

RFQ / TENDER



Tender No: CRAC-JHB 1

Vendor No: 11001386

BOARD LIST
BOARD LIST
TRANSNET FREIGHT RAIL
PROCUREMENT DEPARTMENT
2000

Purchaser : Buyisiwe Hlatshway
Telephone : 011 584 0665
Fax Number:

Please quote reference:
DJ2/6000588198

Deliver to:
TFR Head Office
Supply Chain Services
2000 Johannesburg

Closing Date : 18.03.2013
Validity Date : 31.05.2013
RFQ No : 6000588198

Currency: ZAR

RFQ/TENDER: CRAC-JHB-10180
TOOLS AND EQUIPMENT FOR THE UPGRADE AND REPLACEMENT OF TOOLS (HAND HELD)
FOR INFRASTRUCTURE DEPOTS, DELIVERED AT ELANDSFONTEIN DEPOT. ONCE OFF DELIVERY.

The RFQ documents are obtainable at the address below at a cost of R150,00 Per document.

TENDERS ARE HEREBY INVITED TO QUOTE AND SUMBIT QUOTATION/S AT INYANDA HOUSE 1, 21 WELLINGTON ROAD, PARKTOWN-JOHANNESBURG, NOT LATER THAN TUESDAY 12 FEBRUARY 2013 AT 10:00 AM, N.B. TENDER BOX IS

OPEN FOR 24-HOURS PER WEEK FOR DELIVERING YOUR QUOTATION/S.
NB: PLEASE QUOTE AS PER ATTACHMENT SPECIFICATIONS.

1. RETURN OF QUOTATION/S PLEASE FAX: 011 774 9129 OR 774 9186 OR

E-MAIL TO: thuli.mathebula@transnet.net

1.1 QUOTATION/S MUST BE SUBMITTED PUNCTUALLY AT 10:00 ON THE CLOSING DATE AND LATE QUOTATIONS WILL NOT BE CONSIDERED.

1.2 IF DELIVERED BY HAND:

TRANSNET FREIGHT RAIL, SUPPLY CHAIN SERVICES
GROUND FLOOR
INYANDA HOUSE 1
21 WELLINGTON ROAD
PARKTOWN

DATE:

SIGNATURE OF TENDERER(S):

CONTACT PERSON: TEL No:

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2. CONDITIONS:

2.2 ANY PURCHASE ORDER PLACED AS A RESULT OF YOUR QUOTATION WILL BE SUBJECT TO THE STANDARD TERMS AND

CONDITIONS OF CONTRACT, FORM US7(LATEST), GENERAL TENDER CONDITIONS, FORM CSS5 (LATEST) AND CONDITIONS MENTIONED HEREIN.

2.3 TENDERERS MAY OFFER AN EARLIER VALIDITY DATE, BUT THEIR QUOTATION MAY, IN THAT EVENT, BE DISREGARDED FOR THIS REASON.

2.4 TENDERERS ARE REQUIRED TO OFFER ONLY FIRM PRICES. PRICES SUBJECT TO REVIEW IN TERMS OF CLAUSE 32 OF FORM US7 WILL ONLY BE CONSIDERED SHOULD THE DELIVERY PERIOD REQUIRED EXCEED 6 MONTHS.

2.5 BEST DELIVERY TIME MUST BE OFFERED.

2.6 DISCOUNT (TRADE DISCOUNT),VALUE ADDED TAX (VAT) MUCH BE SHOWN SEPARATELY.

2.7 TRANSNET RESERVES THE RIGHT TO NEGOTIATE PRICES AND COMMERCIAL ASPECTS AFTER THE CLOSING DATE OF THE QUOTATION.

2.8 DIRECT DELIVERY INTIMATES DELIVERY BEING EFFECTED INTO THE WAREHOUSE OR THE ACTUAL POINT OF SUPPLY AND SHOULD THEREFORE INCLUDE ANY TRANSPORTATION MODE DEEMED NECESSARY IN EXECUTING THIS METHOD OF DELIVERY BASIS IN ORDER TO MEET THE REQUIRED DELIVERY DATE. TAX CLEARANCE CERTIFICATES: The Regulations in terms of the Public Finance Management Act, 1999: Framework for Supply Chain Management as published in Government Gazette No.25767 dated 5 December 2003, Clause 9 (1) (d), stipulates that the accounting authority of an institution to which these regulations apply must reject any bid from a supplier who fails to provide written proof from the South African Revenue that the supplier either has no outstanding tax obligations or has made arrangements to meet outstanding tax obligations. Tenderers will be disqualified if a valid tax clearance certificate or written proof from the South African Revenue Service that supplier has made arrangements to meet outstanding tax obligations is not submitted with the tender. COMPANY DETAILS:

NAME OF COMPANY: _____ CONTACT PERSON: _____ TEL. _____

No. _____ FAX No. _____ REG. No. _____ BROAD BASE BLACK

ECONOMIC EMPOWERMENT (BBBEE) Transnet fully endorses and supports the Government's Broad-based Black Economic Empowerment Programme and it is strongly of the opinion that all South African Business Enterprises have an equal obligation to redress the past. Transnet will therefore prefer to do business with local business enterprises who share these same values. Transnet will endeavour to do business enterprises that possess a BBBEE "recognition level" of at least a level 5. Transnet urges Tenderers (large enterprises and QSE's- see below) to have themselves accredited by any one of the various Accreditation Agencies available, who do their BBBEE ratings in accordance with the latest Codes (i.e. those promulgated on 9 February 2007) and whose names appear on the present ABVA (Association of BEE Verification Agencies)-"List of Full Members" as displayed on the ABVA website (www.abva.co.za) Although no agencies have, as yet, been accredited by SANAS (SA National Accreditation System), Transnet will, in the interim, accept rating certificates of tenderers who have been verified by any of the listed agencies. Enterprises will be rated by such agency based on the Following: 1. Large Enterprises (i.e. annual turnover > R 35 million: "Rating level base on all seven elements of the BBBEE scorecard. 2. Qualifying Small Enterprises-(QSE)(i.e. annual turnover > R5M but < R35m "Rating based on any four elements of the BBBEE scorecard. NB:

3. Emerging Micro Enterprises-(EME) (i.e. annual turnover < R5m) are exempted from being rated/verified: "Automatic rating of Level 4 BBBEE irrespective of race of ownership, i.e. 100% BBBEE recognition

"Black ownership > 50% or Black Women ownership > 30% automatically qualifies as level 3 BBBEE, i.e. 110% BBBEE recognition.

"EME's should provide certified documentary proof of annual turnover (i.e. audited financials) plus proof of Black ownership if Black ownership > 50% or Black Women ownership > 30% from the EME's Auditor/Accounting Officer.

4. In addition to the above, Tenderers who wish to enter into a Joint

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Venture or subcontract portions of the contract to BBBEE companies, must state in their tenders the percentage of the total contract value that will be allocated to such BBBEE companies should they be successful in being awarded any business. A rating certificate in respect of such BBBEE JV-partners and /or sub-contractor/s, as well as a breakdown of the distribution of the aforementioned percentage must also be furnished

In view of the high emphasis which Transnet places on Broad-based Black Economic Empowerment, Transnet will allow certain preference points for BBBEE in the evaluation of all responses. Depending upon the value of the ensuing business award (i.e. below or in excess of R2m), the 80/20 or 90/10 point preference systems will be utilized where BBBEE will count out of 20 or 10 respectively in the evaluation process.

EACH RESPONDENT IS REQUIRED TO FURNISH PROOF OF THE ABOVE TO TRANSNET. FAILURE TO DO SO WILL RESULT IN A SCORE OF ZERO BEING ALLOCATED FOR BBBEE Turnover: Kindly indicate your company's annual turnover for the past year R_____

"If annual turnover < R5m, please attach certified confirmation from your Auditor/Accounting Officer

"If annual turnover > R5m please attach original or certified copy of accreditation certificate and detailed scorecard by an ABVA accreditation agency (registered as a "Full Member")

PAYMENT TERMS

The following payment terms will apply as from 1 October 2008.

"All suppliers will be paid 30 days from receipt of month and statement. i.e. payment term F055

CONDITIONS:

This quotation is subject to the provisions of the Standard Terms and Conditions of Contract, Form US7, (Latest) and the General Tender Conditions, Form CSS5 (Latest) and any other standard or special conditions mentioned and/or embodied in the quotation request.

SCHEDULE OF REQUIREMENTS

TENDERERS SHOULD INSERT THEIR PRICE/S UNDER THE APPROPRIATE HEADING HEREUNDER;

IN THIS REGARD THE TENDERER'S ATTENTION IS DIRECTED TO PARAGRAPH 16 OF FORM CSS5 (LATEST).

NB. TENDERERS OFFERING GOODS FROM IMPORTED SUPPLIES MUST SUBMIT THEIR PRICES ON THE DELIVERY BASIS APPEARING UNDER COLUMN (C) OF THIS SCHEDULE OF REQUIREMENTS.

TRANSNET INSISTS ON HONESTY AND INTEGRITY BEYOND REPROACH AT ALL TIMES

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AND WILL NOT TOLERATE ANY FORM OF IMPROPER INFLUENCING, BRIBERY, CORRUPTION, FRAUD, OR ANY OTHER UNETHICAL CONDUCT ON THE PART OF BIDDERS /TRANSNET EMPLOYEES. IF, IN THE OPION OF TRANSNET,S CHIEF OPERATING OFFICER, A TENDERER/CONTRACTOR/SUPPLIER HAS OR CAUSED TO BE PROMISED, OFFER OR GIVEN TO ANY TRANSNET EMPLOYEE, ANY BRIBE, COMMISSION, GIFT LOAN ADVANTAGE OR OTHER CONSIDERATION,TRANSNET SHALL BE ENTITLED TO REVOKE THE TENDER/CONTRACT BY FOLLOWING ITS INTERNAL POLICIES THAT GOVERN THE ECLUSION PROCESS.IN SUCH AN EVENT TRANSNET WILL BE ENTITLED TO PLACE ANY TENDERER/CONTRACTOR/SUPPLIER WHO HAS CONTRAVENED THE PROVISIONS OF TRANSNET'S BUSINESS ETHICS ON ITS LIST OF EXCLUDED TENDERERS.THIS LIST WILL ALSO BE DISTRIBUTED TO ALL OTHER STATE OWNED ENTERPRISES AND GOVERNMENT DEPARTMENTS.

