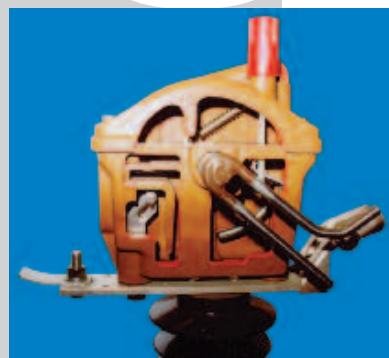
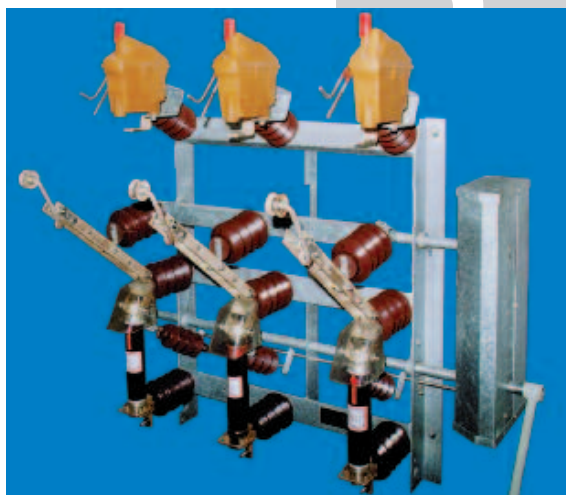


DRIESCHER
Outdoor - Switch-Disconnecter
FLa 15/6400, FLa 15/6410
and FLa 15/6410 SA

- Rated voltage
12 kV, 24 kV und 36 kV
- Rated current 400 A and 630 A
- 1-pole and 3-pole design



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DRIESCHER – Outdoor switch-disconnectors

in compliance with DIN EN 62271-103 VDE 0671-103

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- 3 Technical data, description of function, arcing chamber – section model
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- 6 Three-pole outdoor switch-disconnector FLa 15/6410 with fuse holders mounted at angle
- 6 Single-pole outdoor switch-disconnector FLa 15/6400
- 7 Three-pole outdoor switch-disconnector FLa 15/6410 SA with straight mounted fuse holders
- 8 Arrangement of actuators

General information

The outdoor switch-disconnector FLa 15/6400 and FLa 15/6410 (with fuse holders mounted below) have been developed for upright assembly.

The switches comply with the regulations as per DIN EN 62271-103 VDE 0671-103.

The principle design and mounting dimensions correspond to the outdoor disconnecting switches 6400 and 6410 as given in catalogue 751.

The arc-extinguishing device which is shunted in the ON position and is of the quick-make, quick-break type, has been adopted from the proven switch-disconnector FLa 15/60 (catalogue 762) which is used as a line sectionalizer. All arcing chambers are filled at the factory with approx. 0.5 litres of **Shell Diala D** switchgear oil.

The main application for the switch-disconnectors FLa 15/6400 and FLa 15/6410 is as feeder switch for pole-mounted transformer stations. The base frames are welded from sectional steel and the operating shafts which are mounted in bronze bearings are hot-galvanized. All insulators used in the construction are made of cycloaliphatic cast resin (catalogue 712).

All contacts with flat terminations in accordance with DIN 46206 and double contact blades are made of electrolytic copper are silver-plated and form loopless current paths.

The fuse holder contacts are designed to take HV-HBC (high-voltage, high breaking capacity fuses) (catalogue 791) in accordance with DIN 43625.

Adequate cross sections and suitable contact pressures mean that the switches still function easily and properly after many years of operation.

Outdoor operating mechanisms as described in our catalogue 776 are available for operating switch-disconnectors and earthing switches.

Compressed-air operating mechanisms and fully enclosed signalling switches (protection type IP 55) can also be added, as well as motor-operated actuation. Connecting screws, washers and spring washers are of stainless steel.

The short-circuit strength specified in the following table applies to switch-disconnectors as well as the earthing switches mounted on the switches.

