

# Outdoor disconnectors FTr (previously 6400 and 6410)

single- and three-pole design  
rated voltage 25 and 38.5 kV  
rated current 400 and 630 A



**DRIBO, spol. s r.o.**

Pražákova 36  
619 00 Brno  
Czech Republic

Tel.: +420 533 101 111, Fax: +420 543 216 619, E-mail: [dribo@dribo.cz](mailto:dribo@dribo.cz), Internet: <http://www.dribo.eu>

ISO 9001  
ISO 14001  
BUREAU VERITAS  
Certification



## Outdoor disconnectors

Outdoor disconnectors, produced in accordance with the Driescher company's documentation, used for several years on high-voltage long-distance lines, have proven their high reliability and safety of operation. Disconnectors are intended particularly for terminal branchings in radial arrangement.

Disconnectors satisfy standards EN 62271-1 and EN 62271-102. Using insulators satisfy the fourth grade of contamination area according.

Simple disconnectors of a sturdy structure proved themselves in an excellent way under very different climatic conditions.

The foundation-welded frame is made of open steel profiles, which guarantee perfect surface protection from corrosion caused by heat zinc coating that can be controlled on all places. Heat zinc coating protects the shafts of the disconnectors mounted in bronze bearings as well as all other steel components.

All current conduction components are made of silver plated electrolytical copper and constitute a loopless current conduction path.

The cross-section of the conductors on the current conduction path is sufficiently dimensioned. Appropriate contact pressures of the stainless steel springs ensure optimum prerequisites for faultless switching even after several years of the

The construction of the disconnectors, the quality level of material used and care exercised in the production process, which is governed by the principles of the ISO 9001:2000 standard, is a guarantee for low operation and maintenance costs in the future.

**Under normal operating conditions it is not necessary for the disconnectors to undergo a preventive maintenance during the period of twenty years.**

disconnector operation under extreme operating conditions.

The disconnectors are delivered with such made of a cycloaliphatic resin or porcelain bearings.

The disconnectors can be provided with earthing switches located on the under side. The use of earthing switches requires a double or triple drive with a sturdy blocking mechanism preventing incorrect handling. The number of pull rods and pendulum bearings is correspondingly increased.

Control of the disconnectors and earthing switches is ensured by means of hand, possibly motor outdoor drives.

The disconnectors can be provided with encased auxiliary switches (IP 44 protection) installed directly on the frame of the device ensuring thus reliable switching-on and switching-off signalling.

The values of the short-circuit resistance are kept so as to ensure an adequately large reserve. These values apply both for the disconnectors and built-in earthing switches.

The construction of the disconnectors and the quality of the materials being used ensure low cost operating conditions and maintenance.

The disconnectors can be optionally equipped with overvoltage limiters.

### Technical data of FTr (6400 and 6410) outdoor disconnectors

Rated voltage [kV]	Rated current [A]	Rated short-time current $I_k$ [kA]	Rated short-circuit duration $t_k$ [s]	Rated peak withstand current $I_p$ [kA]
<b>25</b>	400	20	3	50
	630	25	3	63
<b>38,5</b>	400	20	3	50
	630	25	3	63

