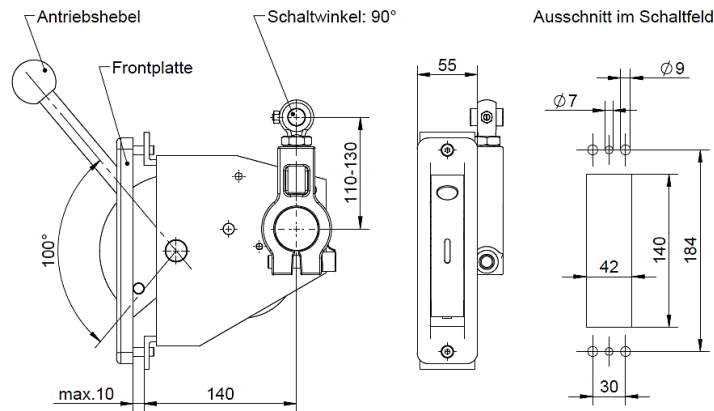
94.060-01 operating lever, compl.



3. 86.020/25 plug-in lever drive

3.1 dimension drawing – order numbers

The plug-in lever drive is as a result of the extensive adjustment possibilities suitable for all types of switches. It's adjustable from feeler gauge 110mm to 130mm as well as attachable on the left and right cell wall by implementing the shaft butt.

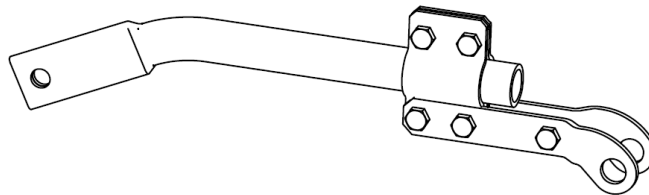


order number:

- 86.020 plug-in lever drive with stop On-Off and interlock / detent
- 89.070-01 operating lever (with black ball)
- 86.057-01 front panel (black)

If it's desired that the drive for disconnecting switches and earthing switches can only be operated by different operating levers, the plug-in lever drive for earthing switches is provided with an adapter.

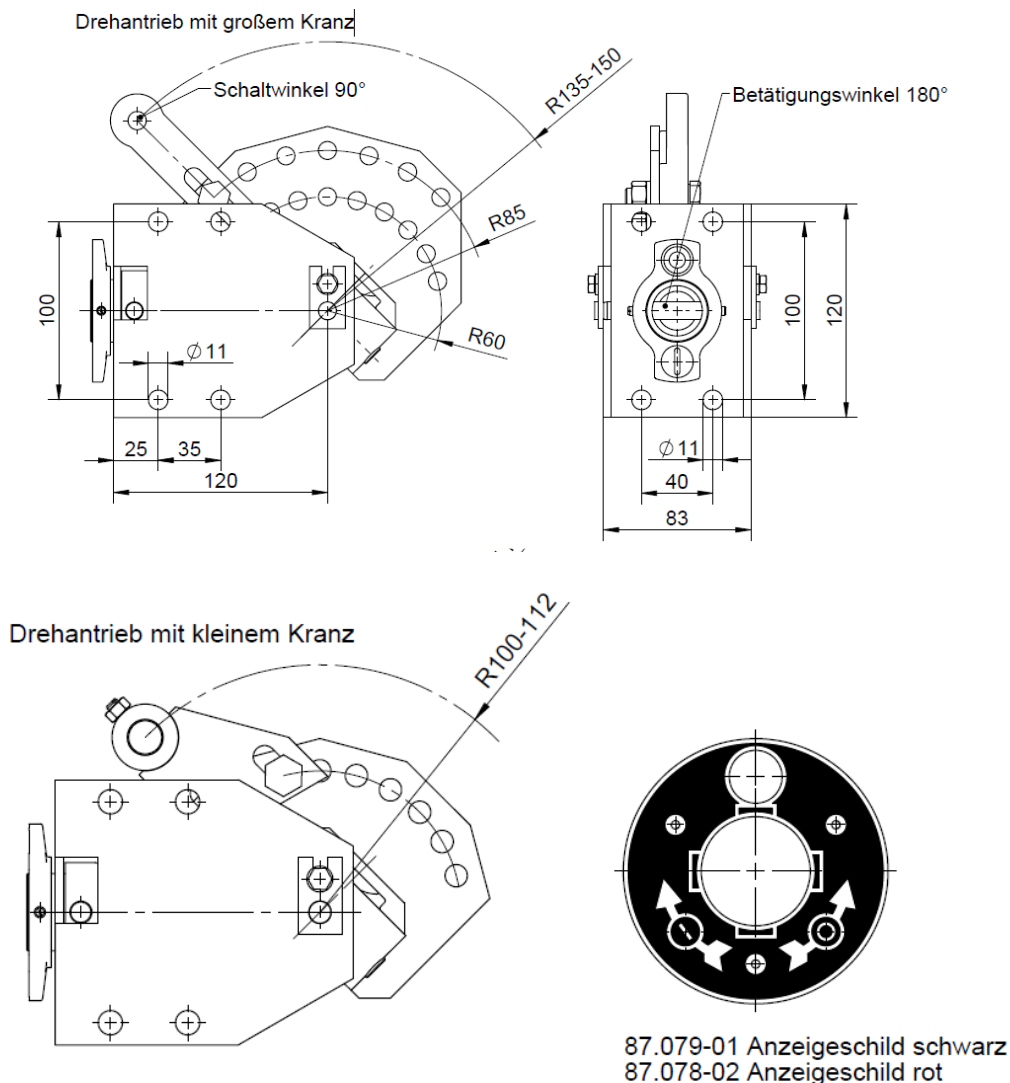
- 86.025 plug-in lever drive with adapter, stop On-Off and interlock / detent
 - 89.070-02 operating lever (with red ball)
 - 86.057-02 front panel (red)
- Zubehör:
- 86.021 linkage complete, length 1,5m (on request special lengths possible)



