Lot. 6 (Item No. 25-27) MV Drop-Out Fuses

Medium voltage drop out fuses are needed to protect distribution transformers and also to protect lightly loaded spur lines. Fuse bases shall conform to the requirements of table shown below. The medium voltage fuse barrel carrying fuse links shall be of the disconnecting type suitable for opening, closing and removal when energised using an insulated operating stick.

Table 1: Standard Specification for Medium Voltage Drop Out Fuse Bases

Parameter	**33 kV**	**11 kV**
Applicable standard	IEC 60282-2,IS 9385 I-III	
Type	Explusion drop out type for outdoor use	
Rated current of the fuse base (A)	100	100
Rated load breaking capacity (A)	6	20
Insulation level: Dry Impulse withstand (1.2 kV/50 μs) voltage (positive & negative polarity) (peak) • Across the isolating distance of the fuse base kV • To earth and between poles kV Wet 1 min. Power frequency withstand voltage (rms.) • Across the isolating distance of the fuse base kV. • To earth and between poles kV	 195 170 80 70	 85 75 32 28
Rated short time breaking capacity (kA)	8	10
Minimum Creepage Distance	900	300
Mounting Arrangement	Vertical Mounting on two Channels	

Note: When fuses are required to be used above 1000 m, the rated insulation levels to be specified should be determined by appropriate correction factors.

Each cutout unit shall be supplied complete with connection terminals suitable for conductors ranging in size from 16 mm2 to 120 mm2. Details are given on drawing no. BPC-DDCS-2022-28 for 11 kV and 33 kV systems.

1 Fuse link

The fuse link shall be suitable for A.C system with a maximum system voltage of 12 kV and 36 kV and frequency of 50 Hz. The fuse link shall be suitable for use in distribution fuse cut

out, drop out type. The size of fuse link required will depend on the transformer size and should be in accordance with table 85. The wire expulsion fuse links shall be removable button head, single tail, Type T designed and constructed as per IEC 60282-2 of current ratings as given in table. The strain wire tensile strength should be enough to withstand pull forces and any mechanical shock in excess of 4.5 kg min. Button head and contact washer should be Tin/Silver platted. The overall length of the expulsion fuse link shall be 610mm to suit wide range of the fuse holders (fuse carriers) used on 11 kV and 33 kV system. The fuse link shall be of following ratings:

