

DRIESCHER - Outdoor Disconnectors, Earthing devices, Fuse holders

- Rated voltage U_r
12 kV, 24 kV and 38,5 kV
- Rated current I_r
400 A, 630 A, 1600 A, 2500 A
and 4000 A



FTTr

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DRIESCHER - Outdoor Disconnectors, Earthing devices and Fuse holders

- 2 General, Operating conditions, Technical description
- 3 3-pole Outdoor - Earthing devices FES ; (U_r 12 kV, 24 kV and 38,5 kV)
- 5 3-pole Outdoor - Disconnectors FTr 12-..... ; (U_r 12 kV)
- 7 3-pole Outdoor - Disconnectors FTr 24-..... ; (U_r 24 kV)
- 10 3-pole Outdoor - Disconnectors FTr 38,5-..... ; (U_r 38,5 kV)
- 13 3-pole Outdoor - Fuse-Disconnectors FTr-400-20-SU ; (U_r 24 kV and 38,5 kV)
- 14 1-pole Outdoor - Disconnectors FTr ..-630-20-1 a. FTr 24-1600-40-1; (U_r $12/\sqrt{3}$ kV, $24/\sqrt{3}$ kV a. $36/\sqrt{3}$ kV)
- 16 1-pole Outdoor Fuse-holders for h.v.h.b.c. fuses with rated current of 200 A
- 17 3-pole Outdoor Fuse-holders for h.v.h.b.c. fuses with rated current of 200 A
- 18 Outdoor Universal Motor drive type UM 90
- 19 Arrangement of drives for Outdoor Disconnector
- 20 Examples mounted on motor drives

General

The 1- and 3-pole **Outdoor Disconnectors FTr** are applicable for a rated voltage range of 12 kV to 38,5 kV and a rated current range from 400 A to 4000 A. The rated short time current upto 50 kA for a duration of 3s depending on the type has been tested.

The 3-pole **Earthing Devices FES** are useable for a rated voltage range of 12 kV to 38,5 kV.

A rated short time current up to 63 kA is depending

on type specified.

All switches are type-tested according to EN 62271-102 and are suitable either for vertical mounting (90° operating angle) or horizontal mounting (110° operating angle).

For each switch an instruction manual for transportation, mounting and commissioning is included. This instruction manual should be strictly followed.

Operating conditions

Installation can be carried out at heights of up to 1000 m above sea level.

The switches are designed for normal operating conditions according to IEC 62271-1.

According to this the following limiting values applies:

Ambient temperature:

Peak value of the ambient temperature +40°C

Average value over 24 hours +35°C

Min. value of the ambient temperature -25°C

(class "minus 25 Outdoor")

Technical description

General

The disconnectors and earthing devices are able to carry its rated short time and rated withstand current according to the data as the type plate. The base frames of the switches are hot-dip galvanized. The main contact system is made of electrolytic copper and the surface is silver plated acc. to QTL 0200.

Rustproof pressure springs maintain the required contact force over the whole mechanical life.

Equipments

Basically all DRIESCHER disconnectors and earthing devices are equipped with a continuous operating shaft ($\varnothing=30$ mm).

This enables the optional mounting of the drive on the left or right side.

The disconnector switches with a rated current of 2500 A and more, have contact elements with self lubricating coat silver-graphite on the impact side.

DRIESCHER - 3-pole Outdoor Earthing Devices

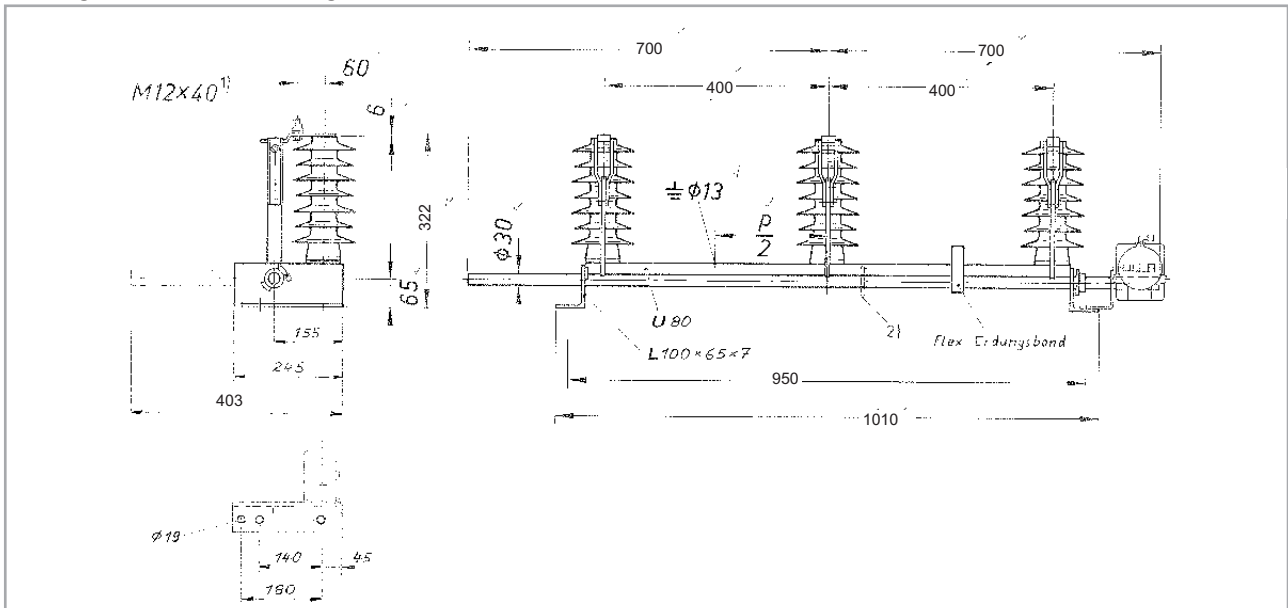
3-pole Outdoor Earthing Devices Type FES 12-.. ; (Ur 12 kV)

Type		FES 12-20	FES 12-31,5	FES 12-63
Rated voltage	U_r	12 kV	12 kV	12 kV
Rated frequency	f_r	50 Hz	50 Hz	50 Hz
Rated short time current	I_k	20 kA	31,5 kA	63 kA
Rated duration of short-time circuit	t_k	3 s	3 s	1 s
Rated peak withstand current	I_p	50 kA	80 kA	160 kA
Rated impulse withstand voltage	U_p			
- Phase to Earth		75 kV	75 kV	75 kV
Rated power frequency withstand voltage	U_d			
- Phase to Earth		28 kV	28 kV	28 kV
Weight approx.		31 kg	33 kg	38 kg
Pollution degree of the insulator		PD 3	PD 3	PD 3
Electrical life		E0	E0	E0
Drawing no.		FT3-44202/1	FT3-108395	FT3-44203/1
Part no.		2-75314304	2-75314400	2-75314604

Accessories: • auxiliary switch
• motor drive UM 90

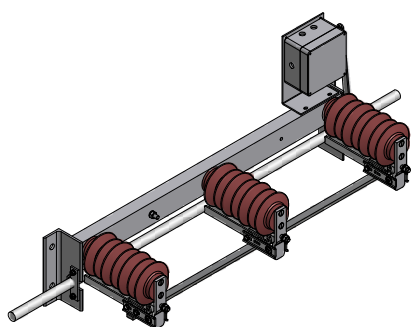
All switches are available with higher pollution degree on request!

Drawing for FES 12-20 / Drawing no. FT3-44202/1



DRIESCHER - 3-pole Outdoor Earthing Devices

3-pole Outdoor Earthing Devices Type FES 24-.. ; (Ur 24 kV)



FES 24-31,5

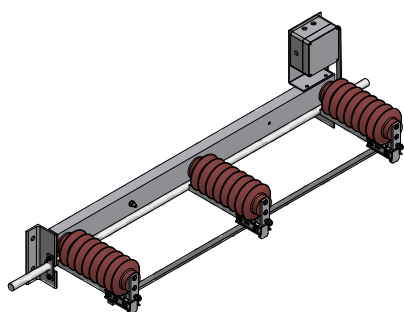
Type		FES 24-20	FES 24-31,5	FES 24-63
Rated voltage	U_r	24 kV	24 kV	24 kV
Rated frequency	f_r	50 Hz	50 Hz	50 Hz
Rated short time current	I_k	20 kA	31,5 kA	63 kA
Rated duration of short-time circuit	t_k	3 s	3 s	1 s
Rated peak withstand current	I_p	50 kA	80 kA	160 kA
Rated impulse withstand voltage	U_p			
- Phase to Earth		125 kV	125 kV	125 kV
Rated power frequency withstand voltage	U_d			
- Phase to Earth		50 kV	50 kV	50 kV
Weight approx.		37 kg	46 kg	49 kg
Pollution degree of the insulator		PD 3	PD 3	PD 3
Electrical life		E0	E0	E0
Drawing no.		FT3-44202/5	FT3-108050	FT3-44203/5
Part no.		2-75344305	2-75344405	2-75344605

Accessories:

- auxiliary switch
- motor drive UM 90

All switches are available with higher pollution degree on request!

