





ELEKTROTECHNISCHE WERKE FRITZ DRIESCHER & SÖHNE GMBH

D-85366 MOOSBURG • TEL. +49 87 61 6 81-0 • FAX +49 87 61 68 11 37 http://www.driescher.com email: Driescher@aol.com



Plug-in lever drive SHA Clamping positions of switchgears and drives Universal mechanism u/v Stirrup-operated mechanism n/u D-Z-drives D-Z-drives with magnet interlocking Lever-operation mechanism for wall mounting Wall bearing with fulcrum crank D-drives Ring level mechanism Pulling eyes • Clamping cranks • Clamping rod heads Blocking lever • Box for D-drives • Shaft prolongation • Plug-in lever • Angle crank Linkage pipe • Insulating rod • Interconnecting linkage for D-drives Bearing pedestal • End bearing

Plug-in lever drives SHA

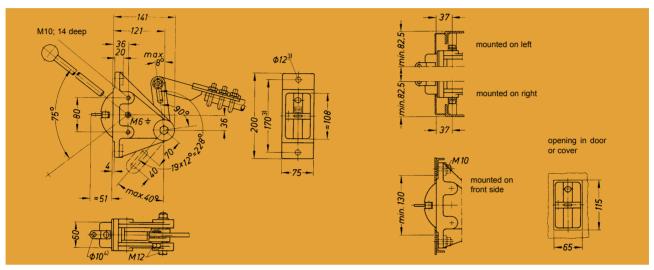
for the operation of indoor switchgears in medium voltage cubicle. The max. torque of the plug-in lever drives is 200 Nm.

The cranks are serrated on the side, 12° steps. The drive has a blocking lever and a removeable plug-in lever.

The operating crank is 16 x at 12° to adjust and is flexible for all rod position.

Included in delivery:

- 1 Plug-in lever (365 mm long) as well as
- 1 Joint bolt (ø 12 mm) in the crank drive.

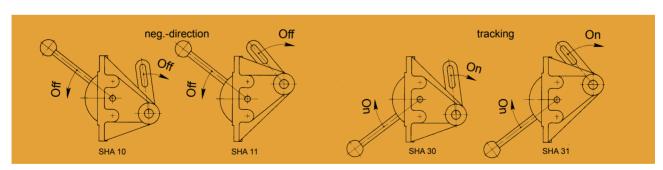


3) only when ordering for mounting on front side

4) in connection with lockering lever AZ4-24680 (see page 8) for protection with a padlock

	Part-	no.				
Type	Colour green1)	Colour red 2)	Weight 5)	Sense of	Mounting	Drawing-no.
	RAL 7032	RAL 3002	approx. kg	rotation		
SHA 10	774 41100	774 41600	3,58	negdirection	position of the adjustable	AZ 3-26932
SHA 30	774 43100	774 43600	3,58	tracking	tooth crank under driving middle	AZ 3-26932
SHA 11	774 42100	774 42600	3,58	negdirection	position of theadjustable	AZ 3-26932
SHA 31	774 44100	774 44600	3,58	tracking	tooth crank over driving middle	AZ 3-26932

¹⁾ for switchgear • 2) for earthing switch • 5) including plug-in lever, however without linkage rod and accessories



For the complete drive-situation we have 3 accessory-sets to choose from

- a) 1 clamping rod head with bearing bushing
 1 linkage rod 3/4", 1,5 m long with welded forked rod head and joint bolt
 1 clamping crank s₂ = 100 mm for switching shaft totat weight: approx. 8,0 kg
- b) 1 insulating rod 1080 mm long with joint bolt
 1 clamping crank s₂ = 100 mm for switching shaft total weight: approx. 5,7 kg

to **a)** and **b)** for another rodes, please look on page 15.

As special version also available with magnetic interlocking. We ask for your inquiry.