TRANSNET INVITES ITS VALUED SUPPLIERS TO REPORT ANY ALLEGATIONS OF FRAUD, CORRUPTION OR OTHER UNETHICAL ACTIVITIES TO TRANSNET TIP-OFFS ANONYMOUS, AT ANY OF THE FOLLOWING ADDRESSES/ CONTACT NUMBERS:

TOLL-FREE ANONYMOUS HOTLINE-0800 003 056
EMAIL-transnet@tip-offs.com
FAX NUMBER-0800 007 788
FREEPOST DBN 298, UMHLANGA ROCKS, 4320

ADDITIONAL INFORMATION REQUIRED:(WHERE APPLICABLE)

3.1 THE FOLLOWING ADDITIONAL INFORMATION IS REQUIRED:

- (A) DISCOUNT:-----
- (B) SETTLEMENT DISCOUNT:-----
- (C) PRICE/S FIRM:-----
- (D) PRICE/S FIRM UNTIL:----- THEREAFTER SUBJECT TO REVIEW.
- (E) PRICE/S NOT FIRM:-----
- (F) SABS MARK:-----
- (G) SABS PERMIT NO:-----
- (H) BRAND/MAKE/TYPE:-----
- (I) FULL NAME AND ADDRESS OF MANUFACTURER:-----

(J) FULL NAME AND ADDRESS OF INSPECTION POINT:

(K) COUNTRY OF ORIGIN:-----

(L) YEAR 2000 CONTRACT COMPLIANCE:

Vendor/proposers shall indicate their year 2000 compliance with:

- A. Technology Products.
- B. Equipment, products, components or parts
- C. Products and Services

Non- compliance with either (A) or (B) shall result in your bid/

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proposal being deemed non-responsive. Non-Compliance with (C) may cause you bid/proposal to be deemed non-responsive. If you indicate that none of the following apply, please provide a written justification for your determination. Transnet will review this justification and will make a final determination.

Year 2000 Compliance means that (A) the information Technology, (B) Equipment/Products/Components/Parts (Collectively Products) supplied.

(C) Products and Services contracted, will accurately process date and time data from into and between the 20th and 21th centuries. The year 1999 and 2000 and for all leap year. Process date and time includes, but is not limited to, data calculation, logistical functions, program branching, format conversion, edits and validations and the use of dates in comparasons, sorting sequencing, merging, retrieving, searching and indexing. Furthermore year 2000 compliance when (A) used in combination with other information technology, (B) used in combination with other products, (C) used in combination with their(Vendor) other date required interfaces, shall accurately process date and time data (A) if the other technology, (B) If the other products, (C) either passed to or received from their other customers/suppliers, properly exchange date and time data with it/ them.

Comply: _____ Does not Comply: _____ Not Comply: _____

Justification:

(M) SURPLUS MATERIAL:

TENDERERS MUST INDICATE IF THEY WILL BE PREPARED TO PURCHASE BACK FROM TRANSNET ANY SURPLUS MATERIAL WHICH MAY BECOME AVAILABLE FROM ANY RESULTING PURCHASE ORDER/CONTRACT ORIGINATED FROM THE QUOTATION SUBMITTED:

.....

(N) PAYMENT OVERSEAS:

ONLY IF TRANSNET LIMITED IS REQUESTED BY THE TENDERER TO EFFECT PAYMENT OVERSEAS DIRECT TO THE TENDERER'S PRINCIPAL/SUPPLIER THE FOLLOWING INFORMATION IS REQUIRED:

* EXCHANGE RATE ON WHICH THE QUOTATION PRICE IS BASED:R 1.00 SA CURRENCY BEING EQUAL TO------(FOREING CURRENCY).

* PERCENTAGE IN RELATION TO THE QUOTATION PRICE TO BE REMITTED OVERSEAS:

.....

* NAME OF COUNTRY TO WHICH PAYMENT IS TO BE MADE:

.....

.....

* APPLICABLE DATE OF EXCHANGE RATE:

.....

* BENEFICIARY'S NAME AND FULL ADDRESS:

DATE:

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* BENEFICIARY'S BANKERS AND FULL ADDRESS:

.....

* APPLICABLE ACCOUNT NUMBER:

(O) DELIVERY DATE:
 TENDERERS MUST FURNISH THEIR ACTUAL DELIVERY AND MANUFACTURING PERIOD
 HEREUNDER NOTWITHSTANDING THE DELIVERY DATES SPECIFIED BY TRANSNET.

THE FOLLOWING MUST ALSO BE FURNISHED IN REGARD TO THE ABOVE:

1. PERIOD REQUIRED TO OBTAIN RAW MATERIAL.....(DAYS)
2. MANUFACTURING PERIOD.....(DAYS)
3. PERIOD TO TRANSPORT MATERIAL TO DESTINATION..(DAY)

MATERIAL NO.	1.(PERIOD)	2. (PERIOD)	3. (PERIOD)
.....
.....
.....
.....

MATERIAL NO.	1.(PERIOD)	2. (PERIOD)	3. (PERIOD)
.....
.....
.....
.....

Item	Qty	Material	Description
------	-----	----------	-------------

00010	6	Hydraulic power unit	
-------	---	----------------------	--

R.....
 Each

Delivery Date: 30.04.2013

FULL DETAILS OF DESCRIPTION

00020	12	Hydraulic tie temping machine	
-------	----	-------------------------------	--

R.....
 Each

Delivery Date: 30.04.2013

FULL DETAILS OF DESCRIPTION

00030	3	Hydraulic rail drilling machine	
-------	---	---------------------------------	--

R.....
 Each

Delivery Date: 30.04.2013

DATE:

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Item	Qty	Material	Description
------	-----	----------	-------------

FULL DETAILS OF DESCRIPTION

00040 3 Hydraulic rail saws

R.....
Each

Delivery Date: 30.04.2013

FULL DETAILS OF DESCRIPTION

00050 6 Hydraulic 1 impact wrench machine

R.....
Each

Delivery Date: 30.04.2013

FULL DETAILS OF DESCRIPTION

00060 6 Hydraulic track jacks

R.....
Each

Delivery Date: 30.04.2013

FULL DETAILS OF DESCRIPTION

“PREVIEW COPY ONLY”

DATE:

SIGNATURE OF TENDERER(S):

.....



INFRASTRUCTURE MAINTENANCE

SPECIFICATION

Specification For A Hydraulic Tie Tamper

Author: Chief Engineering Technician Ashwin Singh
Small Plant & Equipment
Approved: Senior Engineer Colin Blandford
Engineering
Authorised: Senior Engineer Colin Blandford
Engineering





Date: 1 April 2008

Circulation Restricted To:

Transnet Freight Rail - Infrastructure

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“PREVIEW COPY ONLY”

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.



INFRASTRUCTURE MAINTENANCE

SPECIFICATION

Specification For A Hydraulic Rail Drill

“PREVIEW COPY ONLY”

Author: Chief Engineering Technician Ashwin Singh

Small Plant & Equipment

Approved: Senior Engineer Colin Blandford

Engineering

Authorised: Senior Engineer Colin Blandford

Engineering

Date: 27 May 2008

Circulation Restricted To:

Transnet Freight Rail - Infrastructure

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“PREVIEW COPY ONLY”

1. General Requirements

- 1.1 This specification outlines the requirements of a heavy-duty, hydraulically operated automatic feed rail drill.

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 the sustained heavy-duty demands of railway infrastructure maintenance.
- 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.
- 4.3 The rail drill 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 This specification outlines the requirements of a heavy-duty hydraulically operated automatic feed rail drilling machine that will be used to drill holes in webs of rail sizes as outlined in this specification.
- 5.2 The machine must be complete with index bar, rail templates, tool holders and coolant supply vessel.

6. Detailed Requirements

6.1 Preferred Mass

- 6.1.1 The mass of the rail drill (including whip hoses) must not exceed 30kg.

6.2 Hydraulic System Requirements

- 6.2.1 The machine must comply to HTMA standards for hydraulic tool operation.
- 6.2.2 The machine must operate on the "Open Centre Circuit" hydraulic system.
- 6.2.3 The hydraulic supply will meet the requirements of HTMA Type RR System and the rail drill must operate effectively on this standard.
- 6.2.4 The rail drill must be equipped with 12mm ($1/2$ ") 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 400mm long.
- 6.2.6 The whip hoses must be fitted with 12mm ($1/2$ ") fixed male and female quick release flat-face fittings that comply to HTMA standards. The quick release fittings must be fitted with dust caps.
- 6.2.7 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.
- 6.2.8 Coupling points are to indicate whether they are supply or return points.

6.3 Rail Profiles and Hole Sizes

- 6.3.1 A complete set of drawings depicting the various rail profiles i.e. 30kg/m, 40kg/m, 48kg/m, 57kg/m, S-60-SAR, UIC-60 and 60E1 is provided in Annexure A.
- 6.3.2 The hole sizes and hole distances for the various rail joints, except 60E1 which will be advised are also indicated in Annexure A.

6.4 Tool Holders and Drill Bits

- 6.4.1 Tool holders and carbide bits must be readily available in South Africa.
- 6.4.2 The tool holders must accommodate standard carbide bits.
- 6.4.3 The supplier must indicate the most suitable bit to be used and suitable alternatives.
- 6.4.4 The rail drills will also be used in the drilling of 13.5mm holes for rail bonding kits in any of the rail profiles mentioned in 6.3.1. Therefore the operation of the rail drill must be suitable for the drilling of these too.

