

ISO 9001-2015	Document No.: TM-SM-343(Rev 01 of 2020)	Version no.: 01	Date Effective From: 08/01/2021
Document Title: Specification of Light Weight Motorized Trolley			



RESEARCH DESIGNS AND STANDARDS ORGANISATION
Manaknagar, Lucknow-226011

Track Machines & Monitoring Directorate

(TM-SM-343)
Specification of Light Weight Motorized Trolley
(Rev 01 of 2020)

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Prepared By:	Checked By:	Approved By:	

1.0 Scope:

- 1.1 This specification covers performance requirements of Light Weight Motorized Trolley in completely assembled and furnished conditions for operation on 1676 mm (Nominal) gauge on main line and branch line of Indian Railways.
- 1.2 This Trolley shall be Self Propelled, light Weight; low cost trolley for carrying Small Machines & Tools for day to day Track maintenance operation providing easy & quick access to all work sites along railway track.
- 1.3 The manufacturer may submit their own model/versions according to their specifications which can meet functional requirement as mentioned in this specification.

2.0 Reference:

- 2.1 The design of trolley and its components shall confirm to IS/BS/ISO/IRS specifications wherever applicable.

3.0 Materials, Processing and Workmanship:

- 3.1 All the metal surfaces shall be properly finished, rough and sharp edges shall be removed.
- 3.2 All the working parts subjected to wear shall be accurately machined to such tolerances as will ensure the fitting of spares with minimum of adjustment.

The Trolley may be fabricated & constructed using light weight material like aluminum alloy & the Trolley wheels may be of cold pressed steel/forged steel or light alloy.

4.0 Functional Requirements:

- 4.1 The Trolley shall be self propelled, powered by an air cooled diesel/ petrol engine, which will drive a hydraulic system transferring the powers on rear most wheels.
- 4.2 The pay load capacity of Trolley will be 1200 kg, main purpose is to transport small P.way materials/fittings, tools, welding equipment and Small Machines etc. required for day to day used by P.Way staff.
- 4.3 The tare weight of the trolley should be less so that it can be easily on-track/off tracked.
- 4.4 Seating capacity is not needed.
- 4.5 Trough is not needed.
- 4.6 Platform shall be made of light weight but strong materials such, so as to make it dismantable which can be assembled / dismantled in few minutes.
- 4.7 It shall have hydraulic braking system.
- 4.8 The height of platform above rail level should be 300-350 mm.

- 4.9 The trolley shall be capable of running at designed speed in curves (upto & including 10 degree curves) and shall also be capable of negotiating points & crossing, diamond crossings, single/double slips at a speed of 05 kmph approx.
- 4.10 A minimum clearance of 102 mm from rail level should be available.
- 4.11 Small wheel diameter and low height to facilitate easy loading and unloading. The Trolley wheels diameter 150 to 200 mm.
- 4.12 The trolley shall have the following accessories:
- i) Horn: Horn should be loud enough.
 - ii) Flag fixing arrangement shall be provided for fixing flags (RED) during day time.
 - iii) Pushing handles (two nos.) shall be provided to facilitate pushing the trolley manually in case of engine failure.
 - iv) Red lamp

5.0 Technical Features:

5.1 The trolley shall fulfill following requirements:

1.	Track Gauge (Nominal)	:	1676 mm
2.	Pay load capacity	:	1200 kg
3.	Self weight	:	200 kg (max.)
4.	Speed	:	05 kmph
5.	Lighting arrangement	:	Head and tail lamps shall be provided to both the front and rear side of the trolley.
6.	Dimension of platform	:	2250 X 2000 mm
	i) Length	:	2300 to 2400 mm
	ii) Width	:	2100 to 2200 mm
	iii) Height (above rail level)	:	300-350 mm

5.2 The trolley shall be operateable in climatic conditions given below:

1.	Atmospheric Temperature	:	0- 55° C
2.	Altitude	:	0-300 m
3.	Humidity	:	100% Saturation during rainy season
4.	Rainfall	:	Very heavy in certain areas
5.	Atmosphere during (hot whether)	:	Extremely dusty & desert terrain in certain areas.
6.	Coastal Area	:	Humid & Salt laden terrain.