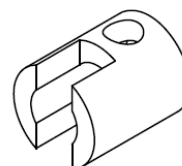
4. 87.050/100/150 rotary drive

4.1 dimension drawing

The rotary drive is space saving, uncomplicated and versatile usable. When switching a 180° rotary motion is converted into a 90° vertical motion. Useable for switchgears with a torque up to 150 Nm.



If it's desired that the drive for disconnecting switches and earthing switches can only be operated by different operating levers, the rotary drive for earthing switches is provided with an adapter.



87.105-01 adapter

4. 87.050/100/150 rotary drive

4.2 order numbers

87.050 rotary drive with large rim
and adjustable feeler gauge from 135mm to
150mm complete with indicating sign black or red.

87.050-01 rotary drive with large rim
and adjustable feeler gauge from 135mm to
150mm complete with adapter and indicating sign
red.

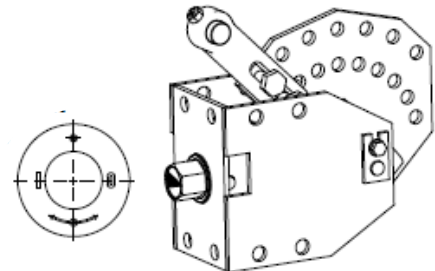
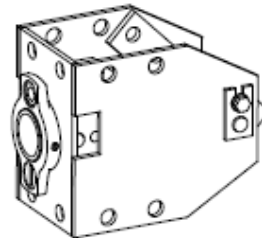
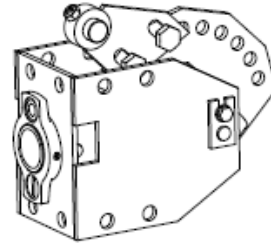
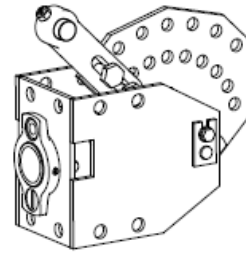
87.100 rotary drive with small rim
and adjustable feeler gauge from 100mm to
112mm complete with indicating sign black or red.

87.100-01 rotary drive with small rim
and adjustable feeler gauge from 100mm to
112mm complete with adapter and indicating sign
red.

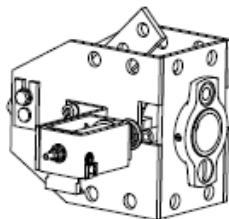
87.150 rotary drive designed to operate a Flex
drive complete with indicating sign black or red.

87.150-01 rotary drive designed to operate a Flex
drive complete with adapter and indicating sign
red.

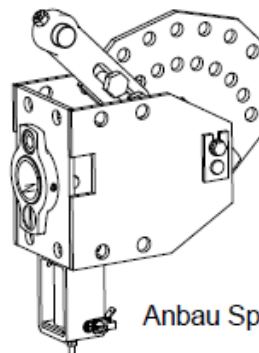
87.050-sk rotary drive with large rim
and adjustable feeler gauge from 135mm to
150mm as well as operation with hex 24 complete
with indicating sign black or red (92.110-04) and
adhesive arrow black or red.



Sonderlösungen: Drehantrieb mit Anbau Sperrmagnet



Anbau Sperrmagnet seitlich.



Anbau Sperrmagnet unten.

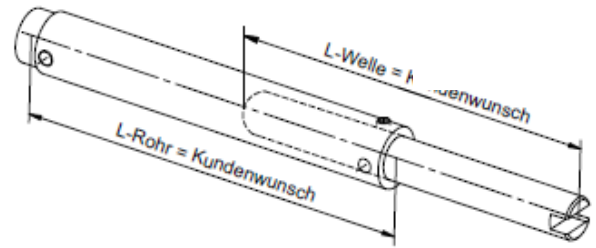
4. 87.050/100/150 rotary drive

4.3 attachments rotary drive

87.030 drive extension

L duct (standard) = 270mm

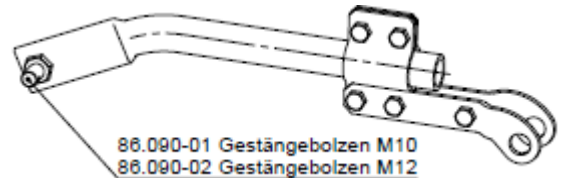
L shaft (standard) = 160mm



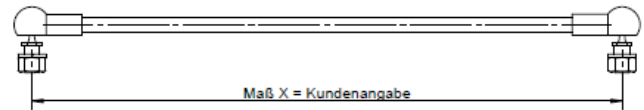
86.021 linkage complete

type: 01 - 1500mm

02 - 2000mm (on request special lengths possible)



ball joint rod with joints M12



ball joint rod reinforced with joints M12 or M14x1,5
If the dimension X over 500 mm is needed or a very difficult to switch device is operated, a reinforced switch rod M12 or M14x1,5 is recommended.