6.5 Cutting Tip Cooling System

- 6.5.1 A well designed cooling system that operates through the tool holder is required.
- 6.5.2 The cooling-lubricant storage vessel should not be less than 6 litres in capacity.
- 6.5.3 Once pressurised to its maximum, the pressure in the cooling-lubricant storage vessel must be more than sufficient to provide cooling for at least one complete hole.

6.6 Spindle Speed

- 6.6.1 The speed of the rail drill must be optimised for the rail material and cutting bits recommended by the supplier.
- 6.6.2 The speed of the rail drill must be variable from 0 to maximum.

6.7 Rail Clamps

- 6.7.1 Notwithstanding the requirements of 6.8, the rail clamps of the rail drill are to be provided with an absolutely positive type(s) of clamping device(s) in order to ensure that no movement will be possible during operation of the rail drills.
- 6.7.2 The clamping must be rigid and square to the rail.

6.8 Rail Drill Templates

- 6.8.1 It is required that the templates for the following rail sizes be configured as below:

30 kg/metre and 40 kg/metre templates combined in one set
48 kg/metre and 57 kg/metre templates combined in one set
60 kg/metre and 60E1 templates combined in one set
S60 in one set of templates

- 6.8.2 The hardness of the templates must be such as to resist deformation and damage while in service.
- 6.8.3 The templates must be clearly marked.
- 6.8.4 The templates must be such that the drilled hole will be as called for on the rail profile drawings.

6.9 Index Bar

- 6.9.1 An index bar will be used to position the rail drill in a number of positions relative to a rail joint to drill a number of holes in the rail, accurately located relative to each other.
- 6.9.2 A single index bar must be provided to position the rail drill for the drilling of holes for the various rail profiles as per 6.3.
- 6.9.3 The index bar must be clearly marked with the necessary dimensions required to position the rail drill.

6.10 Component Markings

- 6.10.1 The drill is to be clearly marked in respect of hydraulic oil flow required.
6.10.2 Coupling points are also to indicate whether they are supply or return points.

6.11 Body

- 6.11.1 The frame and components of the machine must be robust.
6.11.2 The machine must be well protected against rust.
6.11.3 The grip on the handles must have a non-slip surface.
6.11.4 The machines will be accepted in standard factory finish and colour.
Due cognisance must be given to the life requirement of the machine.

6.12 Ergonomics

- 6.12.1 The tool must be ergonomically designed for maximum operator productivity, safety and transportability.

6.13 Accessories

- 6.13.1 The following accessories must be supplied with the rail drill:

- a.) 13.5 mm tool holder
- b.) 26 mm tool holder
- c.) 32 mm tool holder
- d.) 35 mm tool holder
- e.) Set of templates as per 6.8
- f.) Index bar as per 6.9
- g.) Coolant supply vessel
- h.) A storage box for 6.13.1 a-e and 6.13.2 a-d.

- 6.13.2 The following accessories must be quoted for separately:

- a.) Carbide bit for 13.5 mm tool holder
- b.) Carbide bit for 26 mm tool holder
- c.) Carbide bit for 32 mm tool holder
- d.) Carbide bit for 35 mm tool holder

6.14 Optional Extras

- 6.14.1 A de-burring tool, as per drawing BBB2066, must be offered as an optional extra.
6.14.2 The de-burring tool and its components must be able to resist deformation while in service.

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

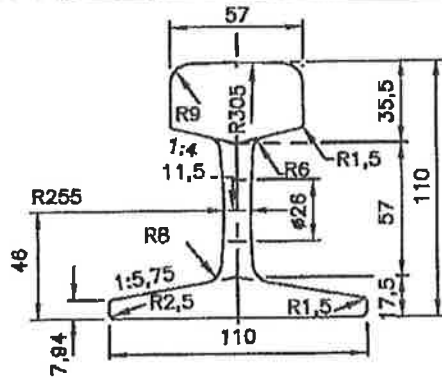
- 8.1 All machines must comply with the requirements of the Machinery and Occupational Safety Act, (Act 85 of 1993 – General Machinery Regulations) and The Machinery Directive 98/37/EC.
- 8.2 The rail drill must be completely assembled and filled with lubricants and ready for service in all respects.
- 8.3 Where grease nipples are fitted these are to be to DIN 71412 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.

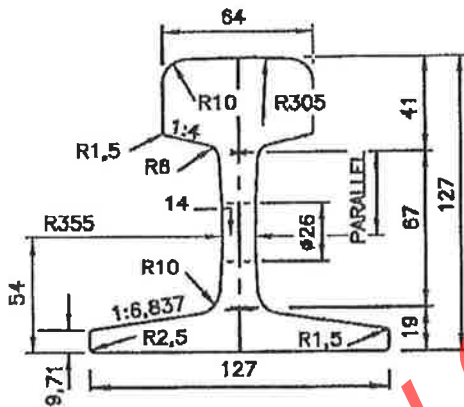
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Annexure A

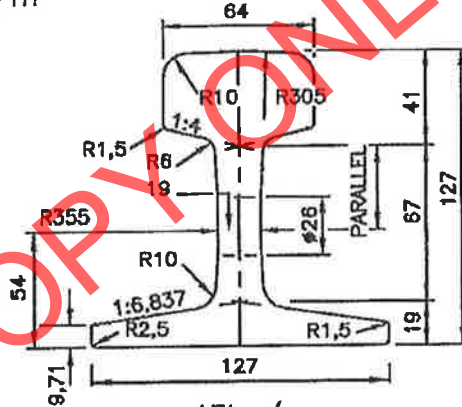
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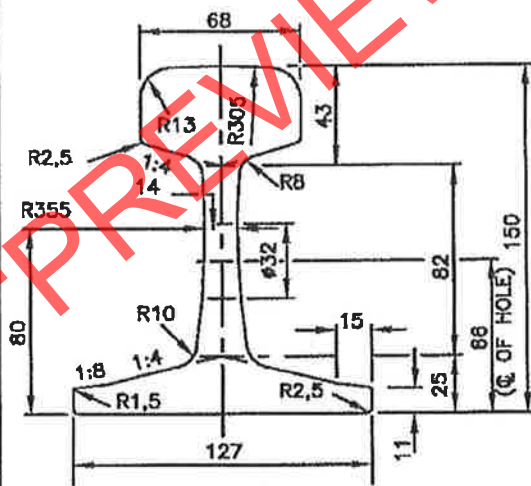
30kg/m



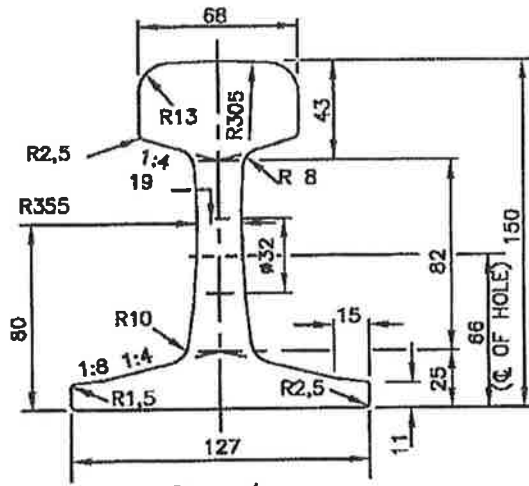
40kg/m



43kg/m
(HARBOUR AREAS)

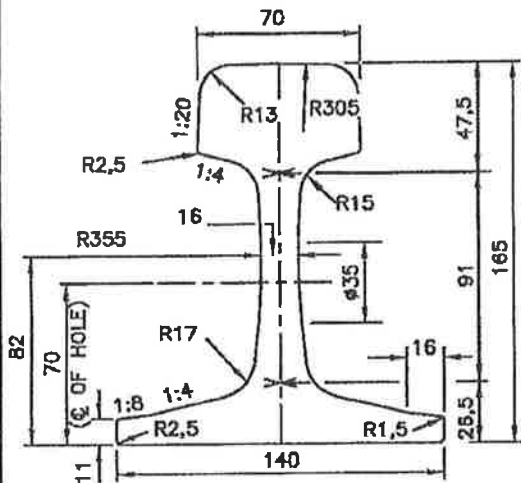


48kg/m

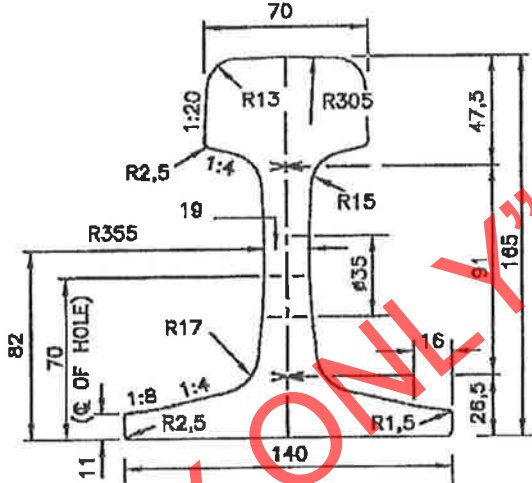


51kg/m
(FLEXIBLE POINTS BLADE
AND UNDERCUT STOCK RAIL)

