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सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

TI/STR/023(Revision-2)

Schedule of infrastructure Requirements for Manufacturing
& testing facilities and Quality Control Requirements

For

FORGED STEEL FITTINGS & SPHEROIDAL GRAPHITE CAST IRON (SGCI) FITTINGS
(2020)

ISSUED BY

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1.0 **SCOPE:** This schedule covers the technical requirement for manufacturing of forged steel fittings and Spheroidal Graphite Cast Iron (SGCI) fittings.

2.1 GENERAL INFRASTRUCTURE & MANUFACTURING DETAILS: Manufacturer should have adequate covered accommodation for Storing raw material, finished items awaiting dispatch and arranging Inspection. Manufacturer should have system to ensure that the products conform to RDSO'S Specification No. TI/SPC/OHE/Fittings/0130(10/13) (latest) for forged steel fittings/SGCI fittings.

2.2 **MACHINERY & PLANT:** Following machinery and plant of suitable capacity should be available for Forged Steel Fittings and SGCI Fittings -

S N	MACHINERY & PLANT	Forged Steel Fittings	SGCI Fittin gs
i	Drop hammer	Yes	No
ii	Forging screw press	Yes	No
ii	Power press	Yes	No
i	Bench Grinder of various capacities.	Yes	Yes
v	Hacksaw machine	Yes	No
vi	Centre	Yes	No
vi	Milling Machine	Yes	No
viii	Shaping machine/Molding Machine	Yes	Yes
i	Drilling machine	Yes	Yes
x	Lathe machine	Yes	Yes
xi	Oil fired furnace or induction furnace	Yes	Yes
xi	Induction Furnace (With Suitable Temperature Control Device)	No	Yes
xi	Threading machine	Yes	Yes
xi	Shot blasting Machine.	Yes	Yes
x	Magnesium Treatment Ladle	No	Yes
x	Hand Shanks (Small ladles)	No	Yes
x	Metallic Die	Yes	Yes
xv	Patterns for sand casting	No	Yes

Note: (i) Forging of OHE fittings can be done in house or at outside in case of forging done at outside, forging certificate shall be provided by manufacturer during type test or forging process shall be witnessed by type testing authority, if required.

(ii) Manufacturer shall mention the name of forging agency in quality assurance Plan (QAP).

(iii) Manufacturer should ensure the periodical checking, repair and replacement of the dies/patterns in use to get precise dimension.

3.0 **TESTING FACILITIES:** Manufacturer should have adequate facility to test the raw materials as well as the finished product.

S.N.	Testing facilities	For forged	For SGCI
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		steel fittings	fittings
i	Hardness Testing Machine	Yes	Yes
ii	Electromagnetic crack detecting machine/Dye Penetration Testing Facility	Yes	Yes
iii	Metallurgical Microscope and Micro polishing machine.	Yes	Yes
iv	UTM machine	Yes	Yes
v	Measuring instrument like Vernier caliper, screw gauge: thread gauge etc.	Yes	Yes
vi	Elco meter to measure the thickness of Galvanization.	Yes	Yes
vii	Spectrometer or Chemical laboratory for Chemical	Yes	Yes

4.0 QUALITY CONTROL REQUIREMENTS:

4.1. The firm should ensure compliance of RDSO ISO procedure 'QM-RF-8.1-3 (Latest)' & it covers Quality Assurance Plan (QAP). This document may be referred from RDSO website. The QAP shall be submitted to RDSO and got approved .

4.2 The firm should have acquired ISO: 9000 certification for the product for which an approval is sought and the product should be broadly covered in the scope of the certification for manufacture and supply.

4.3 Quality manual of the firm for ISO: 9000 should clearly indicate at any stage the control over manufacturing, quality control and testing of the said product.

4.4 There exists system of easy traceability of the product from raw material stage to finished product stage .

4.5 Each section shall be headed by a qualified staff with experience in the relevant field.

4.6 System and documentation should exist for documentation of the following.

4.6.1 Incoming raw material with TC reference of supplier as well as internal test/audit checking from outside agency wherever required.

4.6.2 Stage inspection and test result.

4.6.3 System for calibration of testing & measuring equipment record

4.6.4 Rejection at Customer end and Remedial action taken.

5.0 Drawing office facilities should be equipped preferably with AUTO CAD Software.

6.0 The "Make in India" policy of Government of India shall be applicable.