

ISO 9001-2015	Document No.:TM/SM/1	(Second Revision)2020	Date Effective From:-07/12/2020
Document Title: Specification of Abrasive Rail Cutter			

भारत सरकार  
Government of India  
रेल मंत्रालय  
Ministry of Railways



**SPECIFICATION OF ABRASIVE RAIL CUTTER**  
Specification No.-TM/SM/1  
(Second Revision)

Track Machines & Monitoring Directorate  
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## 1.0 Scope :

This specification covers the material, technical and functional requirements with testing criteria of ‘Abrasive Rail Cutter’ which is needed to cut rails very fast by using rail cutting wheel (abrasive disc).

## 2.0 Reference Documents :

Following codes/documents have been referred to in this specification. The updated copy of latest version with correction slip/amendments shall be followed and available at the firm’s works premises.

(i)	IS : 1991 (part 4) -1988 (Re-affirmed 2018)	Safety requirements for the use, care and protection of abrasive grinding wheels. Part-4: Safety Guard.
(ii)	TM/SM/2 (Rev. 01- 2020)	Rail Cutting Wheel (Abrasive Disc).

## 3.0 Materials, Processing and Workmanship:

- 3.1 Rail Clamp: The rail clamp shall be made of tough, durable and light weight material having sufficient mechanical strength. The rivet/bolts used in the clamp shall be of high tensile category.
- 3.2 Power Source: The engine/electric/hydraulic motor shall be of reputed make and shall provide sufficient power to cut the rail within the specified time and tolerance.
- 3.3 Guard for abrasive rail cutting wheel: The guard of the cutting wheel shall be made of good quality non-combustible light weight material to prevent the sparks and iron chips emitted during cutting operation. There shall be sufficient space between new wheel and guard periphery. The maximum angular exposure of the abrasive wheel periphery and sides for safety guards shall not exceed 180°. In this regard IS: 1991 (part-4) – 1988 (Re-affirmed 2018) shall be referred to.

## 4.0 Functional Requirements:

- 4.1 The abrasive rail cutter shall be capable of cutting all types of flat bottom rails being used in Indian Railways.
- 4.2 The abrasive rail cutter shall be capable of cutting rail at any distance from rail end.
- 4.3 The abrasive rail cutter shall have a strong and rigid clamping arrangement which shall fix the machine on rail near the cutting location. The clamping arrangement shall have a suitable location pointer to mark the cutting point on the rail. The fixing and removing mechanism shall be easy and quick in nature. The abrasive rail cutter while attached with clamp during cutting operation shall not be loosen/misaligned. The abrasive rail cutter shall be so attached with the clamp that it can swing vertically.

- 4.4 The abrasive rail cutter shall be capable of working continuously during the severe Indian atmospheric and climatic conditions.
- 4.5 The machine shall function normally in tilted position during cutting. In integrated engine driven cutter there shall not be any operational trouble in tilted position.
- 4.6 The abrasive rail cutter shall be so designed that there shall be minimum or no vibration during cutting operation to avoid possibility of misalignment and breakage of the abrasive rail cutting wheel.

## 5.0 Technical Features:

i.	Rated capacity of power source	Sufficient to cut the rail within the specified time and tolerance.
ii.	Speed of the power output shaft	Sufficient to generate speed of power output shaft to cut the rail within the specified time and tolerance.
iii.	Overall weight (including rail clamp)	Maximum 32 kg
iv.	Cutting time (using rail cutting wheel (abrasive disc) as per RDSO spec. No. TM/SM/2 (Rev. 1-2020)	a) 60 kg 90 UTS rail – 5 min. (max) b) 60 kg 72 UTS rail – 4 min. (max) c) 52 kg 90 UTS rail – 4 min. (max) d) 52 kg 72 UTS rail – 2 min. (max)
v.	Fixing time of rail clamp and the abrasive rail cutter	Within one minute.
vi.	In engine driven cutter, fuel tank capacity	Sufficient to run for minimum 5 cuts for 60 kg 90 UTS rail/7 cuts in 52 kg 90 UTS rail.
vii.	Squareness of cuts	±0.5 mm for vertical and lateral direction.

## 6.0 Tests:

### 6.1 Tests at the time of Vendor Registration (Prototype Tests):

Type tests are meant to be conducted on prototypes at the time of initial approval. The manufacturer/supplier shall produce two prototypes of abrasive rail cutter during 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. All arrangement like consumable, rails, cutting wheels etc. shall be done by the manufacturer/supplier. The cost of this arrangement shall be borne by the supplier.

