



**GUJARAT ENERGY TRANSMISSION  
CORPORATION LTD.**

**SARADAR PATEL VIDYUT BHAVAN,  
RACE COURSE, BARODA – 390 007.**

**TECHNICAL SPECIFICATIONS  
FOR**

**400 KV, 220 KV, 132 KV & 66 KV  
SOLIDCORE POST INSULATORS**

GETCO/E/4,2,1,6 TS – 1-400BPI/R4 June-22

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**TECHNICAL SPECIFICATION FOR 400/220/132/66 KV  
SOLIDCORE POST INSULATORS**

**1 SCOPE**

This specification provides for the supply of 400, 220, 132, & 66 kV solid core post insulators required for the 400 kV, 220 kV, 132 kV or 66 kV sub-stations at various sites in State of Gujarat.

**2 DESIGN**

The post insulator required for sub-station shall be of outdoor type suitable for operation under tropical conditions with high temperature, humidity and rainfall. The insulation level should be as under:

Item	Power frequency <u>withstand value</u> 1 min (dry)/ (wet) in KV (rms)	Impulse withstand <u>strength</u> KV (Peak)
400KV Solid core post insulator	760/680 KV (w/o arc horns)	1550 KVp
220 KV solid core post insulator	510/460 KV	1050 KVp
132kV solid core post insulator	275 KV	650 KVp
66kV solid core post insulator	165/140KV	350 KVp

the post insulator shall be suitable for outdoor operation and shall be suitable for mounting on *lattice* or one pole structure. *The mounting bolts, nuts and washers shall be in the scope of supply.*

**3 PROTECTION AGAINST CORROSION**

All malleable iron steel work, steel bolts and nuts and flanges shall be hot dip galvanized in accordance with IS: 2629/1966 with the latest amendment thereof.

**4 ELECTRICAL AND MECHANICAL CHARACTERISTICS OF INSULATORS**

Imported insulator meeting electrical and mechanical characteristics will be accepted if only they are offered against suppliers import license and the transit breakages if any, are also covered by the supplier for replacement of material from their stock. Insulators shall be of "Post Type" and the metal fitting cemented by insulator manufacturers.

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## 5 TECHNICAL PARTICULARS

Technical particulars of 400 220, 132 & 66 KV solid core post insulator (Guaranteed details to be furnished by the bidder in Schedule-A attached with the specification).

Sr. No.	Description	Unit	Solid core post insulator			
			400 kV	220 kV	132 kV	66 kV
01	02	03	04	05	06	07
01	Highest system voltage	KV	420	245	145	72.5
02	Height of unit	mm	3910	2300±3.5	1500±2.5	770 ± 1
03	Bending strength (approximate failing load): a) Upright	Kgf	800	800	600	400
04	Tensile strength (Approximate)	Kgf	17,000	8000	7000	3500
05	Compression strength (Approximate)	Kgf	33,000	20000	14000	7000
06	Torsion strength (Approximate)	KgfM.	460	450	300	200
07	a) Power frequency flashover voltage (dry)	KV	890	625	275	180
	b) -do- (wet)	KV	820	570	275	155
08	a) Impulse flashover voltage (Positive)	KV	1850	1210	650	355
	b) -do- (Negative)	KV	1850	1450	650	405
09	a) One minute power frequency withstand voltage (dry)	KV	760 (w/o arcing horns )	510	275	165
	b) -do- (wet)	KV	680 (w/o arcing horns )	460	275	140
10	Impulse positive/negative withstand voltage	KV	1550	1050	650	350
11	Power frequency puncture voltage	KV	Puncture proof	Puncture proof	Puncture proof	Puncture proof
12	RIV	KV				
	a) Test V to Ground KV (rms)		266		---	---
	b) at 1000 KHz with grading rings	mV	<1000mV	<500 mV		

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13	(a) Visible discharge (b) Switching surge withstand voltage	KV KVp	320 with grading ring 1080	154 --	105 --	53 --
14	Creepage distance (Approximate)	mm	10,500	6125	3625	1815
15	Top metal fitting PCD	mm	4 holes of M16 PCD 127	4 holes of M16 PCD = 127	4 holes of M16 PCD = 127	127 ± 0.2
16	Bottom metal fitting PCD	mm	8 Holes of M18 PCD 300	8 holes of M18 and PCD = 254	4 holes of M18 and PCD = 225	127 ± 0.2
17	All ferrous part should be hot dip galvanized to IS:2629/1966		Yes	Yes	Yes	Yes
18	Suitable for Hot line washing		Yes	Yes	Yes	Yes
19	Corona Extinction device		Corona ring provided	--	--	--
20	Dry Arcing Distance	mm.	3400	--	--	--

1KN = 101.972 Kgs.