Note: Switch-disconnectors with porcelain insulators manufactured from 1965 onwards can be converted to cast resin insulators. It is also possible to replace individual insulators. Please ask for the relevant literature.

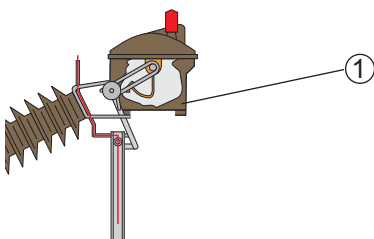
DRIESCHER - Outdoor switch-disconnectors FLa

Technical data

			Rated voltage 12 kV		Rated voltage 24 kV		Rated voltage 36 kV	
			FLa 15/6400	FLa 15/6410 FLa 15/6410 SA	FLa 15/6400	FLa 15/6410 FLa 15/6410 SA	FLa 15/6400	FLa 15/6410 FLa 15/6410 SA
Rated current	I_r	A	630	400	630	400	630	400
Frequency rating	f_r	Hz	50	50	50	50	50	50
Rated short time current	I_k	kA	25	25	25	25	25	25
Rated peak withstand current	I_p	kA	63	63	63	63	63	63
Rated short-circuit making current	I_{ma}	kA ¹⁾	10	10	10	10	10	10
Rated mainly active load breaking current	I_1	A	630	630	630	630	400	400
Rated distribution line closed-loop breaking current	I_{2a}	A	400	400	400	400	400	400
Rated no-load transformer breaking current	I_3	A	50	50	50	50	10	10
Rated cable-charging breaking current	I_{4a}	A	11	11	11	11	11	11
Rated earth fault breaking current	I_{6a}	A	56	56	56	56	30	30
Nominal cable-charging breaking current under earth fault	I_{6b}	A	-	-	-	-	32	32

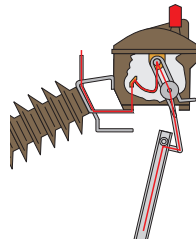
1) by draughty manual operation

Description of function

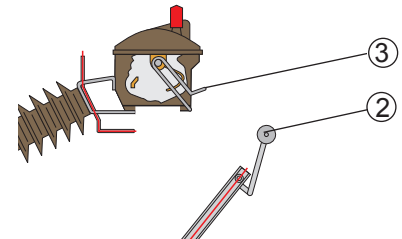


Current flow, closed position, switching position and opening operation are shown in the above illustrations.

The actuating arm attached to the double contact blade has two concave hemispheres 2 at the end. The arcing chamber 1 has an auxiliary counter-contact in the form of a stainless steel forked piece 3.

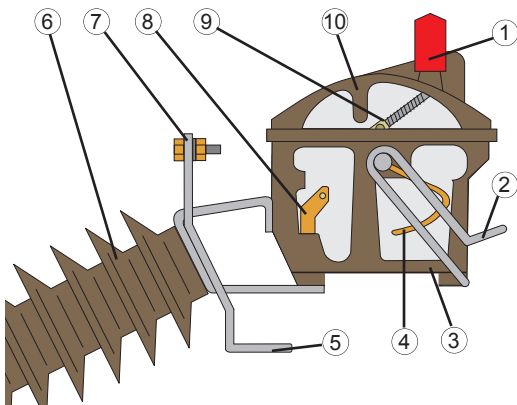


When the switch is actuated this fork piece is forcibly driven by the contact arm during both making and breaking operations. A high-speed operating mechanism connected in the centre of the arcing chamber closes and disconnects the contacts independently of the speed of manual operation.