3-pole Outdoor Earthing Devices Type FES 38,5-.. ; (Ur 38,5 kV)



FES 38,5-31,5

Type		FES 38,5-20	FES 38,5-31,5
Rated voltage	U_r	38,5 kV	38,5 kV
Rated frequency	f_r	50 Hz	50 Hz
Rated short time current	I_k	20 kA	31,5 kA
Rated duration of short-time circuit	t_k	3 s	3 s
Rated peak withstand current	I_p	50 kA	80 kA
Rated impulse withstand voltage	U_p		
- Phase to Earth		180 kV	180 kV
Rated power frequency withstand voltage	U_d		
- Phase to Earth		80 kV	80 kV
Weight approx.		56 kg	65 kg
Pollution degree of the insulator		PD 3	PD 3
Electrical life		E0	E0
Drawing no.		FT3-44202/9	FT3-108051
Part no.		2-75374307	2-75374408

Accessories:

- auxiliary switch
- motor drive UM 90

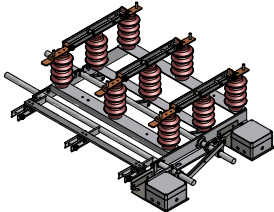
All switches are available with higher pollution degree on request!

DRIESCHER - 3-pole Outdoor Disconnectors

3-pol. Outdoor Disconnecter Type FTr 12-....-.. ; (Ur 12 kV)

Type		FTr 12-630-25	FTr 12-1600-40	FTr 12-2500-40	FTr 12-4000-40
Rated voltage	U_r	12 kV	12 kV	12 kV	12 kV
Rated frequency	f_r	50 Hz	50 Hz	50 Hz	50 Hz
Rated current	I_r	630 A	1600 A	2500 A	4000 A
Rated short time current	I_k	25 kA	40 kA	40 kA	40 kA
Rated duration of short-time circuit	t_k	3 s	3 s	3 s	3 s
Rated peak withstand current	I_p	63 kA	100 kA	100 kA	100 kA
Rated impulse withstand voltage	U_p				
- Phase to Earth		75 kV	75 kV	75 kV	75 kV
- Across the Open Gap		85 kV	85 kV	85 kV	85 kV
Rated power frequency withstand voltage	U_d				
- Phase to Earth		28 kV	28 kV	28 kV	28 kV
- Across the Open Gap		32 kV	32 kV	32 kV	32 kV
Weight approx.		45 kg	65 kg	100 kg	140 kg
Mechanical life		M2	M2	M1	M1
Pollution degree of the insulator		PD 3	PD 3	PD 3	PD 3

All switches are available with higher pollution degree on request!

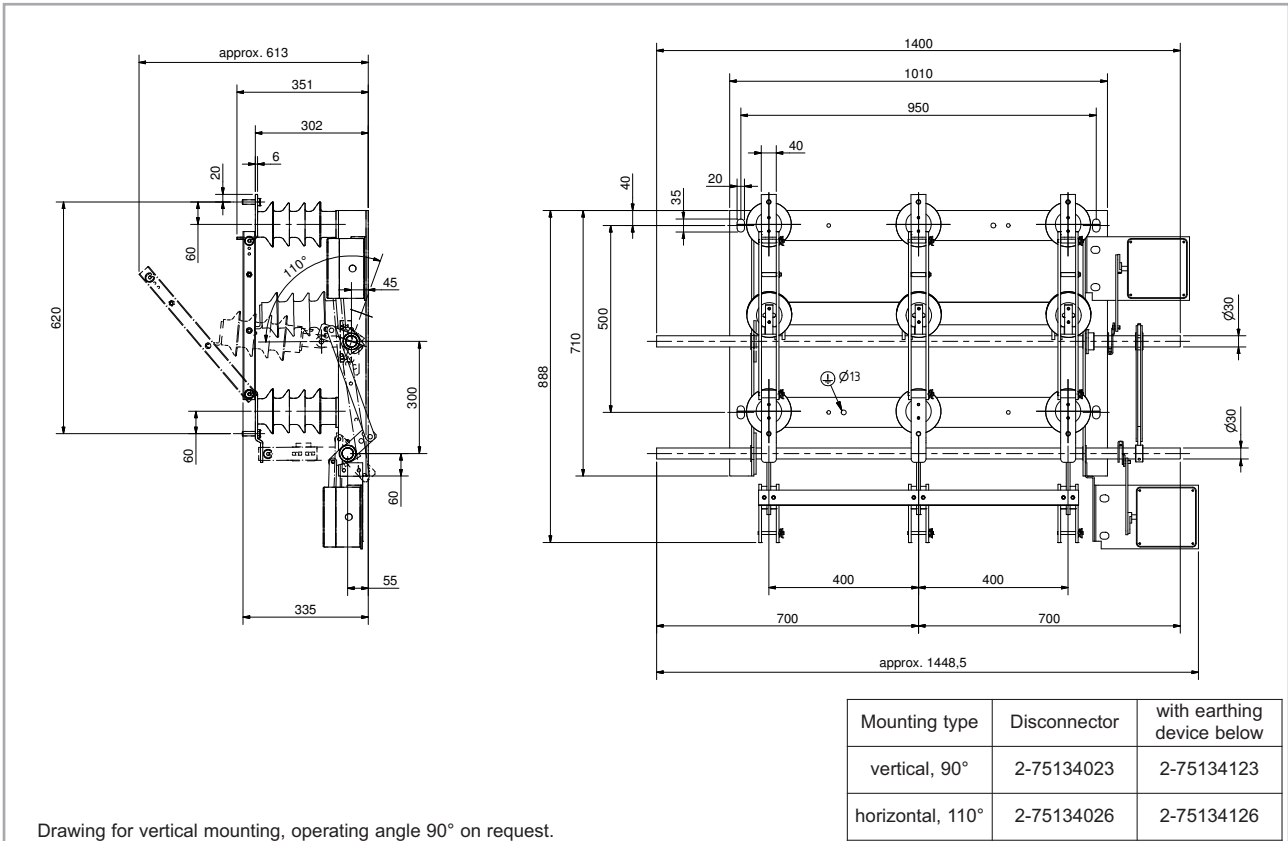


FTr 12-630-25

Accessories:

- auxiliary switches
- Motor drive UM 90
- earthing device automatically
- earthing device with mech. interlocking
- operating angle 90° suitable for vertical mounting
- operating angle 110° suitable for horizontal mounting

Drawing for FTr 12-630-25 / Drawing no. FT3-106943 horizontal mounting, operating angle 110°

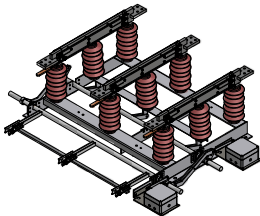


DRIESCHER - 3-pole Outdoor Disconnectors

3-pole Outdoor Disconnector Type FTTr 24-....-.. ; (Ur 24 kV)

Type		FTTr 24-400-20	FTTr 24-630-25	FTTr 24-1600-40	FTTr 24-2500-40	FTTr 24-4000-40
Rated voltage	U_r	24 kV	24 kV	24 kV	24 kV	24 kV
Rated frequency	f_r	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Rated current	I_r	400 A	630 A	1600 A	2500 A	4000 A
Rated short time current	I_k	20 kA	25 kA	40 kA	40 kA	40 kA
Rated duration of short-time circuit	t_k	3 s	3 s	3 s	3 s	3 s
Rated peak withstand current	I_p	50 kA	63 kA	100 kA	100 kA	100 kA
Rated impulse withstand voltage	U_p					
- Phase to Earth		125 kV	125 kV	125 kV	125 kV	125 kV
- Across the Open Gap		145 kV	145 kV	145 kV	145 kV	145 kV
Rated power frequency withstand voltage U_d						
- Phase to Earth		50 kV	50 kV	50 kV	50 kV	50 kV
- Across the Open Gap		60 kV	60 kV	60 kV	60 kV	60 kV
Weight approx.		65 kg	70 kg	115 kg	120 kg	150 kg
Mechanical life		M2	M2	M2	M1	M1
Pollution degree of the insulator		PD 3	PD 3	PD 3	PD 3	PD 3

All switches are available with higher pollution degree on request!

