

KARNATAKA POWER TRANSMISSION CORPORATION LIMITED

TECHNICAL SPECIFICATION

SECTION – 11 KV SPECIAL GOS

TECHNICAL SPECIFICATION

11 KV SPECIAL GOS

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TECHNICAL SPECIFICATION
SECTION –
11 KV SPECIAL GOS

TECHNICAL SPECIFICATION FOR 11 KV, 400 A SPECIAL
(ROSTERING) GOS FOR RURAL LOADS

1.0 SCOPE

This specification covers the manufacture, testing at manufacture's work and supply of 11 KV switches of single break 400 Amps capacity complete with accessories such as operating pipes, connecting pipes and guides, supporting insulators, link work and locking arrangements etc., complete.

- 2.0 The equipment offered shall conform to IS 1818; 1972 and latest amendments thereof. The switches shall be suitable for horizontal upright mounting.

3.0 CONSTRUCTION

The base shall be made of robust rolled M.S channel section of size 75 x 40 mm. All ferrous parts shall be hot dip galvanized and all copper parts shall be tinned. The rotating parts shall be fitted with suitable bearing.

- 3.1 The blades and contacts shall be of best quality electrolytic copper and shall be capable of carrying rated current of 400 A without exceeding the temperature limits specified in IS 1818 – 1972.

- 3.2 a) The insulator shall be of post type brown glazed porcelain stacking type design E22 as per IS 5350 (part – III) 1971 with capscrews and spring washers and to technical specification enclosed conforming to IS – 2544 1973 with amendments thereof.

- b) The operating pipes shall be of 25 mm dia “B” CLASS, GI pipes. The GI pipes used shall conform to IS 1239 part – I, 3 mm thick 1979 with amendment of January’ 81 and any further amendment thereof. The operating mechanism shall be as shown in the drawing.

- c) **Terminal Connector:** C-Type wedge connector-Coyote 2 hole paddle ACSR conductor shall be provided. The exact size of ACSR Conductor will be confirmed during approval of drawings.

- d) All the parts shall be hot dip galvanized and shall conform to the following :

IS 200 – 1960 for quality of Zinc for galvanization.

IS 2620 – 1960 for hot dip galvanization of iron and steel.

IS 2633 – 1972 testing of zinc coating on galvanized parts.

IS 6759 – 1966 hot dip galvanized coating on structural steel.

IS 5358 – 1960 hot dip galvanized coating on fasteners.

IS 6745 – 1972 determination of weight of zinc coating on galvanized iron and steel parts (with amendments No. 1) with latest amendments thereof if any for the above.

e. ARCING HORNS

The switches shall be supplied with hot dip galvanized arcing horns so that while closing or opening the switches arcing takes place between the arcing horns and not between the main contacts.

f. LOCKING ARRANGEMENTS

Suitable locking arrangements shall be provided for the operating handle. The locking devices shall be supplied with duplicate keys along with the switches.

- g. The switches shall be designed to withstand the test voltage as per IS 1818; 1972 or its latest revision thereof. The switches shall be designed to have a continuous current capacity of 400A.

4.0 TESTING AND TEST CERTIFICATES

4.1 ROUTINE TESTS

Routine tests as per IS 1818 : 1972 shall be conducted on each switch.

a) TYPE TESTS

Type tested GOS shall be offered. **The type test reports shall be furnished for each rating called for in the bid.** The type test reports shall not be older than Five (5) years as on the last date of submission of bid.

a) For GOS manufactured in India:

- i. Type tests on indigenous equipment for which testing facility is available in India, should have been conducted in any independent laboratories approved by Government or accredited by National accreditation body of the country like Central Power Research

Institute (CPRI), Electrical Research and Development Association (ERDA), etc.

- ii. Type tests on indigenous equipment, for which testing facility is not available in India, should have been conducted in a laboratory of foreign country accredited by National accreditation body of that country.
- iii. The type tests conducted in-house by manufacturers shall also be acceptable provided the lab (manufacturer's) is accredited by National accreditation body of the country and the tests have been witnessed by a representative of NABL accredited Independent laboratory/Power utility.

b) For GOS manufactured Abroad:

- i. Type tests on imported equipment should have been conducted in an Indian Laboratory or foreign laboratory accredited by National accreditation body of respective country.
- ii. Type tests conducted in-house by manufacturers shall also be acceptable provided the laboratory is accredited by National accreditation body of the country and the tests have been witnessed by a representative of accreditation body/Power utility.

The following type tests on one switch specified in the IS 1818; 1972 shall be conducted.