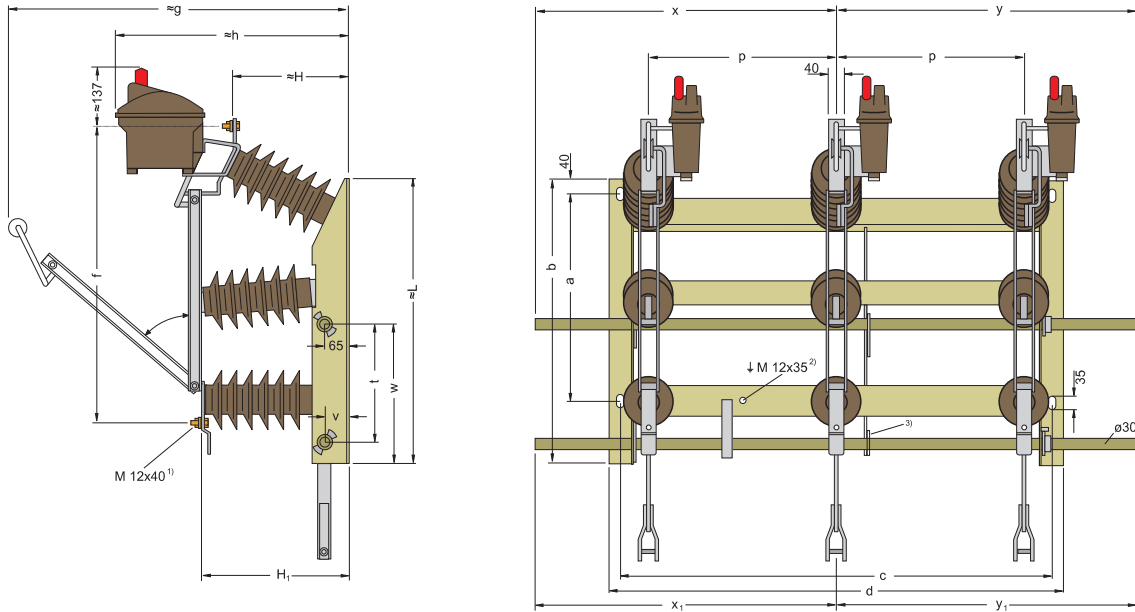
The arcing chambers are shunted.

Section model of arcing chamber



- ① Filler screw with dipstick and vent
- ② Fork piece (of stainless steel)
- ③ Lower section of arcing chamber (sectional view)
- ④ Switching pin
- ⑤ Main contact
- ⑥ Cast resin insulator
- ⑦ Connecting rail with screw
- ⑧ Secondary contact
- ⑨ Toggle mechanism (rapid make and break)
- ⑩ Upper section of arcing chamber (sectional view)

3-pole outdoor switch-disconnector FLa 15/6400



- 1) Hex head bolt (caulked) with nut, washer and spring washer
- 2) Hex head bolt with screw, washer and spring washer
- 3) Support bearing for earthing switch shaft (only for 36 kV)

• without earthing switch

Rated voltage kV	Rated current A	Part-no.	p	a	b	c	d	f	≈g	≈h	≈H	H ₁	w	x	y	Weight approx. kg	Drawing-no.
12	630	763 34002	400	500	710	950	1010	741	795	540	261	322	360	700	700	85	FT 3-44085
24	630	763 64003	500	550	760	1150	1210	793	905	620	311	392	375	800	800	104	FT 3-44085
36	630	763 94004	700	750	960	1550	1610	1044	1068	699	390	472	450	950	950	147	FT 3-44085