87.022 operating lever for rotary drive
87.050/100/150



87.023 operating lever for rotary drive 87.050-
red/100-red/150-red



87.036 operating lever for rotary drive when used
for disconnecting switch with black ball 87.050-sk-
black when used for earthing switch with red ball
87.050-sk-red

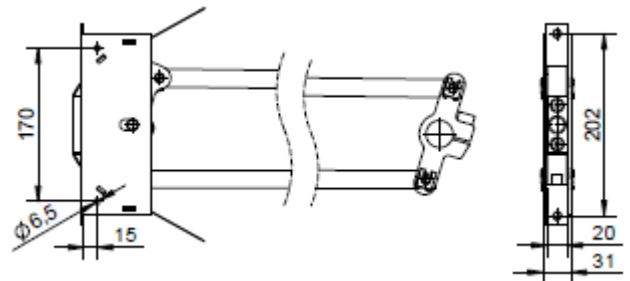


5. 93.010/20/30/40 double-linkage drive

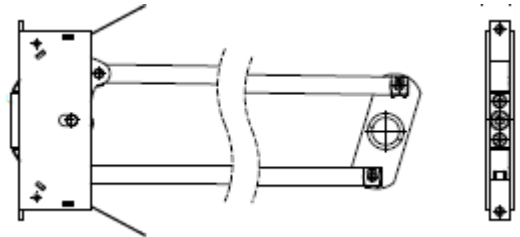
The double-linkage drive has got an operating angle of 100° and can be used for switchgears with a torque up to 150 Nm. When using the drive, horizontally no reaction forces and vertically only small reaction forces occur because of the principal of the double-linkage. Thereby light and small cell constructions are possible. The drive rods are made of epoxy-hard tissue and are delivered in standard lengths 1000mm and 1200mm. According to the installation conditions they must be bored 10,1 mm and shortened on one side during the mounting. Drive rods can also be delivered as galvanized flat steel. The drives for disconnecting switches and earthing switches receive different drive actuators. This can meet the desire that disconnecting switches and earthing switches can only be operated with different operating levers.

5.1 order numbers

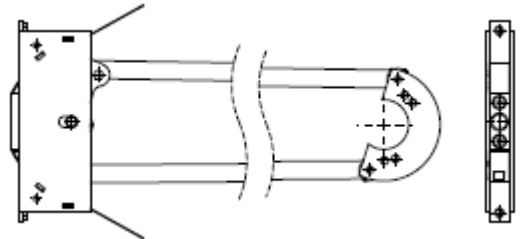
93.010 double-linkage drive
for load break switches with clamping lever



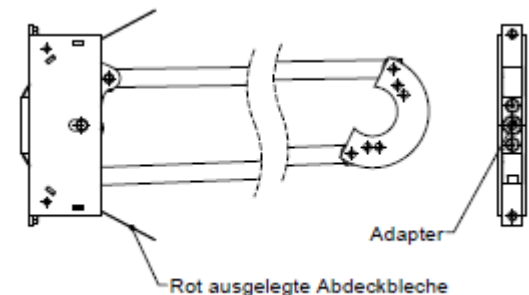
93.020 double-linkage drive
for earthing switches with adapter and red
designed cover plate, with drive carrier
(recesses 165° or 180°)



93.030 double-linkage drive
for load break switches for mounting on perforated
discs



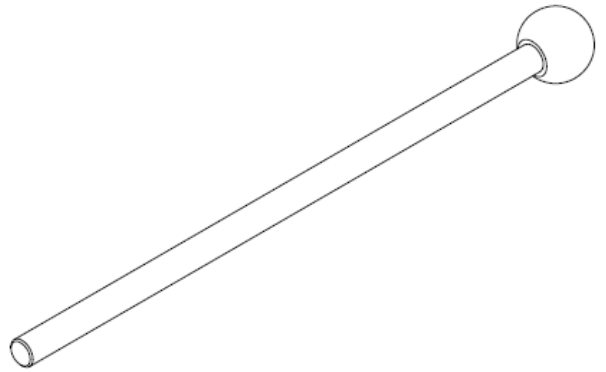
93.040 double-linkage drive
for earthing switches with adapter and red
designed cover plate for mounting on perforated
discs



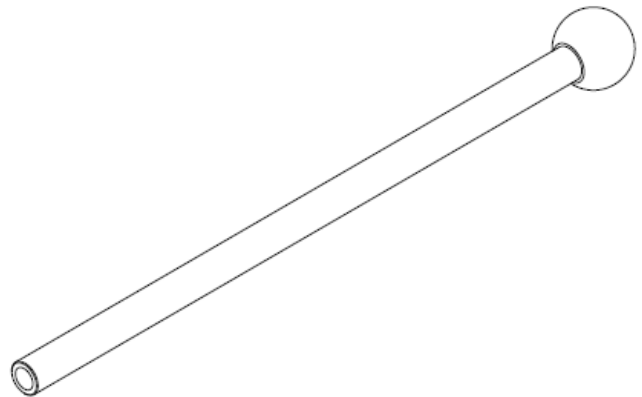
5. 93.010/20/30/40 double-linkage drive

5.2 operating lever

93.015 operating lever for double-linkage drive
for 93.010/93.030



93.025 operating lever for double-linkage drive
for 93.020/93.040



6. 80.100/110/120 attachment kit for signaling switch

If the signaling switch should be operated with help of a Flexzug, the required connection kits from Flexzug-switch shaft as well as Flexzug -signaling switch shaft are offered.