REMARKS :
1. FOR PROPERTIES AND ROLL MARKS SEE
ANNEXURE 14 SHEETS 4 TO 6

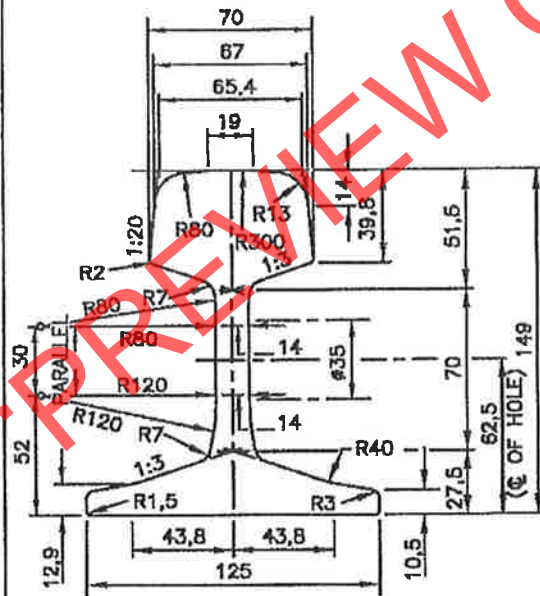


57kg/m

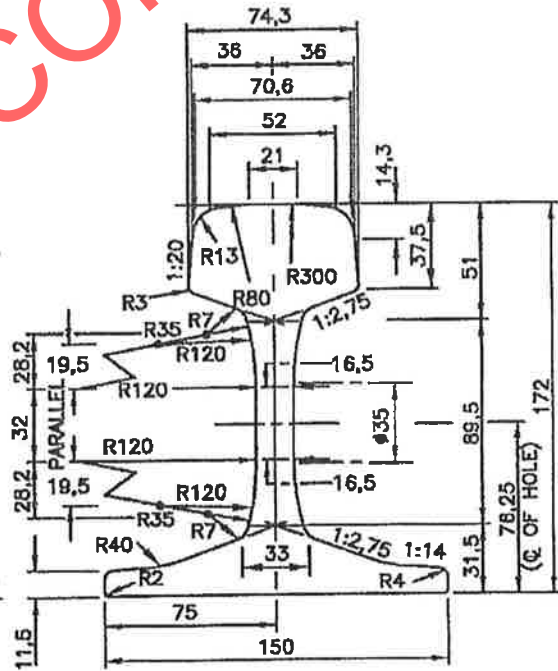


60kg/m

(FLEXIBLE POINTS BLADE
AND UNDERCUT STOCK RAIL)



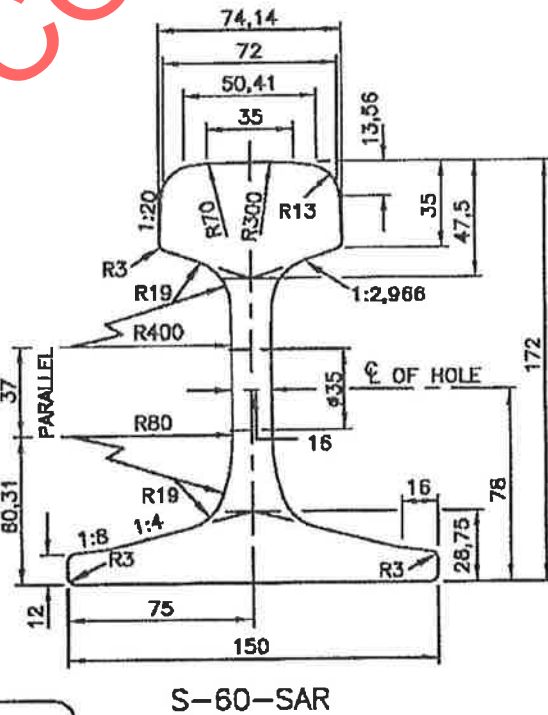
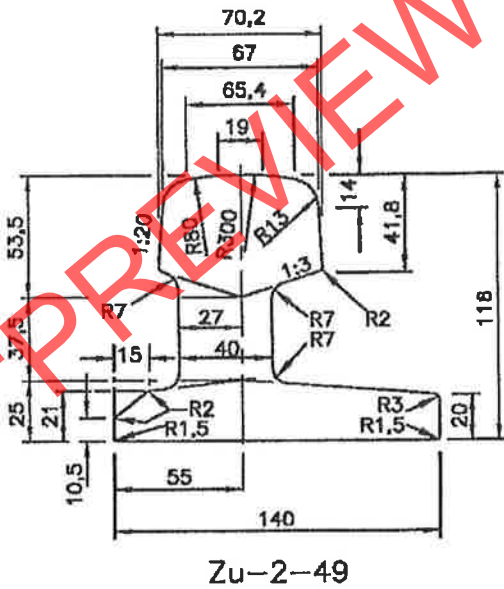
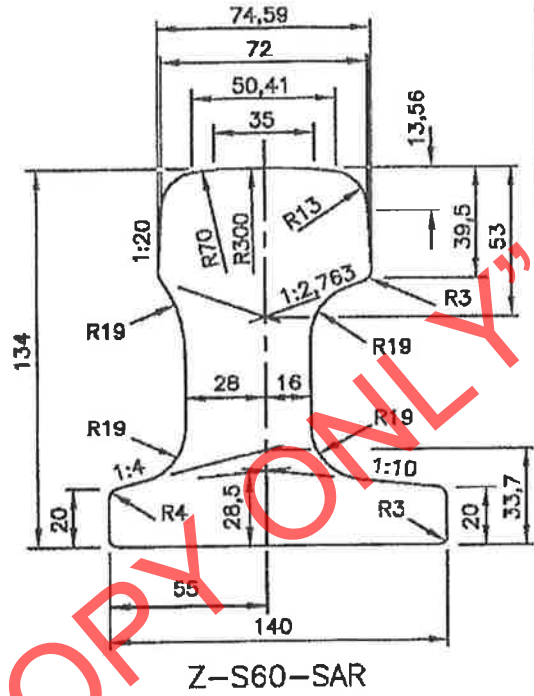
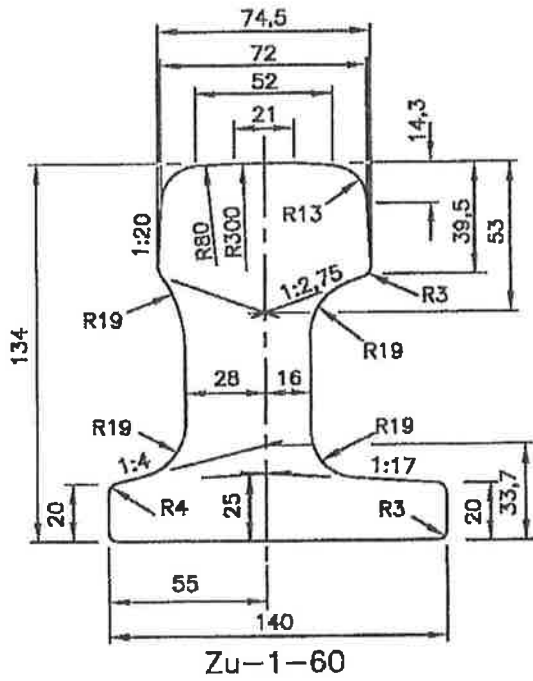
S-49



UIC-60

REMARKS :