• with earthing switch

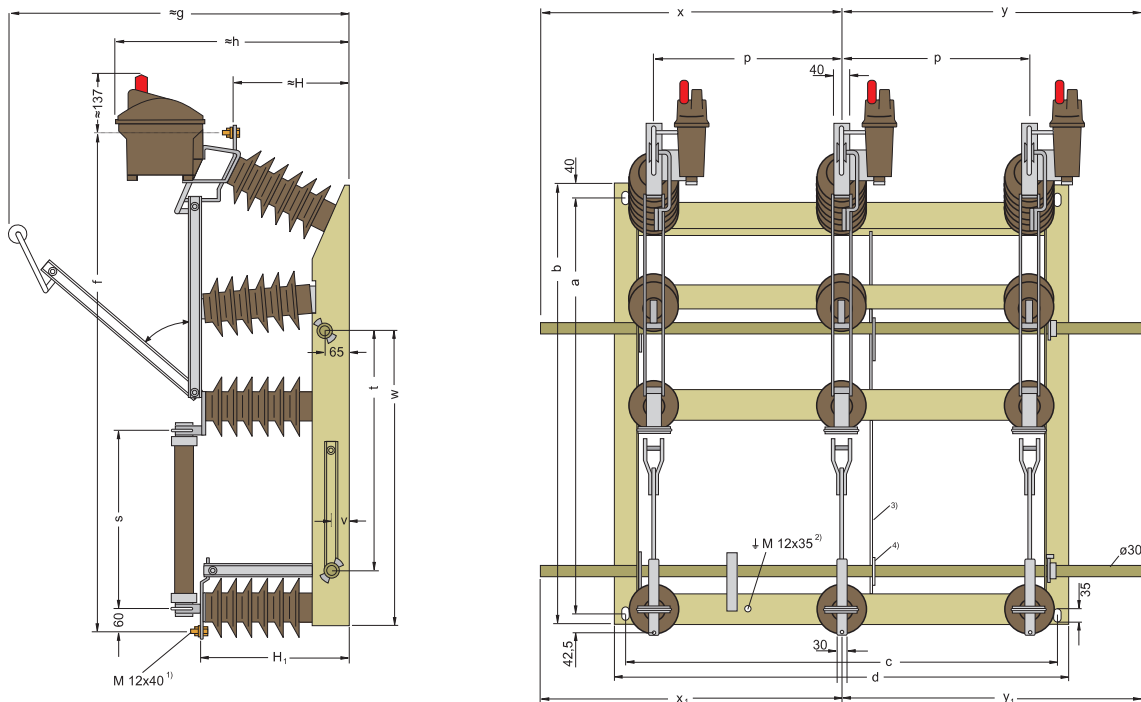
Rated voltage kV	Rated current A	Part-no.	p	≈L	t	v	x ₁	y ₁	Weight approx. kg	Drawing-no.
12	630	763 34502	400	887	300	75	700	700	98	FT 3-44085
24	630	763 64503	500	1017	315	65	800	800	119	FT 3-44085
36	630	763 94504	700	1297	390	65	950	950	165	FT 3-44085

for missing dimensions refer to table above

Equipped with positive mechanical locking between disconnector and earthing switches, auxiliary switches, motor-operated mechanism and compressed-air operating mechanism (catalogue 776) only if ordered additionally.

3-pole outdoor switch-disconnector FLa 15/6410

with fuse holders mounted upright below for HV-HBC fuses of up to 200 A rated current



- 1) Hexagon head bolt (caulked) with nut, washer and spring washer
- 2) Hexagon head bolt with nut, washer and spring washer
- 3) Strut (only in 36 kV version)
- 4) Support bearing for earthing switch shaft (only for 36 kV)

• without earthing switch

Rated voltage kV	Rated current A	Part-no.	p	a	b	c	d	f	≈g	≈h	≈H	H ₁	w	x	y	Weight approx. kg	Drawing-no.
12	400	763 26002	400	905	967	950	1010	1128,5	795	540	261	322	617	700	700	108	FT 3-44086
24	400	763 56003	500	1105	1167	1150	1210	1330,5	905	620	311	392	782	800	800	133	FT 3-44086
36	400	763 86004	700	1400	1462	1550	1610	1676,5	1068	699	390	472	952	950	950	182	FT 3-44086

