

**TECHNICAL SPECIFICATION OF 11KV, 22KV AIR BREAK SWITCH
WITH POLYMER INSULATOR**

MATERIAL SPECIFICATION CELL

TECHNICAL SPECIFICATION
OF

11KV, 22KV AIR BREAK SWITCH
WITH POLYMER INSULATOR

**TECHNICAL SPECIFICATION OF 11KV, 22KV AIR BREAK SWITCH
WITH POLYMER INSULATOR****Table of Contents**

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**TECHNICAL SPECIFICATION OF 11KV, 22KV AIR BREAK SWITCH
WITH POLYMER INSULATOR**

1.00 SCOPE

This specification covers the Design, manufacture & testing at works and supply of Air Break Switches with Polymer Insulator suitable for 11 kV & 22 kV System Voltages.

2.00 SERVICE CONDITIONS

The equipment to be supplied against this Specification shall be suitable for use under the following tropical conditions.

Environmental Conditions

- | | |
|--|-----------------------|
| a) Maximum ambient temperature | 50° C |
| b) Maximum ambient temperature in shade | 45° C |
| c) Minimum temperature of air in shade | 35° C |
| d) Maximum daily average Temperature | 40° C |
| e) Maximum yearly weighted average Temperature | 32° C |
| f) Relative Humidity | 10 to 100 % |
| g) Maximum Annual rainfall | 1450 mm |
| h) Maximum wind pressure | 150 Kg/m ² |
| i) Maximum altitude above mean sea level | 1000 meters |
| j) Isoceraunic level | 50 days/year |
| k) Seismic level (Horizontal acceleration) | 0.3 g |
| l) Climate: Moderately hot and humid tropical climate conducive to rust and fungus growth. | |

3.00 SYSTEM VOLTAGE

The systems on which the AB Switches will be installed will be:

- i) 11 kV, 3 Phase, 50 Hz with solidly earthed neutral system.
- ii) 22 kV, 3 Phase, 50 Hz with solidly earthed neutral system.

The rated voltage shall be 12kV/24kV.

4.00 APPLICABLE STANDARD

Unless otherwise stipulated in this Specifications, the A.B. Switches shall conform to IEC 62271-103 amended upto date. In case of difference, if any, between this specification and the IEC 62271-103 amended upto date the provisions of this specification will hold good.

5.00 CURRENT CAPACITY

5.01 Current Carrying Capacity

The continuous current carrying capacity for the different system voltages shall be as under:

<u>System Voltage</u>	<u>Current carrying capacity</u>
a) 11 kV	400 Amps.
b) 22 kV	400 Amps.

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5.02 Rated Short Time Current

The rated short time current for 1 sec. shall be 16 kA.

5.03 Rated Peak Withstand Current

The value of peak current that the switch can withstand in the closed position shall be 40 kA.

5.04 Rated mainly active load breaking capacity

The rated mainly active load breaking capacity shall be 10 A.

5.05 Rated transformer off-load breaking capacity

The rated transformer off-load breaking capacity shall be 6.3 A(rms).

5.06 Rated line-charging breaking capacity

The rated line-charging breaking capacity shall be 2.5 A(rms).

5.07 Rated Cable charging breaking capacity

The rated cable charging breaking capacity shall be 10 A(rms).

6.00 NUMBER OF POSTS

Number of posts per phase for different system voltages shall be as under:-

- i) 11 kV three posts per phase. Each post having single Insulator unit.
- ii) 22 kV three posts per phase. Each post having single Insulator unit.

7.00 GENERAL REQUIREMENTS

7.01 A. B. SWITCH IN GENERAL

The A.B. switch shall be of outdoor type. They shall be of triple pole, gang operated type and shall be suitable for horizontal or vertical installation. The A.B. switch should be with arcing horns. The sizes of rods used for arcing horns would be 8 mm. M.S. hot dip galvanized. The current carrying connectors should be of two-bolt type having nuts and bolts, with spring washer & plane washers. Connectors shall be of tinned copper. All ferrous parts shall be hot dip galvanized and copper parts heavily tinned.

All current carrying parts should have current density less than 1.6 Amps/sq.mm. & the minimum cross section for fixed contact shall be 300 sq.mm. In case of flexible copper braided tape, the weight of tape shall be minimum 475 grams for 11 kV rating and 675 grams for 22 kV rating per phase including terminal bracket.

All joints in current carrying path shall be of two bolt type. Each joint shall be provided with one plane and one spring washer of not less than 2 mm thickness.

7.02 POLYMER POST INSULATOR

Design & manufacture of post insulator to be used in A. B. Switch assembly should be such that stresses due to expansion & contraction in any part of the Insulator shall not lead to deterioration. The faces of metal fittings shall be parallel and at right angle to the axis of insulator and corresponding holes on top and bottom metal fittings shall lie in a vertical plane containing the axis of the Insulator. End fittings shall be made of spheroidal graphite cast iron,

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malleable cast iron, forged steel or aluminum alloy. The vertical alignment of post insulator must not vary after operations.

Each Polymer Post Insulator should confirm to the requirements of IEC 61109 amended upto date.

