

**SCHEDULE OF TECHNICAL REQUIREMENTS FOR
MANUFACTURE & SUPPLY OF ACCESSORIES OF THREE PHASE
STATOR CHAMBER FOR 3-PHASE TRACTION MOTOR TYPE 6FRA-
6068 OF ELECTRIC LOCOMOTIVES.**

STR No. CLW/TM/18038, Rev-1

**TRACTION MOTOR DEPARTMENT
CHITTARANJAN LOCOMOTIVE WORKS
CHITTARANJAN – 713365
WEST BENGAL**

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ALTERATION/REVISION SHEET FOR MANUFACTURE & SUPPLY OF ACCESSORIES OF
THREE PHASE STATOR CHAMBER FOR 3-PHASE TRACTION MOTOR TYPE 6FRA-6068.
OF ELECTRIC LOCOMOTIVES.

Alt. No.	Authority	Description	Signature	Date

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**SCHEDULE OF TECHNICAL REQUIREMENTS FOR MANUFACTURE & SUPPLY OF
ACCESSORIES OF THREE PHASE STATOR CHAMBER FOR 3-PHASE TRACTION MOTOR
TYPE 6FRA-6068 OF ELECTRIC LOCOMOTIVES.**

1.Scope:- This schedule of technical requirement (STR) is being issued to serve as guidelines to manufacturers /firms for manufacturing of ACCESSORIES OF THREE PHASE STATOR CHAMBER for three phase Traction Motor type 6FRA- 6068. Format of quality assurance plan to be followed, minimum machinery and plant, testing facilities & measurement facilities required. This STR should be read in conjunction with the relevant specification and drawing. The firm should satisfy themselves having complied with the requirements of the Specification, Drawing and STR.

2. Reference :-

SN.	Description	P.L. No.	Drg. No.	Specn. No.
1.	Accessories of 3 phase Stator Chamber for TM type 6FRA-6068	29941260	3TWD.096.167 Alt-4 or latest version	IS: 10192 Grade- 'EP3'

3. Requirement: The firm should be certified to ISO 9001 by an agency accredited by NABCB.

4. Production Capacity: Annual production capacity calculation for the full production range must be given on the basis of time required for each process.

5. Desired aspect in QAP : QAP has to be specific for each product, as per RDSO's QAP format No. QM-RF-8.1-3, Version 1.0 or latest instruction issued by competent authority.

6 M&P, Testing and Measuring instrument :- List of typical M&P required for manufacture, testing and measuring instruments furnished in page 4 of 5 & 5 of 5 is for general guidance only and actual manufacturing operations, specific testing & measuring instruments shall be submitted and get approved by the firm as a part of QAP.

7. Internal Quality Control System :-

7.1 The manufacturer shall procure all the raw materials from standard brand preferably from RDSO /CLW approved sources along with test certificates and sources should be available as and when asked for. If RDSO/CLW sources are not available, then raw material from reputed firm shall be procured.

7.2 Quality Assurance Process of incoming materials, manufacturing process used for the subject items including type test, supply criteria covering specification, acceptance norms , agency if tested from outside lab(NABL accredited), format of records etc to be submitted.

7.3 Detailed process flow chart indicating process of manufacture and individual product to be furnished.

7.4 The testing and measuring equipments and validity of calibration should be current and calibration Certificate issued by the calibration agency should be maintained.

7.5 Relevant Standards like IS/BS/IEC/ASTM etc. shall be available with the firm.

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SCHEDULE OF TECHNICAL REQUIREMENTS FOR MANUFACTURE & SUPPLY OF
ACCESSORIES OF THREE PHASE STATOR CHAMBER FOR 3-PHASE TRACTION MOTOR
TYPE 6FRA-6068 OF ELECTRIC LOCOMOTIVES.

8. PROCESS OF MANUFACTURING:

8.1 The following details of machines used for all the steps of machining operations should be included:

- a) Make and Model of the machine.
- b) Accuracy.
- c) Details of machining operation.

8.2 Details of Jig and Fixtures used during manufacture should be furnished along with the manufacturing process wherever used.

8.3 The following details of measuring instruments/ equipments/Jigs/Fixtures used for all the steps of measurement operations should be included:

- a) Make and Model of the measuring equipments.
- b) Accuracy.
- c) Quantity to be measured and acceptable value range.

8.4 The material & Test should be as per IS: 10192'1982 Grade-EP3.

A. Machinery and Plant .

The following is the indicative list of machining facilities to be available with the firm:

1. Steel Moulding Dies complete for Bracing Rings-3different types as per CLW drawing.
2. Different types of Steel Dies for support Clamps.
3. Different types of Steel Gauges for support Clamps.
4. Press machine of 2 Ton Capacity.
5. Power Drill Machines.
6. Shear Machines- Capacity 14''.
7. Heating Chamber- upto 300°C.
8. Marketing/Measuring Table of Suitable Size.
9. Facilities of identification markings as per specification.
10. A.C. High Voltage Testing Set- upto 30 kV capacity with least count 0.6 kV.
11. Equipment of water Absorption Test (Balance); Least Count-1gm.

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B. Testing facilities:

Following testing facilities should be available with the firm :

a. MECHANICAL TEST (as per IS: 10192' 1982 Grade- 'EP3'):-

1. Tensile Strength (N/mm²).
2. Impact Strength (kJ/m²)
3. Shear Strength (N/ mm²).
4. Splitting Resistance (KN).
5. Cross Breaking Strength (N/mm²).

b. ELECTRICAL AND THERMAL TEST: -

1. Di-electrical Strength Test at 15kV for 60 seconds (min.).
2. Insulation Resistance Test : 10,000 mega ohms (min.).
3. Martens Heat Distortion Temperature : 160°C.

c. PHYSICAL TEST:-

1. Water Absorption Test 0.50% (min.).
2. Specific Gravity Test.

C. Measuring facilities:-

1. Steel Gauges/Vernier Calipers (0.002mm), Micrometers, inside & outside callipers and all other Gauges required during Matching Operations and Dimensional Checks.
2. Micrometer (200-500 mm outside) Least Count-0.001mm.
3. Megger-1000V
4. Muffle Furnace-temperature upto 500°C.
5. Hard & Ground Pins to check accuracy of hole dia. The Gauges should be hard & ground to avoid any lapses of accuracy.
6. Infrared thermometer for checking temperature of material at standard room temperature before dimensional checking.

D. All Plant & Machinery, testing and measuring instruments are to be filled up as per following format.

SL No.	Description of plant & machinery	Model	Make	Machine No.	Year of Built	Range/ Capacity

Note:

Vague language like available or will install is not to be considered. CLW reserves the right to cancel the capacity cum capability assessment without any prior intimation.

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