



Specification of
Light Weight Abrasive Rail Cutter
(Broad Functional Requirement)
(Spec. No. - TM/SM/LWARC dt. 31.03.2014)
(Second revision-02 of 2022)

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



1.0 Scope:

- 1.1 The Light Weight Abrasive Rail Cutter shall be capable of cutting all types of flat bottom rails being used in Indian Railways.
- 1.2 The LWARC shall be capable of cutting rail at any distance from rail end.

2.0 Functional Requirements:

- 2.1 The LWARC 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 LWARC while attached with clamp during cutting operation shall not be loosen/misaligned. The LWARC shall be so attached with the clamp that it can swing vertically.
- 2.2 The abrasive rail cutter shall be capable of working continuously during the severe Indian atmospheric and climatic conditions.
- 2.3 The machine shall function properly in tilted position also if required.
- 2.4 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 cutting wheel.

3.0 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 25kg.
iv.	Cutting time	60 kg 90 UTS rail – 2 min. 30 sec. (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.

4.0 Tests :**i) Visual and Dimensional Test:**

The LWARC shall be visually checked for defects like rough finishing, bend in frame, loose fittings etc. and weight of the LWARC shall be checked.

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

ii)Continuous running tests for power source:

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

iii) Cutting Performance Test:

The LWARC 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 LWARC with RDSO approved Rail Cutting Wheel (Abrasive Disc) (Spec no. TM/SM/2 Rev 02 of 2020).

- 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.

Before offering the LWARCs 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 LWARCs and shall submit internal test certificate and raw material certificate to the inspecting official. The cutting performance test shall be continued till the Abrasive Disc reaches its discard diameter of 260 mm.

4.1 Acceptance Tests:

Following acceptance tests to be conducted at consignee's premises:

- i) Visual & Dimensional check – as per clause 4.1 (i) – Every cutter in the consignment.
- ii) Cutting performance test :As per clause no. 4.1 (iii)- Every cutter in the consignment'.
- iii) **Continuous running tests for power source:**Every cutter in the consignment

5.0 Inspection:

5.1 The inspection of the LWARC during procurement shall be carried out by the purchaser zonal railway or any representative/agency authorized by CTE of the zonal railways. Minimum level of the inspecting official shall be SSE (Senior Section Engineer). The cost of inspection and testing shall be borne by the manufacturer/supplier.

5.2 If any cutter fails in any acceptance test, same shall be rejected.'

6.0 Warranty & AMC:

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

- i) Any part of the LWARC 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 be made in any part of the machine offered, the period of twelve months shall commence from the date of such modification.
- ii) During procurement of the LWARC, 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. For procurement of LWARC with AMC, Comprehensive Guideline on Procurement, Operation, Maintenance and Repair of Small Track Machines (report No.TM-227) may be referred.

7.0 Service Facility and Spare Parts (including tools):

- 7.1 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 LWARC for proper operation and handling.
- 7.2 The manufacturers/supplier shall have good service network throughout the country for quick and easy access to the users. A prompt response to the call of the customers is expected in case of any problem experienced in field.
- 7.3 Each LWARC shall be supplied with a complete set of tool kit and a set of tensioning belt required for operation and maintenance of the LWARC.
- 7.4 The manufacturer/supplier shall be responsible for subsequent availability of the spare parts to ensure trouble free service for the cutter.

8.0 Documentations:

- 8.1 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.
- 8.2 Copies of the maker’s certificate guaranteeing the performance of the LWARC should be supplied in duplicate along with the delivery of each LWARC.

9.0 Training and Commissioning:

- 9.1 Adequate training for operation and maintenance of the LWARC shall be imparted to at consignee’s end or at manufacturer’s premises as mutually agreed between the manufacturer and the purchaser at the rate of one operator per LWARC during supply which shall be treated as commissioning.

9.2 After the LWARC has been supplied at consignee premises, the supply shall be considered as complete only after field training is provided by the supplier as stated above.

10.0 Marking And Packing:

10.1 Each LWARC shall be legibly and indelibly marked with following details:

- i) Name, initials and trade-marks of manufacturer.
- ii) Contact details of manufacturer/Supplier
- iii) Serial number of LWARC.
- iv) Month and year of supply

10.2 The LWARC 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.

11.0 Manufacturer/Supplier has sole responsibility to maintain the quality of the product supplied to railways and other units.

12.0 Reference Document:

Following standards have been referred to in this specification on. The following standards with up-dated corrections/amendments shall be available at manufacturer's works.

(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 02 of 2020)	Rail Cutting Wheel/Abrasive Disc
(iii)	EN-12413:2007	Safety requirements for bonded abrasive products.

13.0 Preference to Make in India:

The Government of India policy on 'Make in India' shall be applicable and compliance of the instruction contained in public procurement (preference to make in India) order -2017 "Make in India" shall be ensured.

-----*****-----