7.03 FIXED AND MOVABLE CONTACT SYATEM

The fixed & moving contacts material shall be electrolytic hard-drawn copper heavily tinned. The contact shall be of high pressure and self aligning type with positive wiping action and minimum contact pressure shall be 1/4 lb. per amp. of current carrying capacity.

Supplier has to supply A.B. Switch units manufactured only as per the details given in the enclosed drawings.

7.04 MECHANICAL STRENGTH

A.B. Switches shall withstand rated mechanical terminal load and electromagnetic forces without impairing their operational reliability or current carrying properties.

7.05 SECURING POSITIONS

A.B. Switches inclusive of their operating mechanism should not come out of their open or closed positions by gravity, wind pressure, vibrations or reasonable shocks.

A.B. Switches shall be capable of resisting in closed position the dynamic and thermic effects of the maximum possible short circuit current at the installation point and should not open under the influence of short circuit current.

7.06 NAME PLATE

A.B. Switches shall be provided with a nameplate containing following information.

Name of manufacturer.

Order reference.

Rated voltage-kV

Rated normal current in Amps.

Rated one second short-time current in Amps.

Year & Month of Manufacture.

Name of manufacturer should also be provided on the operating device. The nameplate should be riveted to the base channel at the center of each pole and operating mechanism including parts. Sticker may be used for parts of operating mechanism.

7.07 PHASE TO PHASE CLEARANCE

The phase to phase clearance shall be as under :-

System Voltage.	Phase to phase clearance
11 kV	75 cm.
22 kV	122 cm.

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7.08 ISOLATING DISTANCE

The minimum distance between the fixed and the nearest part on the moving contact in the completely open position should not be less than the following for different system voltage.

System Voltage	Min. Isolating Distance
11 kV	31 cm.
22 kV	46 cm.

7.09 OPERATING MECHANISM

This should comprise of 'B' Class G.I. Operating pipe of 32 mm outer diameter and 6 meter length in single piece without joint. The mechanism should give good mechanical leverage with minimum of loose/lost motion. There should be provision for pad-locking in both 'on' and 'off' position.

8.00 TESTS

8.01 TYPE TESTS:

A) A.B. SWITCH

The tenderer shall furnish following Type Tests carried out on A. B. Switches as per IEC 62271-103 amended upto date alongwith the offer.

- i) Lightning Impulse Voltage Withstand Test
- ii) Dry & Wet Power Frequency Voltage Withstand Test
- iii) Temperature rise test
- iv) Measurement of Resistance of Main Circuit
- v) Mechanical Endurance test
- vi) Short Time Withstand Current & Peak Withstand Current Test (The short time current rating for 1 second should be 16 kArms)

The A.B Switch should confirm to the following characteristics.

Sr. No.	System Voltage	Lightning Impulse Withstand Voltage with +ve & -ve Polarity		Power Frequency Withstand Voltage (Dry & Wet)	
		Across the Isolating Distance (kV Peak)	To Earth & between poles (kV Peak)	Across the Isolating Distance (kV Peak)	To Earth & between poles (kV Peak)
1.	11 kV	85	75	32	28
2.	22 kV	145	125	60	50

All the above type tests shall be carried out as per IEC 62271-103 amended upto date at laboratories which are accredited by the National Accreditation Board of Testing and Calibration Laboratories (NABL) of Govt. of India. These type tests should have been carried out within five years prior to the date of opening of the tender.

B) POLYMER POST INSULATOR:

The tenderer will clearly & specifically indicate the name of manufacturer of Polymer Post Insulator. Accordingly, tenderer shall furnish following Type Tests carried out on Polymer Post Insulator as per IEC 61109 amended upto date alongwith the offer.

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Sr. No.	Type Test	Test Procedure/Standard
1.	Dry Lightning Impulse Withstand Voltage test	IEC 61109 (Clause No. 11.1)
2.	Wet power frequency test	IEC 61109 (Clause No. 11.1)
3.	Damage Limit proof test and test of tightness of the interface between end fittings & Insulator housing	IEC 61109 (Clause No. 11.2)
4.	Radio Interference test	IEC 60437
5.	Recovery of Hydrophobicity test	Annexure 'A'
6.	Chemical Composition test for Silicon Content	Annexure 'A' or any other test method acceptable to the owner
7.	Brittle Fracture resistance test	Annexure 'A'

The Polymer Post Insulators should confirm to the following characteristics.

Sr No	System Voltage	Impulse Withstand Voltage in kV	Impulse Flashover Voltage in kV	Wet Power Frequency Withstand Voltage in kV	Power Frequency Flashover Voltage in kV		Creepage Distance in mm	FRP Rod Dia. in mm.
					Dry	Wet		
1.	11 kV	75	125	35	80	50	320	24
2.	22 kV	125	160	55	120	85	560	34

All the above Type Tests shall be carried out as per IEC 61109 amended upto date at laboratories which are accredited by the National Accreditation Board of Testing and Calibration Laboratories (NABL) of Govt. of India. These type tests should have been carried out within five years prior to the date of opening of the tender.

The Tenderer shall submit all the Type Test reports of A.B. Switch & Post Insulators as per relevant IS/IEC to the office of the Chief Engineer (Testing & QC) and get it approved as per Tender conditions.

