



सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

SPECIFICATION
FOR
TESTING **TENSILE** LOAD TESTING MACHINE
FOR
25KV PORCELAIN & COMPOSITE INSULATORS
BEFORE INSTALLATION

No. TI/SPC/OHE/INSTEST/0090(02/2009) Rev '01'

Issued by:

TRACTION INSTALLATION DIRECTORATE
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**TESTING LOAD TESTING MACHINE FOR 25KV PORCELAIN & COMPOSITE
INSULATORS**

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SPECIFICATION FOR TENSILE LOAD TESTING MACHINE FOR 25 kV COMPOSITE AND PORCELAIN INSULATORS

1.0 **SCOPE:** - This specification covers the requirements of machine for tensile load testing for of porcelain & composite insulators.

1.1 The "Make in India" Policy of Government of India shall be applicable.

2.0 CLIMATIC CONDITIONS

The machine shall be in continuous operation under the following atmospheric and climatic conditions:

i)	Ambient air temperature in shade	-10° C to 55° C
ii)	Maximum temperature in sun.	70° C
iii)	Maximum relative humidity	100%

3.0 **Materials:** Materials used in the construction of the testing machine shall be corrosion resistant.

4.0 Operational characteristics / features of the Tensile testing machine.

4.1 The machine shall be portable, capable of testing insulators up to 700mm length excluding the adopter/attachment required for fitment of insulators.

4.2 The operation of machine shall be smooth & without any jerk.

4.3 Stability of the machine in all operational position (unloaded and loaded) shall be ensured. Frame shall be firm enough to stand on its own without any foundation.

4.4 It should be possible to fix the insulators in the machine in minimum possible time.

- 4.5 A wire mesh should be provided around the machine so as to restrict the insulator pieces inside the mesh in case breakage of insulator. Thereby preventing any injury to the operator during testing.
 - 4.6 Appropriate adopter fittings and any other gadgets required for preventing the insulator from slipping during testing shall be supplied along with the machine.
 - 4.7 Two sets of adopters /grips for each type of insulator shall also be provided for testing of different types of insulators, as per requirement of the purchaser.
 - 4.8 There shall not be any leakage of the oil from the machine during the operation/otherwise.
 - 4.9 One operator shall be sufficient to fix the insulator & operate the tensile testing machine on its own by manually operating the hydraulic pump and reading on the display board or gauge shall be clearly visible.
 - 4.10 The reading of load applied on insulator shall be available in Kgf/kN.
 - 4.11 Machine should be mounted on castor wheel with suitable braking mechanism.
 - 4.12 Control equipment including gauge and safety devices shall be provided for safe and satisfactory operation of the machine.
- 5.0 **Capacity:** - The minimum capacity of the machine shall be 10 Tonne.
- 6.0 **Rate of application of tensile load:** 300kgf (max.) per second.
- 7.0 **Hydraulic oil** shall comply with IS specifications.
- 8.0 **Vibration:** The machine shall withstand satisfactorily, the vibration and shocks normally encountered during insulator testing. Machine should be mounted on castor wheels with suitable braking mechanism.

9.0 Cylinder & Pump: Cylinder & pump used for operation of the machine shall be of reputed make & certificate regarding their testing at reputed labs shall be furnished by the tenderer.

10.0 TYPE TEST: The manufacturer shall produce one machine for conducting prototype testing.

- i) Visual Examination.
- ii) Verification of Dimensions.
- iii) Measurement of the weight.
- iv) Proof loading.
- v) Operational test.

11.0 ACCEPTANCE TEST: All the tests mentioned in clause 10.0, shall constitute acceptance tests.

12.0 ROUTINE TESTS:- The following test shall be carried out by the manufacturer on each machine and record maintained:

- i) Visual Examination.
- ii) Verification of Dimensions.
- iii) Measurement of the weight.

13.0 TESTING PROCEDURE :-

13.1 Visual Examination:- The component / parts of the machine shall be visually examined for any manufacturing defect, deformation of parts, misalignment, rusting, pitting / corrosion etc. No such defects which may be harmful to safe /satisfactory operation of machine shall be accepted.

13.2 Measurement of Dimensions:- The major and other critical dimensions of the machine shall confirm to the **approved drawing**. ~~Approved by D.G., RDSO/Lucknow, or his authorized representative.~~

13.3 Measurement of weight:- The weight of the machine shall be within the limits specified in the approved drawing.

13.4 Proof Loading:- The tensile load testing machine shall be tested prior to operational test with load of 20,000 kgf, which it shall withstand for at least five minutes without permanent deformation of any component of the machine.

13.5 Operational Test:- After proof loading, the machine shall be made to test 1.25 times i.e. 12500 kgf load with the fixture of insulator testing, which shall ensure that every part of the fixture & machine comes under load. During the test there shall be no permanent deformation.

14.0 Inspection & testing: The machine shall be inspected and tested by ~~the Director General/TI [DG/TI]/RDSO, Lucknow/~~ purchaser or his authorised representative at the ~~manufacturer~~ firm's work. Tenderer shall demonstrate functioning of the machine on the sample test specimen along with associated fitting during the inspection. ~~The machine shall be dispatched duly packed only after it has been cleared for dispatch by the Inspecting Officer. Such passing shall in no way exonerate the contractor from their obligation in respect of quality and performance of the machine.~~

15.0 Installation & Commissioning: The machine shall be installed & commissioned by contractor and training shall be imparted to purchaser staff for operation, maintenance and troubleshooting of machine after installation.

16.0 Maintenance & operational manuals: Two copies of operational and maintenance manual shall be supplied.

~~**17.0 Warranty:** The manufacturer shall provide warrantee for satisfactory performance of machine for a period of 18 months from date of installation & commissioning.~~

~~**18.0** All the provisions contained in RDSO's ISO procedures laid down in document No. QO D 7.1 11 dated 19.07.2019 (Titled " Vendor change in approved status") and subsequent versions/amendments thereof, shall be binding and applicable on the successful vendor/vendors in the contracts floated by Railways to maintain quality of products supplied to Railways.~~