1. FOR PROPERTIES AND ROLL MARKS SEE ANNEXURE 14 SHEETS 4 TO 8

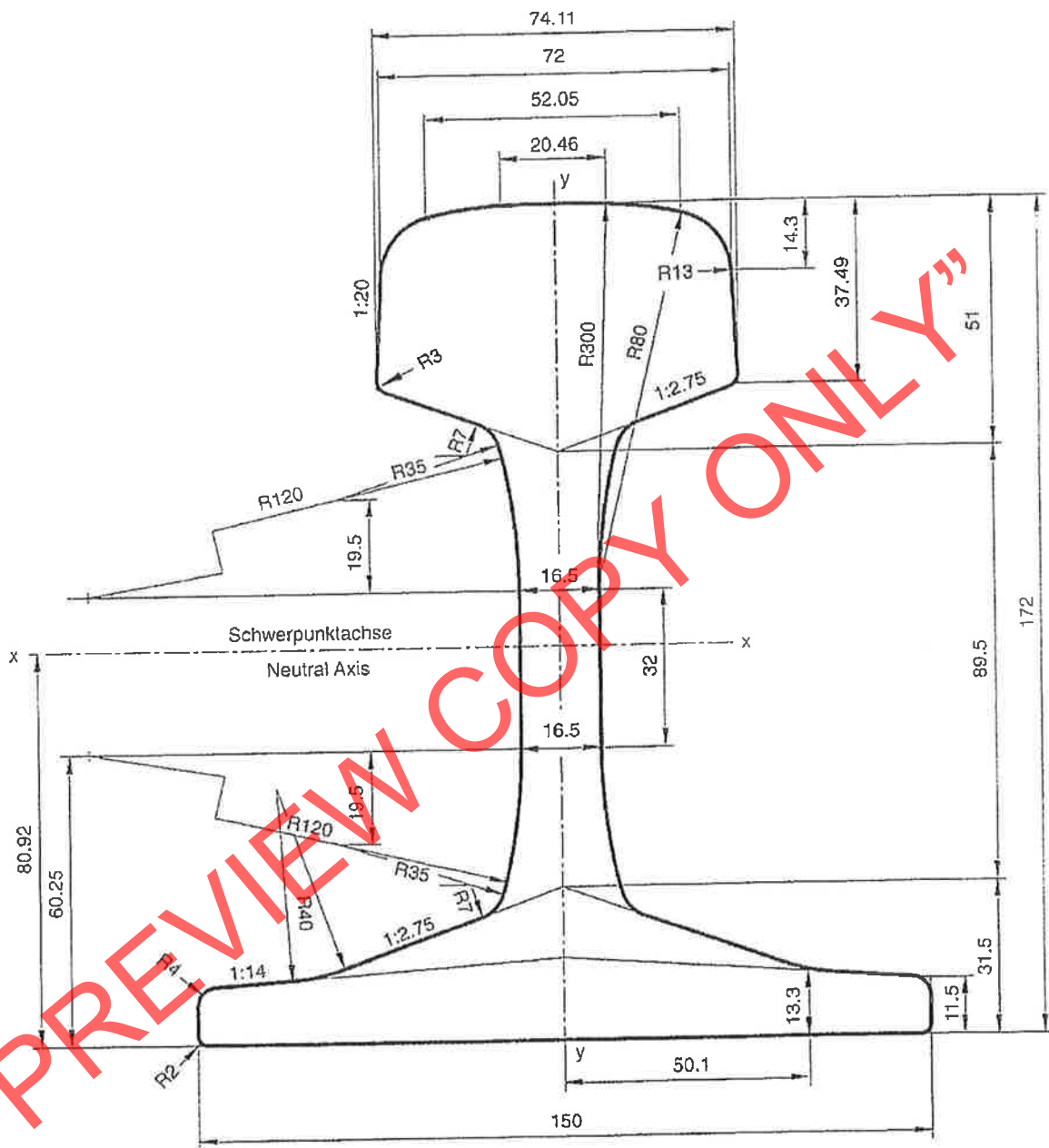


REMARKS :
1. FOR PROPERTIES AND ROLL MARKS SEE
ANNEXURE 14 SHEETS 4 TO 6



60E1

VIGNOLSCHIENE, FLAT BOTTOM RAIL, RAIL VIGNOLE

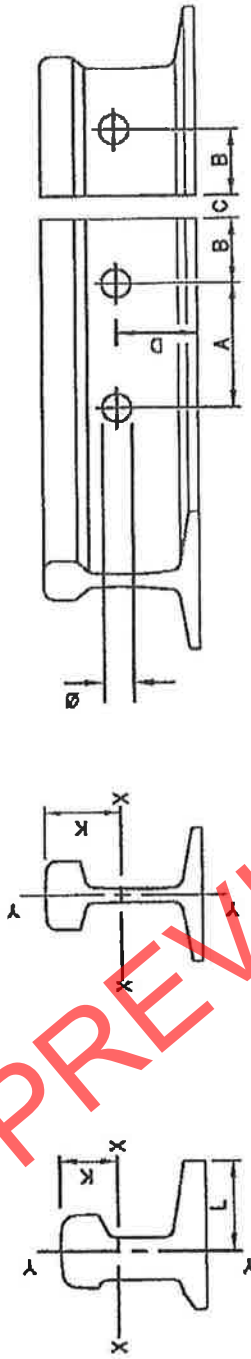


A = 76.7 cm²
 G = 60.21 kg/m
 I_x = 3036.3 cm⁴
 W_x = 333.6 cm³

Scale: 1 : 1.25
 Edition: 8/97



RAIL PROPERTIES



RAIL	MASS (kg/m)	HOLING						AREAS				PROPERTIES					DRAWING
		A	B	C	D	Ø	NUMBER	HEAD (%)	WEB (%)	FLANGE (%)	SECTION (cm ²)	I (cm ⁴)	Z (cm ³)	K (mm)	L (mm)		
		X - X	Y - Y	X - X	Y - Y	X - X	Y - Y	X - X	Y - Y	X - X	Y - Y						
30kg	30	100	47	6	46	26	4	45,11	18,87	36,02	38,537	628,89	158,18	110,94	56,36	-	E-192M
40kg	40	100	47	6	54	26	4	44,86	19,44	35,70	51,715	1 115,36	281,56	169,20	65,92	-	E-346
43kg	43	100	47	6	54	26	4	42,42	24,03	33,55	55,230	1 129,00	280,30	170,10	66,35	-	E-3215M
48kg	48	100	67	6	66	32	4	41,55	22,65	35,80	60,160	1 822,00	316,04	234,18	78,50	-	E-358M
51kg	51	100	67	6	66	32	4	39,00	27,80	33,20	64,850	1 874,00	320,50	234,60	78,60	-	E-358M
57kg	57	100	67	6	70	35	4	41,55	23,02	35,43	75,240	2 650,80	442,00	336,48	86,21	-	E-3232M
60kg	60	100	67	6	70	35	4	40,14	25,69	34,17	76,125	2 703,27	445,39	343,97	86,41	-	E-3232M
S-60-SAR	60,34	100	67	6	78	35	4	37,53	24,02	38,45	77,020	3 097,62	550,40	395,63	93,70	-	E-3326
Z-S60-SAR	72,83	-	-	-	-	-	-	34,88	30,63	34,47	92,980	1 734,40	748,04	282,98	74,80	82,70	-
UIC-60	60,34	100	67	6	76,25	35	4	40,22	22,55	37,23	78,860	3 055,00	512,80	335,50	91,05	-	700-E-736
Zu-1-60	73,00	-	-	-	-	-	-	-	-	-	93,000	1 728,00	743,50	289,60	75,15	82,24	-
S-49	49,43	100	67	6	62,5	35	4	47,45	17,56	34,99	62,970	1 189,00	320,00	240,00	75,70	-	700-E-722
Zu-2-49	62,20	-	-	-	-	-	-	-	-	-	79,260	1 075,00	700,00	162,00	66,30	61,00	-



TRANSNET
Freight Rail

INFRASTRUCTURE MAINTENANCE

SPECIFICATION

Specification For A Hydraulic Reversible Rail Saw

Author: Chief Engineering Technician Ashwin Singh
Small Plant & Equipment

Approved: Senior Engineer Colin Blandford
Engineering

Authorised: Senior Engineer Colin Blandford
Engineering

Date: 22 May 2008

Circulation Restricted To:

Transnet Freight Rail - Infrastructure

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1. General Requirements

- 1.1 This specification outlines the requirements of a heavy duty hydraulically operated reversible rail saw, suitable for 400mm (16") diameter cutting discs.
- 1.2 The rail saw must be fitted with a clamp for attaching the machine to the various rail profiles employed within Transnet Freight Rail.

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 rail saw 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" adjustment machine is preferred.
- 3.3 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 rail saws are to be easily and economically maintained with standard workshop tools and equipment.
- 4.3 The machines 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 This specification outlines the requirements of a heavy duty hydraulically operated reversible rail saw, suitable for 400mm (16") diameter cutting discs.
- 5.2 The rail saw must be fitted with a clamp for attaching the machine to the various rail profiles employed within Transnet Freight Rail.

6. Detailed Requirements

6.1 Mass

- 6.1.1 The mass of the rail saw, including whip hoses, must not exceed 17 kg (excluding rail clamp).

6.2 Hydraulic System Requirements

- 6.2.1 The machine must comply to HTMA standards for hydraulic tool operation.
- 6.2.2 The machine must operate on the "Open Centre Circuit" hydraulic system.
- 6.2.3 The hydraulic input will meet the requirements of HTMA Type RR System and the rail saw must operate effectively on this standard.
- 6.2.4 The machine must be equipped with 12mm (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 400mm long.
- 6.2.6 The whip hoses must be fitted with 12mm (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.
- 6.2.7 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.
- 6.2.8 The machine is to be clearly marked in respect of hydraulic oil flow required.
- 6.2.9 Coupling points are to indicate whether they are supply or return points.

6.3 Rail Profiles and Hole Sizes

- 6.3.1 A complete set of drawings depicting the various rail profiles i.e. 30kg/m, 40kg/m, 48kg/m, 57kg/m, S-60-SAR, UIC-60 and 60E1 is provided in Annexure A.
- 6.3.2 The hole sizes and hole distances for the various rail joints, except 60E1 which will be advised, are also indicated in Annexure A.

6.4 Operator Comfort

- 6.4.1 The rail saw must comply with SANS 8662-1:1998 (Hand-Held Portable Power Tools - Measurement of Vibrations at the Handle Part 1:General) and SANS 8662 - 12:2003 (Hand-Held Portable Power Tools - Measurement of Vibrations at the Handle Part 12: Saws and files with reciprocating action and saws with oscillating or rotating action).

6.5 Noise Emission

6.5.1 The rail saw must comply to BS EN ISO 4871:1997 (Declaration and verification of noise emission values of machinery and equipment).

6.6 Free Running Speed

6.6.1 The free running speed of the rail saw must not exceed 4800 rpm.

6.7 Drive

6.7.1 A direct drive machine is preferred but other options may be offered provided the tool complies to the technical requirements of this specification.

6.8 Arbor Shaft Diameter

6.8.1 The arbor shaft diameter must be 25.4mm (1").

6.9 Arbor Flange

6.9.1 Suitable protection to arbor flanges must be provided in order that these may not be able to touch the rail when the blade wears small.

6.9.2 Flange dimensions must comply to those stipulated by the South African Abrasives Association.

6.10 Reversibility

6.10.1 Machines must be reversible i.e. it must have the ability to cut the rail from both sides without the removing of the clamping bracket from the rail.

6.10.2 The main bearing of the rail saw is to be such that thrust on blade is not carried to the hydraulic motor.

6.11 Rail Clamps

6.11.1 Rail clamps of the rail saw must be provided with an absolutely positive type of clamping device/s in order that no movement will be possible during the operation of these machines.

6.11.2 Whilst cutting the rail from both sides, the rail saw needs to maintain alignment such that the cut is equal, level and square.

6.12 Cutting Discs

6.12.1 The hydraulic rail saw must be suitable for locally manufactured 400mm (16") diameter, 4800 rpm, 4mm thick cutting discs that will comply to the Safety Code For Bonded Abrasives as per South African Abrasives Association

6.13 Body

- 6.13.1 The body of the tool and its components must be robust.
- 6.13.2 The machine must be well protected against rust.
- 6.13.3 The grip on the handles must have a non-slip surface.
- 6.13.4 Machines will be acceptable in standard factory production finish and colour. Details to be furnished. Due cognisance must be given to the life requirement of the machine.

6.14 Safety

- 6.14.1 The rail saw is to be provided with suitable safety guards to protect against the risks resulting from wheel breakage.
- 6.14.2 A safety trigger that prevents accidental switch-on of these machines must be fitted to the rail saw.
- 6.14.2 The maximum rated operating speed (rpm) of the rail saw must be clearly marked.

6.15 Ergonomics

- 6.15.1 The machine must be ergonomically designed for maximum operator productivity and safety.

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.

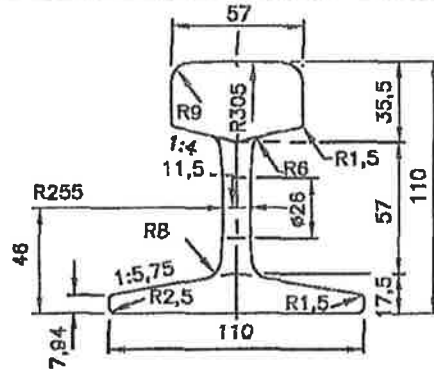
8. Legal and Operational

- 8.1 All machines must comply with the requirements of the Machinery and Occupational Safety Act, (Act 85 of 1993 – General and Driven 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.

