



INFRASTRUCTURE MAINTENANCE

SPECIFICATION

Specification For A Hydraulic Track Jack

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Author: Chief Engineering Technician
Documentation Management

Ashwin Singh

Handwritten signature of Ashwin Singh over a dotted line.

Approved: Senior Engineer
Equipment Technology

Colin Blandford

Handwritten signature of Colin Blandford over a dotted line.

Authorised: Senior Engineer
Equipment Technology

Colin Blandford

Handwritten signature of Colin Blandford over a dotted line.

Date: 19 February 2008

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Transnet Freight Rail - Infrastructure

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1. Scope

- 1.1 This specification outlines the requirements of a 9000 kg lifting capacity, heavy-duty hydraulic, hand operated rail maintenance track jack.
- 1.2 The jack will be used for both horizontal and vertical operation.

2. Operating Conditions

- 2.1 Machines will be operated in all weather conditions at altitudes varying from sea level to 1850 m above sea level, relative humidity 10% to 90% and atmospheric conditions which vary from heavily saline to dry and dusty.
- 2.2 Ambient air temperatures ranging from -5° C to 45° C.

3. Qualifications

- 3.1 The design of the machine is to be that of the manufacturer, but must be of robust construction in order to meet sustained heavy-duty demands.
- 3.2 A “no-tool” adjustment machine is preferred.
- 3.3 Machines will be acceptable in standard factory production finish and colour. Details to be furnished.
- 3.4 Only products proven in service will be considered. A list of users, both South African and international, is to be submitted.

4. Performance

- 4.1 A service life of not less than 7 years is expected from each machine. The actual design life of the machines is to be stated.
- 4.2 The machines are to be easily and economically maintained with standard workshop tools and equipment.

5. General Requirements

- 5.1 The jacks will be hand operated in both vertical and horizontal positions.
- 5.2 The jack is to incorporate an internal return spring, comfortable carrying/manoeuvring handle as well as a one piece operating (pumping) handle.
- 5.3 The base plate is to be suitable for use in loose ballast, i.e. no additional base plates to be required.

6. Detailed Requirements

6.1 Lifting Capacity

- 6.1.1 The jack must have a minimum lifting capacity of 9000 kg.

6.2 Mass

- 6.2.1 The net mass of the track jack is not to exceed 26kg.

6.3 Stroke

- 6.3.1 The jack must have a stroke of not less than 200mm.

6.4 Height

- 6.4.1 The overall collapsed height of the jack (including carrying handle) must not exceed 400mm.
- 6.4.2 The toe shoe height must be approximately 50mm measured from the base of the retracted jack.
- 6.4.3 The top end shoe height must be approximately 370mm measured from the base of the retracted jack.

6.5 Handle Effort

- 6.5.1 The handle effort at full load is to be a maximum of 350N.

6.6 Body

- 6.6.1 The body of the jack and its components must be robust.
- 6.6.2 The tool must be rustproof.
- 6.6.3 The grip on the handles must have a non-slip surface.

6.7 Body and Base

- 6.7.1 The body and base of the jack shall be of a suitable grade of SG iron complying with SABS 936/937, an aluminium alloy casting or of welded construction.
- 6.7.2 The dimensions of the base plate must be a minimum of 250mm x 150mm.
- 6.7.3 The base must have the ability to resist deformation in service.

6.8 Lifting Shoes

- 6.8.1 The jack must be equipped with both toe and top end lifting shoes.
- 6.8.2 The dimensions of the toe shoe must be approximately 65mm x 75mm.
- 6.8.3 The dimensions of the top end shoe must be approximately 100mm x 70mm
- 6.8.4 The toe shoe must be securely retained.
- 6.8.5 A V-base lifting head is to be supplied, in addition to the standard lifting head, to enable the jack to operate horizontally between railway lines.

6.9 Lubrication

- 6.9.1 Where grease nipples are fitted, these are to be to DIN 71412 in easily accessible positions. Full details of lubrication applicable to machines on offer to be submitted.

6.10 Safety and Protection

- 6.10.1 Each jack must be equipped with a suitable relief valve in order to prevent damage to seals or other working parts when attempts are made to exceed the lifting capacity.
- 6.10.2 The relief valve must be tamper-proof.
- 6.10.3 The seal and piston of the jack must be protected against damage from the ballast or operator abuse.

6.11 Ergonomics

- 6.11.1 The tool must be ergonomically designed for maximum operator productivity and safety.

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7. Quality Control

- 7.1 All machines must be manufactured in an environment that complies to the latest ISO 9000 to ISO 9004 or similar quality control standards. Details must be furnished.
- 7.2 Machines will be subject to a technical evaluation and the final decision will, amongst others, be based on these findings.

8. Legal and Operational

- 8.1 All machines must comply with the requirements of the Machinery and Occupational Safety Act, (Act 85 of 1993). It must also comply with ANSI/ASME B30.1-2004 (Safety Code for Jacks) and EN 1494 (Mobile or moveable jacks and associated lifting equipment)
- 8.2 The jack must be completely assembled and filled with lubricants and ready for service in all respects.
- 8.3 An operator's handbook, service manual and spare parts list must be supplied with each machine in order to ensure that the machine is operated in accordance to the manufacturer's instructions.
- 8.4 All machines and equipment must be supplied complete with essential tools such as allen keys, spanners etc. in order to make essential adjustments as well as to fit or remove consumable items.
- 8.5 Suppliers of hydraulic machinery will be required to stock a full range of readily available spare parts required for the maintenance of these machines throughout their life span. Full details of service organisation is to be submitted.
- 8.6 All machines and equipment is to be guaranteed for a minimum period of 12 months against faulty material and workmanship - fair wear and tear excluded. Full details of guarantee is to be submitted.
- 8.7 The information as requested by the various clauses in this specification are to be supplied in the form of technical data, pamphlets and/or drawings. If this is not complied to, offers may be overlooked.
- 8.8 Each machine purchased will be issued with a project number consisting of 20 characters which must be stamped or engraved directly onto the machine or on the manufacturer's data plate or a separate riveted plate on the particular machine.
- 8.9 Sufficient training must be given to all operators of these machines.
- 8.10 Machines not already in service with Transnet Freight Rail must be made available for testing/evaluation during the adjudication of the tender. Technical improvements on existing machines/equipment is to be substantiated by physical examples.