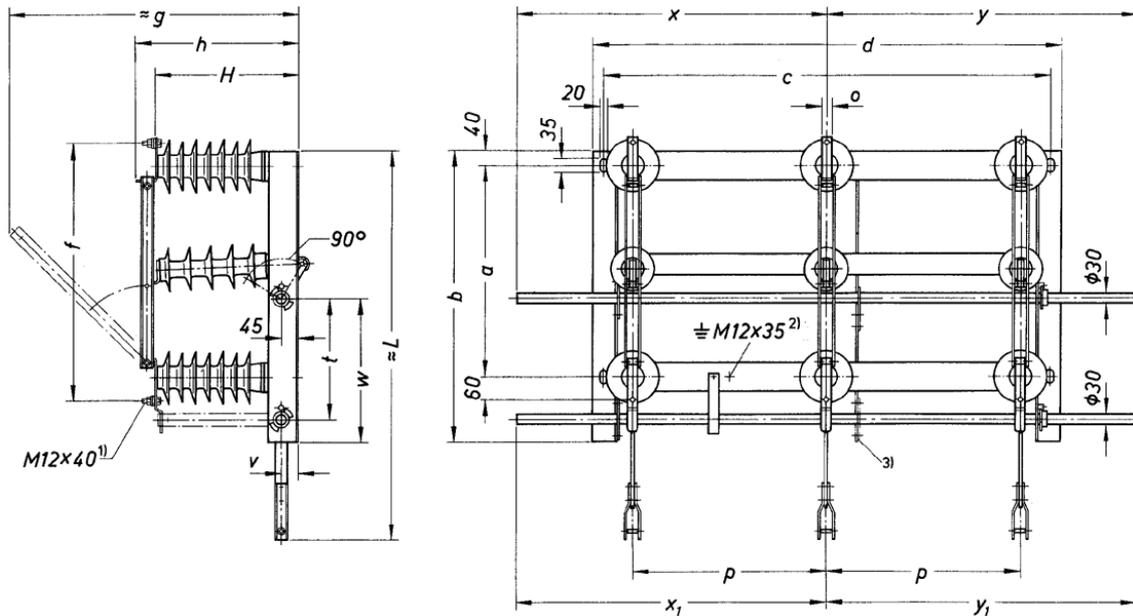
### Technical data of FTr.-H outdoor disconnectors (with extinguishing horns)

Rated voltage	U	kV	25		38,5	
rated current	$I_n$	A	400	630	400	630
rated short-time current	$I_k$	kA	20	25	20	25
rated peak withstand current	$I_p$	kA	50	63	50	63
rated making current	$I_{ma}$	kA	3,15	3,15	3,15	3,15
rated breaking current	$I_{load}$	A	17	17	16	16
closed-loop breaking current	$I_{loop}$	A	17	17	16	16
inductive breaking current	$I_{nltr}$	A	4	4	4	4
capacitive breaking current	$I_{cc}$	A	10	10	10	10

## Withstand voltages of disconnectors

<b>rated voltage</b>	kV	25	38,5
<b>rated short-time withstand power frequency voltage / 1min. to be applied in both dry and wet environmental conditions</b>			
against the earth, across the poles and between disconnected contacts	kV	50	80
across the isolating distance	kV	60	90
<b>rated lightning pulse withstand voltage</b>			
against the earth, across the poles and between disconnected contacts	kV	125	180
across the isolating distance	kV	145	210