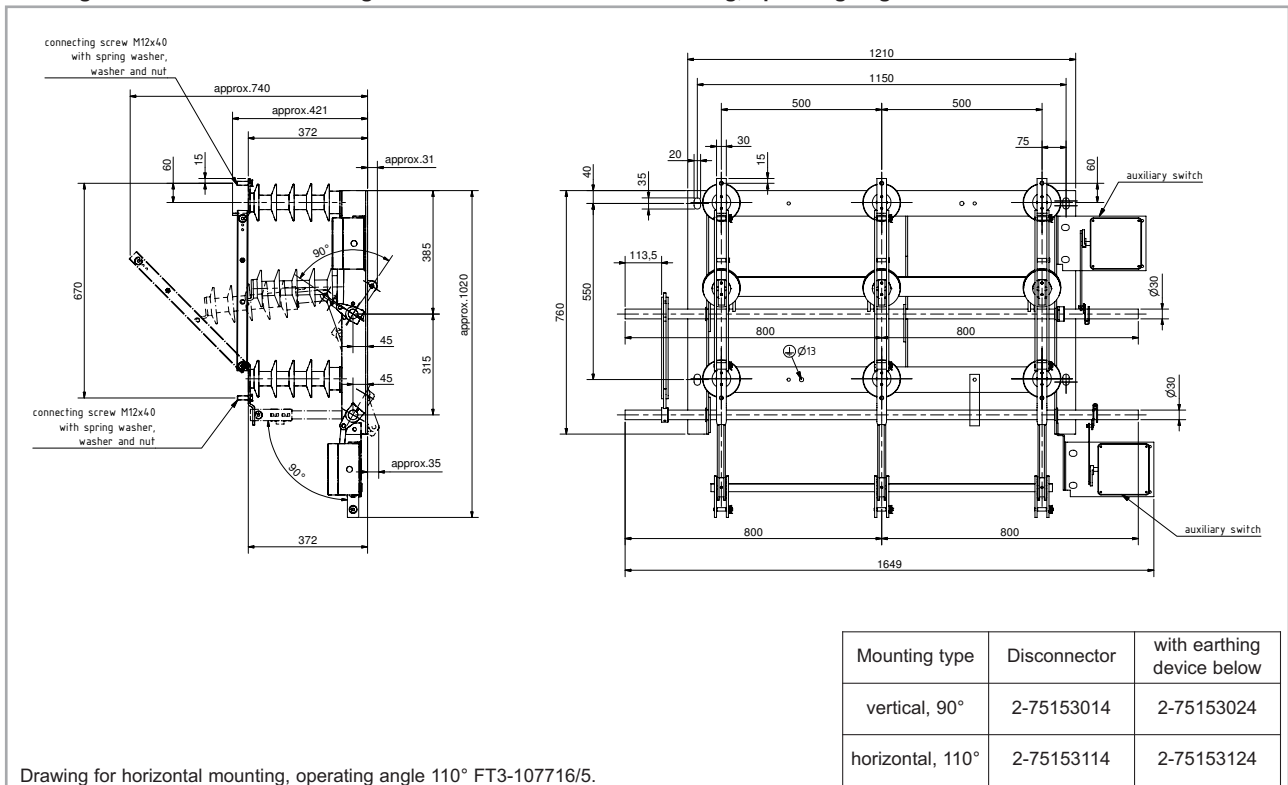


FTTr 24-2500-40

Accessories:

- auxiliary switches
- Motor drive UM 90
- earthing device automatically
- earthing device with mech. interlocking
- operating angle 90° suitable for vertical mounting
- operating angle 110° suitable for horizontal mounting

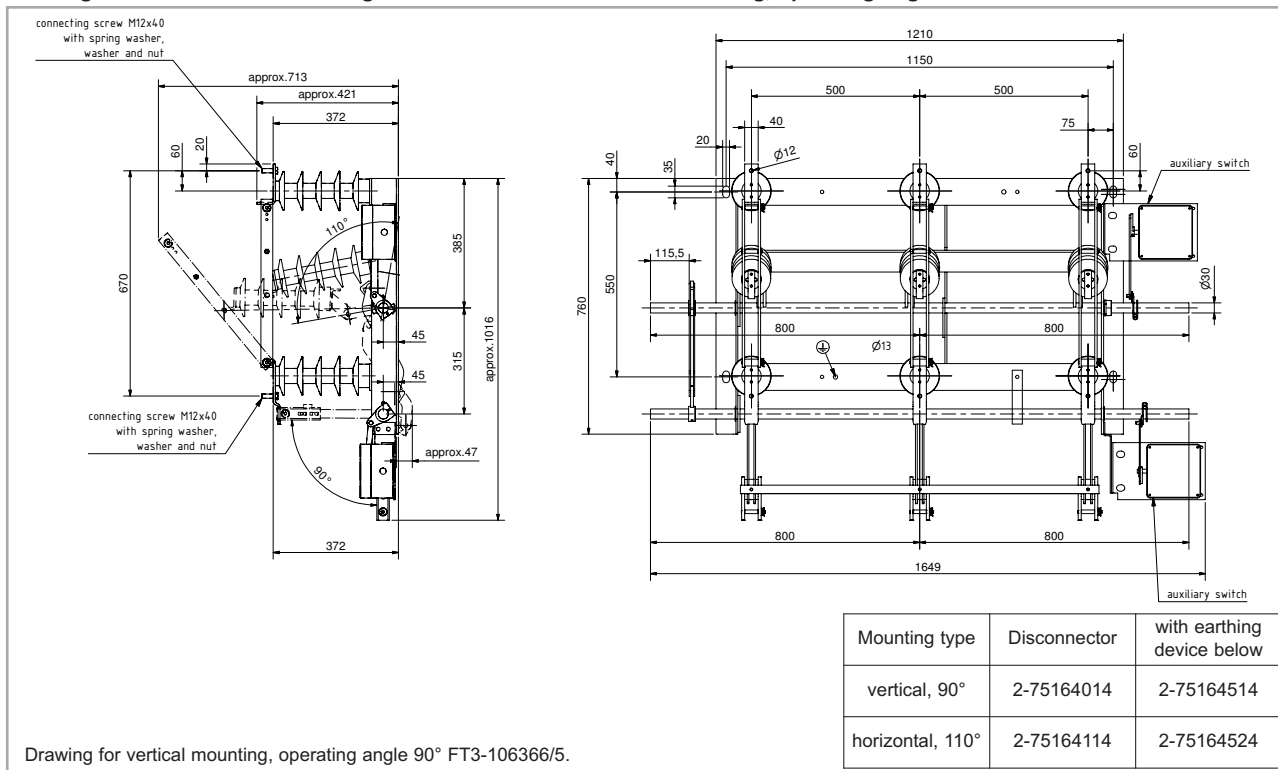
Drawing for FTTr 24-400-20 / Drawing no. FT3-106365/5 vertical mounting, operating angle 90°



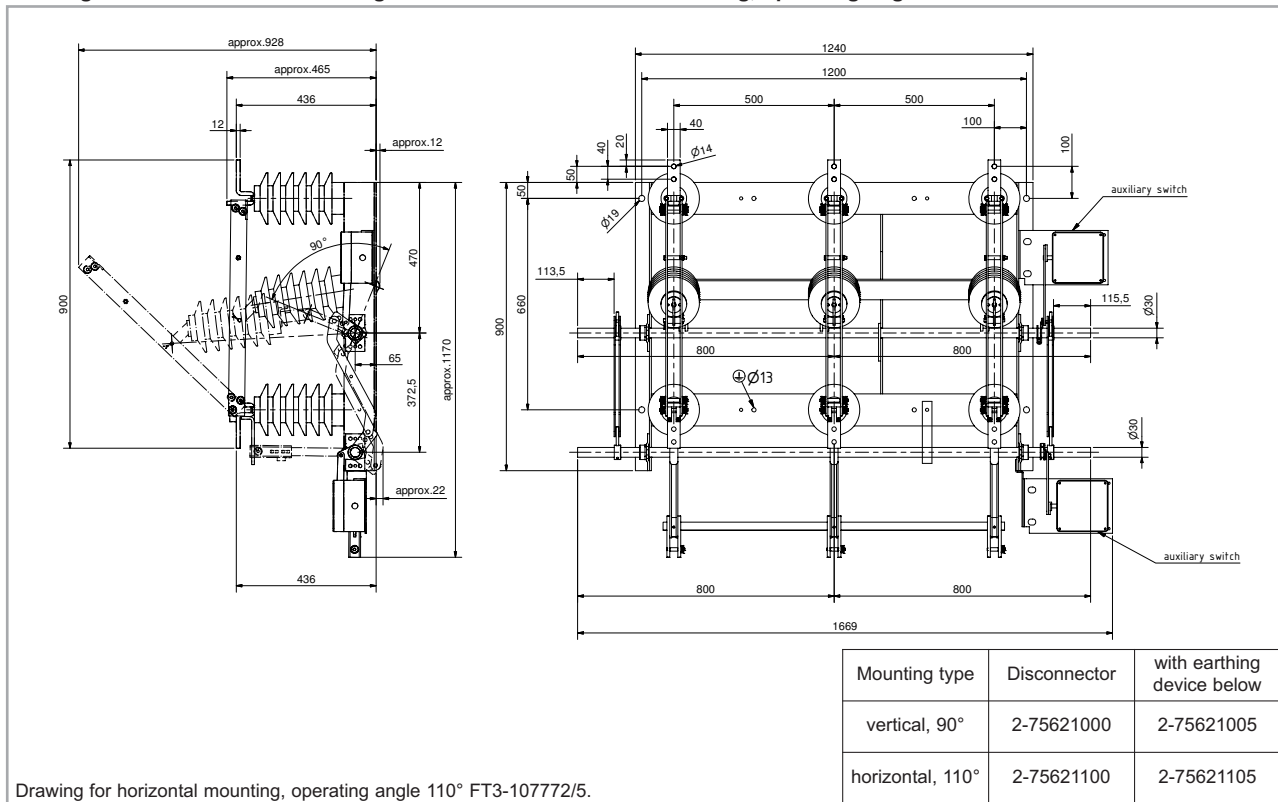
DRIESCHER - 3-pole Outdoor Disconnectors