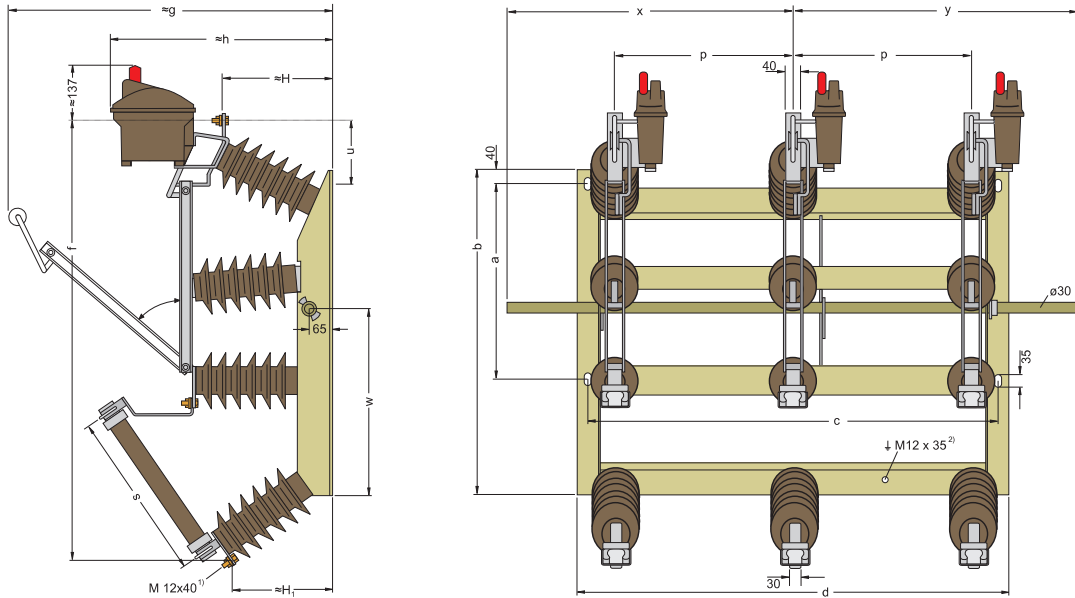
• with earthing switch

Rated voltage kV	Rated current A	Part-no.	p	s	t	v	x ₁	y ₁	Weight approx. kg	Drawing-no.		
12	400	763 26502	400	325	487,5	75		700	700	121	FT 3-44086	
24	400	763 56105	500	475	632,5	65	for missing dimensions refer to table above		800	800	148	FT 3-44086
36	400	763 86504	700	570	802,5	65		950	950	200	FT 3-44086	

Equipped with positive mechanical locking between load-break and earthing switches, auxiliary switches, motor-operated mechanism and compressed-air operating mechanism (catalogue 776) only if ordered additionally.

3-pole outdoor switch-disconnector FLa 15/6410

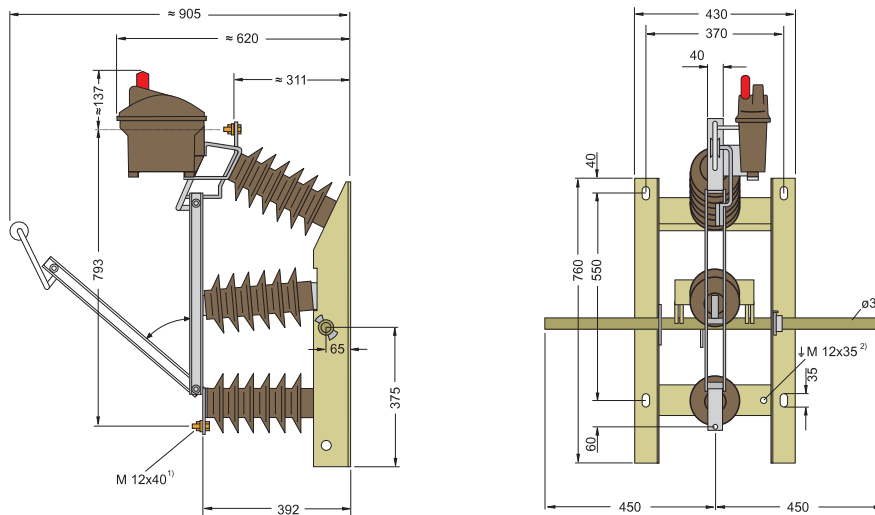
with fuse holders mounted below and inclined at an angle, for HV-HBC fuses up to 200 A rated current



- 1) Hexagonal screw (caulked) with nut, washer and spring washer
- 2) Hexagonal screw with nut, washer and spring washer

