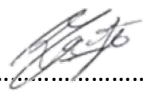


PRODUCT SYSTEMS DEVELOPMENT - WHEELS USER REQUIREMENT SPECIFICATION

DOC. NO.: PD_PDWL_NAT_URS_075

USER REQUIREMENT SPECIFICATION FOR THE SUPPLY OF A WHEEL AND BEARING PRESS-OFF MACHINE FOR TRANSNET ENGINEERING WHEEL BUSINESSES

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	Date:	06 July 2026

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HISTORY OF CHANGES

First issue: **15 – 11 – 2024**

Document No.: **PD_PDWL_NAT_URS_075**

The following changes are included in this revision:

Pages Affected	Revision #	Release Date	Description of Changes

DOCUMENT CONTROL

Distribution List:	
Document Availability:	SAP DocMan
Related Policy Documents:	
Supporting Templates:	

1.0 SCOPE OF WORK

- 1.1 This specification details the user requirements (URS) for the purchase, installation and commissioning of a new wheel and bearing press off machine. The machine will be used to press off the AP bearings as well as to press off the locomotive wheel centers (see annexure A Figure 1 for similar required machine).
- 1.2 Transnet Engineering will monitor the technical performance, as well as the effectiveness of the maintenance service during the guarantee period of minimum 12 months.
- 1.3 The press machine purchased must provide the latest technology and ensure the following (The tenderer must fully complete Annexure B and clearly indicate compliance or non-compliance to each item):
 - 1.3.1 The capacity of the bearing press shall be 1000kN minimum for press-off and press-on. The tenderer must specify the capacity of the press in the tender.
 - 1.3.2 Gauge requirements:
 - 1.3.2.1 A reliable analog force gauge. The accuracy must be within $\pm 1\%$.
 - 1.3.2.2 All gauges are to be calibrated and certified by a SANAS approved company with an accompanying certificate and identification sticker on the gauge.
 - 1.3.2.3 All gauges must make provision for the working capacity and must have a red band from the working capacity to the maximum capacity of the gauge.
 - 1.3.2.4 All force gauges shall be gauged in metric units (Ton, kN) and pressure gauges in MPa.
 - 1.3.3 The stroke of the piston in the cylinder must be adequate to press off a bearing with length 305mm from the axle journal. The stroke must be specified in the tender.
 - 1.3.4 The press-off cylinder shall have a 3 position solenoid valve, with neutral position.
 - 1.3.5 The design of the cylinders must be in standard metric sizes.
 - 1.3.6 Ram speeds must be:
 - Ram out: 35mm/second minimum
 - Ram in: 35mm/second minimumThe tenderer must specify their different speeds in the tender document
 - 1.3.7 Hoses must accommodate pressures of 70MPa for 3/8' hose size or 56 MPa for 1/2' hose size.

- 1.3.7.1 The 3/8' hose shall be manufactured as per S425-06/20592-0608/10510-06/03400-06 = 2.5m with fittings HNN-08 and HNB-0606 with a flat face 3/8' coupler (1 off complete).
- 1.3.7.2 The 3/8' hose shall be manufactured as per S425-06/20592-0608/10510-06/03400-06 = 2.8mtr with fittings HNN-08 and HNB-0606 with a flat face 3/8' coupler (1off complete)
- 1.3.7.3 The ½' coupler shall be of part number S425-08/20512-08/10510-08/03400-08 = 2.5mtr with fittings HNB-08 and HNB-0806 with a flat face ½" BSP coupler (2 off complete).
- 1.3.8 The distance between the centre of the holes for position A on figure 2 must be 170mm on either side of the machine (see annexure A). This dimension must be verified during site briefing.
- 1.3.9 The distance between the centre of the holes for position B on figure 2 must be 507mm for the top and bottom part of the machine (see annexure A) . This dimension must be verified during site briefing.
- 1.3.10 The machine must be manufactured with a ram extension bar to the requirements of drawing number TWK29443.
- 1.3.11 Ram extension ring must be supplied as per drawing number TWK 28847. On the front, the ram bar threads must be able to thread into the ram extension ring (see position C on figure 3 of annexure A).
- 1.3.12 The machine must be manufactured with a ram adaptor to the requirements of drawing number TWK30490
- 1.3.13 A preventative and reparative maintenance schedule that will reduce the downtime of a wheel mounting press to a minimum.
- 1.3.14 The press shall be height adjustable (hydraulically). The ram shall remain horizontal at all height adjustments.
- 1.3.15 The press shall be able to carry the weight of the heaviest bearing (±70kg) hanging on the front of the ram, without tipping over.
- 1.3.16 Power usage: AC voltage of 380 to 420V, 3 phases, 50 Hz. Tenderer shall supply information of complete power requirements.
- 1.3.17 An emergency stop button must be installed.
- 1.3.18 A hydraulic overflow valve is required.
- 1.4 All lubrication and hydraulic fluids for testing and commissioning shall be supplied by the tenderer.