6.0 Tests:

6.1 Tests at the time of initial approval (Type Tests):

The supplier/ manufacturer shall offer one prototype of the trolley for type test after successfully carrying out the internal tests. The supplier/manufacturer shall submit internal test certificate to RDSO before offering the prototypes. Following tests shall be carried out in sequence:

- i) Visual & Dimensional check
- ii) Field test/ load test

6.1.1 Visual & Dimensional check:

Trolley shall be checked visually and dimensionally as per clause 4.0 and clause 5.1 wherever applicable. The trolley shall be free from all visual defects in material, construction and fabrication. The major dimensions shall be checked as per manufacturer’s drawing. The weight shall also be recorded.

6.1.2 Field test/ Load test:

6.2 For Type Test:

- i) The trolley shall be loaded with its designed pay load capacity and shall be run at a designed speed for 05 kmph (Two block sections). The trolley shall run at a designed speed with adequate comfort without any problem in starting, breaking, stopping, and negotiation of points & crossings/diamonds.
- ii) The trolley shall also be tested for 20% over load at a speed of 05 kmph in the manner as described in Para (i) above.

6.3 Acceptance Test (Test at the time of supply):

- (a) **Visual and Dimensional Check:** The trolley should be checked visually as per clause 6.1.1.
- (b) **Field Test:** The trolley shall be checked as per para 6.2 for Load test. The inspecting official shall maintain a record as per clause 6.2.

7.0 Documentations:

7.1 Detailed operating manual, maintenance and service manual shall be specially prepared and copy of the same shall be supplied with each trolley.

7.2 Copies of the maker’s certificate guaranteeing the performance of the power pack should be supplied in duplicate alongwith the delivery of each power pack.

7.3 In order to facilitate subsequent maintenance in service, the manufacturer shall supply one set of drawing legible and indelible quality. The drawings shall exhibit clearly the materials mentioning relevant codes/specification, if any that are necessary for the manufacture of

these items. In case of any proprietary items, the supplier shall indicate terms and conditions under which such drawing and technical know-how can be made available to the purchaser.

8.0 Inspection:

- 8.1 Every power pack in the consignment shall be inspected for acceptance tests as mentioned in clause 6.3. Minimum level of inspecting official shall be SE (Section Engineer)/SSE. The cost of inspection shall be borne by the supplier/ manufacturer.
- 8.2 The inspection of the trolley shall be carried out by the purchaser / zonal railway or any representative authorized by the purchaser/CTE of the zonal railway. The cost of inspection and testing shall be borne by the supplier/manufacturer. Copies of maker's test certificate guaranteeing the performance of the trolley shall be supplied in duplicate along with the delivery of each trolley.
- 8.3 The inspecting official shall keep a record of inspection as per clause 12.7 of report TM-227.

9.0 Warranty & AMC:

- 9.1 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 supplier/manufacturer at his own expenses. If any design modifications are made in any part of the equipment offered, the period of 12 months would commence from the date of such modifications.
- 9.2 During procurement of the machine purchaser railways may go post-warranty AMC with the supplier for a pre-determined period as decided by him. This may be incorporated in the tender document as a condition of contract/Tender/Supply.

10.0 Service Facility and Spare Parts(including tools):

- 10.1 Each power pack shall be supplied with a complete kit of tools required by the operator in emergency and for normal working of the power pack.
- 10.2 Spares: Each Power pack shall be supplied with the spares as prescribed by the manufacturer/supplier for normal working of the power pack.
- 10.3 The manufacturer/supplier shall have a good service network throughout the country for quick and easy access to the users. A prompt response to the call of the customer is expected in case of any problem experienced in field.

11.0 Training and Commissioning:

- 11.1 Adequate training for operation and maintenance of the trolley shall be imparted at consignee end at the rate of two operators per trolley during supply which shall be treated as part of commissioning.

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11.2 During commissioning each trolley of the consignment shall run for at least 30 minutes or 5 kilometers with rated pay load at specified speed as per clause 6.2. Only after successful and satisfactory running of the trolley, the supply should be treated as complete.

12.0 Marking And Packing:

12.1 Each power pack shall be legibly and indelibly marked with the following details:

- (i) Name and trade mark/brand of the manufacturer.
- (ii) Contact details of manufacturer and supplier
- (iii) Serial no. of the Trolley.
- (iv) Pay Load Capacity
- (v) Month & year of supply.

12.2 All exposed surfaces shall be painted with yellow paint of standard quality to protect it from rusting and other weathering effects. All the working parts shall be oiled before being assembled. The trolley shall be supplied packed in according to best trade practices to safely transport by rail/road and reach the consignee in safe and satisfactory manner.

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 for ‘Make in India’: The Government of India Policy on ‘Make in India’ shall be applicable for this specification.

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