## 6 TESTING

***All the Isolators, earthing switch along with Insulators and Structure offered shall be fully tested for following tests from NABL accredited laboratory shall be carried out in accordance with latest / amended / up to date IS/IEC. The bidder has to submit the all type test reports as stated hereunder for the offered item along with the technical bid. The type test reports from NABL approved laboratory shall not be older than TEN years. Type Test shall be valid as on the last date of submission of bid.***

### **List of Type Tests:**

1. Visual Examination,
2. Verification of dimensions,
3. Visible discharge (Corona extinction) test,
4. Lightning Impulse Voltage withstand test,
5. Lightning Impulse 50% flashover Voltage test,
6. Dry Power frequency voltage withstand test,

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7. Wet Power frequency voltage withstand test,
8. Dry Power frequency flashover voltage test,
9. Wet Power frequency flashover voltage test,
10. Temperature Cycle test,
11. RIV test,
12. Corona inception & extinction,
13. Switching Impulse voltage test
14. Mechanical Strength test
  - (i) Compression Test,
  - (ii) Tensile Test,
  - (iii) Torsion Test,
  - (iv) Cantilever Strength test and,
  - (v) Bending test
15. Porosity Test
16. Puncture Test (for Insulators type B only) and,
17. Galvanizing test
18. STC Test on terminal connectors

**IMPORTANT NOTE:** *In case of non-submission/partial submission or type test reports of which validity is over, bidder shall submit pending type test report/s from NABL accredited laboratory, in the event of an order, before commencement of supply without affecting delivery schedule, free of cost to GETCO. Confirmation for above shall be invariably submitted along with technical bid.*

All the acceptance tests shall be carried out as IEC - 60168 (latest amendments).

**Power Frequency (dry) withstand test shall be carried out on selected samples at the time of Acceptance Test.**

## **7      DEVIATION**

The offer shall conform in all respects to the above specifications. If not, the deviations shall specifically be brought out in the tender otherwise it will be presumed that the offer conform to above specifications in all respects.

## **8      SPECIAL CONDITIONS**

The following information shall invariably be furnished by the tenderer along with the tender, if the same is not furnished along with the tender, the offer may be ignored without making correspondence.

- a. Name and full address of the manufacturer of post insulators offered.
- b. Make and Electrical and Mechanical characteristics of post insulators.
- c. Testing facilities available with the factory for carrying out type tests and routine tests.
- d. Dimensional drawings with full particulars.
- e. The list of orders executed for the offered items by the manufacturer of the post insulators giving full details such as voltage, type, quantity etc.

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f. The un-priced schedule of the offered item shall also be submitted in technical bid.

**9 Bidder shall furnish, MQP and FQP along with technical bid. Also drawings shall be submitted for approval in the event of an order.**

**10 Bidder shall give all the required guaranteed technical parameters as per attached Schedule – A.**

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**SCHEDULE - A**  
**SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS**  
**FOR 400/245/145/72.5 kV POST INSULATORS**

(To be filled in and signed by the Tenderer)

Sr. No.	Description	Unit	Guaranteed. Value
1	Highest system voltage	kV	
2	Height of unit	mm	
3	Bending strength (approx. failing load): i) Upright	kN	
4	Tensile strength (Approx.)	kN	
5	Compression strength (Approx.)	kN	
6	Torsional strength (Approx.)	kN	
7	a) Power frequency flashover voltage (Dry) b) Power frequency flashover voltage (Wet)	kV kV	
8	a) Impulse flashover voltage (Positive) b) Impulse flashover voltage (Negative)	kVp kVp	
9	a) 1 min. power frequency withstand voltage (Dry) b) 1 min. power frequency withstand voltage (Wet)	kV (rms)	
10	Lightning Impulse positive / negative withstand voltage.	kVp	
11	Power frequency puncture voltage.	kV	
12	Visible discharge voltage	kV	
13	Radio Interference Voltage	Micro Volts	
14	Creepage distance (Minimum) : a) Total b) Protected	mm mm	
15	Dry Arcing distance (Minimum)	mm	
16	Top metal fitting PCD	mm	
17	Bottom metal fitting PCD	mm	
18	All ferrous parts should be hot dip galvanized to IS:No.2629/1966.	--	YES / NO

Date:

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