## Three-pole outdoor disconnectors FTr (6400)



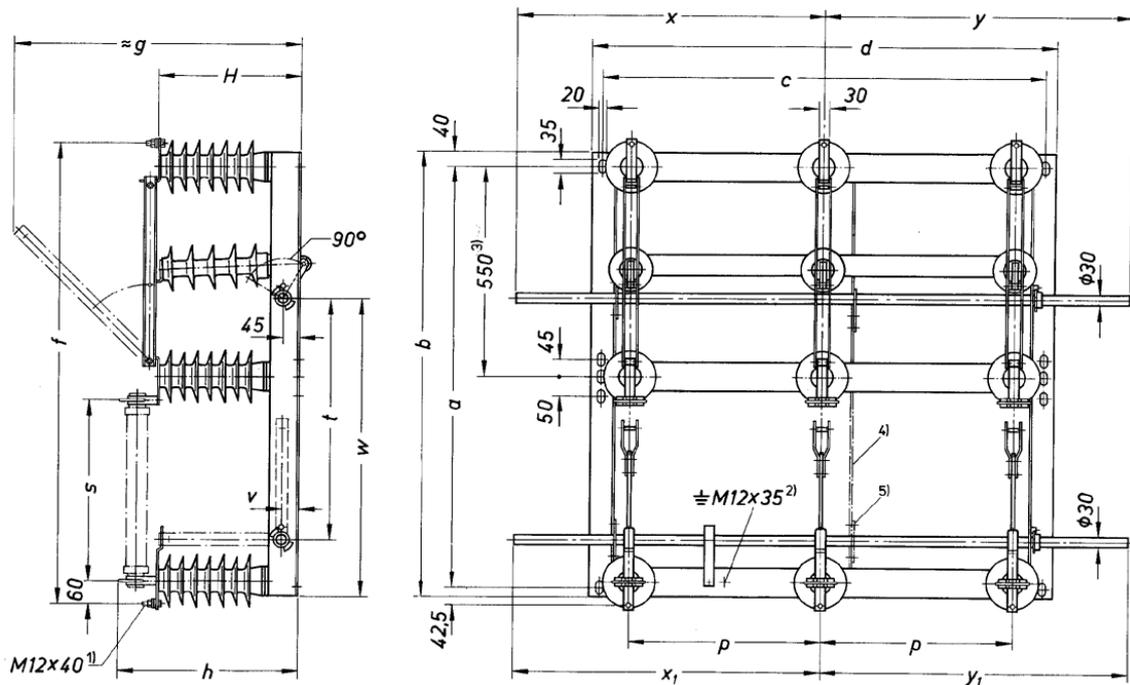
- 1) 2) Hexagon head screw with nut, washer and spring washer  
 3) Supporting bearing for earthing switch shaft only for rated voltage 38,5 kV

Type	$U_r$ [kV]	$I_r$ [A]	p	a	b	c	d	f	$\approx g$	$\approx h$	$\approx H$	o	v	w	$\approx L$	x/y	$x_1/y_1$
FTr 24-400-20	25	400	500	550	760	1150	1210	670	740	408	372	30	315	375	1015	800	800
FTr 24-630-25		630										40					
FTr 38,5-400-20	38,5	400	700	750	960	1550	1610	870	915	488	452	30	390	450	1295	950	950
FTr 38,5-630-25		630										40					

Type	$U_r$ [kV]	$I_r$ [A]	without earthing switch		with earthing switch below with mechanical interlocking	
			Part Nr.	Weight approx. [kg]	Part Nr.	Weight approx. [kg]
FTr 24-400-20	25	400	contact sales department	77,2	contact sales department	91,5
FTr 24-630-25		630				
FTr 38,5-400-20	38,5	400	contact sales department	113,7	contact sales department	129,5
FTr 38,5-630-25		630				

