

ISO 9001: 2015	Document No. M&C/NDT/131/Rev II September 2021	Version No.3.0	Effective Date: 31.12.2022
Document Title: Schedule of technical requirements for vendor approval for manufacture and supply of ultrasonic equipment to Indian Railways.			



RESEARCH DESIGNS & STANDARDS ORGANIZATION Manak Nagar, Lucknow-226011

M&C/NDT/131/2009 Rev II September 2021

Schedule of technical requirements for vendor approval for manufacture and supply of ultrasonic equipment to Indian Railways

Amendment history:

S. No.	Amendment date	Version	Reasons for Amendment
1.	NA	1.0	First issue specification No. M&C/NDT/131/2009, April 2009.
2.	01.01.2017	2.0	Change in para 1 and 3 to 7, annexure 'B' and addition of annexure 'C' as per directives of Railway Board and due to change in vendor registration guidelines, typographical error and withdrawal/revision of specifications. Approval accorded by Director/M&C at np-2 of file No. M&C/NDT/131/2009, April 2009.
3.	27.01.2022	3.0	10 th Extraordinary TSC meeting (Item No. 1355) vide letter no. 2021/CE-II/TSC/10 th Extraordinary dated: 26.05.2017 has recommended for Development of B-Scan USFD testing machines (SRT/DRT) with 9 probes/channel testing capability per rail to enable additional testing with 37 degree probes, and also additional provision for testing of scab rail with 45 degree probe (supplied fitted in loose test rig). To facilitate the firm's plant and machinery for manufacture of SRT & DRT with nine probes/channels STR is revised. Approval of proposed revision at np- 16 & 17 of file No. M&C/NDT/131/2009 and final standard/specification at Note # 5 of e-office file no RDSO-MC0NDT(VEN)/4/2022-O/o Director/MC/RDSO as per document no. QO-D-8.1-2, ver. 2.0 accorded by competent authority.

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1. Foreword:

Ultrasonic testing equipment viz Digital Ultrasonic single rail tester and double rail tester with 7 probes/channel testing capability per rail, Digital Ultrasonic flaw detector, Digital Ultrasonic Testing equipment for welded rail joints are being used for the detection of internal defects as well as service defects in rails, welds, wheels, axles and other miscellaneous components. These ultrasonic equipment are developed by RDSO with indigenous manufacturers for its manufacturing and supply to Indian Railways. The relevant specifications for the requirement of ultrasonic equipment are prepared by RDSO as per requirement depending upon the nature of manufacturing and service defects developed in the rails, rail-weld, axles, wheel and other rolling stock components. 10th Extraordinary TSC meeting (Item No. 1355) vide letter no. 2021/CE-II/TSC/10th Extraordinary dated: 26.05.2017 has recommended for Development of B-Scan USFD testing machines (SRT/DRT) with 9 probes/channel testing capability per rail to enable additional testing with 37 degree probes, and also additional provision for testing of scab rail with 45 degree probe (supplied fitted in loose test rig). To facilitate the firm's plant and machinery for manufacture of SRT & DRT with nine probes/channels, STR is revised

2 Scope:

The schedule of technical requirements covers the norms for manufacturing facilities and quality control requirements of Machinery and Plant available at the firm's premises for manufacturing and supply of ultrasonic equipment confirming relevant current specification to Indian Railways.

3. General Requirements:

3.1 Vendor seeking approval for manufacture and supply of ultrasonic equipment to Indian Railways shall apply as per latest guidelines of RDSO which is available on RDSO website www.rdsso.indianrailways.gov.in —> vendor interface.

3.2 The firm should have manufacturing, quality control, testing, storage and packing facilities in their premises. The firm shall have separate covered area for storage of raw materials, finished product, repair/ servicing room and packing materials.

3.3 The firm shall have necessary standard test pieces required during inspection and sensitivity setting blocks required for the respective equipment. The details of which should be as under:-

3.3.1 Block VI as per IS: 4904 for checking various parameters of the equipment and probes.

3.3.2 Sensitivity Setting Block (for rail tester manufacturer) dimensions are given as Annexure 'A'.

3.3.3 Standard BG Track of minimum 3.0 meters length along with arrangement for sensitivity setting block given in annexure 'A' (for rail tester manufacturer).