Following test is to be conducted:-

- i) Visual and Dimensional Test:

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The abrasive rail cutter shall be visually checked for defects like rough finishing, bend in frame, loose fittings etc. shall be checked. Weight of the abrasive rail cutter shall be checked.

ii) Continuous running tests for power source:

The power source i.e. engine/electric/hydraulic motor shall be started. For engine driven abrasive rail cutter, the engine shall be started easily. The power source shall be run continuously for a minimum period of 30 min. at rated capacity. The power source shall run without any operational trouble.

iii) Cutting Performance Test:

Both the abrasive rail cutter samples shall be tested for cutting performance. 52 kg/ 60 kg, 90 UTS rail piece shall be cut and following details shall be recorded. Minimum 20 cuts shall be done by each Abrasive Rail Cutter with RDSO approved Rail Cutting Wheel (Abrasive Disc).

- a) Fixing time of machine.
- b) Cutting time for every cut.
- c) Firmness of gripping before and after every cut.
- d) Square-ness of cutting in vertical & horizontal direction.
- e) Average fuel consumption.

6.1.1 Before offering the Abrasive Rail Cutters for type test, the manufacturer/ supplier shall satisfy himself regarding performance of the cutter and shall give a certificate specially mentioning that he has checked and tested the abrasive rail cutters and shall submit internal test certificate and raw material certificate to the inspecting official. The cutting performance test shall be continued upto the discard diameter of 260 mm of the Abrasive Disc.

**6.2 Tests at the time of supply (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.

- i) Visual & Dimensional check – as per clause 6.1 (i) – Every cutter in the consignment
- ii) Cutting performance test as per clause no. 6.1 (iii) but total no. of cuts shall not be less than 05nos. – on 52 kg/60 kg 90 UTS rail by every randomly picked up cutter.

**7.0 Inspection:**

7.1 The inspection during procurement of the Abrasive Rail Cutter shall be carried out by the purchaser, zonal railway or any representative/agency authorised by CTE of the zonal railway. Minimum level of the inspecting official shall be SSE

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(Senior Section Engineer).The cost of inspection and testing shall be borne by the manufacturer/supplier.

- 7.2 All the Abrasive Rail Cutter in the consignment shall be subjected to Visual & Dimensional check as per clause 6.2(i). 05% or min 2 nos. of the Abrasive Rail Cutter per lot/PO (randomly taken) shall be inspected for its performance as mentioned in the clause no. 6.2(ii). If the samples satisfy the entire test prescribed as per acceptance criteria, the lot is accepted, otherwise lot is rejected.

**8.0 Warranty & AMC:**

- 8.1 Any part of the abrasive rail cutter failing or proving unsatisfactory in service due to defective design, material or workmanship within 12 months from the date of commissioning shall be replaced by the supplier/ manufacturer at his own expenses. If any design modification is made in any part of the equipment offered, the period of 12 months would commence from the date of such modification.
- 8.2 During procurement of the Abrasive Rail Cutter railways should go post-warranty AMC with the supplier for a pre-determined period as decided by the purchaser railway. This shall be incorporated in the tender document as a condition of contract/Tender/Supply. For procurement of Abrasive Rail Cutter with AMC, Annexure-VI of Comprehensive Guideline on Procurement, Operation, Maintenance and Repair of Small Track Machines (report No.TM-227) may be referred.

**9.0 Service Facility and Spare Parts (including tools):**

- 9.1 The supplier/manufacturer shall provide service of competent service engineers free of cost during commissioning and warranty period. The service engineer shall guide the operating and maintenance staff during commissioning and warranty period of the Abrasive Rail Cutter for proper operation and handling.
- 9.2 The manufacturers/supplier shall have good service network throughout the country for quick and easy acces to the users. A prompt response to the call of the customers is expected in case of any problem experienced in field.
- 9.3 Each Abrasive Rail Cutter shall be supplied with a complete set of tool kit and a set of tensioning belt required for operation and maintenance of the abrasive rail cutter.
- 9.4 The manufacturer/supplier shall be responsible for subsequent availability of the spare parts to ensure trouble free service for the cutter.

**10.0 Documentations:**

- 10.1 In order to facilitate subsequent maintenance in service, the manufacturer/supplier shall supply two sets of schematic diagrams. These shall exhibit clearly the details of the various components.

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10.2 Copies of the maker's certificate guaranteeing the performance of the abrasive rail cutter should be supplied in duplicate alongwith the delivery of each abrasive rail cutter.

**11.0 Training and Commissioning:**

11.1 Adequate training in operation and maintenance of the abrasive rail cutter 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/mutually agreed between the purchaser and the supplier, at the rate of two operator per abrasive rail cutter which shall be treated as part of commissioning.

11.2 After the abrasive rail cutter 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 11.0.

**12.0 Marking and Packing:**

12.1 Each abrasive rail cutter shall be legibly and indelibly marked with the following details:

- (i) Name and trade mark/brand of the manufacturer.
- (ii) Serial no. of the abrasive rail cutter.
- (iii) Month & year of supply.

12.2 The abrasive rail cutter 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 (Document Title: 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. The update document is available on RDSO Website i.e. <https://rdso.indianrailways.gov.in>.

**14.0 Preference to Make in India:**

The Government of India policy on 'Make in India' shall be applicable'.

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