## Three-pole outdoor disconnectors FTTr ..-SU (6410)

**with fuse holders mounted below for HV HBC fuses  
up to 200 A rated current**

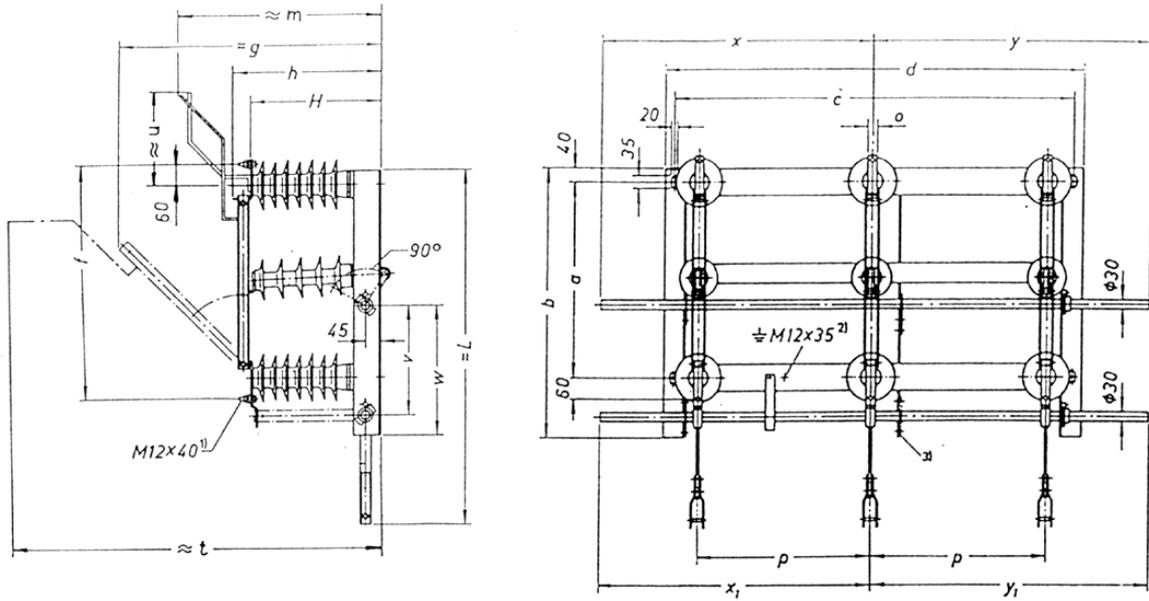


- 1) Hexagon head screw with nut, washer and spring washer
- 2) Additional oblong holes only for 25 kV version
- 3) Strut only for rated voltage 38,5 kV
- 4) Supporting bearing for earthing switch shaft only for rated voltage 38,5 kV

Type	$U_r$ [kV]	$I_r$ [A]	$p$	$a$	$b$	$c$	$d$	$f$	$\approx g$	$\approx h$	$\approx H$	$s$	$v$	$w$	$x/y$	$x_1/y_1$
FTTr 24-400-20-SU	25	400	500	1105	1167	1150	1210	1208	740	470	372	475	633	782	800	800
FTTr 38,5-400-20-SU	38,5	400	700	1400	1462	1550	1610	1503	915	550	452	570	803	952	950	950

Type	$U_r$ [kV]	$I_r$ [A]	without earthing switch		with earthing switch below with mechanical interlocking	
			Part Nr.	Weight approx. [kg]	Part Nr.	Weight approx. [kg]
FTTr 24-400-20-SU	25	400	751 56004	95,0	751 56104	113,0
FTTr 38,5-400-20-SU	38,5	400	751 86005	157,0	751 86105	172,5

**Three-pole outdoor disconnectors FTTr ..-H (6400 with extinguishing horns)**



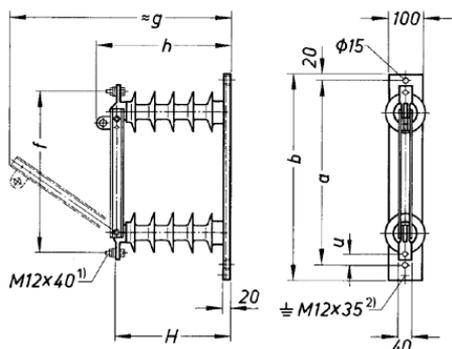
- 1) 2) Hexagon head screw with nut, washer and spring washer
- 3) Supporting bearing for earthing switch shaft only for rated voltage 38,5 kV

Type	U <sub>r</sub> [kV]	I <sub>r</sub> [A]	p	a	b	c	d	f	≈g	≈h	≈H	≈L	o	≈t	v	w	x/y	x <sub>1</sub> /y <sub>1</sub>
FTTr 24-400-20-H	25	400	500	550	760	1150	1210	670	740	408	372	1015	30	1035	315	375	800	800
FTTr 24-630-25-H		630											40					
FTTr 38,5-400-20-H	38,5	400	700	750	960	1550	1610	870	915	488	452	1295	30	1205	390	450	950	950
FTTr 38,5-630-25-H		630											40					