3-pole Outdoor Disconnector Type FT_r 24-....-.. ; (Ur 24 kV)

Drawing for FT_r 24-630-25 / Drawing no. FT3-107916/5 horizontal mounting, operating angle 110°



Drawing for FT_r 24-1600-40 / Drawing no. FT3-106837/5 vertical mounting, operating angle 90°



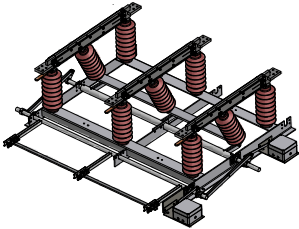
DRIESCHER - 3-pole Outdoor Disconnectors

3-pole Outdoor Disconnector Type FTr 38,5-.....-.. ; (Ur 38,5 kV)

Type FTr 38,5-400-20 FTr 38,5-630-25 FTr 38,5-1600-31,5 FTr 38,5-2500-40 FTr 38,5-4000-40

Rated voltage	U_r	38,5 kV	38,5 kV	38,5 kV	38,5 kV	38,5 kV
Rated frequency	f_r	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Rated current	I_r	400 A	630 A	1600 A	2500 A	4000 A
Rated short time current	I_k	20 kA	25 kA	31,5 kA	40 kA	40 kA
Rated duration of short-time circuit	t_k	3 s	3 s	3 s	3 s	3 s
Rated peak withstand current	I_p	50 kA	63 kA	80 kA	100 kA	100 kA
Rated impulse withstand voltage	U_p					
- Phase to Earth		180 kV	180 kV	180 kV	180 kV	180 kV
- Across the Open Gap		210 kV	210 kV	210 kV	210 kV	210 kV
Rated power frequ. withstand voltage U_d						
- Phase to Earth		80 kV	80 kV	80 kV	80 kV	80 kV
- Across the Open Gap		90 kV	90 kV	90 kV	90 kV	90 kV
Weight approx.		105 kg	110 kg	150 kg	165 kg	165 kg
Mechanical life		M2	M2	M2	M1	M1
Pollution degree of the insulator		PD 3	PD 3	PD 3	PD 3	PD 3

All switches are available with higher pollution degree on request!



Accessories:

- auxiliary switches
- Motor drive UM 90
- earthing device automatically
- earthing device with mech. interlocking
- operating angle 90° suitable for vertical mounting
- operating angle 110° suitable for horizontal mounting

FTr 38,5-2500-40

Drawing for FTr 38,5-400-20 / Drawing no. FT3-106367/5 vertical mounting, operating angle 90°

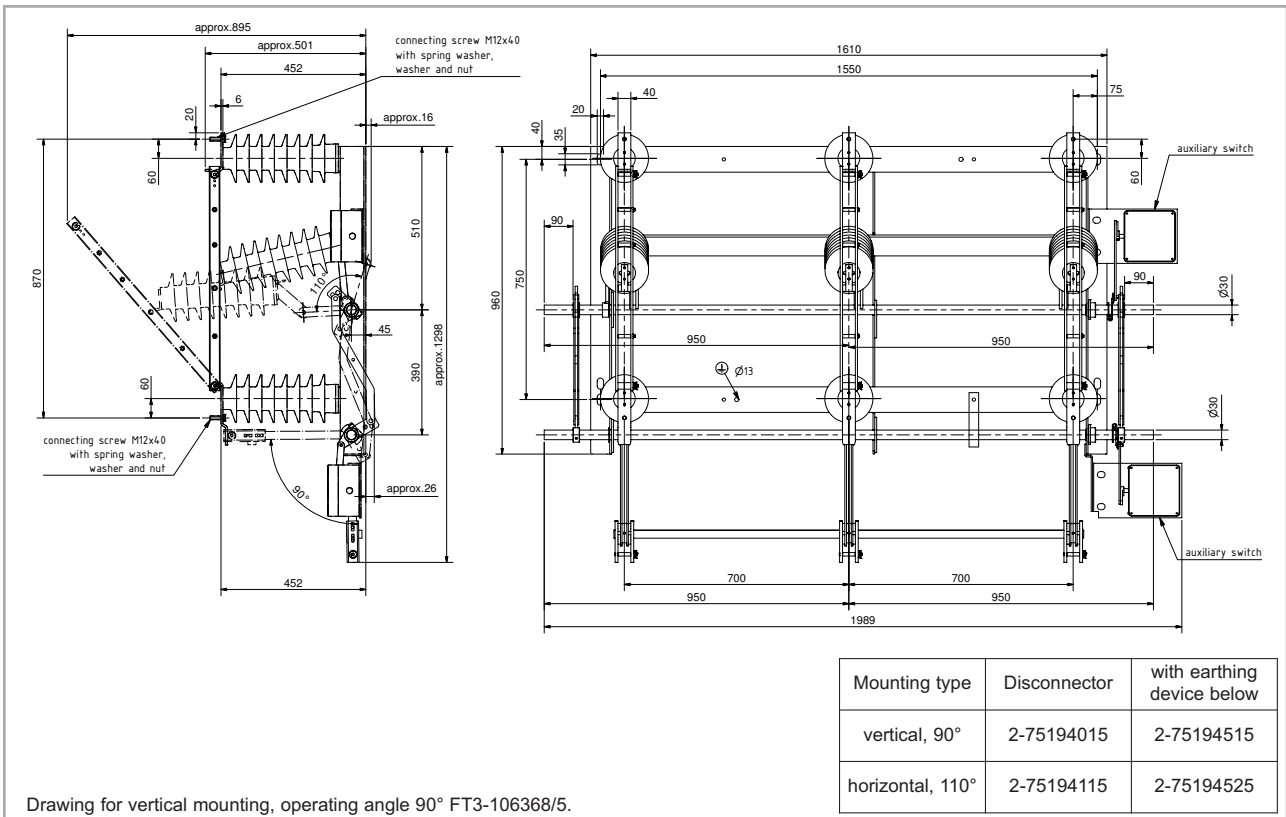
Mounting type	Disconnector	with earthing device below
vertical, 90°	2-75184015	2-75184515
horizontal, 110°	2-75184115	2-75184525

Drawing for horizontal mounting, operating angle 110° FT3-108045/5.

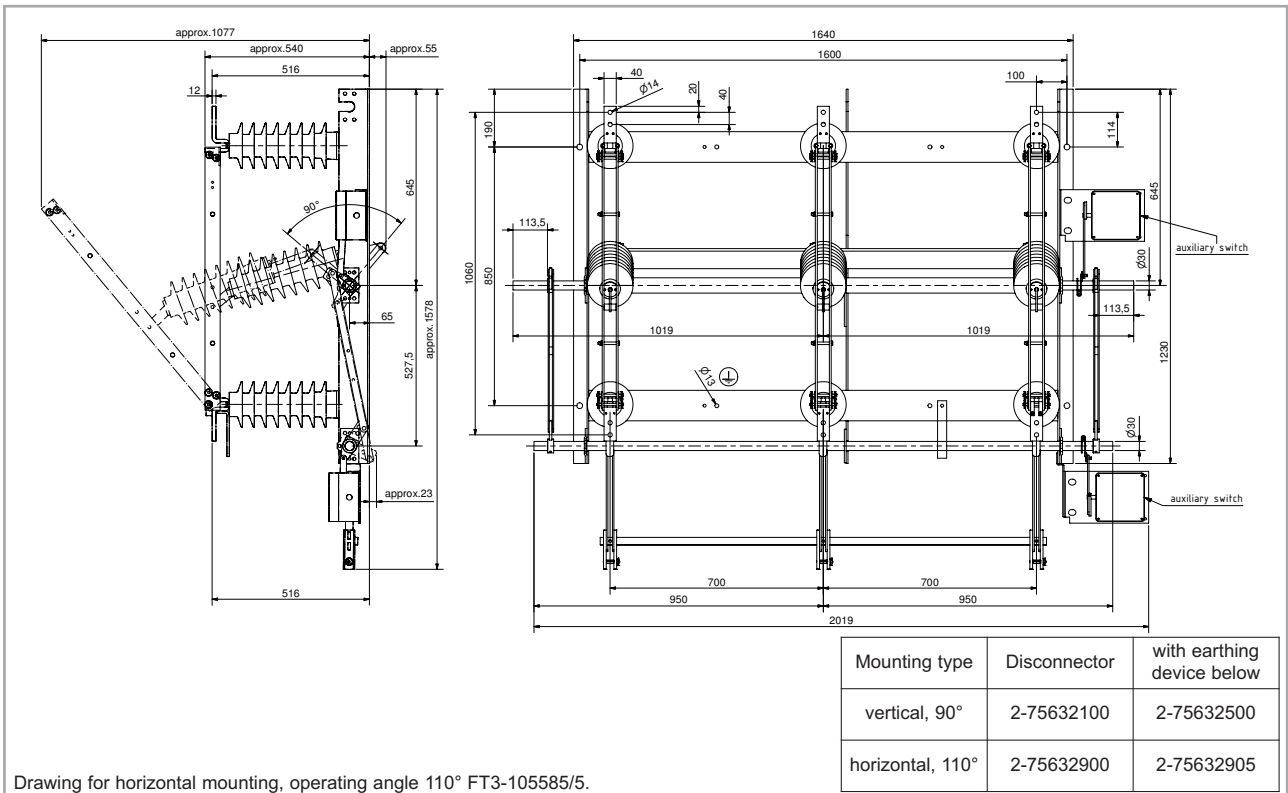
DRIESCHER - 3-pole Outdoor Disconnectors