Clamping positions of switchgears and drives

Disconnecting and **load-break switches** in **ON**-position The connecting rod should form an acute angle to the clamping crank of the switching shaft; and an obtuse angle to the actuating crank (Fig. 1 and 1a)

Power circuit-breakers in OFF-position

The connecting rod should form an acute angle to the actuating crank, and to the clamping crank of the switching shaft, however, an obtuse angle (Fig. 2 and 2a)

Earthing switches in ON-position

• Power circuit-breaker

The connecting rod should form an acute angle to the actuating crank and an obtuse angle to the clamping crank of the earthing switch shaft (Fig. 3 to 4a)

Please avoid over dead-centre positions!!!

· Disconnecting and load-break switch

Fig. 1 (SHA 10) Fig. 2 (SHA 10) Fig. 2a (SHA 10)

Earthing switches

switching on from below towards the top On Fig. 3 (SHA 30) On Fig. 4 (SHA 30) Fig. 4a (SHA 30) Fig. 4a (SHA 30)

• Earthing switches

Universal-Drive U/v

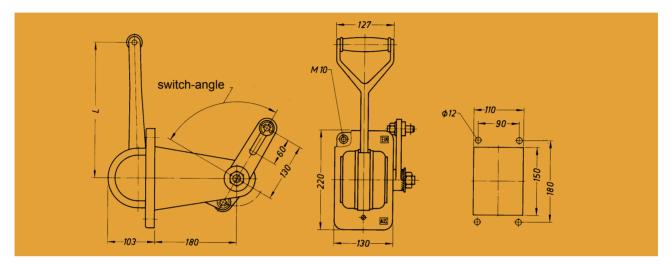
with stirrup-handle, suitable for manual operation and manual emergency operation of indoor switchgears; mainly for load-break switches and power circuit-breakers.

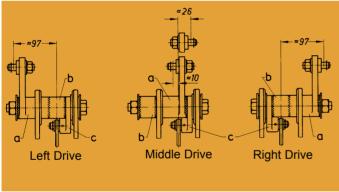
For manual emergency operation the drive is manufactured without dead-centre position and the stirrup-

handle is replaced by a plug-in lever.

The maximal torque of the universal-drive u/v is 500 Nm.

The turn of the crank drive in next to no time.





1) Weight including linkage rod and accessories

The cranks a and c as well as the connecting piece b are serrrated on the side, 12° steps.

Therefore, crank a can be adjusted about $30 \times 12^\circ$ concerning right and left drive, about $20 \times 12^\circ$ concerning middle drive and consequently can be adjusted to every linkage rod position.

Depending on requirement, crank a can be turned from the right - delivery ex works - to the left or to the middle.

Hints for crank positions according page 4.

The upperside drive will be delivered in grey (RAL 7032) and the cover in black (RAL 9005).

In the delivery are included:

- 1 flat clamping rod head with bearing bushing
- 1 linkage rod 3/4" 1,5 m long forked cover welded - with joint bolt
- 1 clamping crank s₂ = 100 mm for the switching shaft

For longer rodes, please look on page 15.

Part.no.	L	weight1) appros. kg	Drawing-no.
774 53300	300	17,70	AZ 3-15932
774 53400	400	18,20	AZ 3-15932

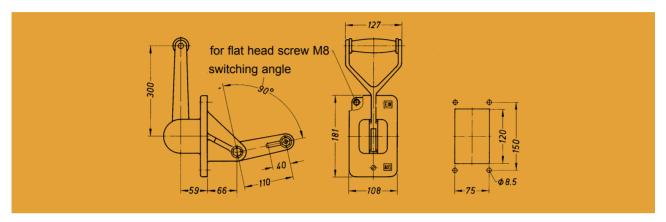
Stirrup-handle drive n/u

For the operation of disconnecting and load-break switches.

possibility of adjusting of 16 x 12° and therefore good adaptation to necessary linkage rod positions.

The max. torque of the Stirrup-handle Drive is 200 Nm. cranks serrated on the front side, 12° steps, through that

Hints for crank positions according to Fig. 1 page 4.



For the operation of disconnecting and load-break switches colour green RAL 6013, cover shell black RAL 9005.