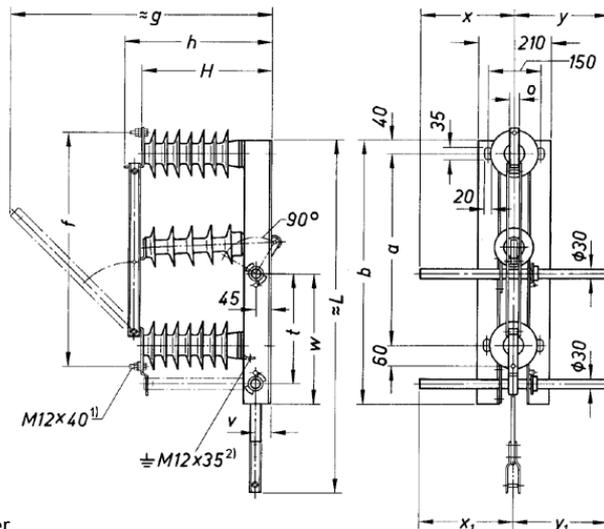
Type	U <sub>r</sub> [kV]	I <sub>r</sub> [A]	without earthing switch		with earthing switch below with mechanical interlocking	
			Part Nr.	Weight approx. [kg]	Part Nr.	Weight approx. [kg]
FTTr 24-400-20-H	25	400	751 54004	78,3	751 54104	92,1
FTTr 24-630-25-H		630	751 64004		751 64104	
FTTr 38,5-400-20-H	38,5	400	751 84005	114,8	751 84105	130,1
FTTr 38,5-630-25-H		630	751 94005		751 94105	

## Single-pole outdoor disconnectors 1350 and FTTr ..-1 (2054)

**Type 1350**



**Type FTTr ..-1**



<sup>1)</sup> Hexagon head screw with nut, washer and spring washer

### 1350 type disconnector without earthing switch

Rated voltage [kV]	Rated current [A]	Part no.	a	b	f	$\approx g$	h	H	u	Weight approx. [kg]
25/ $\sqrt{3}$	400	751 52000	535	600	470	638	385	325	32,5	12
	630	751 62000								

### FTTr ..-1 type disconnector

Type	U <sub>r</sub> [kV]	I <sub>r</sub> [A]	a	b	f	$\approx g$	h	H	$\approx L$	o	t	v	w	x/y	x <sub>1</sub> /y <sub>1</sub>
FTTr 24-400-20-1	25/ $\sqrt{3}$	400	550	760	670	740	421	372	1017	30	315	45	375	270	270
FTTr 24-630-25-1		630								40					
FTTr 38,5-400-20-1	38,5/ $\sqrt{3}$	400	750	960	870	810	489	453	1309	30	430	45	500	270	270
FTTr 38,5-630-25-1		630								40					

Type	U <sub>r</sub> [kV]	I <sub>r</sub> [A]	without earthing switch		with earthing switch	
			Part Nr.	Weight approx. [kg]	Part Nr.	Weight approx. [kg]
FTTr 24-400-20-1	25/ $\sqrt{3}$	400	751 52002	26	751 52102	31
			751 62002		751 62102	
FTTr 38,5-400-20-1	38,5/ $\sqrt{3}$	400	751 82002	38	751 82102	43
			751 92002		751 92102	

## Auxiliary equipment

- hand operated drives mechanisms
- motor operated drives
- auxiliary switches
- fuses (of HH type)

## Arrangement of single and double actuators

for FT<sub>r</sub> outdoor disconnectors (6400 and 6410)

