

ISO 9001-2015	Document No.:TM/SM/10	Version- Revision – First	Date Effective From:- 10/12/2020
Document Title: Specification of <b>Rail Profile Weld Grinder.</b>			



सत्यमेव जयते

Government of India

**Specification of Rail Profile Weld Grinder**  
**(No.TM/SM/10) (dt. 16. 8 .1991)**  
**(First Revision - July 2020)**

**Track Machines & Monitoring Directorate**  
**RESEARCH DESIGNS AND STANDARDS ORGANISATION**  
**Manaknagar, Lucknow-226011**

JRE/SSRE/SSE	ARE/DTM/EDTM	PEDTM	Page 1 of 6
Prepared by	Checked By:	Issued By:	

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## SPECIFICATION OF RAIL PROFILE WELDS GRINDER

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### 1.0 SCOPE:

- 1.1** The machine is required to grind the left over metal on the Alumino-thermit welded rail joints.
- 1.2** The operation of rough grinding is likely to be started when the rail steel is still in red hot condition after removal of the excess material by weld trimmers/ hand chiselling to provided the correct profile on the top rail head and its sides at the weld on any rails upto 60 kg/m and of UTS from 72 to 90 kg/mm<sup>2</sup>.
- 1.3** The final grinding operations shall be performed when the rail temperature has cooled to near ambient temperature.

### 2.0 MATERIALS, PROCESSING AND WORKMANSHIP

- 2.1** The machine shall take guidance from the rail surface and should be capable of swivelling upto 90<sup>0</sup>. On the either side of vertical position for grinding the edges of the rail head, gauge and non- gauge faces as per original profile of the rails.
- 2.2** Its design and construction shall be such that the operator is able to watch the grinding process continuously and inspect the grinding mark during operation without any extra effort.
- 2.3** The construction of the machine shall be such the parts could be easily and quickly replaced in case of breakdown while carrying out the work at site.
- 2.4** There shall be some attachment to hand grind the rail, if required.
- 2.5** The machine shall have adequate and durable cover to protect operators from sparks produced during grinding operation.

### 3.0 TECHNICAL REQUIREMENTS:

- 3.1** The grinding machine shall be compatible and portable with power source such as petrol or diesel engine genset, power supply etc.
- 3.2** The machine shall use cup shape grinding stone of Aluminium oxide grain made out of resinite bond. Grain size 14/16 grinding hardness zero (NIW). The grinding stone shall be of a type which normally available in market. Dia, thickness and complete nomenclature of grinding stone to be specified by the manufacturer/supplier of the machine.

JRE/SSRE/SSE	ARE/DTM/EDTM	PEDTM	Page 2 of 6
Prepared by	Checked By:	Issued By:	

ISO 9001-2015	Document No.:TM/SM/10	Version- Revision – First	Date Effective From:- 10/12/2020
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- 3.3** The machine shall be capable of grinding head and both sides in about 15 minutes for 60 to 90 UTS rails to the following tolerances when used with grinding stone mentioned in the clause 2.4.
- 0.5 mm on top of the rail head, gauge and non-gauge faces with 1 meter straight edge.
  - 0.2 mm on top of the rail head with 10 cm straight edge and
  - 0.3 mm on gauge and non-gauge faces of rail head with 10 cm straight edge.
- 3.4** The machine shall have an arrangement to prevent any grinding below the level of the rail surface.
- 3.5** The machine shall be of light weight of less than 80 kg including power pack and of rugged construction so that it can be handled, pushed on one rail to work-site and operated by not more than 2 persons. At the same time the machine design shall be such that adequate pressure is generated for grinding without requiring an extra effort from the operator.
- 3.6** The machine shall have perfect balance on rail even when inclined to 90<sup>0</sup> (to grind sides of the rail heads).
- 4.0 TEST:**
- 4.1 TYPE TEST:** Type tests are meant to be conducted on prototypes at the time of initial approval. The manufacturer/supplier shall produce two prototypes of Rail Profile Weld Grinder before inspecting officials for type tests. Following tests shall be carried out in the factory premises and field (if not arranged in the factory premises). The cost of type tests shall be borne by the manufacturer/supplier.
- 4.1.1 Visual Test:** The Rail Profile Weld Grinder shall be visually checked for defects like rough finishing, bend in frame, loose fittings etc. shall be checked. Weight of the machine shall be checked.
- 4.1.2 PERFORMANCE TEST:**
- 4.1.2.1** Minimum 20 nos. of weld joints should grinded with each machine.
- 4.1.2.2** The machine shall be capable of grinding head and both sides in about 15 minutes for 60 to 90 UTS rails within tolerances as mentioned in para 3.2.
- 4.1.2.3** During performance test no abnormalities in machine should be noticed such as flume from motor, stop during grinding, excess rail profile cutting etc.

JRE/SSRE/SSE	ARE/DTM/EDTM	PEDTM	Page 3 of 6
Prepared by	Checked By:	Issued By:	

ISO 9001-2015	Document No.:TM/SM/10	Version- Revision – First	Date Effective From:- 10/12/2020
Document Title: Specification of <b>Rail Profile Weld Grinder.</b>			

**4.2 ACCEPTANCE TEST:** Acceptance tests are meant to be conducted on randomly picked up samples which are taken from supplies under inspection against zonal railways/purchaser's purchase order.

