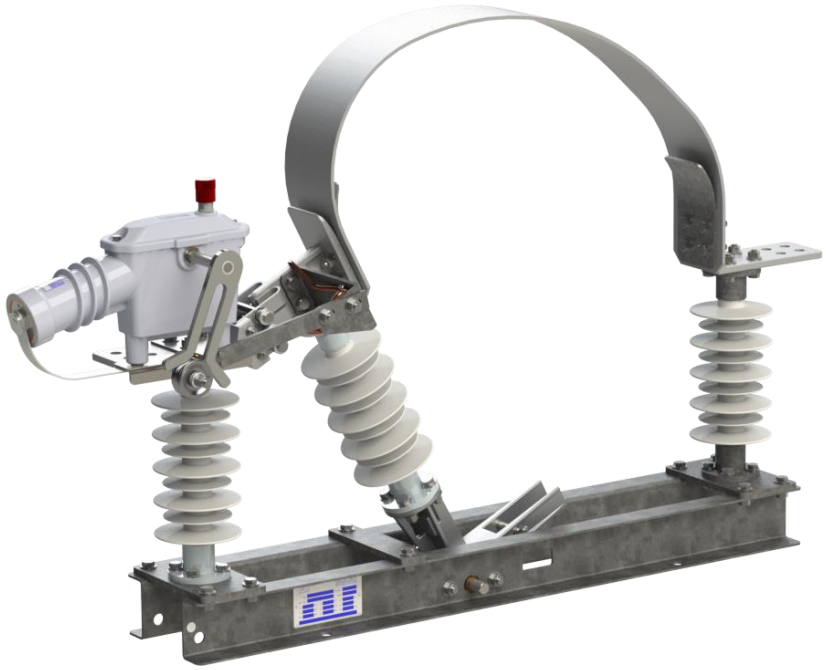
RAUSCHER STOECKLIN

Load Break Switch FHV-B1

Load break switch for 15 kV and 25 kV AC-overhead contact lines



The load break switch FHV-B1 is used to switch or isolate overhead contact lines under load with an AC voltage up to 25 kV.

In order to perform arc quenching, a special designed vacuum chamber performs the switching.

The switch FHV-B1 is of rocker type with two fixed and one movable insulators, the latter ensuring the switching, whereas the former two, placed at the switch's extremities, support the terminals. The length variation is absorbed by flexible copper strips.

The flat terminals allow different connections.

The load break switch is operated motorised or manually by rod or Flexball® (flexible rod). In addition two load break switches can be transformed to one bipolar load break switch.

Our load break switches are manufactured according to EN 62271-1, EN 62271-102 and EN 50152-2.

Thanks to a very long experience in the branch, our company has been awarded with accreditations by different national railways.

Overhead line switchgear

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Features and benefits

- All steel parts made of stainless or hot-dip galvanised steel
- Robust and torsion-free frame
- Minimum bending of the connection wire due to fixed terminals
- Completely maintenance-free vacuum chamber
- Switching-off procedure without external arc
- Short circuit making capacity under specific conditions possible
- Fixing on the supporting structure either by straps (free setting) or screws
- Easy on-site installation and setting
- High reliability ~ 10'000 cycles (depending on the making current)
- All conducting parts either silver, nickel or tin-plated
- Maintenance-free
- Options:
  - Status indication with voltage-free contacts (1x open, 1x closed); 2 limit switches and terminal box
  - Porcelain insulators instead of silicone insulators
  - Pre-arcing horns for increased making capacity
  - Current transformer instead of second fix insulator

Technical data

Rated values		15kV	25kV	
Nominal voltage	U_n	15	25	kV
Rated insulation voltage (acc. to IEC 62497-1)	U_{Nm}	17.5	27.5	kV
Rated voltage (acc. to IEC 62271-1)	U_r	36	52	kV
Rated frequency	f_r	16.7	50	Hz
Rated normal current	I_r	2'000	2'000	A

Withstand values		15kV	25kV	
1-minute power frequency withstand voltage (50Hz, dry & wet)	U_d			
A – To earth and between poles		70	95	kV
B – Across the isolating distance		95	110	kV
Impulse withstand voltage (1.2/50µs)	U_{Ni}			
A – To earth and between poles		170	250	kV
B – Across the isolating distance		195	290	kV

Short-circuit-current		15kV	25kV	
Rated short time withstand current	I_k	40	31.5	kA
Rated peak withstand current	I_p	100	80	kA
Rated duration of short circuit	t_k	1	3	s

Making and breaking current		15kV	25kV	
Rated breaking current at power factor 0.7	I_{break}	2'000	2'000	A
Rated making current at power factor 0.7	I_{make}	2'000	2'000	A
Breaking current at power factor 0.35	I_{break2}	10	10	A
Peak making current (duration 0.2s)	I_{ma}	16	16	kA
Peak making current (by closing with pre-arcing horns)	I_{ma}	32	32	kA

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Rauscher & Stoecklin AG
Reuslistrasse 32, CH-4450 Sissach
T +41 61 976 34 66, F +41 61 976 34 22
info@raustoc.ch, www.raustoc.ch

Geometry	15kV	25kV	
Minimum creepage distance (silicone insulators)	870	1255	mm
Operating stroke	120	180	mm
Weight	68	82	kg
Further dimensions		See drawing	

Lifetime		
Mechanical life	10‘000	Cycles
Rated short circuit	2	On

Environmental conditions		
Operating temperature	-30 up to +40	°C
Relative humidity	100	%
Solar radiation	1‘000	W/m²
Operating altitude	1‘000	a.s.l.
Icing	10	mm
Pollution degree (acc. to IEC 62497-1)	PD4B	
Wind speed	34	m/s