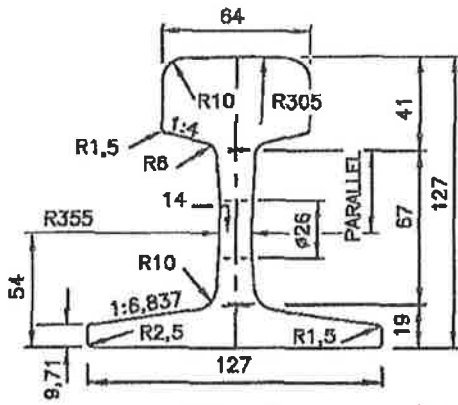
- 8.5 All machines and equipment must be supplied complete with essential tools such as allen keys, spanners etc. in order to make essential adjustments as well as to fit or remove consumable items.
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- 8.11 Sufficient training must be given to all operators 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.

Annexure A

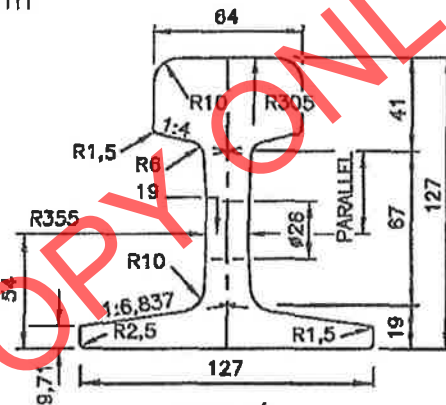
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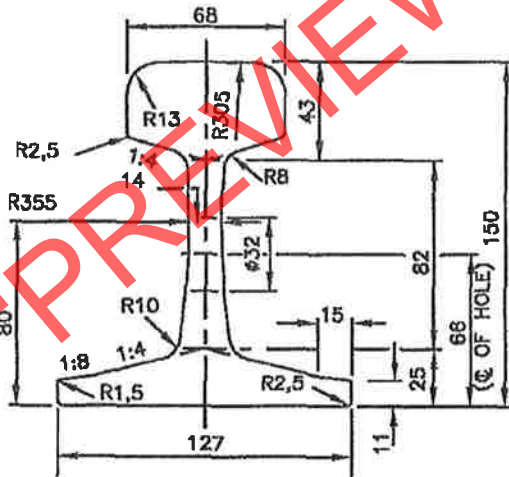
30kg/m



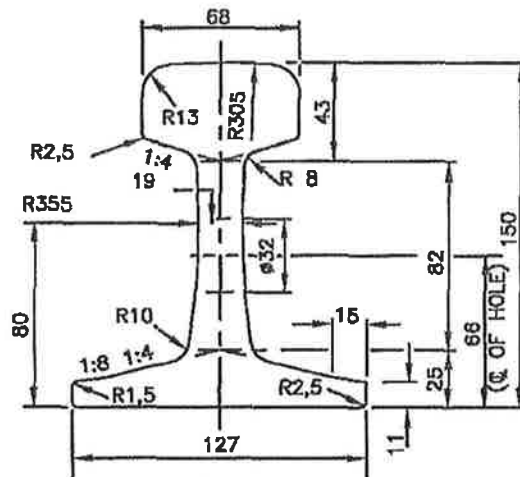
40kg/m



43kg/m
(HARBOUR AREAS)

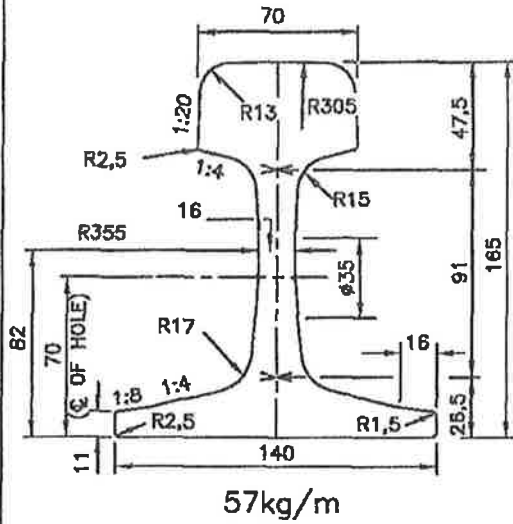


48kg/m

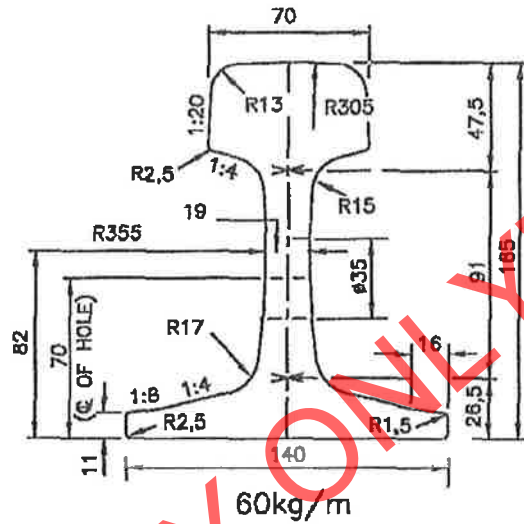


51kg/m
(FLEXIBLE POINTS BLADE
AND UNDERCUT STOCK RAIL)

REMARKS :
1. FOR PROPERTIES AND ROLL MARKS SEE
ANNEXURE 14 SHEETS 4 TO 6

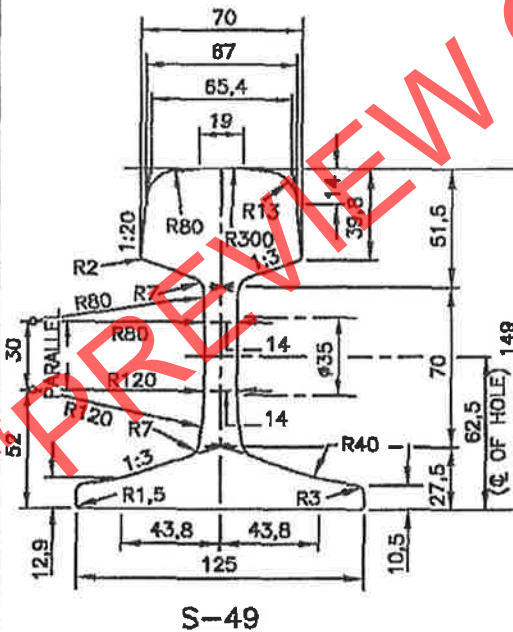


57kg/m

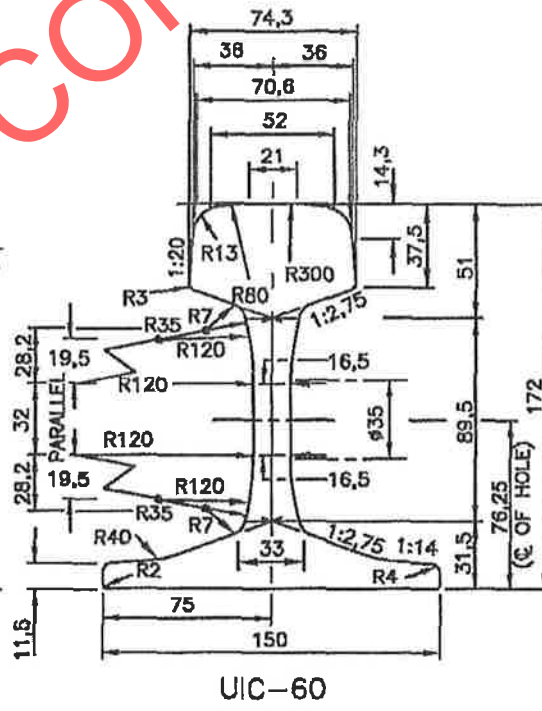


60kg/m

(FLEXIBLE POINTS BLADE
AND UNDERCUT STOCK RAIL)