1) Weight including linkage rod and accessories

In the delivery are included:

- flat clamping rod head with bearing bushing
- linkage rod 3/4" 1,5 m long forked cover plate welded - with joint bolt
- clamping crank s₂ = 100 mm for the switching shaft

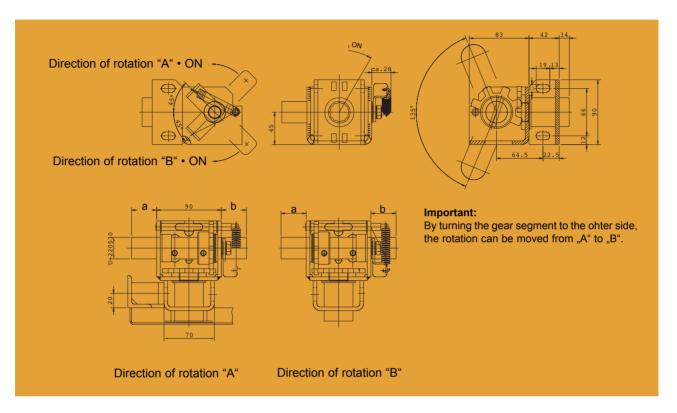
For longer rodes, please look on page 15.

Part-no.	Weight1) approx. kg	Drawing-no.
774 63000	9.50	Δ7 3-10400

D-Z-drive

For the operating of disconnecting and load-break in switchgears. The max. torque of the D-Z drives are 180 Nm.

Hints for crank positions according to page 4.



The upperside drive will be delivered galvanized.

In the delivery are included:

• 1 front fitting with I-O-sign

Operating lever with keys size 24 according page 14

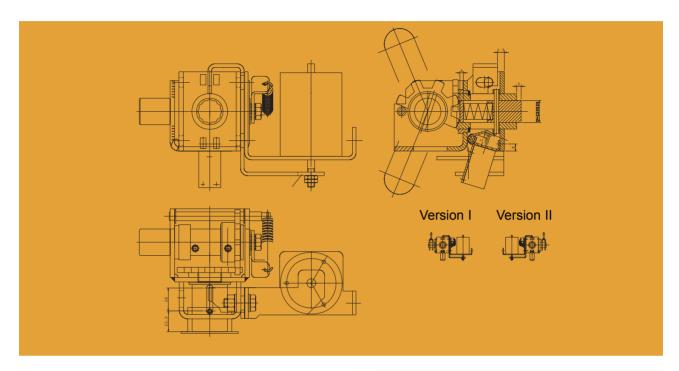
Check with clamping cranks and interconnecting linkage (made of GFK) ,page 13 and 15.

	Weight		Direction of		
Part-no.	approx. kg	Drawing-no.	rotation	а	b
720 40104	2,9	AZ 2-60473/1	Α	35	-
720 40105	2,9	AZ 2-60473/2	В	35	-
720 40106	2,9	AZ 2-60473/3	Α	-	35
720 40107	2,9	AZ 2-60473/4	В	-	35

D-Z-drives with magnet interlocking

For the operating of disconnecting and load-break in switchgears. The max. torque of the D-Z drives are 180 Nm.

Hints for crank positions according to page 4.



The upperside drive will be delivered galvanized.

In the delivery are included:

• 1 front fitting with I-O-sign

Operating lever with keys size 24 according page 14.

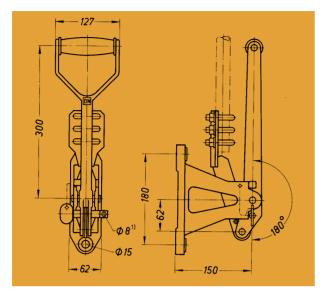
Check with clamping cranks and interconnecting linkage (made of GFK) ,page 13 and 15.



	Weight		Direction of	
Page-no.	approx. kg	Drawing-no.	rotation1)	Version
720 40141	7,1	AZ 2-91156/1	Α	
720 40142	7,1	AZ 2-91156/2	В	I
720 40143	7,1	AZ 2-91156/3	Α	II
720 40144	7,1	AZ 2-91156/4	В	II

¹⁾ Explantation for rotation according page 7

Lever-operation mechanism for wall mounting



1) Drill hole in lock bolt to interlock by a padlock

For the operating of disconnecting and load-break in Switchgears.