3-pole Outdoor Disconnector Type FT_r 38,5-..... ; (Ur 38,5 kV)

Drawing for FT_r 38,5-630-25 / Drawing no. FT3-106942/5 horizontal mounting, operating angle 110°



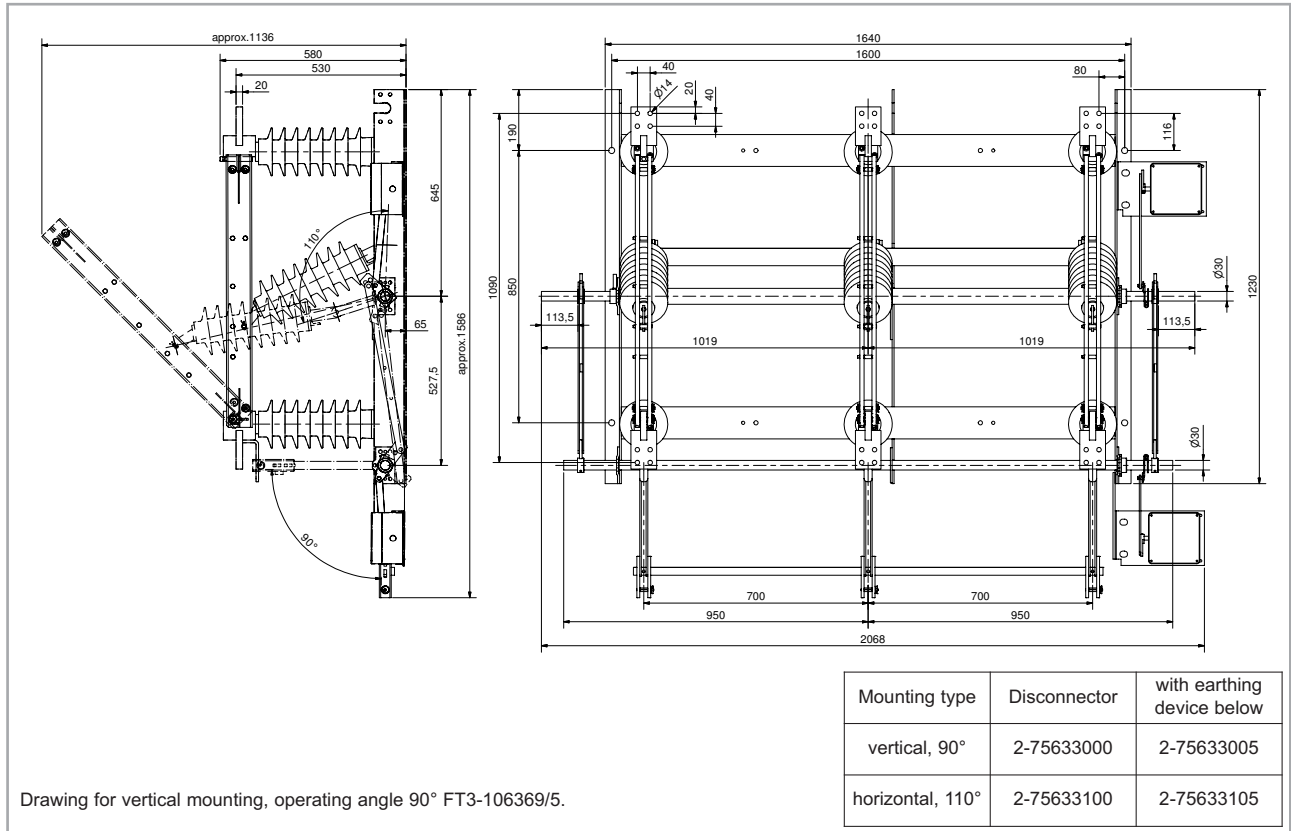
Drawing for FT_r 38,5-1600-31,5 / Drawing no. FT3-106795/5 vertical mounting, operating angle 90°



DRIESCHER - 3-pole Outdoor Disconnectors

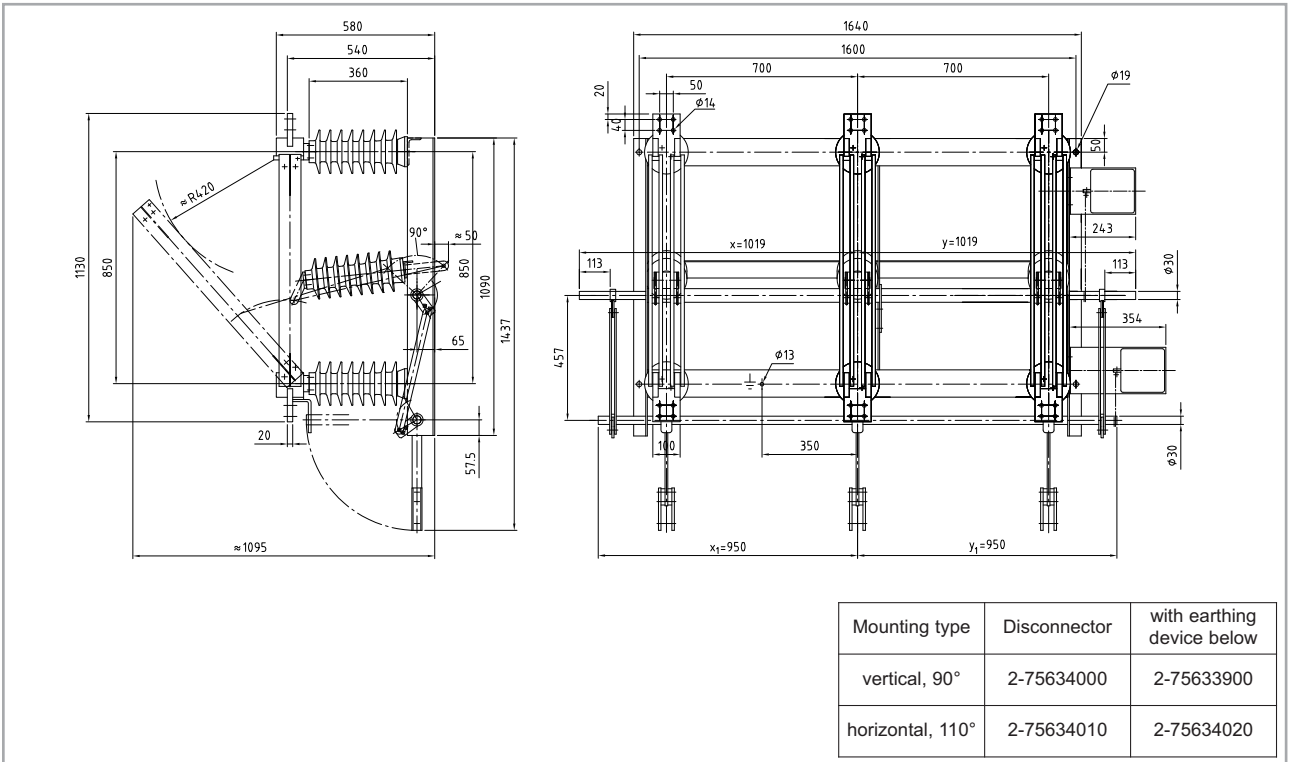
3-pole Outdoor Disconnector Type FT_r 38,5-....-40 ; (Ur 38,5 kV)

Drawing for FT_r 38,5-2500-40 / Drawing no. FT3-107278/5 horizontal mounting, operating angle 110°



Drawing for vertical mounting, operating angle 90° FT3-106369/5.