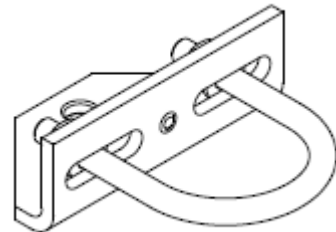
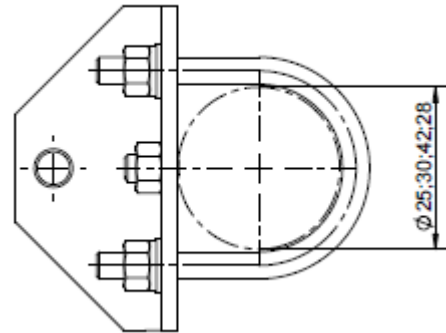
6.1 order numbers connection kit Flexzug-switch shaft and –signaling switch shaft

80.040-01 connection kit Flexzug-switch shaft for \varnothing 25

80.040-02 connection kit Flexzug-switch shaft for \varnothing 30

80.040-03 connection kit Flexzug-switch shaft for \varnothing 42

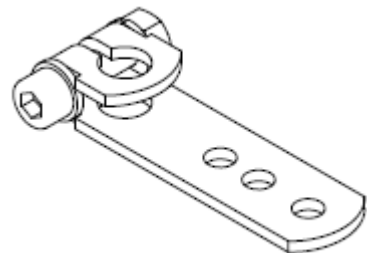
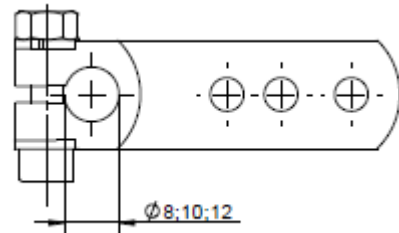
80.040-04 connection kit Flexzug-switch shaft for \varnothing 28



80.045-01 connection kit Flexzug-signaling switch shaft for \varnothing 10

80.045-02 connection kit Flexzug-signaling switch shaft for \varnothing 12

80.045-03 connection kit Flexzug-signaling switch shaft for \varnothing 8

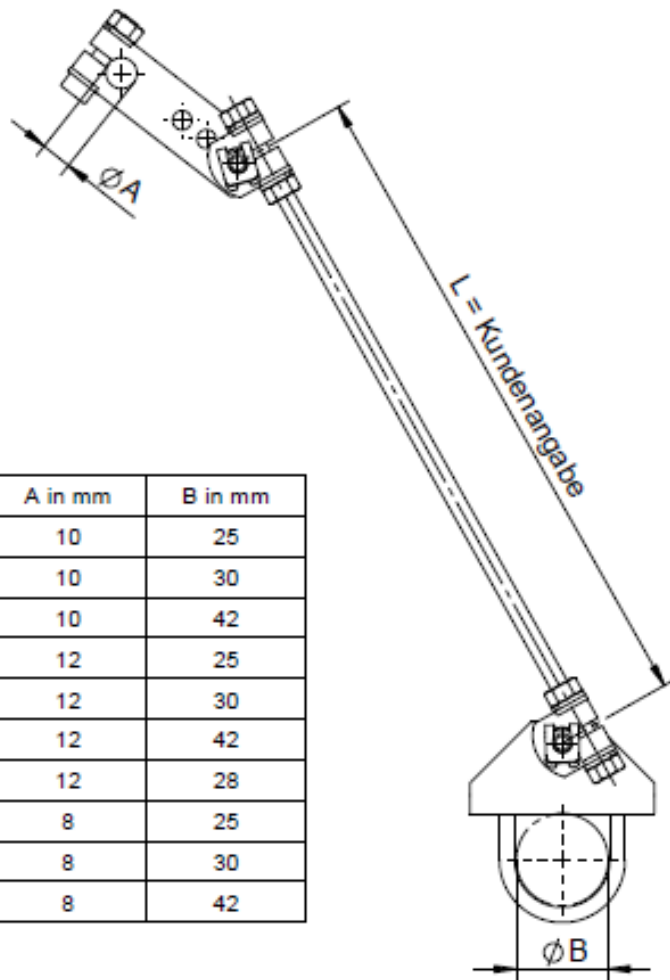


6. 80.100/110/120 attachment kit for signaling switch

This mounting kit allows to mount the signaling switch without boring and cotter-pinning rather only with terminals. Thereby the signaling switch can be mounted very easy and fast with many adjustment possibilities. The variable dimension ist the length ("L") of the drive rod, which is delivered in lengths of 500mm and 1000mm. If a intermediate length is needed, it can be reached by shorten the drive rod with little effort.