3.3.4 Standard Weld Test Piece (for Ultrasonic Weld Tester manufacturer) drawing/dimension is given as Annexure 'B' and 'C'.

3.3.5 Standard axle having artificial defect of 5mm saw cut in a 2.5 meters approximate coach axle. The cut shall be at a distance of 60-100mm from the far end journal end (for Ultrasonic Axle Tester manufacturer).

3.3.6 Standard Rail piece with bolt hole and 5 mm saw cut as per drawing/dimension given in Annexure D. Length of rail piece would be so that sensitivity can be done with 37° probe fitted in trolley.

3.3.7 In case of SRT/DRT, trolley shall be manufactured by the firm as per drawing approved by Track Design Dte./RDSO. (as mentioned in relevant Para. of SRT/DRT specification)

3.4 The firm's premises should be neat, clean and hygienic.

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3.5 Vender application for Fresh Registration:

3.5.1 The firm shall apply for registration as per following document no. QO-D-8.1-5 or latest available in RDSO website in public domain (DOC Title: Application for Registration of Vendor).The vendor has to apply on-line for fresh registration through the IREPS Portal, UVAM Module.

3.5.2 Application for approval of ultrasonic equipment shall be restricted to the ultrasonic equipment confirming to specifications given in clause 7.0 only.

3.6 Charges for vendor registration/quality shall be applicable as per document title vendor registration schedule of charges (document no QO-D-8.1-14 or latest, available in RDSO website in public domain (DOC Title: Vendor registration schedule of charges).

3.7 Change in cost, if any, of prescribed format the time of application shall be bearable by the firm.

3.8 For developmental ultrasonic equipment, the cost of application form and other vendor registration charges will be as per QO-D-8.1-14 or latest, available in RDSO website in public domain (DOC Title: Vendor registration schedule of charges).The Ultrasonic Testing Equipment manufacturers are directly placed in Approved vendor since the equipments are specialised and there requirement are low. (All Ultrasonic testing equipment manufacturers shall directly be placed in Approved vendor as approved by DG/RDSO at np-45 of file no. M&C/NDT/1/5, Vol-XVI, dtd. 10.11.2015.

3.9 Quality Assurance Plan shall be as per document No. QM-RF-8.1-3or latest, available in RDSO website in public domain (DOC title: Guidelines for preparing QAP during registration).

4. Manufacturing & Testing Facilities:

The firm shall have following machineries & plant (M&P) for manufacturing and testing parameters of the relevant equipment:

Sl. No.	Item	Quantity (min)
1.	Oscilloscope: Digital Real Time, Storage, 100MHz	02
2.	Digital multimeter	02
3.	DC Power Supply	03
4.	Portable Drilling Machine	01
5.	Hand Surface Grinding Machine	01
6.	Dry Heat Chamber	01
7.	Soldering Station, Temperature controlled	03
8.	Block V1 as per IS: 4904	02
9.	Vernier Calipers	02
10.	Step Gauge (2 mm - 9 mm)	02
11.	Sensitivity setting Bocks for rail (for Rail Tester manufacturer)	02 (01 no. for 52 Kg & 01 no. for 60 Kg rail section)
12.	Sensitivity setting Bocks for A.T. and F.B. welded rail joint (For ultrasonic testing equipment for welded rail joints manufacturer)	02 (01no. for A.T. weld joint and 1 no for F.B. weld joint)
13.	Standard Rail piece (60 Kg rail section) with bolt hole and 5 mm saw cut (As per Annexure D) for sensitivity setting of 37 ⁰ probes for SRT & DRT. (for Rail Tester manufacturer)	01
14.	Calibration Blocks 50 x 50 x 50 mm or 50 x 50 x 60 mm	02
15.	Standard axle with simulated defect (5 mm saw cut at journal)	01

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	(for Axle tester manufacturer)	
16.	Standard Rail Track with simulated and standard defects (for Rail Tester manufacturer)	01
17.	Centre lathe machine with accessories or CNC machine with accessories.	01
18.	Weighting machine capacity 100Kg	01
19.	Bench Grinder	01
20.	Pressing machine	01
21.	Shaping Machine	01
22.	Painting Spray machine (for Rail testing trolley)	01
23.	Electronic digital weighting machine capacity 5 Kg.	01