Rated voltage kV	Rated current A	Part-no.	p	a	b	c	d	f	≈g	≈h	≈H	H ₁	u	s	w	x/y	Weight approx. kg	Drawing-no.
12	400	763 28002	400	500	762	950	1010	1045	795	540	261	218	181	325	412	700	81	FT 3-28761
24	400	763 58003	500	550	915	1150	1210	1235	905	620	311	285	183	475	530	800	95	FT 3-28761
36	400	763 88004	700	750	1190	1550	1610	1582	1068	699	390	346	234	570	680	950	142	FT 3-28761

1-pole outdoor switch-disconnector FLa 15/6400



- 1) Hexagonal screw (caulked) with nut, washer and spring washer
- 2) Hexagonal screw with nut, washer and spring washer

Rated voltage kV	Rated current A	Part-no.	Weight approx. kg	Drawing-no.
24	630	763 62 001	43	FT 4-21504

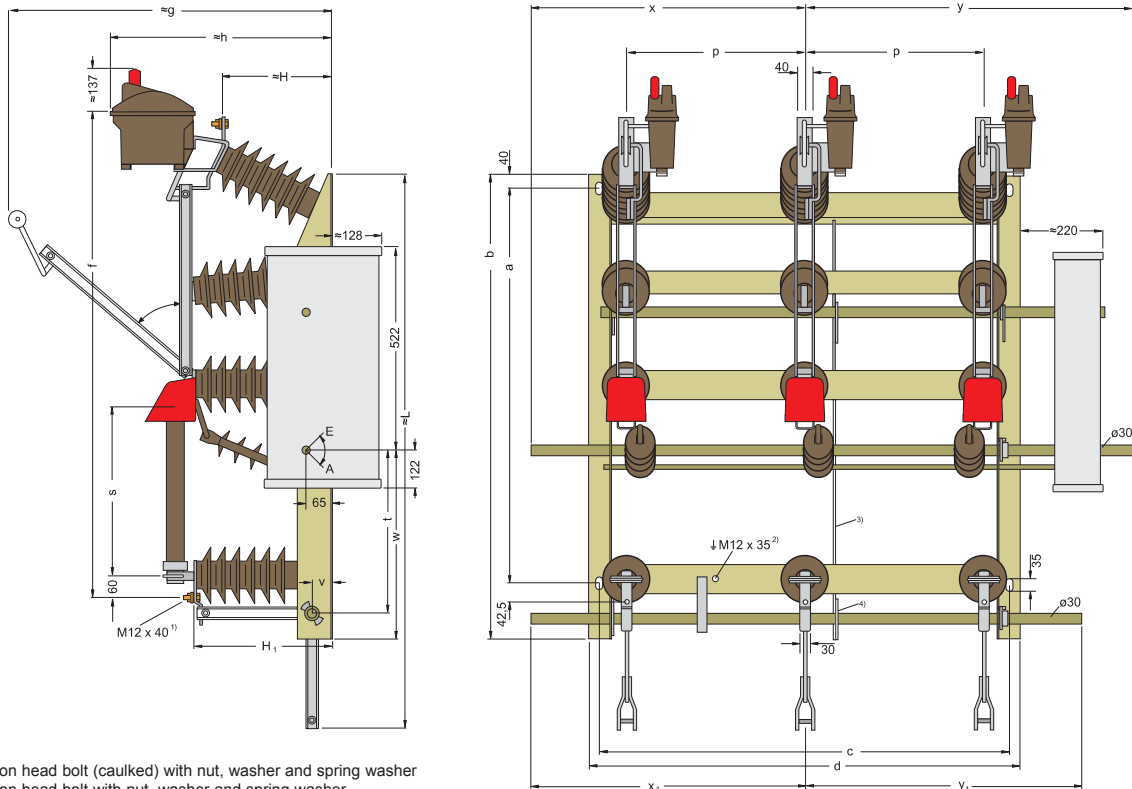
Equipped with auxiliary switches, motor-operated mechanism and compressed-air operating mechanism (catalogue 776) only if ordered additionally.