Drawing for FT_r 38,5-4000-40 / Drawing no. FT3-098171 vertical mounting, operating angle 90°



DRIESCHER - 1-pole Outdoor Disconnectors

1-pole Outdoor Disconnecter Type FTTr ...-...-...-1 ; (Ur 12 kV- 38,5 kV; Ir 630 a. 1600 A)

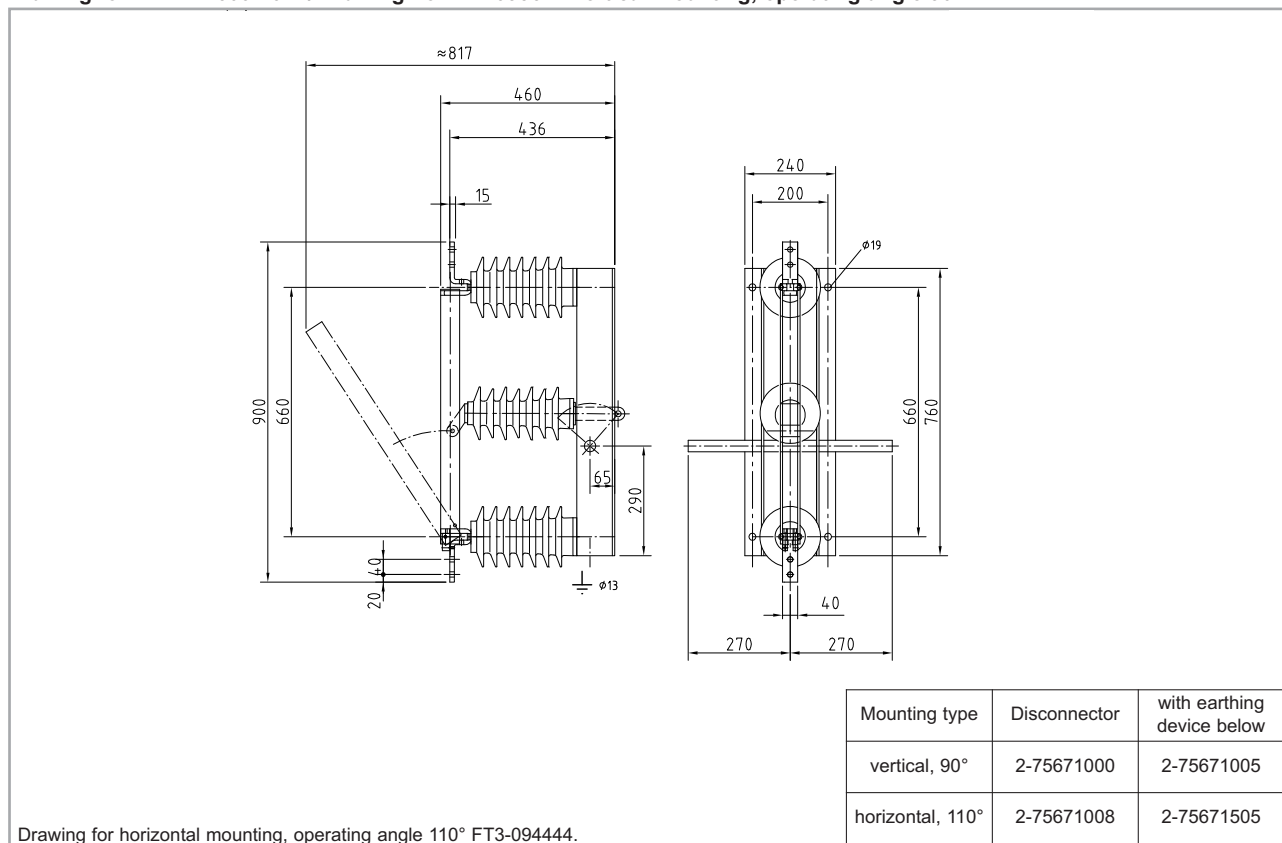
Type		FTTr 12-630-25-1	FTTr 24-630-25-1	FTTr 24-1600-40-1	FTTr 38,5-630-25-1
Rated voltage	U_r	12/ $\sqrt{3}$ kV	24/ $\sqrt{3}$ kV	24/ $\sqrt{3}$ kV	38,5/ $\sqrt{3}$ kV
Rated frequency	f_r	50 Hz	50 Hz	50 Hz	50 Hz
Rated current	I_r	630 A	630 A	1600 A	630 A
Rated short time current	I_k	25 kA	25 kA	40 kA	25 kA
Rated duration of short-time circuit	t_k	3 s	3 s	3 s	3 s
Rated peak withstand current	I_p	63 kA	63 kA	100 kA	63 kA
Rated impulse withstand voltage	U_p				
- Phase to Earth		75 kV	125 kV	125 kV	180 kV
- Across the Open Gap		85 kV	145 kV	145 kV	210 kV
Rated power frequency withstand voltage	U_d				
- Phase to Earth		28 kV	50 kV	50 kV	80 kV
- Across the Open Gap		32 kV	60 kV	60 kV	90 kV
Weight approx.		12 kg	25 kg	42 kg	38 kg
Mechanical life		M2	M2	M2	M2
Pollution degree of the insulator		PD 3	PD 3	PD 3	PD 3

All switches are available with higher pollution degree on request!

Accessories:

- auxiliary switches
- Motor drive UM 90
- earthing device automatically
- earthing device with mech. interlocking
- operating angle 90° suitable for vertical mounting
- operating angle 110° suitable for horizontal mounting
- technical data of the earthing device 1s up to I_k 31,5 kA

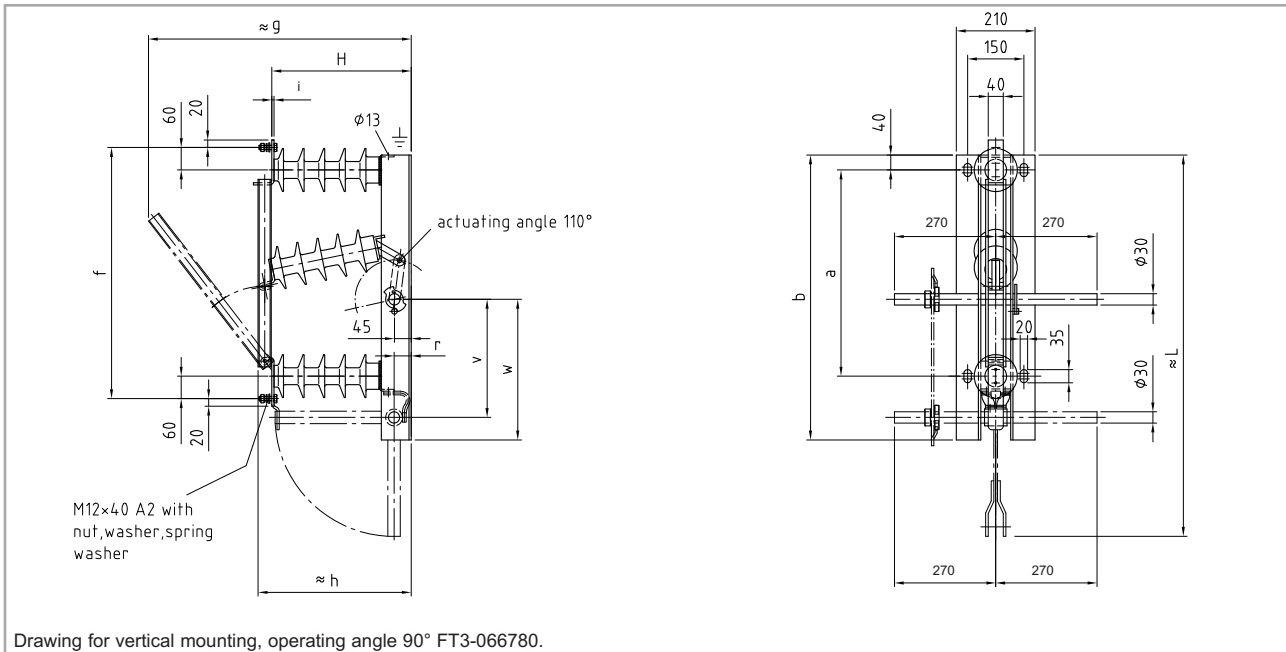
Drawing for FTTr 24-1600-40-1 / Drawing no. FT4-093647 vertical mounting, operating angle 90°



DRIESCHER - 1-pole Outdoor Disconnectors

1-pole Outdoor Disconnector Type FTr ...-630-25-1 ; (Ur 12 kV- 38,5 kV; Ir 630 A)

Drawing for FTr ...-630-25-1 / Drawing no. FT3-059090 horizontal mounting, operating angle 110°



Type	Rated voltage	Rated current	a	b	f	≈g	≈h	H	i	≈L	r	v	w	Drawing-no.
FTr 12-630-25-1	12/√3 kV	630 A	500	710	620	596	338	302	6	887	55	300	360	FT3-059090
FTr 24-630-25-1	24/√3 kV	630 A	550	760	670	720	408	372	6	1017	45	315	375	FT3-059090
FTr 38,5-630-25-1	38,5/√3 kV	630 A	750	960	870	925	488	452	6	1297	45	430	490	FT3-059090

Vertical mounting, 90°

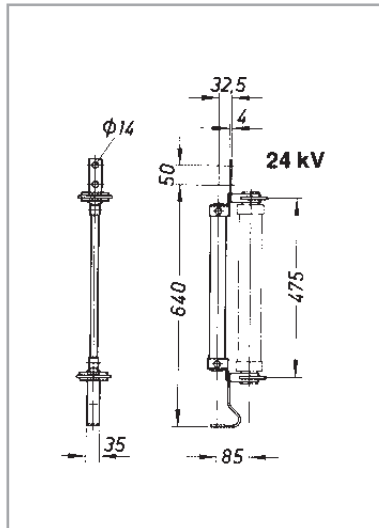
Horizontal mounting, 110°

Type	Part-no Disconnector	Part-no with earthing device below	Part-no Disconnector	Part-no with earthing device below
FTr 12-630-25-1	2-75132002	2-75132102	2-75132902	2-75132508
FTr 24-630-25-1	2-75162002	2-75162502	2-75162902	2-75162508
FTr 38,5-630-25-1	2-75192002	2-75192102	2-75192902	2-75192508