The upperside drive will be delivered in grey (RAL 7032)

In the delivery are included:

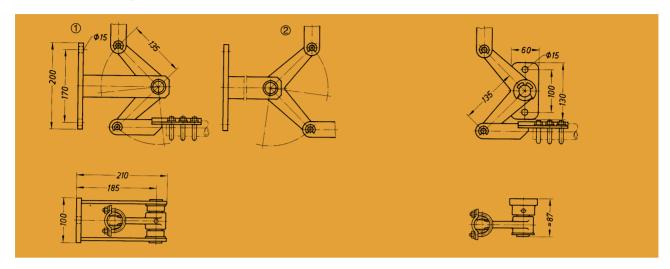
- flat clamping rod head
- linkage rod 3/4" 3 m long forked cover plate welded with joint bolt
- clamping crank s₂ = 100 mm for the switching shaft

Part-no.	Weight compl. approx. kg	Drawing-no.
774 25000	11 2	Δ7 4-1473

Wall bearing with fulcrum crank

• for rear mounting

for lateral mounting



For the operation of disconnecting switches and earthing switches mounted below:

- 1) by means of coupling drives
- 2) by means of plug-in or n/u-drives

For the operatin of earthing switches mounted ex above:

- 1) by means of plug-in or n/u-drives
- 2) by means of coupling drives

The upperside drive will be delivered galvanized.

In the delivery are included:

• 2 forked clamping rod heads (installation works)

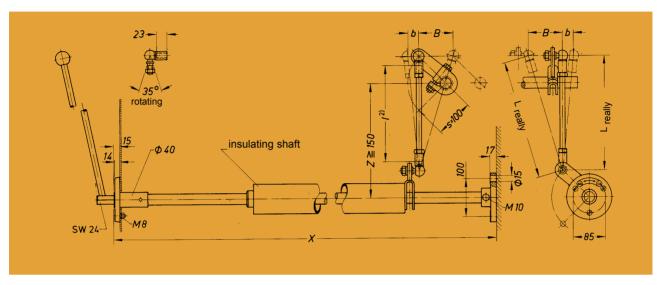
Weight approx.

	Part-no.	kg	Drawing-no.
for rear mounting	774 98100	6,80	AZ 3-16296
for lateral mounting	774 98200	5,00	AZ 4-46680

D-drive

For the operation of load-break switches and power circuit-breakers. The max. torque is 200 Nm.

For Z from 150 mm to 1200 mm. Bigger measures of Z on inquiry.



In the delivery are included:

- 1 shaft with actuating box, X = 1500 mm
- 1 insulating tube 550 mm long, with operating rind
- 1 end bearing
- 1 fitting on the front side with label ON OFF
- 1 plug-in lever with hexagon attachment SW 24
- 2 clamping cranks with angle joint
- 1 connection rod (standardised length) s. page 16

Part-no.	weight compl. approx. kg	Drawing-no.
774 31000	15.4	AZ 3-43530

1) only with crank-gauge s< 100; with s> 100 of the vertical linkage rod guide only diverge to B 2) length of linkage rod I = L minus 55 mm, an adjustment of L about + 12 mm is included in I

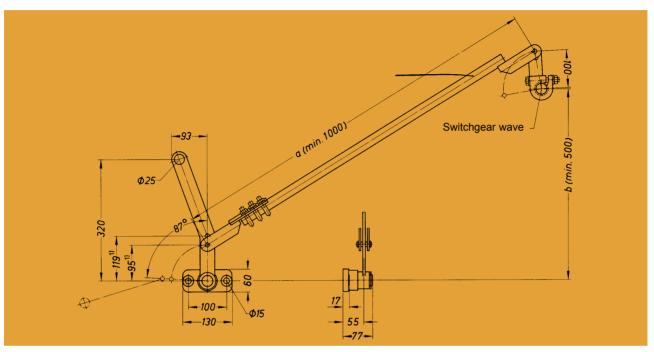
Ring-level mechanism

For the operation of all indoor disconnecting and earthing switches.