Options	FHV-B1
Forced earthing	-
Status indication	✓
Bipolar switch	✓
Pre-arcing horns for increased making capacity	✓

Norms	
EN 50152-2	Railway applications - Fixed installations - Particular requirements for alternating current switchgear - Part 2: Disconnectors, earthing switches and switches with nominal voltage above 1 kV
IEC 62505-2	Railway applications - Fixed installations - Particular requirements for a.c. switchgear - Part 2: Single-phase disconnectors, earthing switches and switches with Un above 1 kV
IEC 62271-1	High-voltage switchgear and controlgear - Part 1: Common specifications
IEC 62271-103	High-voltage switchgear and controlgear - Part 103: Switches for rated voltages above 1 kV up to and including 52 kV
IEC 62497-1	Railway applications - Insulation coordination - Part 1: Basic requirements - Clearances and creepage distances for all electrical and electronic equipment

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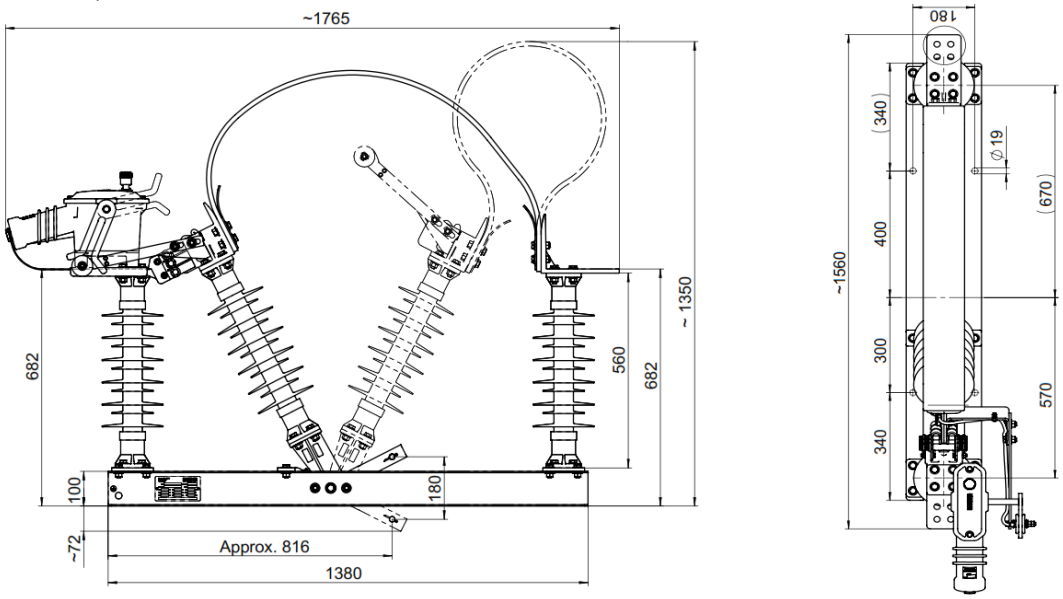
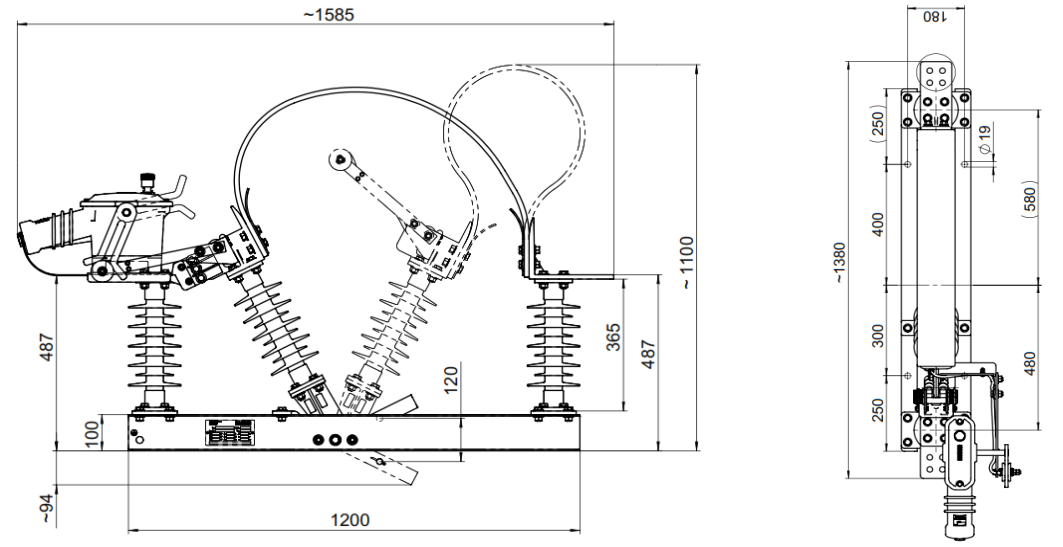
Dimensional drawings

FHV-B1-25/S



FHV-B1-15/S



Ordering information

Basic types	Description	Article-No.
FHV-B 1-25/S	Load break switch 25 kV with silicone insulators	21870
FHV-B1-15/S	Load break switch 15 kV with silicone insulators	21869

Options:

I	=	Status indication with voltage-free contacts (1x open, 1x closed); 2 limit switches and terminal box
P	=	Porcelain insulators instead of silicone insulators
V	=	Pre-arcing horns for higher short circuit making current
W	=	Current transformer

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