5. Quality Control Requirements:



- 5.1 There shall be system to ensure the traceability of products from raw material to finished product stage.
- 5.2 The technical personnel shall be at least regular graduate in Science with Electronics /Instrumentation/Electrical & Electronics or 3 years regular Diploma in Instrumentation/ Electronics/Electrical & Electronics engineering having minimum 3 Years' experience in the relevant field to look after the production, quality check and testing activities of equipment. He should be able to take corrective step in case of any technical troubles. He should also be able to take step to comply with QAP. The R&D / Quality Control staff shall be able to provide technical services to the railways at the time of field trial or as and when required.
- 5.3 The quality audit shall be carried out by official of vendor approving Directorate of RDSO as per Document DOC No: QO-D-8.1-13 or latest, available in RDSO website in public domain (DOC Title: Quality Audit of Approved Vendor).
- 5.4 Vendor shall provide details of outsourcing of minor activities alongwith QAP of outsourcing agency. The firm will require approval of directorate head for outsourcing of minor activities. The outsourcing agency and its QAP shall be incorporated in the QAP of Vendor and to be verified during assessment of the firm.
- 5.5 The vendor shall keep records of rejected, reworked, revalued components information as per DOC No. QM-RF-8.1-3 or latest available in RDSO website in public domain (DOC Title: Guidelines for preparing QAP during registration).
- 5.6 The firm shall ensure that all the relevant latest RDSO specification, IS specification required for testing/inspection are available in original.
- 5.7 Firm should give an undertaking that annual maintenance service to the equipment supplied to railways will be provided.

6. Change in the name of vendor, address of the vendor and additional work set up by the approved vendor:

These changes will be guided by document DOC. No. QO-D-8.1-12, available in RDSO website in public domain (title: Vendor changes in vendor entity).

7. List of Ultrasonic Equipment with respective specification:

- 7.1 Technical Specification of digital ultrasonic testing equipment for welded rail joints with coloured LCD TFT screen, trigonometrical function and A-scan storage along-with data setup Specification No. M&C/NDT/129/2005, Rev-II, Aug.2014 or latest..
- 7.2 Technical specification for Digital Ultrasonic Single Rail Tester with coloured signals and real A-Scan pulse echo with continuous recording of B-Scan storage along with Data setups. Specification No. RDSO/M&C/NDT/128/2007,(B-Scan) Rev. III, July 2017 or latest.

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- 7.3 Digital Ultrasonic Double Rail Tester with minimum two base lines, coloured signals and real A-scan pulse echo with continuous recording of B-Scan storage along with data setups. Specification No. RDSO/M&C/NDT/130/2007, (B-Scan) Rev-III, July 2017 or latest.
- 7.2 Specification for portable Digital Ultrasonic Flaw detector with A- Scan storage-Specification No. M&C/NDT/125/2004, Rev-II, January 2017 or latest.