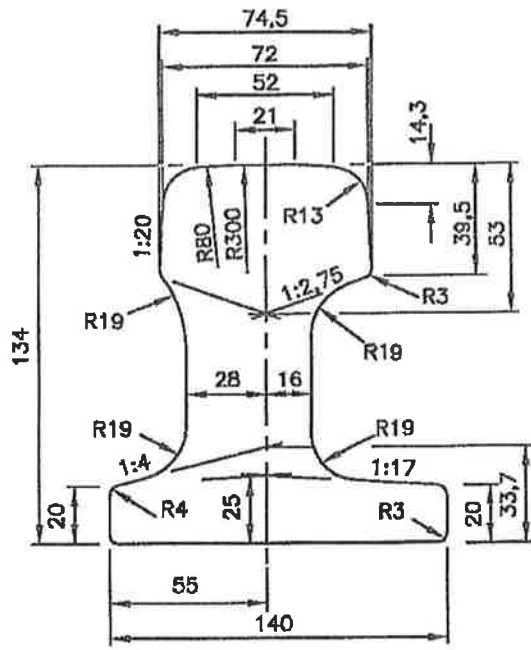


S-49

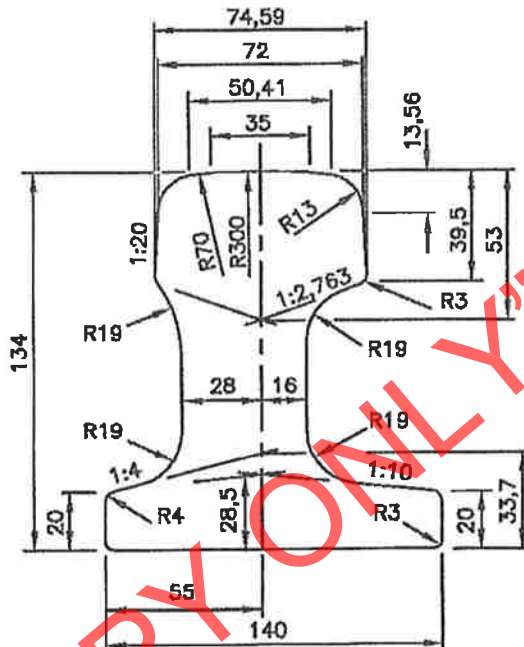


UIC-60

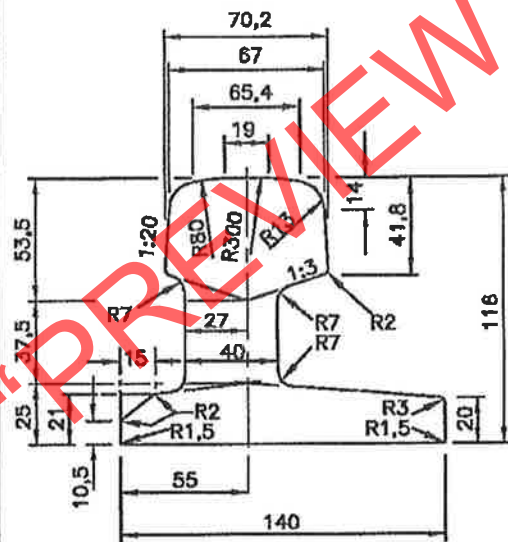
REMARKS :
1. FOR PROPERTIES AND ROLL MARKS SEE
ANNEXURE 14 SHEETS 4 TO 6



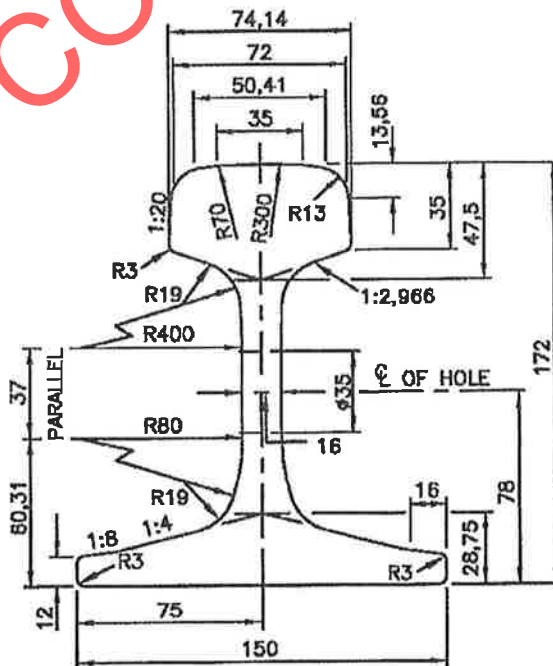
Zu-1-60



Z-S60-SAR



Zu-2-49



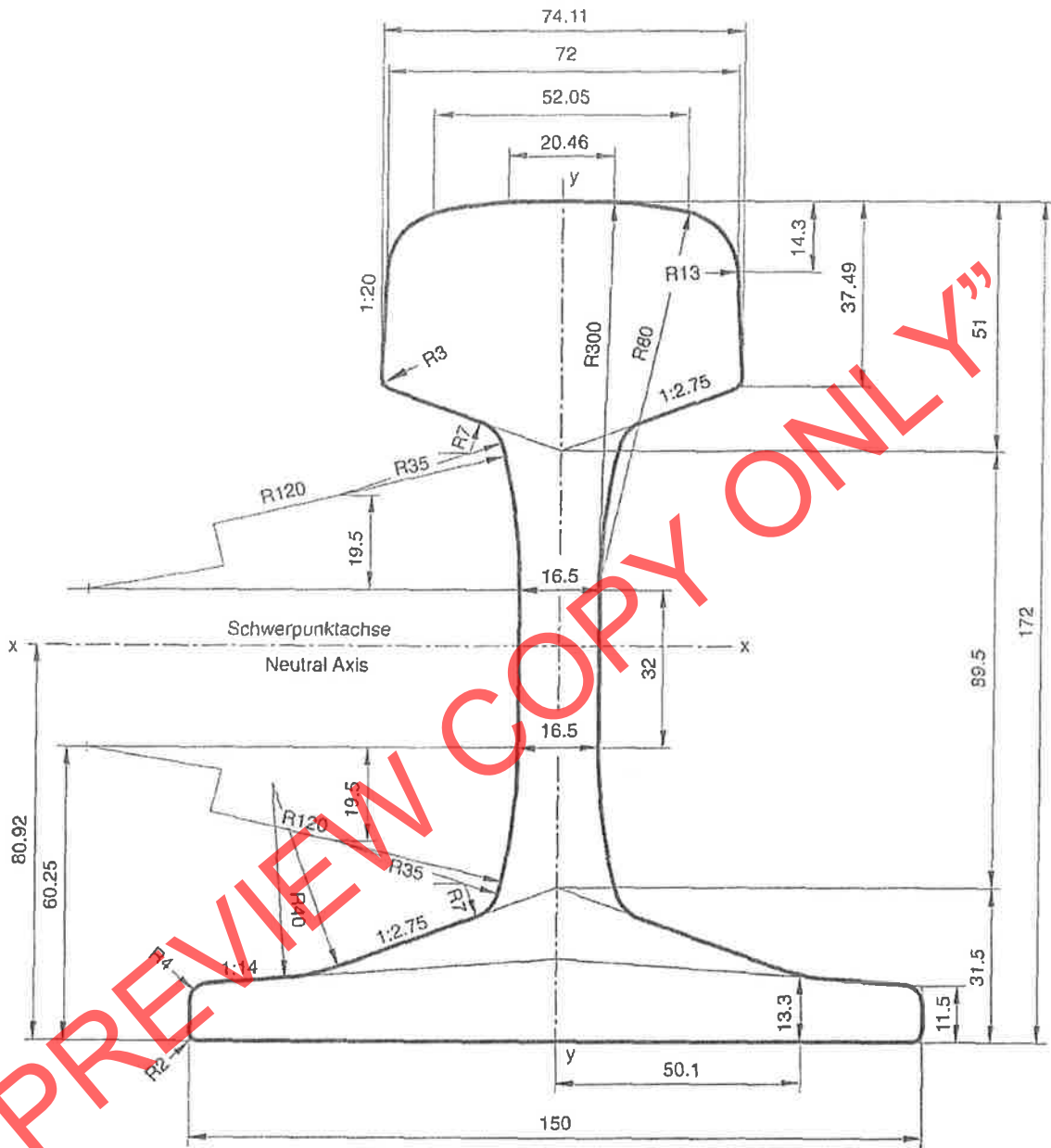
S-60-SAR

REMARKS :
1. FOR PROPERTIES AND ROLL MARKS SEE
ANNEXURE 14 SHEETS 4 TO 6



60E1

VIGNOLSCHIENE, FLAT BOTTOM RAIL, RAIL VIGNOLE

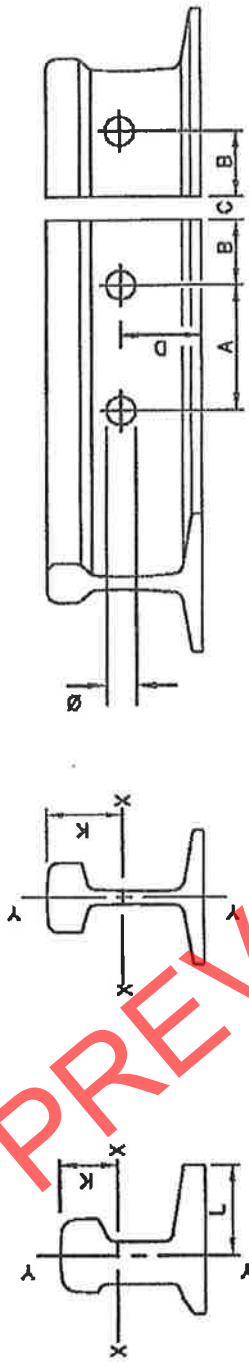


$A = 76.7 \text{ cm}^2$
 $G = 60.21 \text{ kg/m}$
 $I_x = 3038.3 \text{ cm}^4$
 $W_x = 333.6 \text{ cm}^3$

Scale: 1 : 1.25
 Edition: 8/97



RAIL PROPERTIES



RAIL	MASS (kg/m)	HOLING										AREAS					PROPERTIES				DRAWING
		A	B	C	D	Ø	NUMBER	HEAD (%)	WEB (%)	FLANGE (%)	SECTION (cm ²)	I (cm ⁴)	Z (cm ³)	K (mm)	L (mm)						
		X - X	Y - Y	X - X	Y - Y	X - X	Y - Y	X - X	Y - Y	X - X	Y - Y										
30kg	30	100	47	6	46	26	4	45,11	18,87	36,02	38,537	626,89	158,18	110,94	56,38	-	E-192M				
40kg	40	100	47	6	54	26	4	44,86	19,44	35,70	51,715	115,38	281,56	169,20	65,92	-	E-346				
43kg	43	100	47	6	54	26	4	42,42	24,03	33,55	55,230	129,00	280,30	170,10	66,35	-	E-3215M				
48kg	48	100	67	6	68	32	4	41,55	22,85	35,80	60,160	822,00	316,04	234,18	78,50	-	E-358M				
51kg	51	100	67	6	68	32	4	39,00	27,80	33,20	64,850	844,00	320,50	234,60	78,60	-	E-358M				
57kg	57	100	67	6	70	35	4	41,55	23,02	35,43	73,240	650,80	442,00	336,46	86,21	-	E-3232M				
60kg	60	100	67	6	70	35	4	40,14	25,69	34,17	76,125	703,27	445,39	343,97	86,41	-	E-3232M				
S-60-SAR	60,34	100	67	6	78	35	4	37,53	24,02	36,45	77,020	3 087,82	530,40	385,63	FLANGE	93,70	-	E-3326			
Z-S60-SAR	72,63	-	-	-	-	-	-	34,88	30,63	34,47	92,980	1 734,40	746,94	282,98	FLANGE	74,80	82,70	-			
UIC-60	60,34	100	67	6	76,25	35	4	40,22	22,55	37,23	78,880	3 055,00	612,80	335,50	HEAD FLANGE	91,05	-	700-E-736			
Zu-1-60	73,00	-	-	-	-	-	-	-	-	-	93,000	1 728,00	743,60	283,90	HEAD FLANGE	75,15	82,24	-			
S-49	49,43	100	67	6	82,5	35	4	47,45	17,56	34,89	62,970	1 189,00	320,00	240,00	FLANGE	75,70	-	700-E-722			
Zu-2-49	62,20	-	-	-	-	-	-	-	-	-	78,280	1 075,00	700,00	162,00	HEAD	66,30	81,00	-			