6.1 order number attachment kit for signaling switch

Bestell-Nummer	A in mm	B in mm
80.100-01	10	25
80.100-02	10	30
80.100-03	10	42
80.110-01	12	25
80.110-02	12	30
80.110-03	12	42
80.110-04	12	28
80.120-01	8	25
80.120-02	8	30
80.120-03	8	42

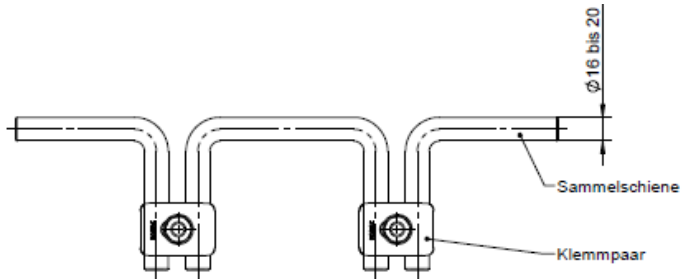


7. 79.004 clamping pairs for round busbars

7.1 order numbers

79.004 clamping pairs for round busbars

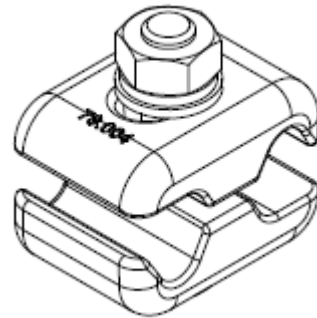
It was developed a clamping pair which allows a perfect mounting of prefabricated, bow-shaped busbars. It consists of two equal halves, which are screwed against each other. A prism and a straight surface form three support lines, which take over the guide of the busbar as well as the heat transfer or rather the current flow. In a long hole the clamping piece halves can be moved against each other so that a tolerance compensation is given. They are manufactured and nickeled as high-quality brass press parts.



The clamping pairs are suitable for round busbars from 16 to 20mm. Deliverable in two types:

79.004-10 clamping pair with one passage 10,5mm (screw M10)

79.004-12 clamping pair with one passage 12,5mm (screw M12)



8. 83.010 shaft extension

8.1 order numbers

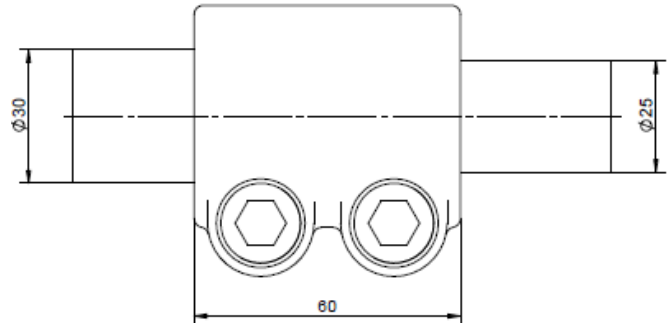
83.010 shaft extension

The depicted shaft extension consists of high-quality ductile iron. They guarantee a reliable fit and only have to be clamped. Boring and cotter-pinning are dropped. The extensions can be mounted fast and are unlimited often detachable and reconnectable.

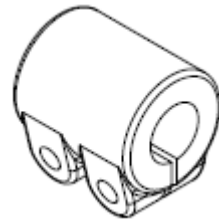
variants of the shaft extension:

- shaft \varnothing 25mm
- shaft \varnothing 30 mm
- shaft \varnothing 30 mm and \varnothing with additional adapter sleeve

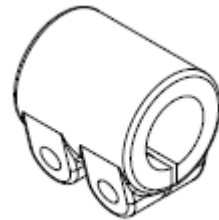
Example with shaft extension, shaft with 30mm reduced to shaft with 25mm.



83.010-02 shaft extension for shaft 25mm



83.010-01 shaft extension for shaft 30mm



83.010-03 adapter sleeve



83.010-40 shaft extension for shaft 25mm / 30mm with adapter sleeve

9. motor drive MD 4

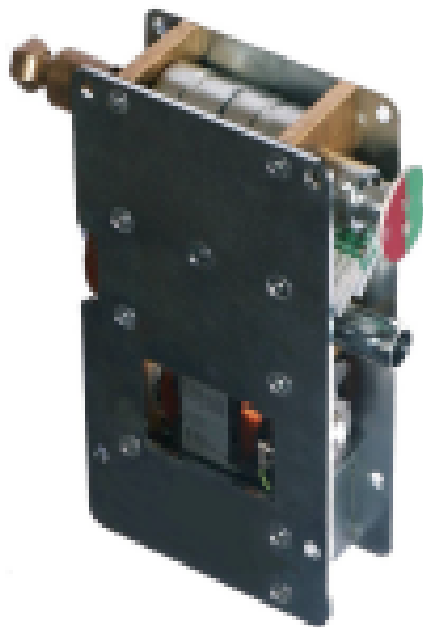
9.1 description / operating instructions / maintenance instructions

1. application area

The motor drive MD4 is used for the electromotive drive of indoor switchgears like load break switches, disconnecting switches, earthing switches or make-proof earthing switches. The connection between the motor drive MD4 and the switchgear is done over especially deliverable transmission elements. The motor drive MD4 only works in one direction of rotation. The adaption of the motors direction of rotation to the handling device of the switchgear is done over a oscillating joint or a special driving disk.

In case of failure of electrical energy the motor drive MD4 can be switched mechanically by emergency crank (counterclockwise).

The functionality of the motor drive MD4 is tested and proven based on EN 60129 by means of 2000 switching cycles ON-OFF with Un 100% as well as 50 switching cycles with Un 85% and 50 switching cycles with Un 110%. Thereby the motor drive MD4 is also suitable for disconnecting switches for special operational requirements.