8.02 ROUTINE TESTS

A) A.B. SWITCH

Each A.B. Switch manufactured & to be supplied will be subjected to following routine tests.

- i) Power Frequency Voltage (Dry) Test on AB Switches which are completely assembled at Manufacturer's work.
- ii) Measurement of resistance of main circuit
- iii) Design & Visual Checks
- iv) Mechanical operating test

B) POLYMER POST INSULATOR:

Each Polymer Post Insulator will be subjected to following routine tests.

- i) Mechanical routine test
- ii) Visual Examination
- iii) Identification of marking

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8.03 ACCEPTANCE TESTS

A) A.B. SWITCH

The following shall be acceptance tests for complete A.B. Switch.

- i) Temperature Rise Test
- ii) Measurement of resistance of main circuit
- iii) Power Frequency Voltage (Dry) Test on main circuit
- iv) Design & Visual Checks
- v) Mechanical operating test
- vi) Galvanizing test as per IS 2633 (amended upto date)

B) POLYMER POST INSULATOR:

The following shall be acceptance tests for Porcelain Post Insulator.

- i) Verification of Dimensions
- ii) Verification of the end fittings used including, if applicable, verification of locking system
- iii) Verification of tightness of interface between end fittings & Insulator housing
- iv) Verification of the specified mechanical load
- v) Galvanizing test

- 8.04** It shall be sole responsibility of the supplier to carry out through inspection & quality checks on the Insulators at the Insulator supplier works, before offering the Insulators for MSEDCL's inspection. The AB Switch shall be supplied duly assembled.

9.00 TESTING FACILITIES

The tenderer shall clearly indicate what testing facilities are available in the works of manufacturer & whether facilities are adequate to carry out all Acceptance & Routine Tests. These facilities should be available to MSEDCL's Engineers if deputed or carry out or witness the tests in the manufacturer works.

10.00 DRAWINGS

A.B. Switch shall be manufactured as per details given in the drawings attached. The tenderer shall furnish following drawings to the office of Chief Engineer (Testing & QC) and get it approved as per tender conditions.

- i) GA drawing of AB Switch with Polymer Post Insulator
- ii) Details of Fixed & Moving Contact
- iii) Drawing of Polymer Post Insulator

11.00 INSPECTION

The inspection may be carried out by the MSEDCL at any stage of manufacture. The successful Tenderer shall grant free access to the MSEDCL's representative at a reasonable time when the work is in progress. Inspection and acceptance of any equipment under this specification by the MSEDCL, shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective. The supplier shall keep the MSEDCL informed in advance, about the manufacturing programme so that arrangement can be made for inspection.

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12.00 DESPATCHES:

From the A.B. Switches received in the stores, two sample switches shall be taken out by MSEDCL's authority and all dimensions will be checked & every sample cutout will be subjected to test for it's trouble free operation. A minimum 50 operations shall be performed on each sample. The payment/SR note shall be released only after satisfactory test for trouble free operation.

13.00 SCHEDULE:

The tenderer shall fill in the following schedules which form part of tender Specification & offer. If the schedules are not submitted duly filled in with the offer, the offer shall be liable for rejection.

SCHEDULE 'A' – GUARANTEED TECHNICAL PARTICULARS

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ANNEXURE - A

Tests on Insulator units

1. RIV Test (Dry)

The insulator along with complete hardware fittings shall have a radio interference voltage level below 100 micro volts at one MHz when subjected to 50 Hz AC voltage of 10kv, 20kV for 11kV, 22kV class insulators respectively under dry condition. The test procedure shall be in accordance with IS:8263 /IEC:437/CISPR 18-2.

2. Brittle Fracture Resistance Test

Brittle fracture test shall be carried out on naked rod along with end fitting by applying "1n HNO₃ acid" (63 g conc. HNO₃ added to 937 g water) to the rod. The rod should be held 80% of SML for the duration of the test. The rod should not fail within the 96-hour test duration. Test arrangement should ensure continuous wetting of the rod with Nitric acid.

3. Recovery of Hydrophobicity & Corona test

The test shall be carried out on 4mm thick samples of 5cm X 7cm.

- (i) The surface of selected samples shall be cleaned with isopropyl alcohol. Allow the surface to dry and spray with water. Record the Hydrophobicity classification in line with STRI guide for Hydrophobicity classification. Dry the sample surface.
- (ii) The sample shall be subjected to mechanical stress by bending the sample over a ground electrode. Corona is continuously generated by applying 12 kV to a needle like electrode placed 1mm above the sample surface. The test shall be done for 100 hrs.
- (iii) Immediately after the corona treatment, spray the surface with water and record the HC classification. Dry the surface and repeat the corona treatment as at clause 2 above. Note HC classification. Repeat the cycle for 1000 hrs. or until an HC of 6 or 7 is obtained. Dry the sample surface.
- (iv) Allow the sample to recover and repeat hydrophobicity measurement at several time intervals. Silicone rubber should recover to HC 1 – HC 2 within 24 to 48 hours, depending on the material and the intensity of the corona treatment.