INFRASTRUCTURE MAINTENANCE

SPECIFICATION

Specification For A Hydraulic 25.4mm (1") Impact Wrench

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Date: 06 May 2008

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“PREVIEW COPY ONLY”

1. Scope

- 1.1 This specification outlines the requirements of a heavy duty hydraulic 25.4mm (1") impact wrench 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 machine 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" adjustment machine is preferred.
- 3.3 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 impact wrenches are to be easily and economically maintained with standard workshop tools and equipment.
- 4.3 The impact wrenches 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 The machine must be a heavy-duty reversible impact wrench having a 25.4mm (1") square drive.
- 5.2 Heavy duty impact sockets and extensions will be used on the machine.
- 5.3 The impact wrench will be used in both vertical and horizontal positions.

6. Detailed Requirements

6.1 Mass

- 6.1.1 The mass of the impact wrench (including whip hoses) is to be in the range of 12 – 15kg.

6.2 Hydraulic System Requirements

- 6.2.1 The machine must comply to HTMA standards for hydraulic tool operation.
- 6.2.2 The machine must operate on the "Open Centre Circuit" hydraulic system.
- 6.2.3 The hydraulic input will meet the requirements of HTMA Type 1 System and the impact wrench must operate effectively on this standard.
- 6.2.4 The machine 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 400mm long.
- 6.2.6 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.
- 6.2.7 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.
- 6.2.8 Coupling points are to indicate whether they are supply or return points.

6.3 Operator Comfort

- 6.3.1 The impact wrench must comply with SANS 8662-1:1998 (Hand-Held Portable Power Tools - Measurement of Vibrations at the Handle Part 1:General) and SANS 8662 – 7:2003 (Hand-Held Portable Power Tools - Measurement of Vibrations at the Handle Part 7: Wrenches, screwdrivers and nut runners with impact, impulse or ratchet action).

6.4 Noise Emission

- 6.4.1 The impact wrench must comply to BS EN ISO 4871:1997 (Declaration and verification of noise emission values of machinery and equipment).

6.5 Speed

6.5.1 The speed of the impact wrench under no load must not exceed 1000 rpm.

6.6 Torque Range

6.6.1 The impact wrench must have an adjustable torque range from 0 Nm to maximum.

6.6.2 The torque range must be from 0 to not less than 2500 Nm.

6.6.3 The maximum torque output must not exceed 3500 Nm.

6.7 Impact Mechanism

6.7.1 The impact mechanism is to be maintenance free.

6.8 Body

6.8.1 The body of the tool and its components must be robust.

6.8.2 The machine must be well protected against rust.

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

6.8.4 Machines will be acceptable in standard factory production finish and colour. Details to be furnished. Due cognisance must be given to the life requirement of the machine.

6.9 Ergonomics

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

6.9.2 The impact wrench must have an anti-vibration handle.

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.

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“PREVIEW COPY ONLY”

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.



INFRASTRUCTURE MAINTENANCE

SPECIFICATION

Specification For A Hydraulic Power Supply Unit

Author: ~~Chief Engineering Technician~~ Molefi Moeketsane 
Small Plant & Equipment

Approved: Senior Engineer Hendrik Esterhuysen
Equipment Technology

Authorised: Senior Engineer Hendrik Esterhuysen
Equipment Technology

Date: 08 May 2012

Circulation Restricted To:

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“PREVIEW COPY ONLY”

1. Scope

- 1.1 This specification outlines the requirements of a diesel engine driven, wheel mounted, hydraulic power unit that will be used for the maintenance of railway infrastructure.
- 1.2 The unit must supply two Type 1 System outputs, which will be used at the same time, and one Type RR System output, as per HTMA performance standards.
- 1.3 At any given time, either Type 1 systems or Type RR system will be in use.

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.
- 2.3 The machines will be used on and around railway tracks and on loose ballast.

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 the sustained heavy-duty demands of railway infrastructure maintenance.
- 3.2 Power supply units must be compatible with hydraulic tools that operate on the “Open Centre Circuit” hydraulic system.
- 3.3 A “no-tool” adjustment machine is preferred.
- 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 are to be stated.
- 4.2 The machines are to be easily and economically maintained with standard workshop tools and equipment.
- 4.3 The power supply unit 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 The power unit must be a heavy-duty wheel mounted machine.
- 5.2 The machine must be complete with hydraulic manifold.
- 5.3 It should be manoeuvrable by one man.
- 5.4 The unit must have guidance wheels for use on rail.
- 5.5 The unit must use a high efficiency hydraulic oil pump/s complete with cooler and return line filter operating on a continuous basis and a suitable tank size to comply to the conditions of this specification.

6. Detailed Requirements

6.1 Duty Cycle

- 6.1.1 The machine must be rated for 100% duty cycle.

6.2 Engine

- 6.2.1 The machine must be diesel engine driven
- 6.2.2 The engine must have sufficient power to comfortably meet the hydraulic requirements at the highest altitude level. Due cognisance must be given to the life requirement of the machine.
- 6.2.3 The engine must be fitted with an automatic shut-down in event of either low engine oil level, low oil pressure level or overheating.
- 6.2.4 The engine must be air cooled.

6.3 Battery

- 6.3.1 The unit must have a sealed lead acid battery of adequate capacity for electric starting.
- 6.3.2 The battery must be secured against theft.

6.4 Fuel Tank

- 6.4.1 The capacity of the fuel tank must not be less than 15 litres.

6.5 Hydraulic System Requirements

- 6.5.1 Details of the hydraulic manifold circuit must be furnished.
- 6.5.2 The power unit must have a suitably sized hydraulic oil tank to comply with the conditions of this specification
- 6.5.3 Flush fitted 12mm ($\frac{1}{2}$ ") fixed male and female quick release, flat-face fittings that comply to HTMA standards must be used.
- 6.5.4 The quick release fittings must be fitted with dust caps.
- 6.5.5 The hydraulic system must have sufficient heat rejection capacity to limit the maximum oil temperature to 60 °C at 100% duty cycle and maximum expected ambient temperature – see clause 2.2.
- 6.5.6 Should a hydraulic oil cooler be fitted, it must automatically switch on and off as and when required and it must be properly protected with a steel grid or plate.
- 6.5.7 System relief valves should be adjusted for cracking pressure as per HTMA requirements.
- 6.5.8 All adjustments must be sealable and tamper proof.

6.6 Power Unit Mobility

- 6.6.1 A suitable power driven mechanism must be offered in order that one operator can move the machine, as specified in this section, under its own power.
- 6.6.2 Notwithstanding clause 6.6.4, a free-wheel operation to allow for manual positioning of the machine must also be available.
- 6.6.3 The unit must have fully variable speed from 0 to the maximum speed..
- 6.6.4. The maximum speed of the machine is not to exceed that which can be managed by a pedestrian.
- 6.6.5 The hydraulic power unit must be permanently fitted with pneumatic rubber tyre wheels.
- 6.6.6 The wheels must be foam filled.
- 6.6.7 The wheels must not be less than 300mm diameter.
- 6.6.8 The tyres are to be to be heat resistant in extreme hot conditions.
- 6.6.8 Tyres to be at least industrial type 4 ply rating.
- 6.6.9 A rail conversion, which allows the machine to be manually pushed along tracks, must be supplied.
- 6.6.10 The rail conversion will be used on track gauges of 1065 to 1105mm, with and without check rails
- 6.6.11 The rail conversion must be such that when on rail, the bottom of the power pack is 300mm above the rail.
- 6.6.11 The rail conversion must be quickly and easily attached and detached.
- 6.6.12 A parking brake(s), effective on and off rail, must be fitted to the power unit.
- 6.6.13 A "dead man" feature must be fitted to the power pack i.e. should the operator let go of the controls, the machine must not move from any position.
- 6.6.14 It must be easy for the power pack to climb onto and off the rail.
- 6.6.15 The machine has not less than 70mm ground clearance.
- 6.6.16 A single man must be able to safely move the machine up and down on rough terrain and standard ballast inclines in free-wheel and powered mode either forwards or backwards.
- 6.6.17 The power unit must be stable while navigating standard ballast inclines.

6.13 Ergonomics

6.13.1 The power unit must be ergonomically designed for maximum operator productivity and safety.

6.14 Additional Requirements

6.14.1 The power unit must come with a support grid for two sets of 15m, 12mm (1/2") hydraulic hoses.

6.14.2 The grid must be generally in accordance with drawing BBC1651 and must be adapted to suit the machine.

6.14.3 The machine must come with hydraulic extension hoses. These hoses are to comply with specification BBC7688 version 1.

7. Quality Control

7.1 All machines must be manufactured in an environment that complies with 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.

“PREVIEW COPY ONLY”

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 power pack 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 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 are 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.
- 8.13 Tenderers shall indicate clause-by-clause a statement of compliance with the specification. This shall take a form of separate document listing all the specification clause numbers indicating individual statement of compliance or non-compliance. If complies, brief description on how compliance is met shall be given.
- 8.1.4 Failure to comply with clause 8.1.3 above could preclude a tender from consideration.