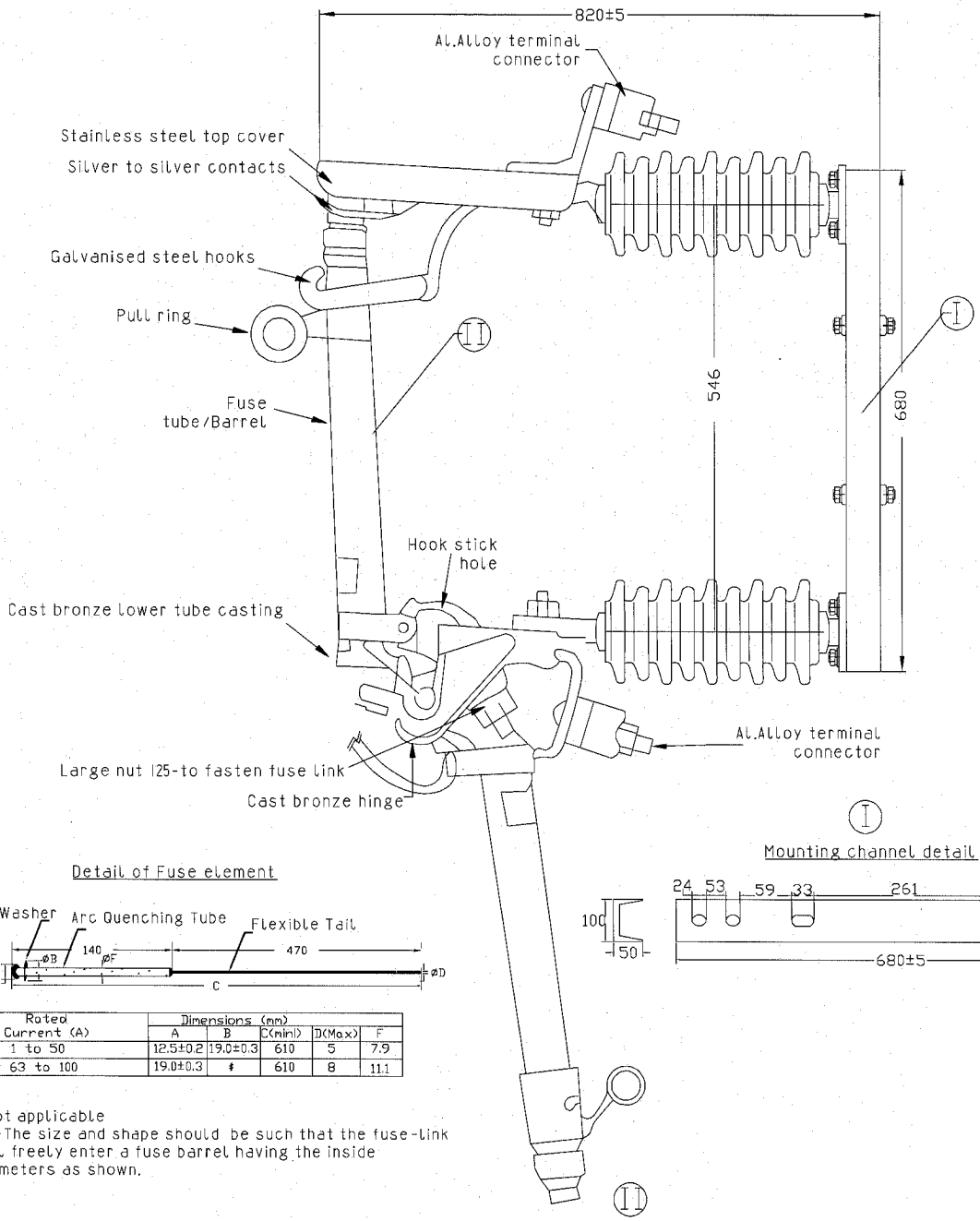
Table 2: Fuse Link Rating

Rated Voltage	Rated current (Amps)	Rated breaking capacity
12 kV	1, 2, 3, 6, 8, 10, 12, 15, 20, 25, 30, 40, 50, 65, 80, 100	10 kA
36 kV	1, 2, 3, 6, 8, 10, 12, 15, 20, 25, 30, 40, 50, 65, 80, 100	8 kA

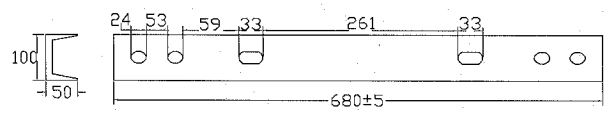
Note: Details of fuse link shown in drawing no. BPC-DDCS-2022-28

2 D.O. Barrels (Carrier Tube)

The carrier tube shall be made of Epoxy Resin Fibre Glass (ERFG). The tube shall have an electrical grade tube with good mechanical and high heat resistance properties. Inside liner of the fuse tube shall be constructed of a synthetic arc quenching material. The external surfaces shall be uniformly finished with polyuret and varnish or epoxy resin. The tube shall have a temperature index of at least 155°C. A removable button head type fuse link shall be able to fix to the arc shortening tube. The installation and removal of the fuse carrier shall be facilitated by inserting the operating rod into a lifting eye at the hinge end (lower) of the fuse carrier when it is in the dropped out position. An operating lever eye shall be provided at the top of the carrier to facilitate a downward pull by the operating rod to release the latch incorporated in the stationary upper contact. All castings such as upper and lower moving and fixed contacts, clamp type terminals, toggle mechanism shall be of phosphor bronze, silicon bronze, aluminium bronze or Silver-plated brass. The fuse barrel shall be as per the dimension indicated in the drawings.



Mounting channel detail

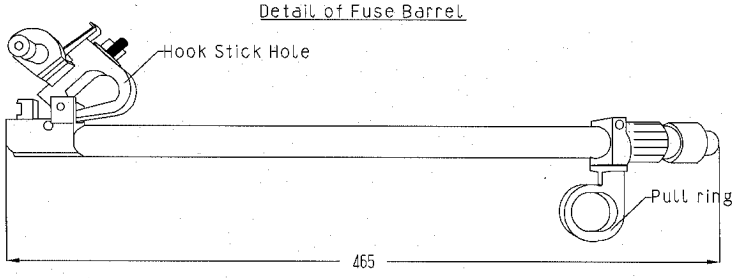


Detail of Fuse element

Rated Current (A)	Dimensions (mm)				
	A	B	C(min)	D(Max)	F
1 to 50	12.5±0.2	19.0±0.3	610	5	7.9
63 to 100	19.0±0.3	#	610	8	11.1

Not applicable
øF - The size and shape should be such that the fuse-link will freely enter a fuse barrel having the inside diameters as shown.

Detail of Fuse Barrel



ODxIDxLENGTH (26mmx13mmx465mm)

BHUTAN POWER CORPORATION LIMITED			ENGINEERING AND RESEARCH DEPARTMENT
			TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD
			Details of 11 kV and 33 kV Fuse Cut-out
TITLE	NAME	DATE	
DESIGNED BY			
CHECKED BY			DRAWING NO. BPC-DDCS-2022-28
APPROVED BY			REVISION 2022