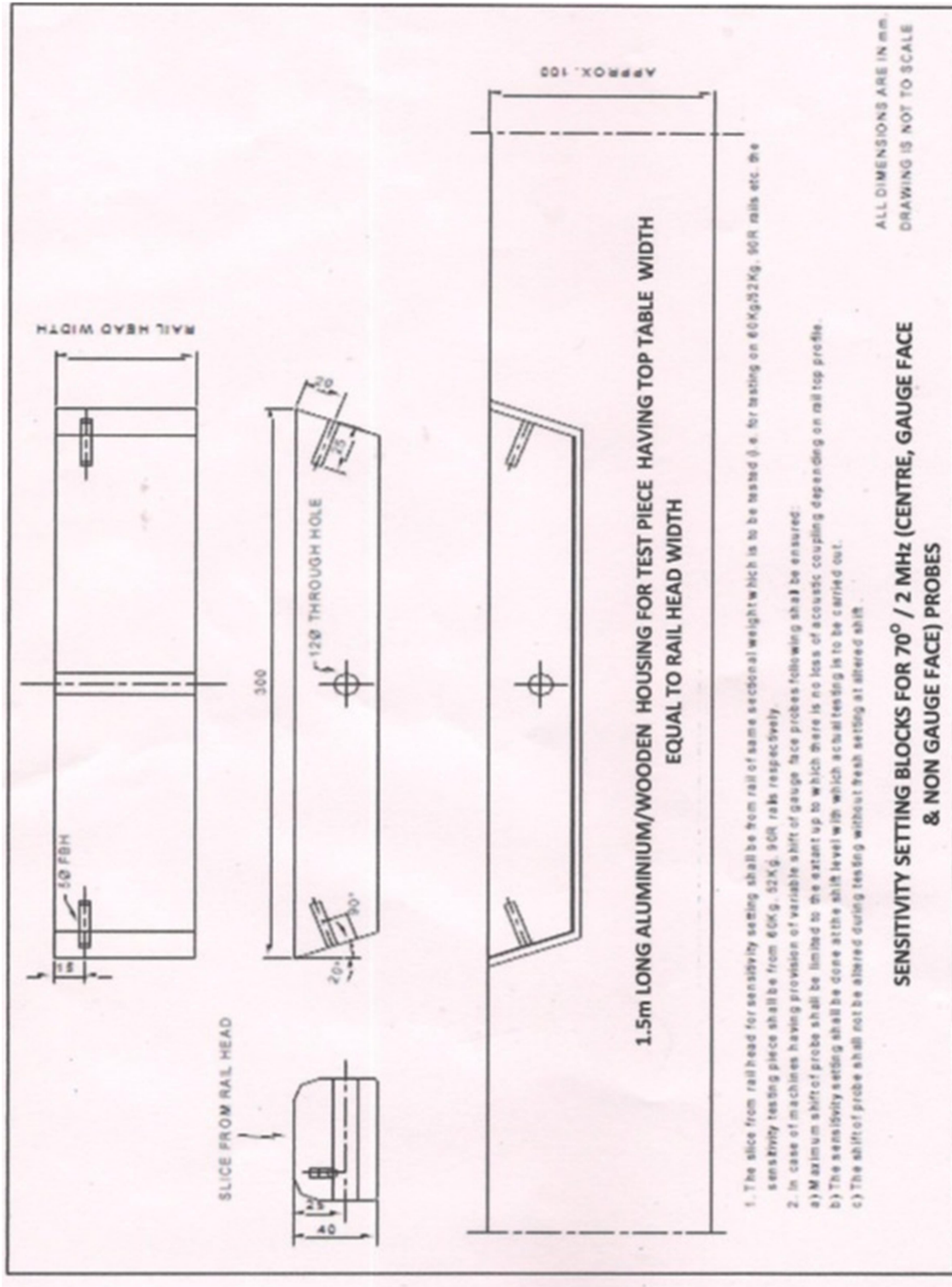
Note: 1.The vendor shall follow latest version of apex documents in vogue at the time of applying for registration and during processing of the application.

2. This STR shall also be applicable for revised/ new specifications of relevant Ultrasonic equipment.
3. RDSO reserve the right for any change/ modification in the present STR as and when required.
4. "Firm should comply Make in India policy and public procurement within (preference to make in India) Order- 2017 under this specification" and subsequent amendment done time to time.

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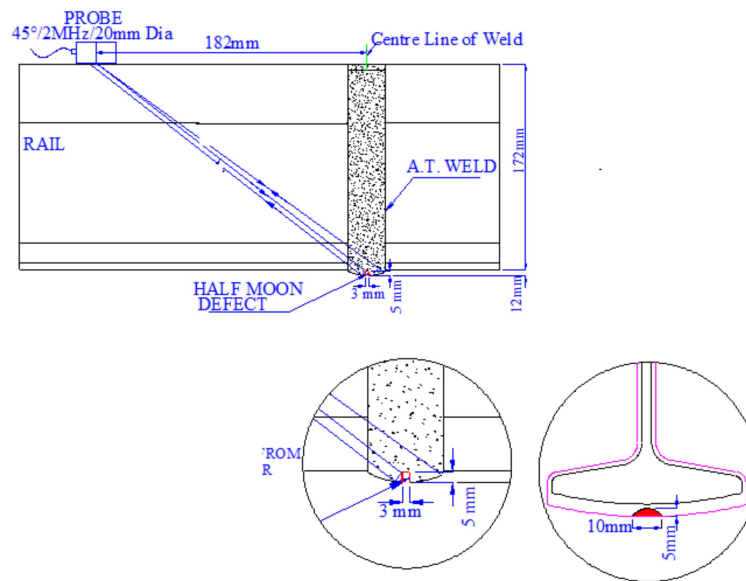
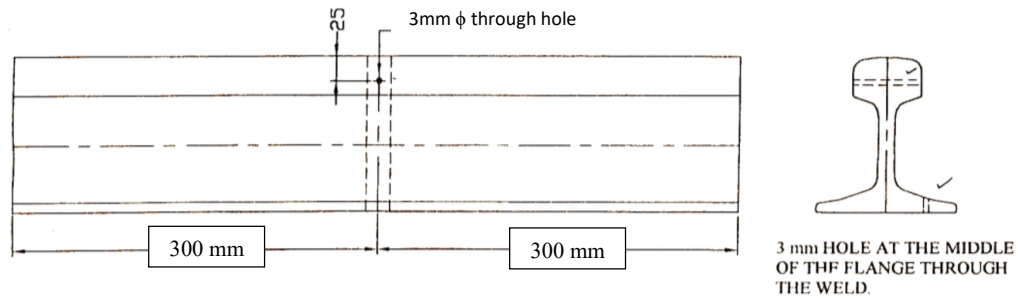
Annexure A