DRIESCHER - 1-pole Outdoor Fuse Holders

1-pole Outdoor Fuse Base

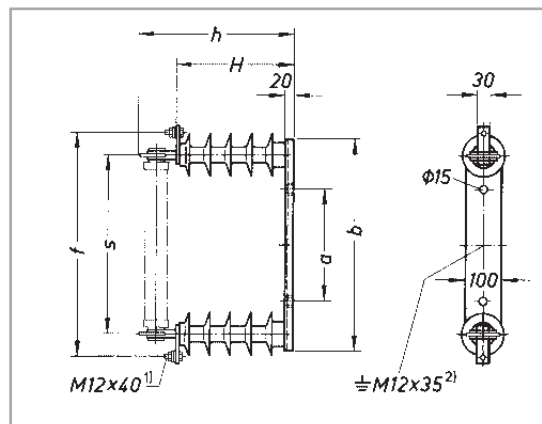
for h.v.h.b.c. fuse-links up to 200 A rated current for direct mounting on the transformer bushing



Rated voltage	Part-no.	Weight approx. kg	Drawing-no.
24 kV	752 40001	3	FT4-17281/2

1-pole Outdoor Fuse Holders

for h.v.h.b.c. fuse-links up to 200 A rated current



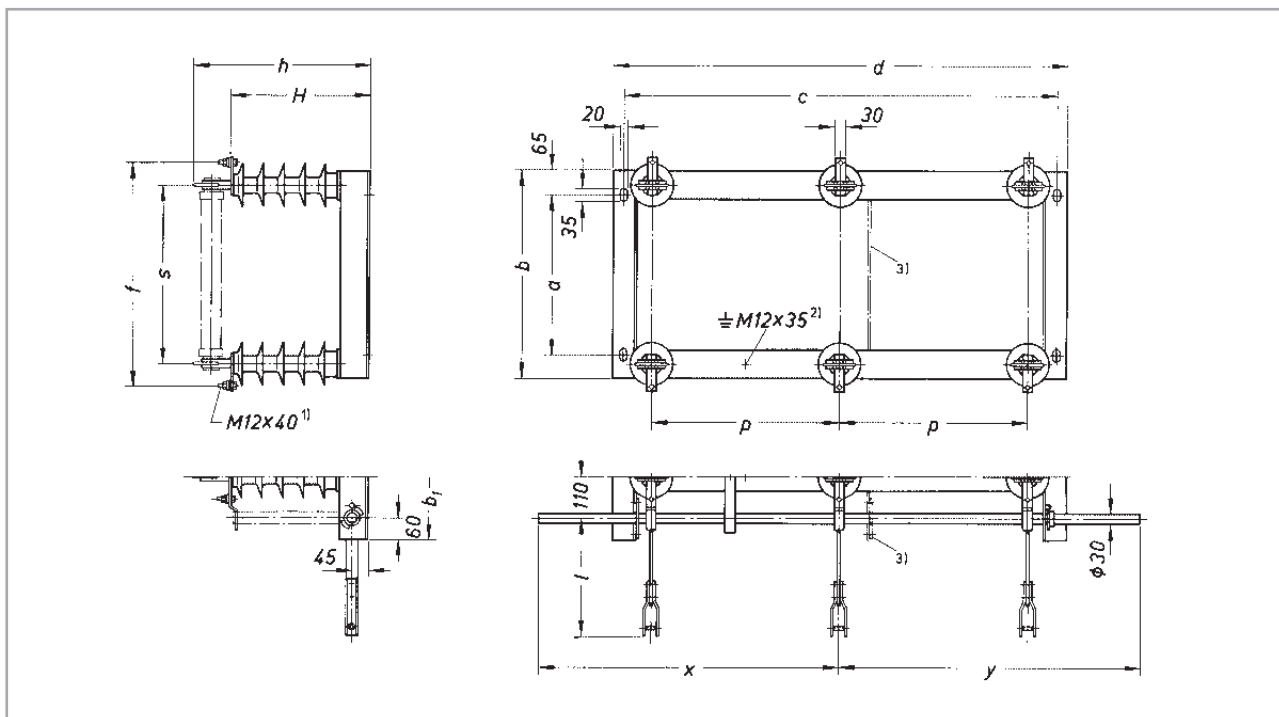
- 1) Hexagon head screw with nut, washer and spring washer
2) Hexagon head screw with nut, washer and spring washer

Rated voltage	Part-no.	a	b	f	≈ h	≈ H	s	Weight approx. kg	Drawing-no.
12 kV	752 12001	180	405	445	335	236	325	8	FT4-5092/1
24 kV	752 42001	300	565	595	405	306	475	8	FT4-5092/2
36 kV	752 72001	380	670	690	485	386	570	17	FT4-5092/3

DRIESCHER - 3-pole Outdoor Fuse Holders

3-pole Outdoor Fuse Holders

for h.v.h.b.c. fuse-links up to 200 A rated current



- 1) Hexagon head screw with nut, washer and spring washer
 2) Hexagon head screw with nut, washer and spring washer
 3) Strut and supporting bearing only for 36 kV with mounted earthing device

• without earthing device

Rated voltage	Part-no.	p	a	b	c	d	f	h	H	s	Weight approx. kg	Drawing-no.
12 kV	752 14002	400	275	405	950	1010	445	401	302	325	33	FT3-7156/1
24 kV	752 44003	500	425	555	1150	1210	595	471	372	475	33	FT3-7156/2
36 kV	752 74004	700	520	650	1550	1610	690	551	452	570	63	FT3-7156/5

• with earthing device

Rated voltage	Part-no.	p	a	b	b ₁	c	d	f	h	H	l	s	x/y	Weight approx. kg	Drawing-no.
12 kV	752 14102	400	275	405	535	950	1010	445	401	302	247	325	700	48	FT3-7156/10
24 kV	752 44103	500	425	555	685	1150	1210	595	471	372	317	475	800	49	FT3-7156/11
36 kV	752 74104	700	520	650	780	1550	1610	690	551	452	397	570	950	80	FT3-7156/12

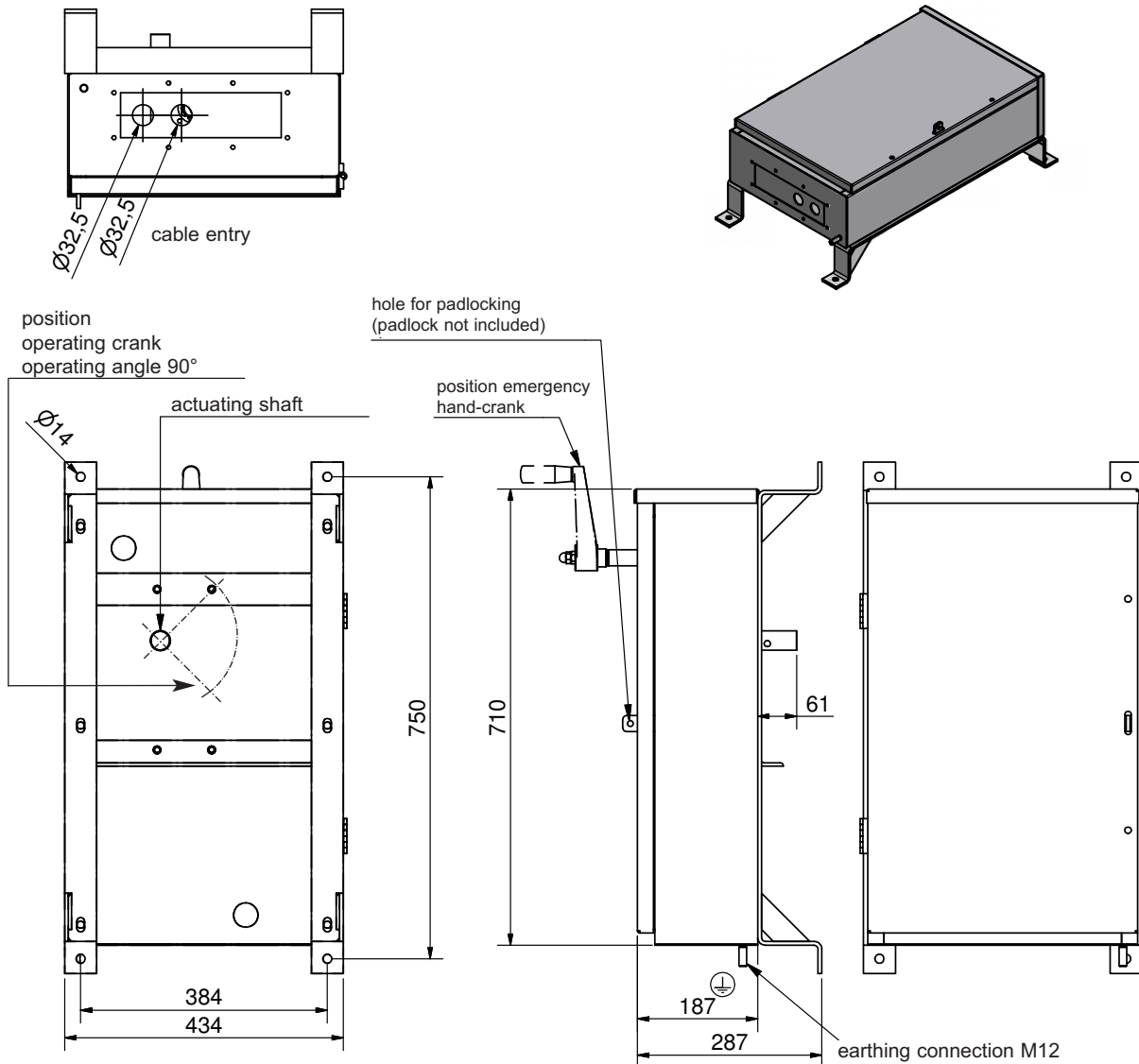
DRIESCHER - Outdoor Universal Motor drive type UM 90

Outdoor Universal Motor drive type UM 90

Stainless steel or aluminium case encapsulated; protection class IP 55; according drawing AZ4-107886; max. torque 350 Nm; total weight approx. 40 kg, exactly data in *brochure 776*.