During the fixing of the lengths of the linkage rod (measure a) and the installation you have to take

care that the switching crank to the drive does not reach the dead-centre position.

The upperside drive will be delivered galvanized.



In the delivery are included:

- 1 forked clamping rod head with joint bolt
- 1 linkage rod 3/4" 1,5 m long forked cover plates tes welded - with joint bolt
- 1 clamping crank $s_2 = 100 \text{ mm}$ for switching shaft
- 1 connecting rode according page 16

impossible rodes according page 16

1) when hanging in the forked rod head at measure 95, the switching angle on t	he.
switching shaft is 90°, at measure 119 it is 110°.	

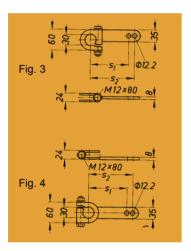
Part-no.	Weight compl. approx. kg	Drawing-no.
774 21000	7,10	AZ 4-46602

Fig. 1 M12×80 Signature of the second of t

Pulling eyes

for shaft diameter 30 mm, with hardened interior gearing.
Steel parts, except screws, washers and nuts, are dacrometed
1) for earthing switches additionally provided with red colour, please name when ordering

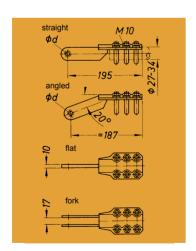
Type	Fig.	Part-no.	g	s	Weight approx kg.	Drawing-no.
eye-lever made of steel	1 ¹⁾	774 11180	6	180	0,60	AZ 4-9750
eye-lever made of steel	11)	774 11245	6	245	0,73	AZ 4-9750
eye-lever made of steel	1 ¹⁾	774 11320	6	320	0,88	AZ 4-9750
eye-lever made of steel	1 ¹⁾	774 11500	8	500	1,49	AZ 4-9750
eye-lever made of GFK	2	774 15180	-	180	0,60	AZ 4-42005
eye-lever made of GFK	2	774 15245	-	245	0,73	AZ 4-42005
eye-lever made of GFK	2	774 15320	-	320	0,87	AZ 4-42005
eye-lever made of GFK	2	774 15500	-	500	1,22	AZ 4-42005



Clamping cranks

for shaft diameter 30 mm, with hardened interior gearing galvanized, except screw, washers and nut.

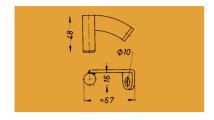
						Weight	Drawing-
Туре		Fig.	Part-no.	s ₁	s_2	approx.kg	no.
		3	774 11600	66	83	0,44	AZ 4-9602
Crank lug in the	g in the middle of the mping screw side	3	774 11601	83	100	0,48	AZ 4-9602
clamping so		3	774 11602	111	128	0,54	AZ 4-9602
		1 3	774 11603	158	175	0,65	AZ 4-9602
		1 4	774 11700	-	60	0,39	AZ 4-17137
Crank lug latera	opposide the	4	774 11701	66	83	0,44	AZ 4-17137
clamping so	clamping screw side	4	774 11702	83	100	0,48	AZ 4-17137
		4	774 11703	111	128	0,54	AZ 4-17137

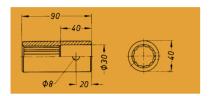


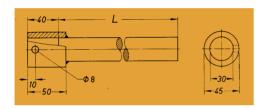
Clamping rod heads

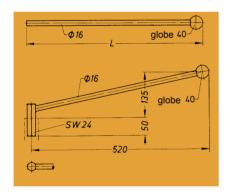
hot-galvanized

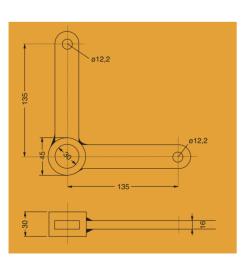
			Weight approx.	
Type	Fig.	ød	kg	Drawing-no.
straight, flat	775 71000	12,5	1,0	AZ 3-9609
straight, flat with bush	775 71011	12,2	1,0	AZ 3-9609
straight, fork	775 71200	12,5	1,1	AZ 3-9609
angled, flat	775 72000	12,5	1,0	AZ 3-14001
angled, fork	775 72200	12,5	1,1	AZ 3-14001











Locking lever for plug-in lever operation

galvanized

 Weight

 Part-no.
 approx. kg
 Drawing-no.

