

ISO9001-2015	Document No.: TM/SM/468	Revision 02	Date Effective From: 24/12/2020
Document Title: Specification of Broad Functional Requirement of Battery Operated Rail Drilling Machine			



# Specification of Broad Functional Requirement of Battery operated Rail Drilling Machine

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First Revision, 2017

**Second Revision, 2020**

**Track Machines & Monitoring Directorate**

**RESEARCH DESIGNS AND STANDARDS ORGANISATION**  
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## 1.0 SCOPE:

This specification covers the material, technical and functional requirements and testing criteria of 'Battery Operated Rail Drilling Machine' which is needed for drilling holes in all section of rails using core drill bit. This specification mainly covers the technical provisions having no connections with necessary contractual provisions. In this specification "Battery Operated Rail Drilling Machine" will be termed as "machine" for conveniences. The machine should comprise of an integrated battery with drilling unit coupled together rigidly to form a compact unit.

- 1.1 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.
- 1.2 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 MATERIAL:

- 2.1 **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.
- 2.2 **Power Source:** The Machine shall be powered by suitable battery with good records of service with wide service network in India. Robust construction & low maintenance cost are of particular importance. The manufacturer should furnish the information regarding make & model of battery proposed to be used & details of service network and availability of spares in India.

## 3.0 FUNCTIONAL REQUIREMENTS:

- 3.1 It should be able to drill straight (centrally to both axes) hole upto 38 mm dia. in the rail web of any type and section of rail from 60 R to 60 kg/m having UTS of 70 to 90kg/mm<sup>2</sup> with suitable clamp, as close as 46 mm from rail ends with tolerance for diameter & position of hole within  $\pm 0.5$  mm.
- 3.2 Machine should be supplied with mono rail cum nylon wheel to enable machine to carry/transport on mono rail/plain surface or any other suitable arrangement for easy transportation.

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#### 4.0 TECHNICAL FEATURES.

i	Weight of the complete unit including all attachments/ Battery for drilling holes (excluding transportation arrangement)	26 kg. max.
ii.	Capacity of power source and drilling time	Sufficient to drill hole in 60kg 90UTS rail section within 1 minute.
iii.	fixing time of rail clamp and the Machine	Fixing arrangement should be firm and easy and should not take more than 2 minutes for fixing to commence drilling operation
iv.	No. of drillings with full charged battery	35 nos. with $\phi$ 28 mm or 32mm for 60 kg 90UTS rail section

#### 5.0 TESTS:

##### 5.1 Test at the time of initial approval (*Type Tests*):

Following type test are to be conducted on Prototypes at the time of initial approval. The manufacturer/supplier shall produce **two prototype** samples before inspecting officials for type tests. The cost of type tests shall be borne by the manufacturer/supplier. All arrangement to conducts type tests shall be made by manufacturer/supplier.

- i) Visual & Dimensional check – The Machine shall be visually checked for visual defects like rough finishing, cracks, loose fittings etc.
- ii) Weight of the machine shall be checked as per clause 4.0 (i).
- iii) Battery performance as per clause no. 4.0 (ii) & (iv)
- iv) Drilling Performance Test:  
The prototypes shall be tested for drilling performance. In 60 kg, 90 UTS rail, holes shall be drilled and following details shall be recorded. Minimum 35 holes with each prototype sample shall be drilled out.
  - a) Fixing time of the machine.
  - b) Drilling time for every drill.
  - c) The tolerance of diameter & position of the hole.
  - d) Firmness of gripping before and after every drill.

##### 5.2 Following type tests are to be conducted at the time of supply (**Acceptance Test**): Acceptance tests are to be conducted inspection against zonal railways/purchaser's purchase order.

- (i) Visual & Dimensional as per clause no. 5.1 (i)
- (ii) Drilling performance test as per clause no. 5.1 (iv). Minimum 05 holes per sample shall be drilled.
- (iii) Weight of machine shall be checked as per clause no.4.0 (i).

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