3-pole outdoor switch-disconnector FLA 15/6410 SA

with fuse holders mounted upright below for pin-operated HV-HBC fuses of up to 200 A rated current

The SA special version of the outdoor fused switch-disconnector FLA 15/6410 which has been well-proven over decades under very versatile operating conditions, has a disconnecting energy storage mechanism which carries out all-pole interruption of the switch if a HV-HBC fuse operates (with a tripping impact force of 120 N). It is therefore possible to also benefit **from the advantages of the HV-HBC fuses** in outdoor applications as well. The energy storage mechanism (patent application filed) is designed in such a way that no additional effort has to be applied when manually operated using the hand crank.

Following a disconnection through operation of the fuse (SA) the stored energy mechanism is tensioned in the OFF position after the return of the operating mechanism. After changing the fuse and switching on, the switch is ready to interrupt again. Stored energy mechanism and interrupting mechanism are securely housed in a hot galvanised steel plate housing which is also vented. Transparent covers protect the release mechanism at the upper contact clips of the HV-HBC fuses respectively. The bearings of the operating, switching and tripping shafts are maintenance free and therefore require no lubrication.



- 1) Hexagon head bolt (caulked) with nut, washer and spring washer
- 2) Hexagon head bolt with nut, washer and spring washer
- 3) Strut (only in 36 kV version)
- 4) Support bearing for earthing switch shaft (only for 36 kV)

• without earthing switch

Rated voltage kV	Rated current A	Part-no.	p	a	b	c	d	f	≈g	≈h	≈H	H ₁	w	x	y	Weight approx. kg	Drawing-no.
12	400	763 26910	400	905	1087	950	1010	1128,5	795	540	261	322	367	700	815	113	FT 3-45650
24	400	763 56910	500	1105	1297	1150	1210	1330,5	905	620	311	392	532	800	915	151	FT 3-45650
36	400	763 86920	700	1400	1592	1550	1610	1676,5	1068	699	390	472	702	965	1115	203	FT 3-45650

• with earthing switch

Rated voltage kV	Rated current A	Part-no.	p	s	t	v	≈L	x ₁	y ₁	Weight approx. kg	Drawing-no.
12	400	763 26911	400	325	307	75	1274	700	700	127	FT 3-45650
24	400	763 56911	500	475	472	65	1554	800	800	168	FT 3-45650
36	400	763 86921	700	570	642	65	1929	950	950	229	FT 3-45650

for missing dimensions refer to table above

Equipped with auxiliary switches only when additionally ordered.

Arrangement of operating mechanisms

for outdoor switch-disconnector FLa 15/6400 and FLa 15/6410 or outdoor switch-disconnector 6400 and 6410