4. Chemical Composition test for Silicon Content

The content of silicon in the composite polymer shall be evaluated by EDX (Energy Dispersion X- ray) Analysis or Thermo-gravimetric analysis. The test may be carried out at CPRI or any other NABL accredited laboratory.

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**SCHEDULE – ‘A’
GUARANTEED TECHNICAL PARTICULARS
11KV AB SWITCH WITH POLYMER INSULATOR**

Sr. No.	Particulars	MSEDCL Requirement	To be offered by Bidder
1.	Name of Manufacturer	Mfg to give details	Text
2.	Works Address	Mfg to give details	Text
3.	Manufacturers Type	11kV 400Amp AB Switch With Polymer Post Insulator	Text
4.	Relevant IS	IEC 62271-103 amended upto date	Text
5.	Rated Voltage	12 kV	Text
6.	Rated Frequency	50 Hz	Text
7.	Continuous current Rating	400 Amp	Text
8.	Rated Short Time Withstand Current for one second	16 kA rms	Text
9.	Rated Peak Withstand Current for one second	40 kA (Peak)	Text
10.	Lightning Impulse Withstand Voltage		
a.	Across the Isolating distance	85 kV (Peak)	Text
b.	To Earth & Between Poles	75 kV (Peak)	Text
11.	Power Frequency Withstand Voltage (Dry & Wet)		
a.	Across the Isolating distance	32 kV rms	Text
b.	To Earth & Between Poles	28 kV rms	Text
12.	Temperature Rise	Within permissible limit as per IEC 62271-103 amended upto date	Text
13.	Material of Fixed & Moving contact	Electrolytic Hard drawn Tinned Copper	Text
14.	Cross Section area of Fixed contact (min.)	300 sq.mm. (min.)	Text
15.	Cross Section area of moving contact (min.)	250 sq.mm. (min.)	Text
16.	Material of connector	Tinned Copper	Text
17.	Cross Section area of connector (min.)	250 sq.mm. (min.)	Text
18.	Phase to Phase clearance	750 mm	Text
19.	Minimum isolating distance (In open Position)	310 mm	Text
20.	GI Operating Pipe	6 meter, 32mm OD, Class ‘B’	Text
21.	Weight of flexible Tinned copper braided tape including terminal bracket	475 grams/phase	Text

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22.	Number of breaks per phase	Single	Text
23.	Operating horizontal (solid) square Rod	25x25sq.mm.	Text
24.	Type of installation	Vertical or Horizontal	Text
25.	Outdoor/Indoor	Outdoor	Text
26.	Size of Base Channel	75mmx40mmx5mm	Text
27.	Polymer Post Insulator		
a.	Rated Voltage	12kV	Text
b.	Applicable Standard	IEC 61109 amended upto date	Text
c.	Make of Post Insulator	Mfg to give details	Text
d.	CD of Pin Insulator (min.)	320mm (min.)	Text
e.	Post Insulators per phase	3 Nos.	Text
f.	FRP Rod Dia.	24mm	Text
28.	Total weight of AB Switch	Mfg. to give details	Text

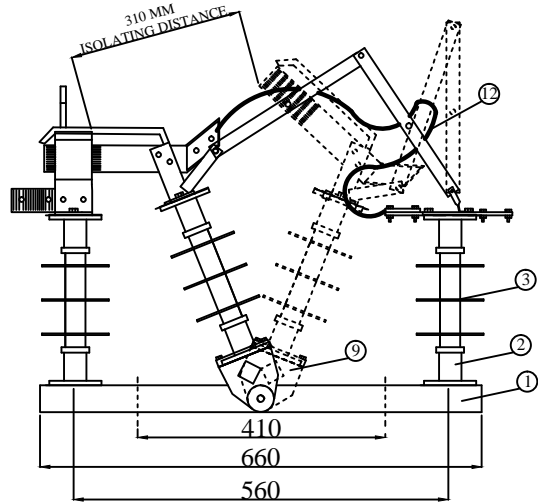
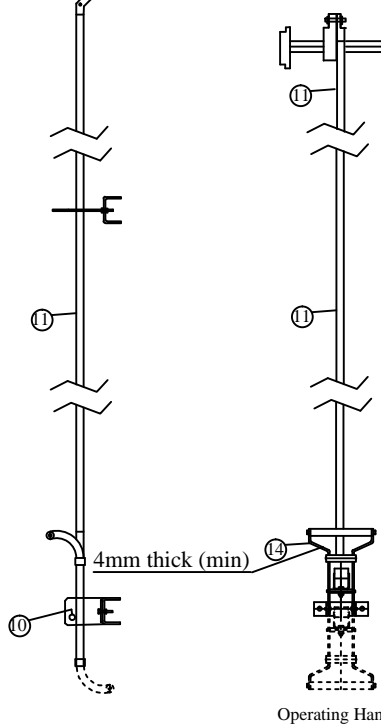
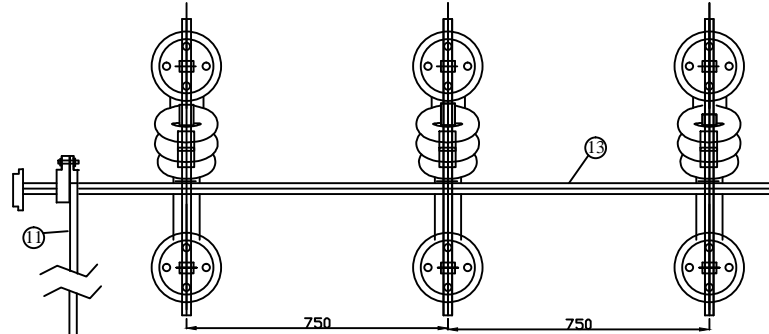
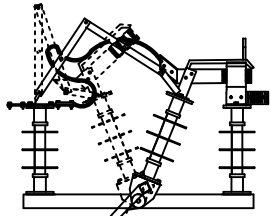
**TECHNICAL SPECIFICATION OF 11KV, 22KV AIR BREAK SWITCH
WITH POLYMER INSULATOR**

