

1200353/2022/O/o PED/INFRA-1/RDSO

ISO 9001-2015	Document No.: TM/SM/465 dated 03.02.2014 (Rev 02 of 2022)	Version-01	Date Effective From: 08/06/2022
Document Title: Specification of Broad functional Requirement for Light weight Push Trolley			



सत्यमेव जयते

Government of India

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Manak Nagar, Lucknow-226011
Track Machines & Monitoring Directorate**

**Specification of Broad Functional Requirement for Light weight push trolley
Specification No.- TM/SM/465 dated 03.02.2014**

(Rev 02 of 2022)

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1.0. Scope:

This specification covers the functional and technical requirements with testing details of Lightweight push trolley. The Lightweight push trolley will be termed as trolley in this specification.

2.0. Reference :Following specification has been referred to in this specification. Updated copy of the specification shall be available in the works of the manufacturer/ supplier.

S.N.	Reference Documents	Title
1.	IS: 1239-Part 1 -2004	Steel Tubes, Tubulars And Other Wrought Steel Fittings — Specification
2.	IS:1875(Reaffirmed-1998)	Carbon Steel Billets, Blooms, Slabs And Bars For Forgings - Specification
3.	IS:7428-1974(Re-affirmed -2001)	Specification for Aluminum Alloy Extruded Bars, Rods, and Sections for Aircraft Purposes (Alloy no. 24345)

3.0. Materials, processing and workmanship:

- 3.1 Wheel: The wheels shall be made of cast steel or any other suitable material having sufficient mechanical strength intended for.
- 3.2 Axle: The axles shall be made hollow by using heavy grade steel pipes of nominal bore 32 mm conforming to IS: 1239-1992. The solid portion of the axles at both ends (where wheels are to be fitted) shall be made of Class 3 steel of IS: 1875.
- 3.3 Trolley Frame: The trolley frame shall be made of seamless steel extruded section (rectangular). Alternatively aluminum extrusion conforming to Grade-II (W condition) of IS: 7428-1974 (Re-affirmed-2001) may be used.
- 3.4 Detachable Seating Arrangement: Good quality molded plastic/equivalent or superior material shall be used for the seat. Each seat shall be fitted to a steel tubular structure side by side. There shall be two hooks for accommodating gauge cum level on the back of seating bench. All the loads shall be distributed such that the stability of trolley on track is ensured in all conditions.
- 3.5 The light inspection (push) trolley shall be sturdy and robust in design, lightweight and easily dismantle-able to load on brake-van/SLR for shifting from one station to other.
- 3.6 The trolley shall run by pushing the same from backside with the help of two detachable handles.
- 3.7 The trolley shall be light in weight so that four persons can easily lift the trolley and make it off the track on the face of an approaching train.
- 3.8 The design of trolley shall conform to IS/BS/DS/ISO/IRS Specifications wherever applicable.

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4.0. Functional Requirements:

4.1 The trolley shall be as light as possible but the strength and structural stability shall be enough to cater to the purpose of the trolley.

4.2 Alternatively, lightweight material for different components as suggested above may be used to make the trolley lightweight.

4.3 The seating arrangement shall be detachable. There shall be an arrangement of light weight umbrella or collapsible/detachable hood over the trolley as a shade against sun/rain. Flag fixing arrangement shall be provided at the top/side of the umbrella/hood for fixing flags.

4.4 The trolley shall have arrangement to fix pushing handles on both side (rear and front).

4.5 The trolley shall be electrically insulated by providing insulation at axle/bearing/at any suitable place.

4.6 The design of the trolley shall be such that it can easily negotiate all types of point and crossings, diamond crossings with and without slips, curves, level crossings and bridges etc.

4.7 The trolley shall have an efficient braking arrangement.

4.8 The trolley shall have detachable stone guard arrangement.

4.9 A wooden toolbox of suitable size for flags, files etc shall be supplied with the trolley.

4.10 The trolley shall be properly insulated so that it shall work without signal failure over Indian Railways. Special attention to be taken so that failure of axle counter shall not occur in automatic section, track-circuit area etc.