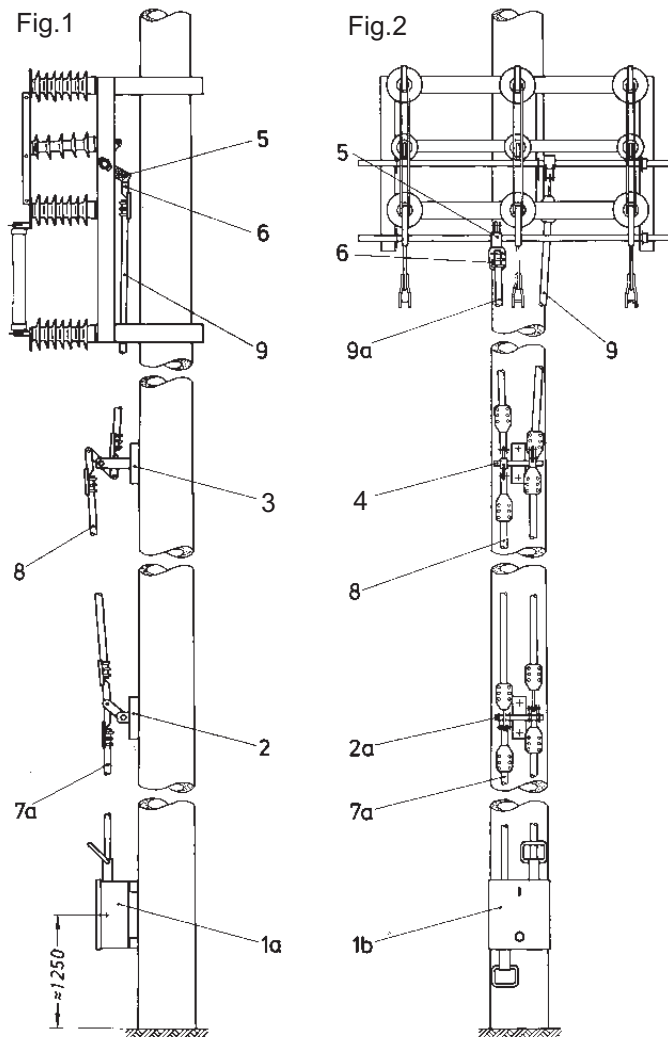
Possible Equipment:

- Operating angle 90°
- for DC, alternatively 24 V, 60 V, 110 V or 220 V
- for AC, alternatively 110 V, 230 V
- Contactor, Motor protecting switch, auxilliary switches
- heating 230V AC, 60 W, with temperatur regulator and hygostat
- key interlocked remote control (local / OFF / remote)
- ON/OFF button for local operation
- Signalling switch for the door position
- auxilliary relays for supervision of voltage
- Signalling switch for interrupting motor voltage for emergency hand operation
- terminal blocks
- brass or plastic cups to seal the hole for cable entrance
- In compliance attached circuit diagramm EM3B 066A D121 06C
- emergency handcrank with slipping clutch part-no. 2-77601001, drawing AZ4-036348



DRIESCHER - 3-pole Outdoor Disconnectors

Arrangement of manual drives for Outdoor Disconnector



Figure

1. Outdoor disconnector with fuse holders mounted below, with single drive
 2. Outdoor disconnector with earthing device mounted below, with double drive

Item

- 1a Single box-type actuator AZ4-7530/1, stroke 110 or 140 mm
 1b Double box-type actuator AZ4-7530/2**
 2 Single intermediate bearing AZ3-15936/1
 2a Double intermediate bearing AZ3-15936/2
 3 Single reversible bearing AZ3-17130/1
 4 Double reversible bearing AZ3-17130/2
 5 Forked clamping crank AZ3-9610/1 (gauge from 73 to 132.5 mm; hole matrix 8.5 mm)
 6 Single rod head AZ3-9609/7 (with link bush)
 7 Lower linkage rod, with bearing bush
 8 Linkage rod
 9 Upper linkage rod for disconnecting switch or load-break switch
 9a Upper linkage rod for earthing switch

*) Stroke settable to 110 or 140 mm.
 Earthing device operating lever (left-hand lever) mechanically locked to the disconnecting switch operating lever. Drawing no. AZ4-38848

DRIESCHER - 3-pole Outdoor Disconnectors and Earthing Devices

Examples mounted on motor drives

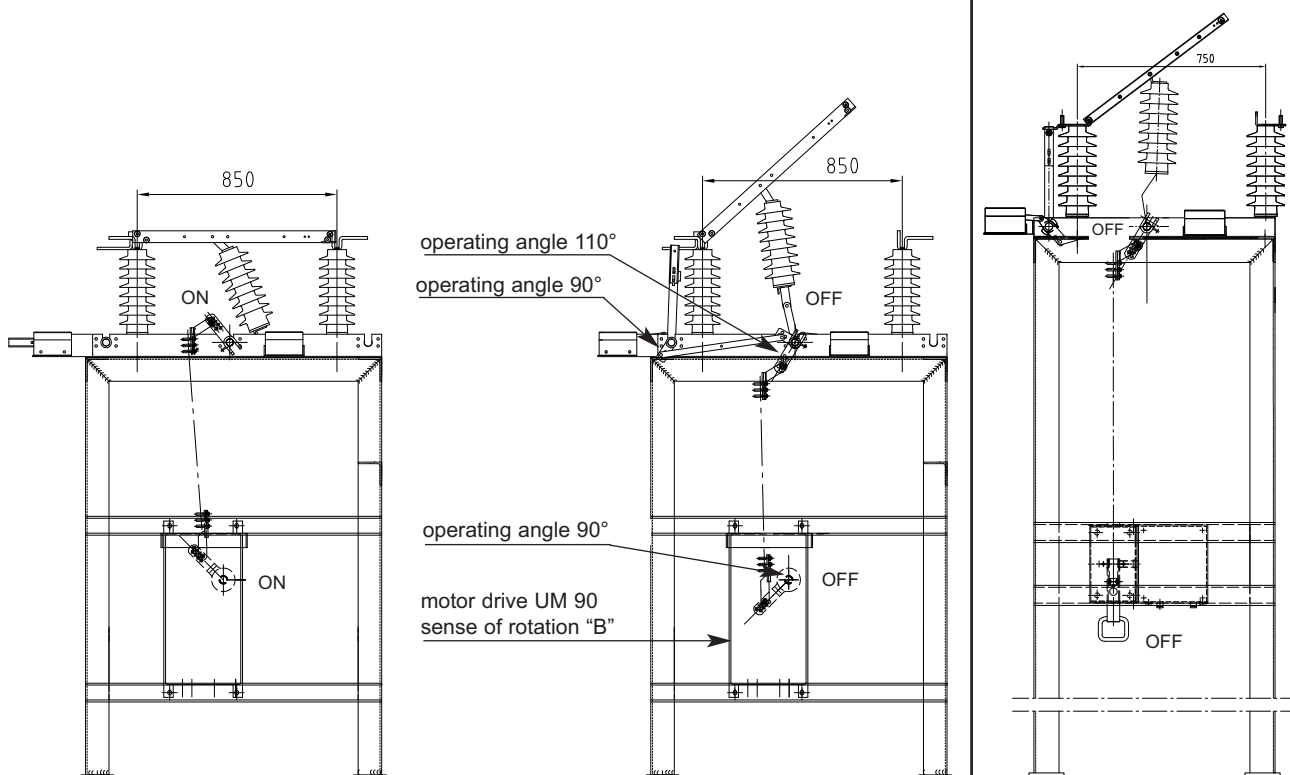
All disconnectors and earthing devices can be equipped with motor drives UM 90.
Here the type of mounting must be taken into account, as there are different types of actuators available.

Exact details about the application can be seen in the brochure 776 for actuators.

Example for horizontal mounting, 110° operating angle

motor operated
acc. to AZ3-107611

manuell operated
acc. to AZ2-107612



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

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