**SCHEDULE – ‘A’
GUARANTEED TECHNICAL PARTICULARS
22 KV AB SWITCH WITH POLYMER INSULATOR**

Sr. No.	Particulars	MSEDCL Requirement	To be offered by Bidder
1.	Name of Manufacturer	Mfg to give details	Text
2.	Works Address	Mfg to give details	Text
3.	Manufacturers Type	22kV 400Amp AB Switch With Polymer Post Insulator	Text
4.	Relevant IS	IEC 62271-103 amended upto date	Text
5.	Rated Voltage	24 kV	Text
6.	Rated Frequency	50 Hz	Text
7.	Continuous current Rating	400 Amp	Text
8.	Rated Short Time Withstand Current for one second	16 kA rms	Text
9.	Rated Peak Withstand Current for one second	40 kA (Peak)	Text
10.	Lightning Impulse Withstand Voltage		
a.	Across the Isolating distance	145 kV (Peak)	Text
b.	To Earth & Between Poles	125 kV (Peak)	Text
11.	Power Frequency Withstand Voltage (Dry & Wet)		
a.	Across the Isolating distance	60 kV rms	Text
b.	To Earth & Between Poles	50 kV rms	Text
12.	Temperature Rise	Within permissible limit as per IEC 62271-103 amended upto date	Text
13.	Material of Fixed & Moving contact	Electrolytic Hard drawn Tinned Copper	Text
14.	Cross Section area of Fixed contact (min.)	300 sq.mm. (min.)	Text
15.	Cross Section area of moving contact (min.)	250 sq.mm. (min.)	Text
16.	Material of connector	Tinned Copper	Text
17.	Cross Section area of connector (min.)	250 sq.mm. (min.)	Text
18.	Phase to Phase clearance	1220 mm	Text
19.	Minimum isolating distance (In open Position)	460 mm	Text
20.	GI Operating Pipe	6 meter, 32mm OD, Class 'B'	Text
21.	Weight of flexible Tinned copper braided tape including terminal bracket	675 grams/phase	Text

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WITH POLYMER INSULATOR**

22.	Number of breaks per phase	Single	Text
23.	Operating horizontal (solid) square Rod	25x25sq.mm.	Text
24.	Type of installation	Vertical or Horizontal	Text
25.	Outdoor/Indoor	Outdoor	Text
26.	Size of Base Channel	75mmx40mmx5mm	Text
27.	Polymer Post Insulator		
a.	Rated Voltage	24 kV	Text
b.	Applicable Standard	IEC 61109 amended upto date	Text
c.	Make of Post Insulator	Mfg to give details	Text
d.	CD of Pin Insulator (min.)	560 mm (min.)	Text
e.	Post Insulators per phase	3 Nos.	Text
f.	FRP Rod Dia.	34mm	Text
28.	Total weight of AB Switch	Mfg. to give details	Text



Operating Handle

Notes:-

1. All nuts, bolts for current carrying parts are of Stainless steel only. Plain & spring washers are provided.
2. All nuts, bolts, washers used for assembly for non current carrying parts are H.D. Galvanised.
3. All ferrous parts are H.D. Galvanised.
4. Copper parts are heavily tinned.
5. All dimensions are in mm.
6. Riveting For MS support- 8mm