2. technical data

Nennspannung	24 V DC	60 V DC	110 V DC	230 V AC/DC
Leistungsaufnahme	375 W	375 W	375 W	375 W
Automat für Motorschutz	16 A	6 A	4 A	2 A
Max. Stromaufnahme	25 A	12 A	5 A	4 A
Max. abgegebenes Drehmoment	240 Nm			
Gewicht	ca. 8 kg			
Schutzart	IP 00			
Umgebungstemperatur	- 20°C bis + 65°C			

9. motor drive MD4

3. description/ working method/ operation

The motor acts on the eccentric shaft of a free-running gear via a gearbox. Thereby the drive shaft is put in a left turn. A started switching must be stopped because the motor drive has only one direction of rotation. The electrical control is via the built-in limit switches S1 (not actuated in position OFF) and S2 (actuated in position OFF) as well as over push-button switches and auxiliary contactors (please refer control unit) which are added by the customer. The electrical connection between the customer's control unit and the motor drive MD4 is done via a 12-pin plug-and-socket connection which is 9-pin occupied.

4. maintenance

The motor drive MD4 is designed for a maintenance-free operation. Maintenance work is therefore not required.

5. Control unit for motor drive MD4

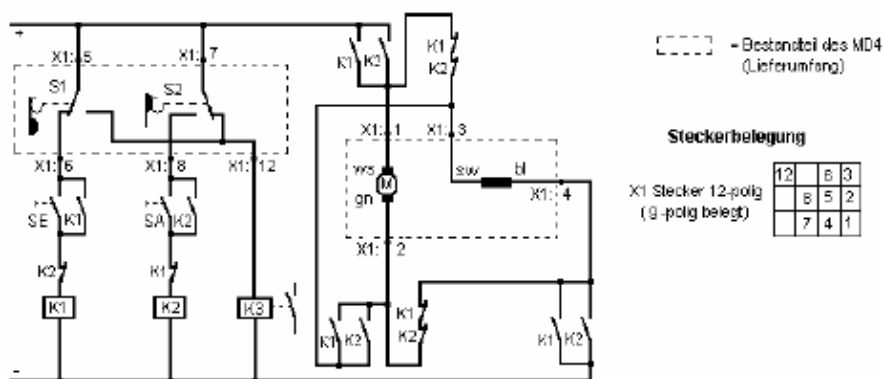
The control unit isn't part of the delivery. The circuit shown below represents the standard version and has to be handled in the version shown in principle.

If necessary K1 and K2 must be wired via 2-pin SE or SA push-button switches. In this case the auxiliary contactors K1 and K2 are to be equipped with one more break contact each.

The wiring of the motor circuit is to be made in the illustrated form to prevent a caster of the engine after contact interruption (countercurrent braking).

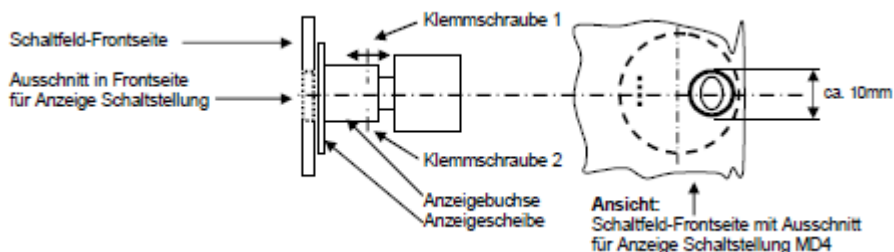
danger: A voltage applied directly to clamps X1: 1 and X1: 2 destroys the motor!! The scope of supply for the motor drive includes the equipment up to the connector X1 (marked with dashed line). For such cases where a message „end position reached“ is required it can be realized via an auxiliary relay K3. For this purpose the connection is already available on terminal 12 of the connector. In addition to the scope of delivery a suitable socket housing and 10 crimp contacts (socket) are provided loosely for each motor drive MD4.

Motorsteuerung MD4 (Schaltungsbeispiel)