 641 09570
 0,13
 AZ 4-24680

Box for D-drives

galvanized

Weight
Part-no. approx. kg Drawing-no.
641 30560 0,5 AZ 4-41400

Shaft prolongation

galvanized

Part-no.	L	Weight approx. kg	Drawing-no.
641 36900	300	1,9	AZ 4-43851
641 09070	500	3,0	AZ 4-43851
641 38870	800	4,6	AZ 4-43851
641 39470	1000	5,8	AZ 4-43851
641 52480	2000	11,4	AZ 4-43851

Plug-in lever

galvanized

			vveigni	Diawing-
Туре	Part-no.	L	approx. kg	no.
straight for plug-in lever	774 91350	365	0,7	AZ 4-37694
straight for plug-in lever	774 91500	515	0,9	AZ 4-37694
with hexagon attachment for D-drives	774 92500	-	1,25	AZ 4-41399

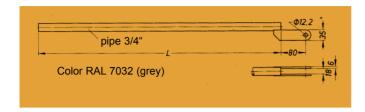
Fulcrum crank

galvanized

 Weight

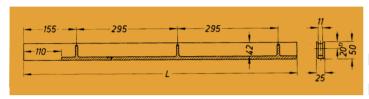
 Part-no.
 approx. kg
 Drawing-no.

 641 37450
 1,3
 AZ 4-46679



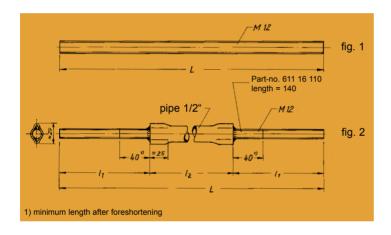
Linkage rod with forked cover plates

galvanized					
Part-no.	L	Weight approx. kg	Drawing-no.		
641 25650	1500	2,7	AZ 4-13157		
641 25660	2000	3,5	AZ 4-13157		
641 25670	2500	4,3	AZ 4-13157		
641 25680	3000	5,1	AZ 4-13157		



Insulating rod made of GFK

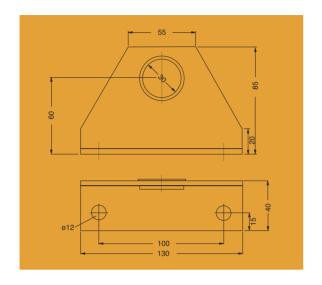
Part-no.	L	Weight approx. kg	Drawing-no.
452 35505	1080	1,40	AZ 3-20697
452 35506	1200	1,75	AZ 3-20697
452 65135	1600	2,30	AZ 3-20697



Connecting rod for D-drives

galvanized

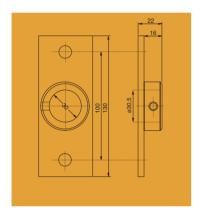
Fig.	Part-no.	L	I_1	I_2	for Z from - to bzw. "L" really from - to	Weight approx. kg	Drawing-no.
1	611 15170	350	-	-	150 - 405	0,34	AZ 4-43531
2	641 32830	510	120	270	405 - 565	0,82	AZ 4-43531
2	641 32840	670	120	430	565 - 725	1,00	AZ 4-43531
2	641 32850	830	120	590	725 - 885	1,22	AZ 4-43531
2	641 32860	990	120	750	885 - 1045	1,42	AZ 4-43531
2	641 32870	1150	120	910	1045 - 1205	1,62	AZ 4-43531



Bearing pedestal for waves ø 30 mm

galvanized

	Weight	
Part-no.	approx. kg	Drawing-no.
621 27140	0,4	AZ 3-46600



Endbearing

galvanized

	Weight	
Part-no.	approx. kg	Drawing-no.
641 37120	0,4	AZ 4-46604

Measures, weights, drawings and descriptions in this list are not binding and are subject to change without notice!

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