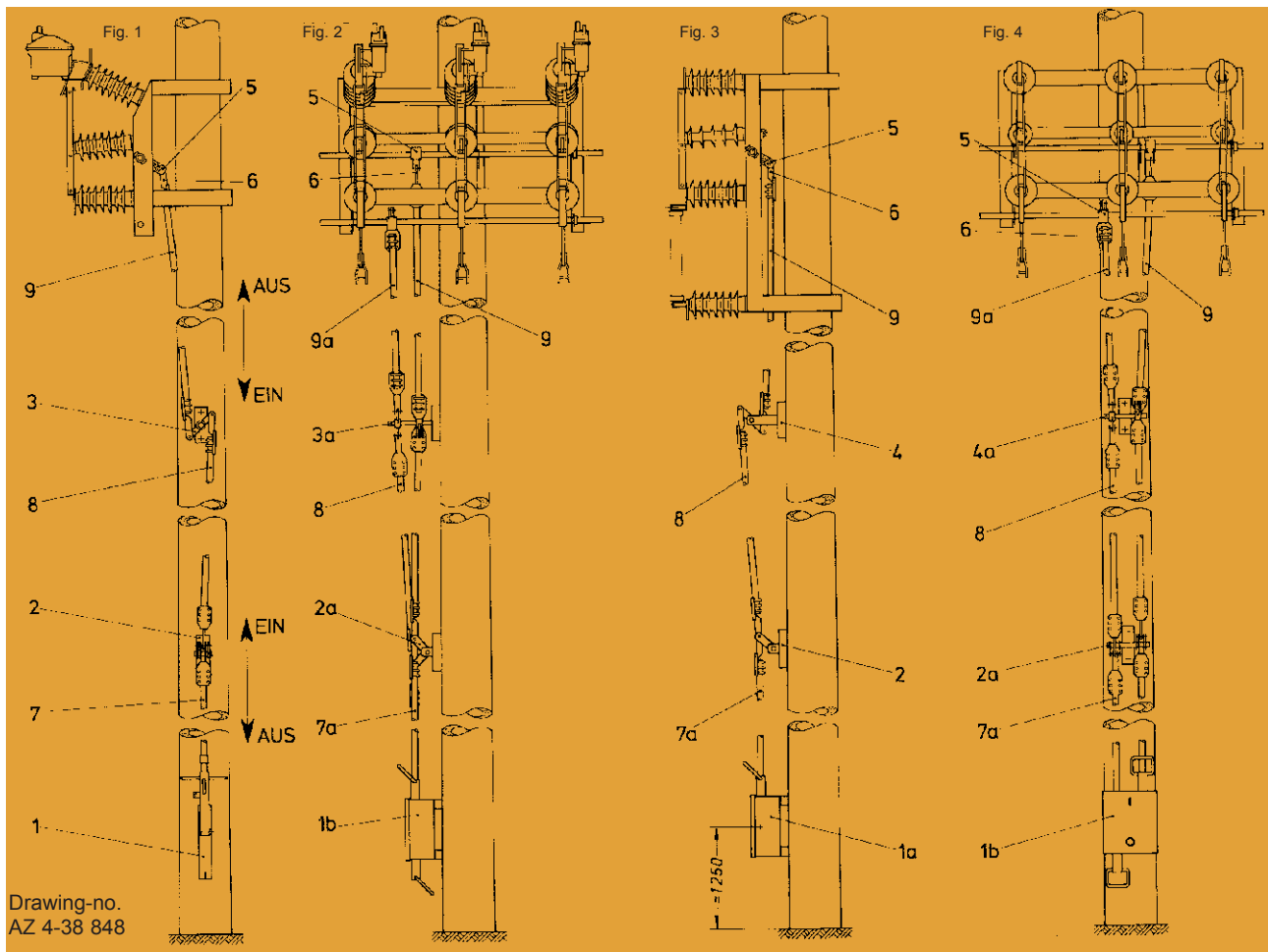


Fig. 1 Switch-disconnector FLa15/6400 with single operation
 Fig. 2 Switch-disconnector FLa15/6400 with earthing switch mounted below, with double operating mechanism
 Fig. 3 Disconnecting switch 6410 with fuse holders mounted below, with single operating mechanism
 Fig. 4 Disconnecting switch 6400 with earthing switch mounted below, with double operating mechanism

- Item 1 L-operating mechanism AZ 4-10 700, stroke 140 mm¹⁾
 Item 1a Single box-type operating mechanism AZ 4-7 530/1, stroke 110 or 140 mm
 Item 1b Double box-type operating mechanism AZ 4-7 530/22)
 Item 2 Single intermediate bearing AZ 3-15 936/1
 Item 2a Double intermediate bearing AZ 3-15 936/2
 Item 3 Single reversible bearing AZ 3-17 131/1

- Item 3a Double reversible bearing AZ 3-17 131/2
 Item 4 Single reversible bearing AZ 3-17 130/1
 Item 4a Double reversible bearing AZ 3-17 130/2
 Item 5 Forked clamping crank AZ 3-9 610/1 (gauge from 73 to 132.5 mm; hole matrix 8.5 mm)
 Item 6 Flat stub head AZ 3-9 610/7 (with link bush)
 Item 7 Lower linkage rod, with thread
 Item 7a Lower linkage rod, with bearing bush
 Item 8 Linkage rod
 Item 9 Upper linkage rod for disconnecting switch or load-break switch
 Item 9a Upper linkage rod for earthing switch
- 1) Conversion to 110 mm stroke possible
 2) Stroke adjustable to 110 mm and 140 mm respectively.

Dimensions, weights, diagrams and descriptions in this brochure are non-binding. Subject to change without notice.

switching • electricity • safely

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