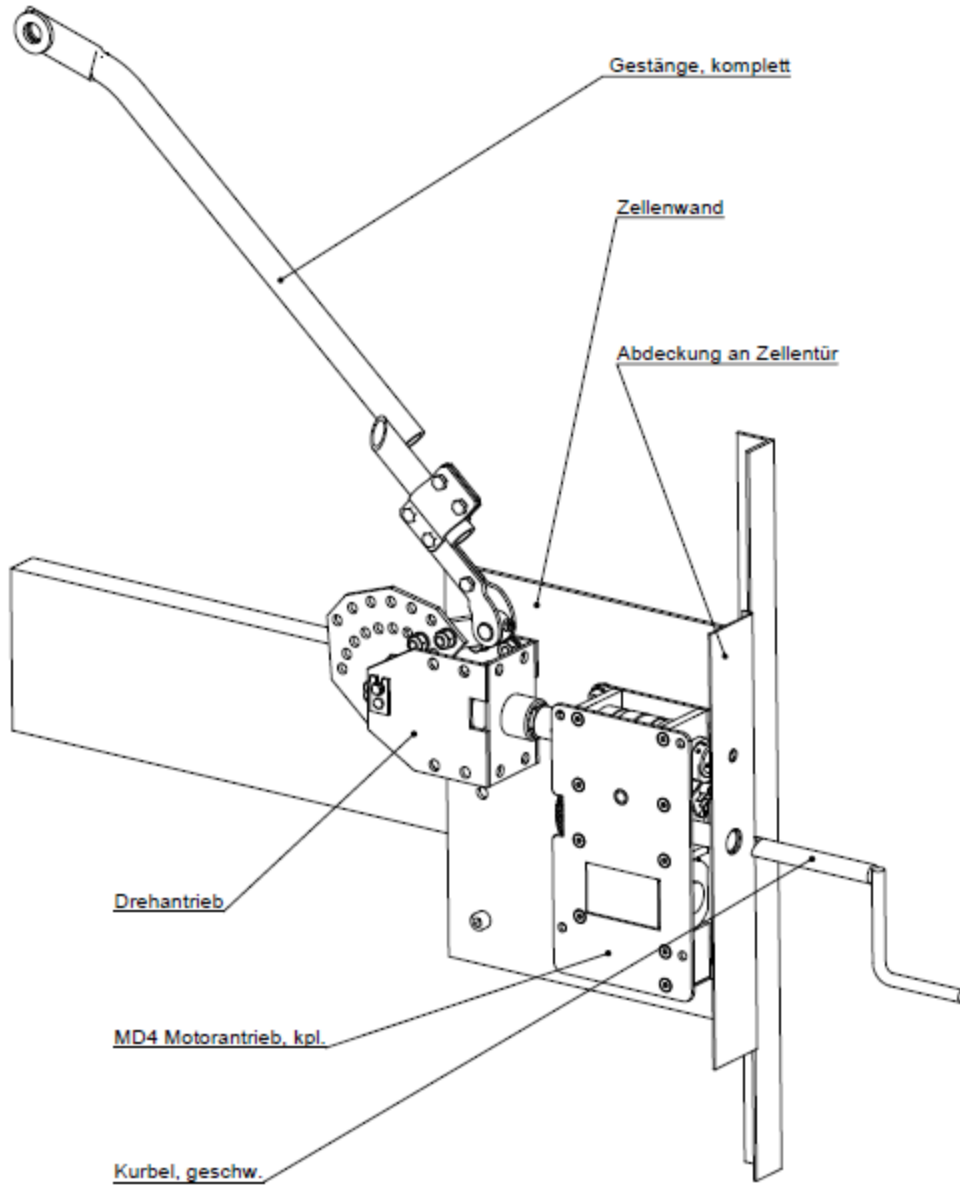
- K1, K2 Hilfsschütz (30, 4S)
- K3 Hilfsrelais 10r Meldung Endlage erreicht (nur, wenn erforderlich)
- S1 Endschiefer in Stellt. AUS nicht betätigt
- S2 Endschiefer in Stellt. AUS betätigt
- M Motor
- SA Drucktaster AUS
- SE Drucktaster BN

Steuerung durch Hilfsschütze mit Gegenstrombremsung
- Darstellung in Schaltstellung AUS -