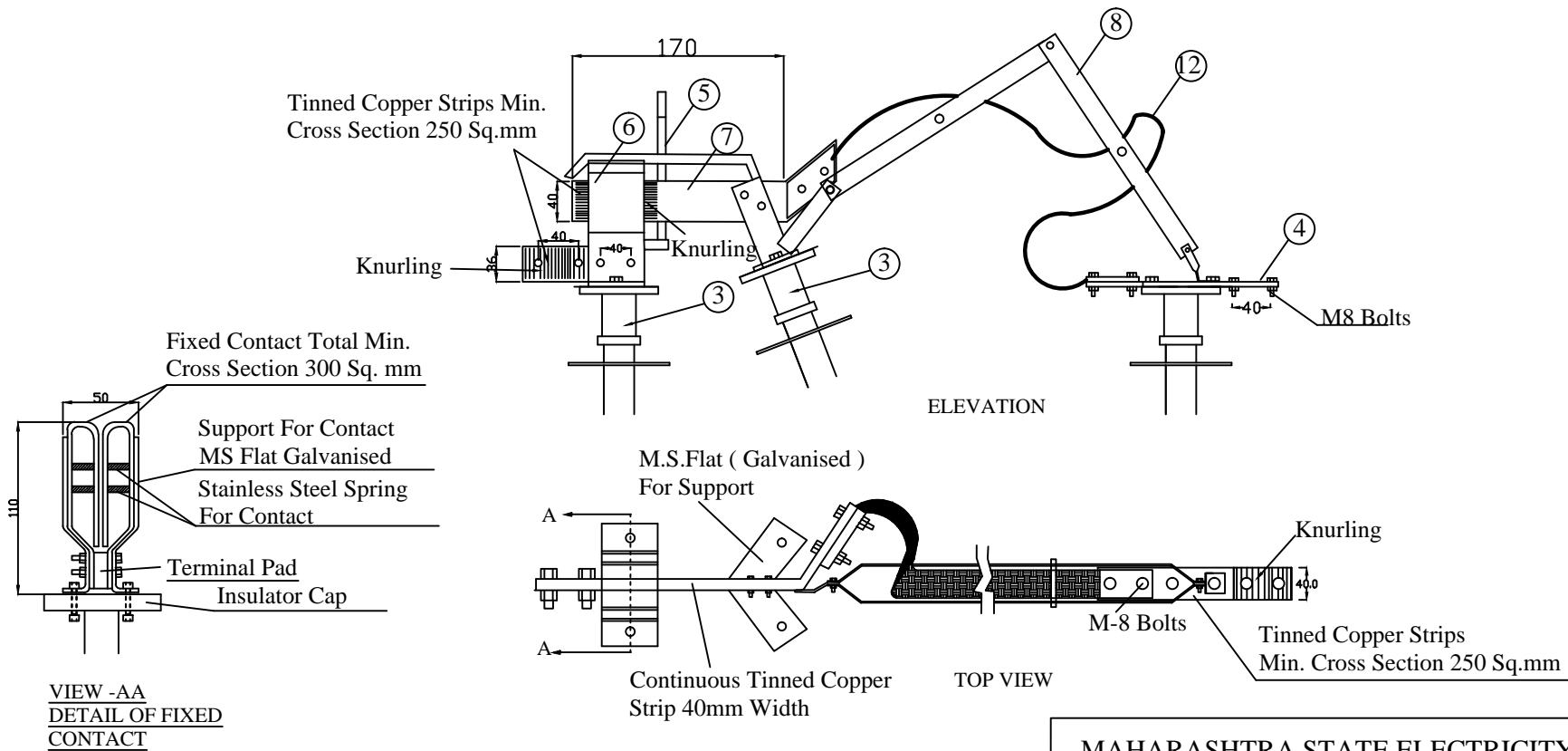
SR. No.	Description	Qty	Material	Specification
1	Base Channel	3	MS HD Galvanised 75 X 40 X 5mm	IS 2062
2	Base of Post Insulator	9	SGCI / MCI / Forged Steel / AL. Alloy	As per specification
3	Post Insulator	9	Polymer	IEC 61109
4	Connector	6	Tinned Copper	As per specification
5	Arcing Horns	6	MS HD Galvanised 8mm	As per specification
6	Fixed Contact	3	Electrolytic Hard Drawn Tinned Copper	As per specification
7	Moving Contact	3	Electrolytic Hard Drawn Tinned Copper	As per specification
8	MS Supporters strip with spacer	3	MS HD Galvanised	IS 2062
9	CI Roller / MS HDG	3	Cast Iron / MS HD Galvanised	As per specification
10	Locking Arrangement	1	MS HD Galvanised	IS 2062
11	Operating Pipe Vertical 6 mtr. 32mm OD Class B	1	GI Pipe	IS 1239
12	Flexible Copper Braided Tape	3	Tinned Copper	As per specification
13	Operating Horizontal (Solid) Square Rod	1	GI 25 x 25 Sq. mm	As per IS
14	Operating ON / OFF Handle	1	MS HD Galvanised	

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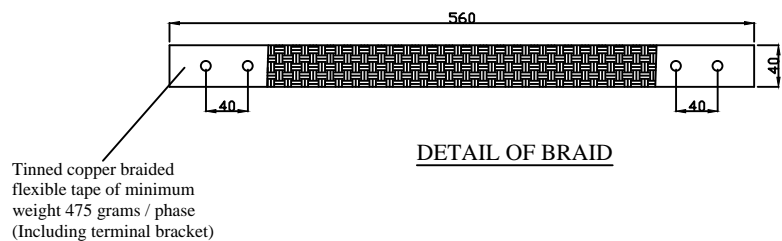
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DRG NO.:- 11KV / AB / POLYMER / 001- sheet 1 of 2

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**VIEW -AA
DETAIL OF FIXED
CONTACT**



