SPECIFICATION OF RAIL CUTTING MACHINE (Saw type)

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Track Machines & Monitoring Directorate

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1.0 Scope:

1.1 This specification covers the material, technical and functional requirements and testing criteria of 'Rail Cutting Machine' which is needed to cut all section of rails using Hacksaw Blade. The machine should comprise of an integrated driving engine with cutting unit coupled together rigidly to form a compact unit with the overall weight including wheel arrangement not exceeding 70 kg. The details of engine and the cutting unit are as below.

1.2 Supplier is fully responsible to maintain the quality of product supplied to Indian Railways.

1.3 Preference to Make in India: Compliance of the instruction contained in Public Procurement (Preference to Make in India) Order -2017 "Make in India" and latest guidelines issued in this regard shall be ensured.

2.0 Functional Requirements:

2.1 Engine: It should be driven by a compatible internal combustion Petrol / Diesel / Natural Gas (NG) / Liquid Petroleum Gas (LPG)/Petrol and Natural Gas (NG) / Diesel and Natural Gas (NG) / Petrol and Liquid Petroleum Gas (LPG) / Diesel and Liquid Petroleum Gas (LPG) / Petrol and Kerosene engine with 2 to 3 HP @ 3000 to 4000 rpm.

2.2 Cutting unit should be able to cut rails of any section i.e. 60 R to 60 kg/m and of any metallurgy i.e. having UTS from 70 to 120 kg/mm^2.

2.3 Cutting unit should be provided with fine adjustment of the blade axially to about 30 mm.

2.4 The time required to cut rail depending on its type should be less than 30 min. excluding the fixing time.

2.5 Saw blade should be made of high performance fast cutting steels asper IS: 2594- 2003 (Reaffirmed 2013) for machine hacksaw blade of tungsten molybdenumalloy with teeth on one side only. Each blade should give at least 5cuts of 1175 HT rails.

2.6 Minimum of two cuts should be possible for each liter of the fuel.

2.7 The fuel tank capacity should be sufficient to cater for 4 or 5 cuts in 1175 HT rails.

2.8 The tolerance of squareness both vertical & lateral of the cut surface shall be ± 1 mm.

3.0 Technical Features:

i.	Weight of the complete unit including all attachments like wheels but without fuel	Maximum 70 kg.
ii.	Capacity of power source	Sufficient to cut in 52kg/60kg 90UTS R260, 1175 HT rail section within stipulated time.
iii.	Fixing time of rail clamp and the Machine	Fixing arrangement should be easy and firm and should not take more than 2 minutes for fixing to prepare the cut.
iv.	Fuel tank capacity	Capacity of the fuel tank should be sufficient to cater for 4 cuts minimum.
v.	Maximum cutting time	i) For 52kg/90UTS-20 minutes ii) For 60kg/90UTS-30 minutes iii) For R260-30 minutes. iv) For 1175 HT-30 minutes.

4.0 Test

4.1 Tests at the time of supply (Acceptance Test):

Following test is to be conducted on sample at the time of supply. The cost of tests shall be borne by the manufacturer/supplier. All arrangement to conducts tests shall be made by manufacturer/supplier.

i) Visual and Dimensional Test:
The Machine shall be visually checked for visual defects like rough finishing, bend in frame, loose fittings etc.

ii) Weight of the machine shall be checked.

iii) Continuous running tests for power source:
The power source i.e., engine shall be started for engine driven machine; the engine shall be started with ease. The power source shall be run continuously for a minimum period of one hour, at full throttle. The power source shall run without any operational trouble during test.

iv) Cutting Performance Test:
The prototypes shall be tested for cutting performance. 1175 HT shall be cut, If 1175 HT rail is not available, test can be conducted on 60 kg, 90 UTS rail and following details shall be recorded. Minimum 20 cuts with each prototype shall be carried out. Test will be conducted by using Hacksaw Blade. The test includes:

a) Fixing time of the machine.
b) Cutting time for every cut.
c) The tolerance of squareness both vertical & lateral of the cut surface.
d) Firmness of gripping before and after every cut.

5.0 INSPECTION:

The inspection of the machine shall be carried out by the purchaser Zonal railway or any representative/other agency authorized by purchaser/zonal railway. The inspection procedure and the test scheme should be submitted to the purchaser for approval. The cost of inspection and testing shall be borne by the manufacturer/supplier. Minimum level of inspecting official shall be SSE.

6.0 WARRANTY& AMC:

6.1 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 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, commissioned in service. The cost of such modification shall be borne by the supplier of such modification.

6.2 During procurement of the machine, railways should go post-warranty AMC with the supplier for a pre-determined period as decided by the purchaser railway as per Comprehensive Guidelines on Procurement, Operation, Maintenance and Repair of Small Track Machine Repot no TM 227.

7.0 Service Facility & Spare Parts:

7.1 Service Engineer: The contractor shall provide at reasonable cost the service of competent engineers during the guarantee period. The service engineers shall be available for instructions to operating, repair and maintenance staff.

7.2 The expected life of the components should be indicated along with their condemning limits. The machine should be supplied with the necessary spare parts for the operation and maintenance for a period of two years. The spare parts required should be detailed in separate list indicating description, part number, quantity and possible source of procurement.

7.3 The manufacturer shall be responsible for the subsequent availability of spares to ensure trouble free service during the life time of the machine.

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

8.0 DOCUMENTATION &INSTRUCTION MANUALS:

8.1 Detailed operating manual, maintenance, safety and service manuals shall be specifically Prepared and three copies each of the same shall be supplied with each machine.

8.2 Frequency of various maintenance operations like servicing overhauling etc. shall be indicated by the supplier.

8.3 Maker's test certificate: Copies of the maker's certificate guaranteeing the performance of the Machine should be supplied in duplicate along with the delivery of each Machine.

8.4 Drawings: In order to facilitate subsequent maintenance in service, the manufacturer/supplier shall supply details drawings of the machine exhibiting clearly the materials and dimensions.

9.0 Training and commissioning:

Adequate demo and training in operation and maintenance of the machine shall be imparted to railway operators at the rate of one operator per machine by the manufacturer either at manufacturer's premises or at railway premises, as mutually agreed between the purchaser and the supplier. The supply will be considered as complete only after this demo and training. That will be treated as commissioning of machine.

10.0 Handling arrangement:

The machine should have mono rail wheels arrangement at the bottom and a handle of convenient height to enable it to be pushed over the rail by one person to take it to the work site. Nylon wheels should also be attached at either end of the double flanged wheels to enable the machine to be moved on cess/plain surface as required. The diameter and thickness of the nylon wheels should be such that they do not infringe check rails nor the ballast adjoining the rail heads

11.0 Marking and Packing:

11.1 The machine shall be legibly and indelibly marked with:

i) Name, Contact no, initials and trade-marks of manufacturer.
ii) Serial number of machine.
iii) Month & year of supply.

11.2 The Machine 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.

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