Figure 1

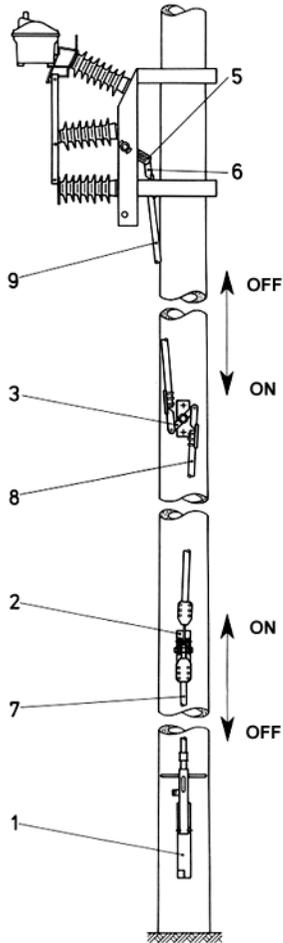


Figure 2

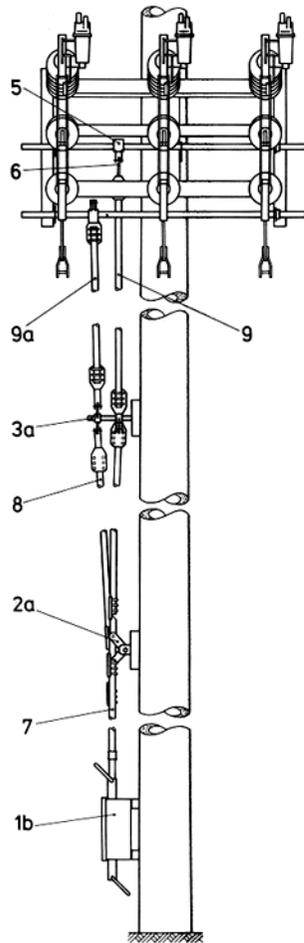


Figure 3

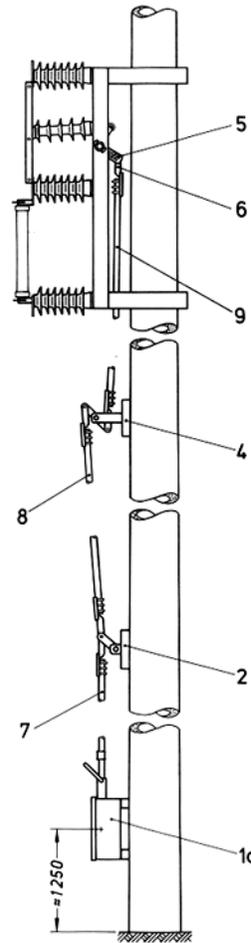
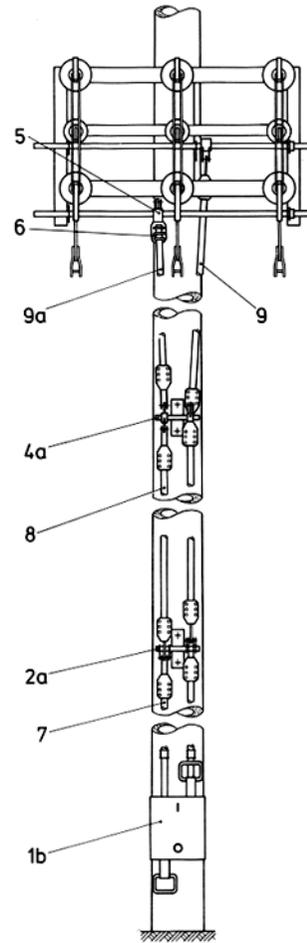


Figure 4



**Figure**

1. Load disconnector Fla 15/6400
2. Load disconnector Fla 15/6400 with earthing switch mounted below
3. Disconnector 6410 with fuse holders mounted below
4. Disconnector 6400 with earthing switch mounted below

**Item**

- 1 Single-actuator L, stroke 140 mm
- 1a Single box-type actuator, stroke 110 or 140 mm
- 1b Double box-type actuator
- 2 Single intermediate bearing
- 2a Double intermediate bearing
- 3 Single reversible bearing
- 3a Double reversible bearing
- 4 Single reversible bearing
- 4a Double reversible bearing
- 5 Forked clamping crank (gauge from 73 to 132.5 mm; hole matrix 8.5 mm)
- 6 Single stub head (with link bush)
- 7 Lower linkage rod, with thread
- 8 Linkage rod
- 9 Upper linkage rod for isolator or load-break switch
- 9a Upper linkage rod for earthing switch

**Earthing switch operating lever (left-hand lever) mechanically locked to the disconnector operating lever.**