- 1) Impulse voltage dry test as per clause 11-1-3 IS 1818/1972
- 2) Power frequency voltage dry test as per clause 11-1-4 ---"----
- 3) Power frequency voltage wet as per clause 11-1-5 ---"----
- 4) Temperature rise test as per clause 11-1-7-1 ---"----
- 5) Measurements of resistance as per clause 11-1-8 ---"----
- 6) Test for rated peak short circuit current as per clause.
- 7) Operation test as per clause 11-1-11 ---"----
- 8) Mechanical endurance test as per clause 11-1-12 ---"----

4.4 NAME PLATE

The switch assembly shall be provided with the name plate legibly and indelibly marked with the following information.

- a) Name of material
- b) Name of manufacturer and trade mark.
- c) Name of the purchaser i.e. the letters K.P.T.C.L.
- d) Purchase order number and date.

- e) Type – designation and serial number
- f) Rated current
- g) Rated voltage
- h) IS specification

5.0 All other details as per enclosed drawing.

TECHNICAL SPECIFICATION FOR 11 KV PEDESTAL POST INSULATORS

1.0 GENERAL REQUIREMENTS

The insulators used in manufacture of GOS shall be of reputed make with CRPF/reputed testing house test certificates. The test report shall be enclosed along with the tender and the brand name of the insulator used for manufacture of GOS shall be specified clearly in the tender. The test report shall pass the following tests (1) impulse voltage with stand (2) tower frequency withstand test both dry and wet (3) porosity test.

- 1.1 Post insulators shall be of stacking type suitable for outdoor use in 11 KV system for conductor supports and also for 11 KV group operating switches and fuse units mounted in upright inverted or cantilever position. The post insulators used shall be baked in temperature controlled kilns only.
- 1.2 The porcelain shall be sound, free from defects, thoroughly verified and smoothly glazed, the glaze on insulators shall be brown in colour and should cover all exposed porcelain part except those areas which serve as supports during fixing are required to be left unglazed as details in IS – 2544; 1963.
- 1.3 Precaution shall be taken during design and manufacture to avoid the following:
 - 1.4 a) Stress due to expansion and contraction which may lead to deterioration
 - b) Stress concentration due to direct engagement of the porcelain with the metal fittings.
 - c) Retention of water in recesses of metal fittings and shape which do not facilitate easy cleaning by normal methods.
- 1.5 All metal parts except those of stainless steel shall be hot dip galvanized after machining and coating shall satisfy the requirement or relevant IS specification. The finished galvanized surface shall be smooth.

- 1.6 The threads of the tapped holes post insulator metal fittings shall be cut after galvanizing and shall be protected against rust. All other threads shall be cut before galvanizing.
- 1.7 The post insulator unit shall be assembled in a suitable jig to ensure the correct positioning of the top and bottom metal fittings relative to one another. The faces of the metal fittings shall be parallel and at right angles to the axis of the insulator and corresponding holes in the top and bottom metal fitting shall be in a vertical plane containing the axis of the insulator.
- 1.8 The supply of insulators shall include suitable cap screws, bolts and nuts and spring washers for stacking. The cap and base shall be malleable cast non the surface treatment being hot dip galvanizing.

1) TECHNICAL PARTICULARS

| Individual units | 11 KV stacking units |
|---|--|
| 1) Rating | 11 KV |
| 2) a) Unit description as per ISS-5350/part-III/ 1971 | E-22 (Except torsional strength as specified) |
| b) Mechanical strength as per clause 3.2 of IS – 5350 part-III/ 1971 | ‘C’ |
| 3) Impulse withstand voltage test conducted as per IS – 2544-1963 | 75 KV |
| 4) Power frequency with stand test | |
| Voltage dry | 55 KV |
| Voltage | 35 KV |
| 5) Puncture voltage | 1.6 times the actual of voltage of the unit. |
| 6) Creeping distance | 230 mm |
| 7) Failing load as per IS 5350 part III/ 1971 | |
| a) Upright | 9000 Newton |
| b) Underhung | 4500 Newton |
| c) Tension | 20,000 N |
| d) Compression | 40,000 N |
| e) Torsion | 680 N M |
| 8) Height of insulator (Mm) | 254 mm |
| 9) Insulating part dia | 202 mm |

| | |
|--|--|
| 10) Top metal fitting puch circle dia | 57mm |
| 11) Bottom metal fitting pitch circle dia | 57 mm |
| 12) a) No. of bolts | 4Nos. |
| b) Bolts holes dia. | 10 mm tapped holes at the top, 12mm plain holes at the bottom. |
| c) Normal dia of mounting face not to exceed. | 85 mm |

2) MARKING

Each insulator shall be legibly and indelibly marked with the following :

- a. Name or trade mark of the manufacturer
- b. Month and year of manufacture
- c. Country of manufacture
- d. ISI certificate mark if any
- e. Letter "KPTCL"

Marking shall be durable and shall be printed by the transfer process before firing.

Note : Manufacturer's test certificate and type test certificate conducted on similar sample insulator shall be submitted.