4.11 The trolley shall be operable in climatic conditions mentioned below:

- | | | |
|-------|-------------------------------|---|
| (i) | Atmospheric temperature | 0 ^o C-55 ^o C |
| (ii) | Altitude | 0-300 m |
| (iii) | Humidity | 100% saturation during rainy season |
| (iv) | Rainfall | Very heavy in certain area |
| (v) | Atmosphere during hot weather | Extremely dusty and desert terrain in certain areas |
| (vi) | Coastal area | Humid and salt laden terrain. |

5.0 : Technical Features:

i.	Nominal Gauge	1676 mm
ii.	Wheel Dia. (at tread)	400 mm
iii.	Wheel Base	900-1000 mm (approx)
iv.	Wheel thickness (average) at tread	6 mm
v.	Flange Thickness(average)	9 mm
vi.	Pay load capacity	0.7 ton (min.)

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vii.	No. of spokes	4
viii.	Seating capacity	3 persons at front
ix.	Trolley Frame Dimension	1450 mm X 1550 mm (approx.)
x.	Umbrella/Hood type	Light weight, collapsible/detachable
xi.	Overall weight	up to 125 Kg.

6.0 Tests:**6.1 Visual & Dimensional check:**

The trolley shall be checked visually and dimensionally as per para 5.0 of specification approved by RDSO/Railway Board. The trolley shall be free from all visual defects in material, construction and fabrication.

6.2 **Load Test:** The trolley shall be loaded with an overload of 25% of rated pay load capacity and shall be run at maximum designated speed for at least two block sections. The trolley shall run at a design speed with adequate comfort without any problem in starting, braking, stopping, and negotiation of points and crossings, curve, steep gradient and level crossing.

Note:

While carrying out load test in the station yard, running line, the instruction laid down in GR/SR, IRPWM and other Railway codes/manuals shall be strictly followed. The assistance of competent supervisor (PWI/PWM) from open line and help of traffic block etc. shall be arranged by purchaser.

6.3 The manufacturer/ supplier shall provide all testing facilities required by the inspecting officials for proper inspection of Trolley.

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

Each trolley shall be subjected to the following tests :

- i) Visual and dimensional check: as per clause-6.1-for each trolley in the consignment
- ii) Load test: as per clause-6.2-for all the samples randomly picked up.

8.0 Inspection:

8.1 Each trolley in the consignment shall be inspected for acceptance tests as mentioned in clause 6.2.

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/manufacture. Minimum level of inspecting official shall be SE (Section Engineer)/SSE.

8.3 If the trolley(s) fails in either of the tests mentioned in clause 7.0, it should be rejected and all the trolleys shall undergo load test besides visual and dimensional check. In such a case, only those trolleys which pass both the tests should be cleared.

9.0 Warranty and AMC:

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9.1 The supplier shall warranty the material covered by the specification to be free from defects under normal use and service. His obligation under this warranty shall be for repairing of the trolley and replace free of cost those parts, which shall be found defective within one year for manufacturing and material defects from the date of receipt by the consignee.

9.2 During procurement of the trolley, 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.

9.3 **Service Facility:** 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.

10.0 Documentations:

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

10.2 Copies of the maker's certificate guaranteeing the performance of the trolley shall be supplied in duplicate along with the delivery of each trolley.

10.3 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.

10.4 During inspections, the consignee should make a proper record of testing of machine/consumable before passing it for billing purposes.

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.

11.2 During commissioning each trolley of the consignment shall run for a distance of minimum 2 Km with rated pay-load at specified speed. Only after successful and satisfactory running of the trolley, the supply shall be treated as complete.

12.0 Marking And Packing:

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

- (i) Name and trade mark/brand of the manufacturer.
- (ii) Contact Details of manufacturer/Supplier
- (iii) Serial number of the trolley.
- (iv) Pay Load Capacity.

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(v) Month & year of supply.

12.2 All exposed surfaces , steel/metallic parts of the trolley shall be painted in desired colour of standard quality as per best trade practice 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 suitable / wooden crates according to best trade practices to safely transport by rail/road and reach the consignee in safe and satisfactory manner.

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

14.0 Preference to Make in India: The Government of India policy on ‘Make in India’ shall be applicable.

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