**4.2.1 Visual Test:** – As per clause 4.1.1 – Every cutter in the consignment.

**4.2.2 Performance Test:** As per clause no. 4.1.2 but total no. of grinded weld shall not be less than 05 nos. by every randomly picked up grinder.

## **5.0 INSPECTION:**

**5.1** The inspection of the machine shall be carried out by the purchaser or his authorised representative, at various stages of manufacturer. The manufacturer shall provide all testing facilities including transportation that are required by the inspecting official for proper inspection of the machine. In case these facilities are not available at the manufacturer's premises, he would be required to get them arranged in the nearby Technical Institute or Test House approved by the purchaser.

**5.2** All the Rail Profile Weld Grinder in the consignment shall be subjected to Visual & Performance check as per clause 4.2. 05% or min 2 nos. of the grinder per lot/PO (randomly taken) shall be inspected. If the samples satisfy the entire test prescribed as per acceptance criteria, the lot is accepted, otherwise lot is rejected.

## **6.0 TOOLS:**

Each machine shall be supplied with a complete kit of tools required by the operator in emergency and for normal working of the machine.

## **7.0 SPARES:**

**7.1** The manufacturer shall supply adequate grinding stones for grinding (head and gauge face) 50 nos. of A.T. welds free of cost along with the machine. Manufacturer will also mention dia., thickness and dimension as well as cost and approximate numbers of joints that can be ground per stone.

**7.2** The manufacturer shall be responsible for the subsequent availability of spares to ensure trouble free service for the life of the machine.

**7.3** The spare parts repaired should be detailed in a separate list indicating description, part no. expected life and source of procurement.

JRE/SSRE/SSE	ARE/DTM/EDTM	PEDTM	Page 4 of 6
Prepared by	Checked By:	Issued By:	

ISO 9001-2015	Document No.:TM/SM/10	Version- Revision – First	Date Effective From:- 10/12/2020
Document Title: Specification of <b>Rail Profile Weld Grinder.</b>			

## 8.0 DOCUMENTS:

- 8.1** Detailed operating manual, safety precautions to be taken, maintenance and service manual shall be supplied in three copies along with each machine.
- 8.2** Copies of the maker's certificate guaranteeing the performance of the machine should be supplied in duplicate along with delivery of each machine.
- 8.3** The manufacturer shall supply detailed drawings exhibiting clearly the materials and dimensions so that the user can have a clear understanding of the machine.

## 9.0 TRAINING AND COMMISSIONING:

- 9.1** Adequate training in operation and maintenance on the machines shall be imparted to Railway operators by the manufacturer either at manufacturer's premises or at railway premises, as per the convenience of the purchaser, at the rate of two operators per machine.
- 9.2** After the grinder has been supplied at consignee premises, the supply shall be considered as complete only after field training is provided by the supplier as per para 9.1.

## 10.0 GUARANTEE WARRANTY AND AMC:

- 10.1** Any part of the machine failing or proving unsatisfactory in service due to defective design, material or workmanship within 12 months from the date of placing in service shall be replaced by the supplier at his own expense. Further should any design modification be made in any part of the equipment offered, the period of 12 months would commence from the date of the modified part is commissioned in service.
- 10.2** During procurement of the grinding machine, railways should go post-warranty AMC with the supplier for a pre-determined period as decided by the purchaser railway. This may be incorporated in the tender document as a condition of contract/Tender/Supply.

## 11.0 HANDLING/TRANSPORTATION SYSTEM

Suitable arrangement shall be made for transporting the grinding machine to worksite by rail and by cess/road. This arrangement shall be integral part of the grinding machine or a separate suitable arrangement for transporting the grinding machine shall be provided along with the grinding machine.

JRE/SSRE/SSE	ARE/DTM/EDTM	PEDTM	Page 5 of 6
Prepared by	Checked By:	Issued By:	

ISO 9001-2015	Document No.:TM/SM/10	Version- Revision – First	Date Effective From:- 10/12/2020
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## 12.0 MARKING AND PACKING:

**12.1** Each Rail Profile Weld Grinder shall be legibly and indelibly marked with the following details:

- (i) Name and trade mark/brand of the manufacturer.
- (ii) Contact No.
- (iii) Serial no. of the Rail Profile Weld Grinder.
- (iv) Month & year of supply.

**12.2** The Rail Profile Weld Grinder shall be packed in wooden/suitable carton after covering with good quality plastic sheets as per best trade practice to avoid any damage during transshipment.

**13.0** All the provisions contained in RDSO's ISO procedures laid down in Document No. QO-D-8.1-11 dated 12.09.2018 (titled Vendor – Changes in approved status"), subsequent versions / amendments thereof shall be binding, and applicable on the successful manufacturers/suppliers in the contracts floated by Railways to maintain quality of products supplied to Railways.

## 14.0 PREFERENCE TO MAKE IN INDIA POLICY:

Compliance of the instructions contained in public procurement (Preference to Make in India) order 2017 or latest instructions issued on subject shall be ensure.

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JRE/SSRE/SSE	ARE/DTM/EDTM	PEDTM	Page 6 of 6
Prepared by	Checked By:	Issued By:	