



TRANSNET
freight rail

INFRASTRUCTURE MAINTENANCE

SPECIFICATION

Specification For A Hydraulic Tie Tamper

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Contents

1. Scope.....	3
2. Operating Conditions	3
3. Qualifications.....	3
4. Performance.....	3
5. General Requirements	4
6. Detailed Requirements	4
6.1 Mass	4
6.2 Hydraulic System Requirements.....	4
6.3 Impact Energy	4
6.4 Impact Rate.....	4
6.5 Operator Comfort	4
6.6 Noise Emission	5
6.7 Tool	5
6.8 Height.....	5
6.9 Body	5
6.10 Ergonomics.....	5
7. Quality Control	5
8. Legal and Operational	6

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1. Scope

- 1.1 This specification outlines the requirements of a heavy duty hydraulic tie tamper that will be used for the maintenance of railway infrastructure.

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 tie tamper is to be that of the manufacturer, but must be of robust construction in order to meet sustained heavy-duty demands of railway infrastructure maintenance.
- 3.2 A “no-tool” bit changing system 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 machine is to be stated.
- 4.2 The tampers are to be easily and economically maintained with standard workshop tools and equipment.
- 4.3 The tampers must be compatible with hydraulic oil of viscosity grades 46 and 68 – details as per SANS 1218:2005 (Hydraulic Oil – Anti-wear Type)

5. General Requirements

- 5.1 A heavy duty hydraulically operated tie-tamper for the tamping of rail ballast, tamping of asphalt and the breaking of concrete.

6. Detailed Requirements

6.1 Mass

- 6.1.1 The total mass of the unit, including the tamper bit and whip hoses, must not exceed 25 kg.

6.2 Hydraulic System Requirements

- 6.2.1 The hydraulic input will meet the requirements of HTMA Type 1 System and the tamper must operate effectively on this standard.
- 6.2.2 The tie tamper must comply to HTMA standards for hydraulic tool operation.
- 6.2.3 The machine must operate on the "Open Centre Circuit" hydraulic system.
- 6.2.4 The tie tamper must be equipped with 12mm ($\frac{1}{2}$ ")hydraulic whip hoses that comply to DIN EN 853 - 2SN (Rubber Hoses and Hose Assemblies - Wire Braid Reinforced Hydraulic Type).
- 6.2.5 The whip hoses must be fitted with 12mm ($\frac{1}{2}$ ") fixed male and female quick release flat-face fittings that comply to HTMA standards. The quick release fittings must be fitted with dust caps.
- 6.2.6 The whip hoses must be 400mm long.
- 6.2.7 Hose connections must be placed in a position that would assist in the balance of the machine and make it easy for the operator to handle and move the machine.

6.3 Impact Energy

- 6.3.1 The impact energy must be a minimum of 60 joules.

6.4 Impact Rate

- 6.4.1 The impact rate must be in the range of 1200 – 1800 blows per minute.

6.5 Operator Comfort

- 6.5.1 The tie tamper must comply with SANS 8662-1:1998 (Hand-Held Portable Power Tools - Measurement of Vibrations at the Handle Part 1:General) and SANS 8662 – 5:2003 (Hand-Held Portable Power Tools - Measurement of Vibrations at the Handle Part 5: Pavement breakers and hammers for construction work).

6.6 Noise Emission

6.6.1 The tie tamper must comply to Noise Directive 2000/14/EC.

6.7 Tool

6.7.1 The tool shank size must be HEX 25mm X 108 mm long.

6.7.2 The retaining mechanism must be compatible with the tool shank – see 6.7.1.

6.7.3 The total length of the tool will be approximately 600mm.

6.7.4 The tip width will be approximately 80mm.

6.7.5 The weight of the tool will be approximately 5 kg.

6.8 Height

6.8.1 The height of the tamper handles, with a tamping bit in place, must be approximately 950 - 1020mm measured from the tip of the bit.

6.8.2 The total height of the unit, with the tamping bit in place, must be in the range of 1000 – 1050mm.

6.9 Body

6.9.1 The frame and components of the tamper must be robust.

6.9.2 The machine must be well protected against rust.

6.9.3 The grip on the handles must have a non-slip surface.

6.9.4 The tie tampers will be accepted in standard factory finish and colour.

Due cognisance must be given to the life requirement of the machine.

6.10 Ergonomics

6.10.1 The tie tamper must be ergonomically designed for maximum operator productivity and safety.

6.10.2 The tamper must have an anti-vibration handle.

6.10.3 A suitable synthetic protection cover must be provided to allow for a smooth sliding action on the operator's leg.

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 – General Machinery Regulations) and The Machinery Directive 98/37/EC.
- 8.2 The machine must be completely assembled and filled with lubricants and ready for service in all respects.
- 8.3 Where grease nipples are fitted these are to be to DIN 71412 (Lubricating Nipples – Cone Type) in easily accessible positions.
Full details of lubrication applicable to machines on offer to be submitted.
- 8.4 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.
- 8.5 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.
- 8.6 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.
- 8.7 Consumable items must be available locally and must be of standardised format in order to be used on equipment of more than one supplier.
- 8.8 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.
- 8.9 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.
- 8.10 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.
- 8.11 Sufficient training must be given to all operators of these machines.
- 8.12 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.