DETAIL OF BRAID

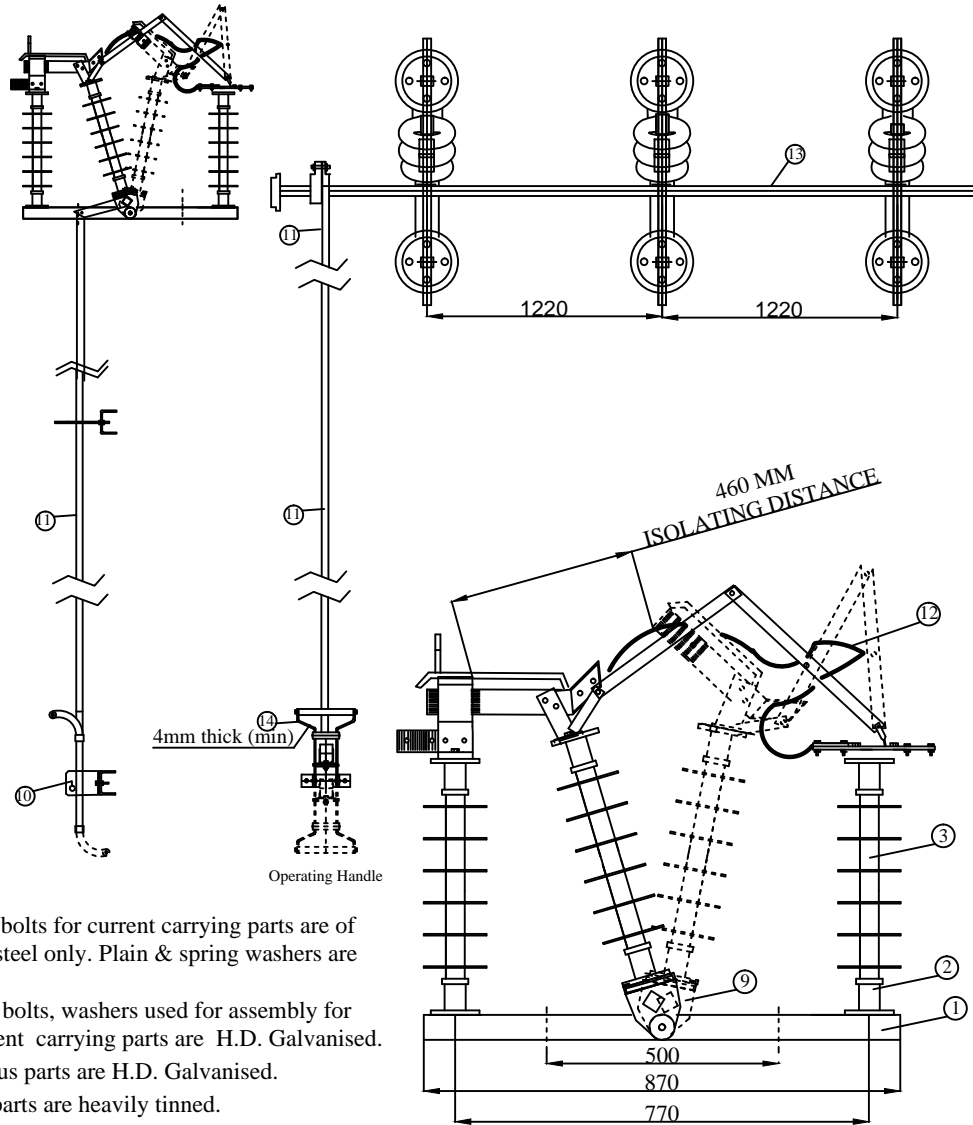
Tinned copper braided flexible tape of minimum weight 475 grams / phase (Including terminal bracket)

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NAME:- **DETAIL OF FIXED & MOVING CONTACT OF 11KV 400AMP AB SWITCH WITH POLYMER INSULATOR**

DRG NO.:- **11KV /AB / POLYMER / 001- Sheet 2 of 2**

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Notes:-

1. All nuts, bolts for current carrying parts are of Stainless steel only. Plain & spring washers are provided.
2. All nuts, bolts, washers used for assembly for non current carrying parts are H.D. Galvanised.
3. All ferrous parts are H.D. Galvanised.
4. Copper parts are heavily tinned.
5. All dimensions are in mm.
6. Riveting For MS support- 8mm