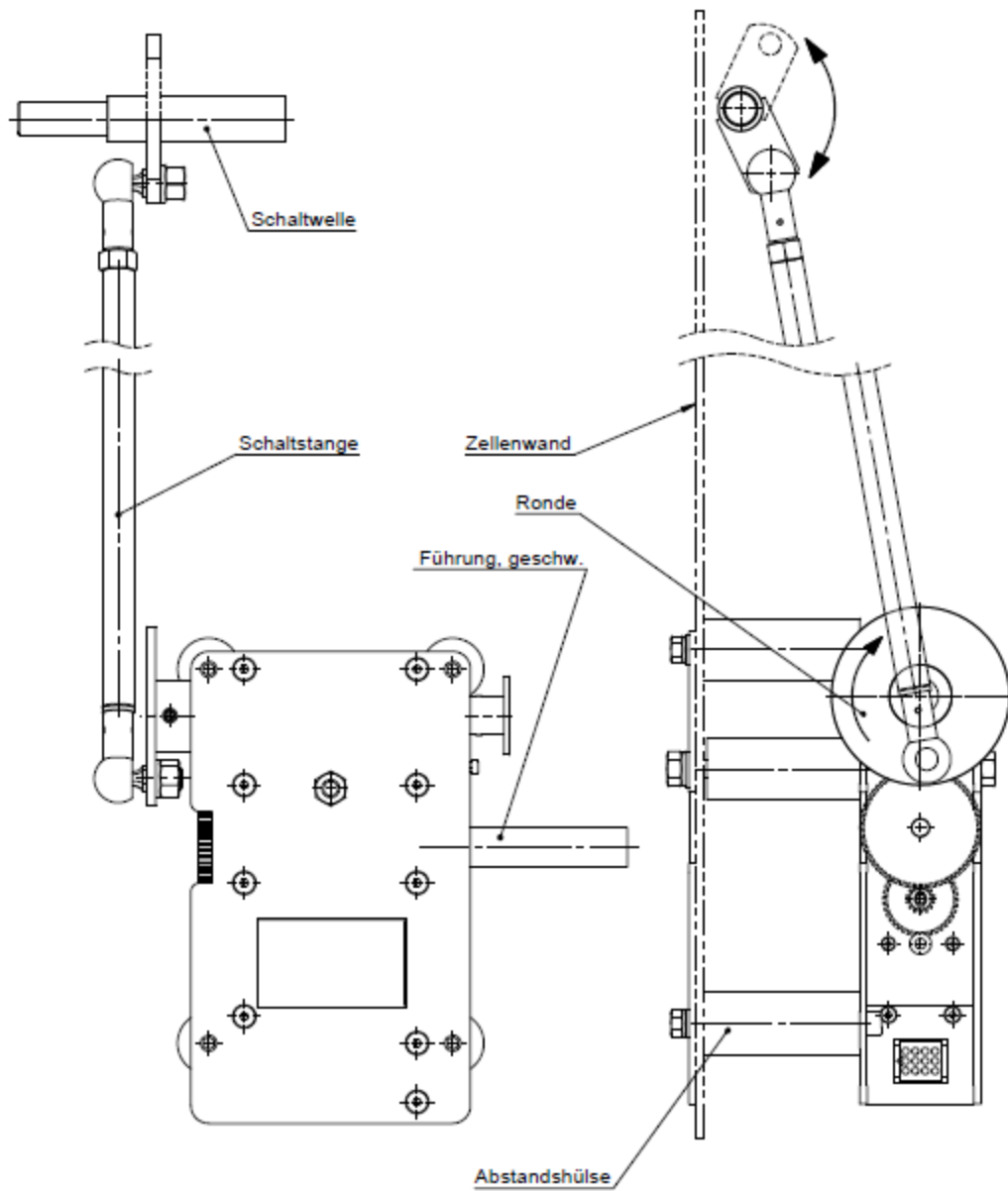


9. motor drive MD4

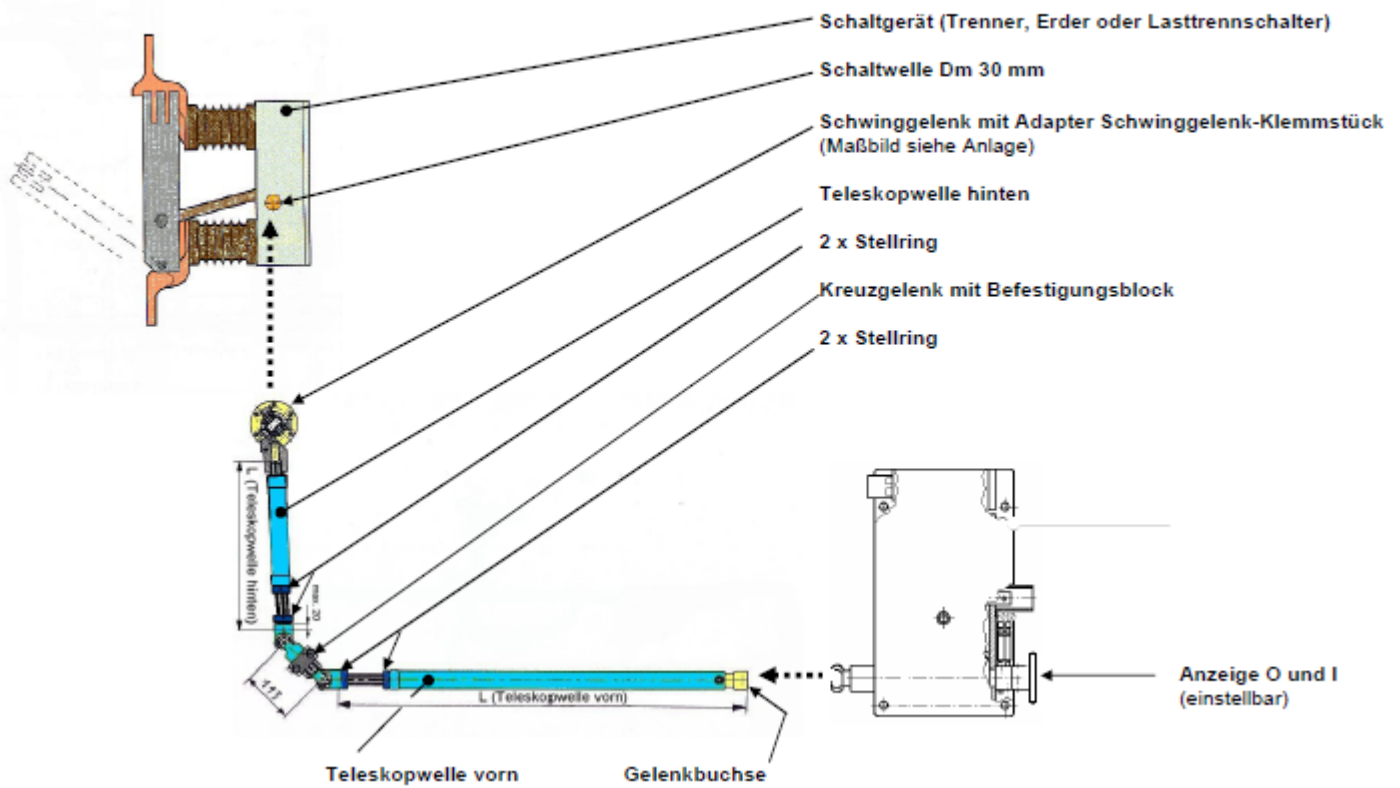
9.2 installation examples for motor drive



9. motor drive MD4



9. motor drive MD4





SZM
Schaltanlagen
Zubehör

Bad Muskau
ZUSCHA Boss

www.szm-gmbh.de



manufacturing site
Heideweg 2
02953 Bad Muskau
Phone: 035771 58-300
info@szm-gmbh.de

office Berlin
Erich-Steinfurth-Straße 6
10243 Berlin
Phone: 030 297705-192
info@szm-gmbh.de

service location NORTH
Industriestraße 30 a
21493 Schwarzenbek
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