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Annexure B



ENLARGED VIEW

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Annexure C

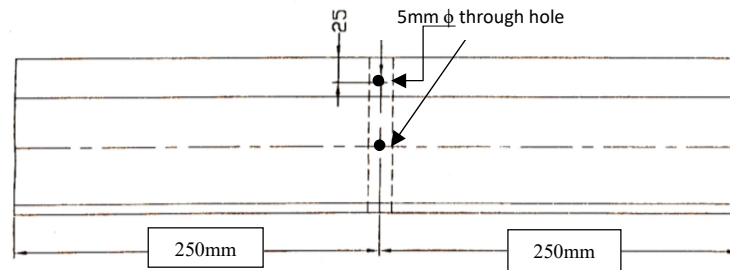


Fig. 3: Standard F.B. Weld test piece

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Annexure D

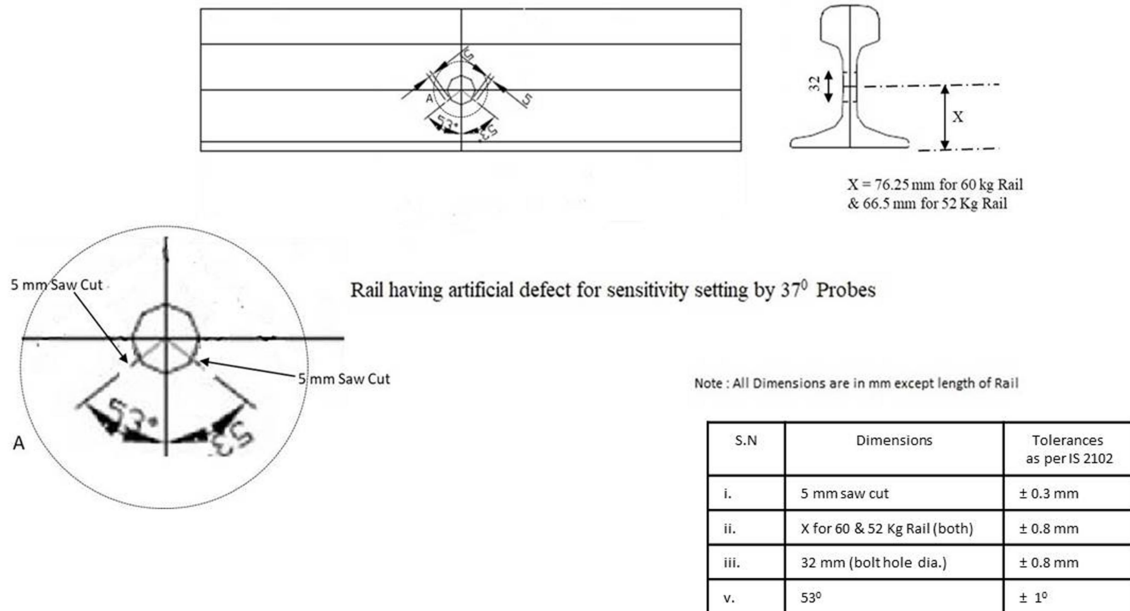


Fig.4 - Standard Rail piece with bolt hole and 5 mm saw

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