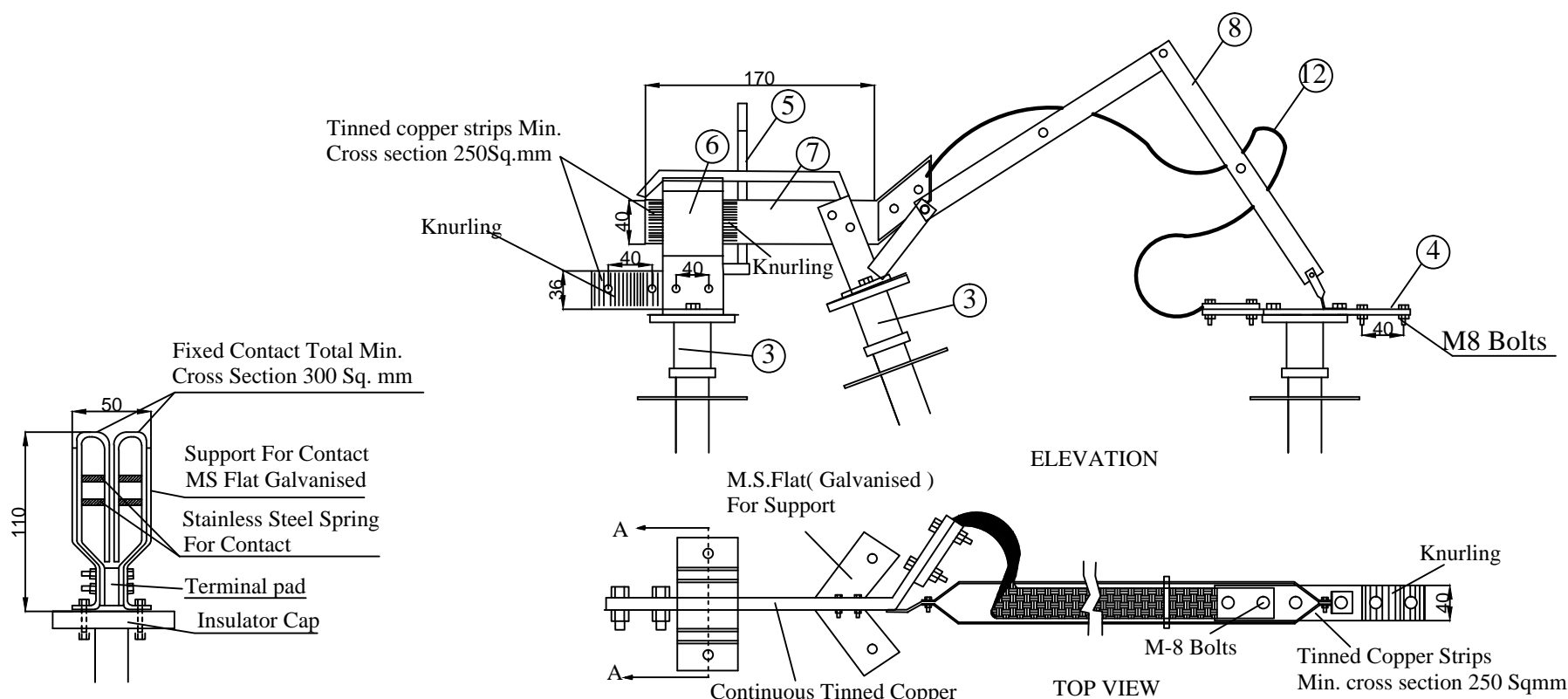
SR. No.	Description	Qty	Material	Specification
1	Base Channel	3	MS HD Galvanised 75 X 40 X 5mm	IS 2062
2	Base of Post Insulator	9	SGCI / MCI / Forged Steel / AL. Alloy	As per specification
3	Post Insulator	9	Polymer	IEC 61109
4	Connector	6	Tinned Copper	As per specification
5	Arcing Horns	6	MS HD Galvanised 8mm	As per specification
6	Fixed Contact	3	Electrolytic Hard Drawn Tinned Copper	As per specification
7	Moving Contact	3	Electrolytic Hard Drawn Tinned Copper	As per specification
8	MS Supporters strip with spacer	3	MS HD Galvanised	IS 2062
9	CI Roller / MS HDG	3	Cast Iron / MS HD Galvanised	As per specification
10	Locking Arrangement	1	MS HD Galvanised	IS 2062
11	Operating Pipe Vertical 6 mtr. 32mm OD Class B	1	GI Pipe	IS 1239
12	Flexible Copper Braided Tape	3	Tinned Copper	As per specification
13	Operating Horizontal (Solid) Square Rod	1	GI 25 x 25 Sq. mm	As per IS
14	Operating ON / OFF Handle	1	MS HD Galvanised	

MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY LTD.

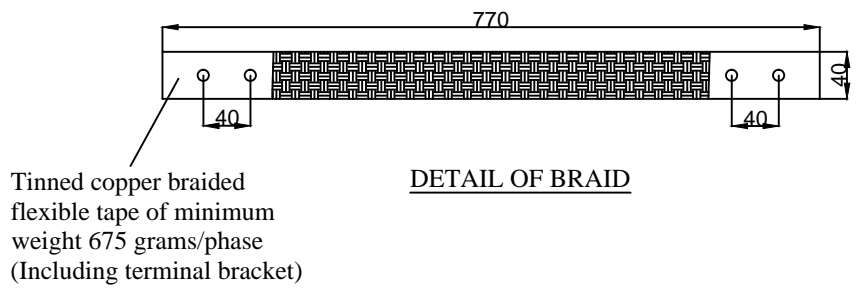
NAME:- GA DRAWING OF 22KV 400AMP AB SWITCH WITH POLYMER INSULATOR

DRG NO.:-22KV / AB / POLYMER / 001- sheet 1 of 2

			RIV. :-0.0
CHECKED BY	APPROVED BY	DATE	



VIEW -AA
DETAIL OF FIXED CONTACT



MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY LTD.			
NAME:- DETAIL OF FIXED & MOVING CONTACT OF 22KV 400AMP AB SWITCH WITH POLYMER INSULATOR			
DRG NO.:- 22KV /AB / POLYMER / 001- Sheet 2 of 2			
			RIV. :-0.0
CHECKED BY	APPROVED BY	DATE	