- 1.5 Electrical cabling to the nearest power supply and the relevant plug shall be supplied by the tenderer (distance to be verified during site visit).
- 1.6 The electrical control panel and the motor fan cover shall be painted orange to comply with TE electrical specification. All glands to be of steel type.

2.0 DEFINITIONS

- 2.1 CONTRACTOR: The Contractor shall mean any person, body or corporate who have been contracted by Transnet Engineering to supply the equipment or machinery.
- 2.2 TENDERER: The Tenderer shall mean any person, body or corporate who have been contracted by Transnet Engineering to supply a new bearing press for pressing bearings on to axles.

3.0 OPERATIONAL REQUIREMENTS FOR THE BEARING PRESS

3.1 OPERATING ENVIRONMENT

- 3.1.1 The press will be located in a wheel shop where no temperature control or air conditioning exists.

4.0 SAFETY

- 4.1 The successful tenderer shall ensure that they understand the operation and workshop environment when working in TE property. Induction courses are available and it is the responsibility of the tenderer to ensure that they attend an induction course at the plant where they will operate.
- 4.2 All safety rules and guidelines shall be adhered to while on TE premises, and the tenderer shall ensure that all his staff wear the required PPE while on the TE premises.

5.0 MANUFACTURING STANDARD

- 5.1 All manufacturing and supplier standards shall be stated in the tender.
- 5.2 Material identification markings are to be stamped on all parts i.e. hydraulic cylinders, rams and connecting bolts. Where specialized material is used a certificate must be supplied.
- 5.3 Calibration: The press with all pressure/force gauges must be calibrated.

6.0 MAINTENANCE

- 6.1 All equipment shall be supplied with 3 comprehensive hard copy sets of maintenance and operational manuals and 1 x pdf copy. These must include the maintenance spares required.
- 6.2 Information concerning the after sales back-up service shall be provided by the supplier.
- 6.3 The contractor shall supply a preventative and reparative maintenance manual with accompanied proposed maintenance schedule for the useful life of the machine.
- 6.4 Preference will be given to tenderers that have, or are willing to establish maintenance backup, within South Africa. This maintenance backup is to include the storage of spares at a South African location.
- 6.5 The contractor must clearly stipulate the nature of the maintenance during the guarantee period and how long it will take to have attendance on site. Transnet Engineering require a response time of not more than 24 hours.
- 6.6 Information of the cylinder size, volume and displacement must be made available to Transnet Engineering to ensure correct calibration of dial gauges information to be stamped on cylinder or suitable secured plate attached to power pack with values stamped on.
- 6.7 Lubrication Chart with list of Lubricants, Lubrication points and frequency, - 3 Hardcopy + 1 PDF
- 6.8 Electrical Schematics, Electrical Parts List (with OEM part numbers), Cable schedules, - 3 Hardcopy + 1 PDF

7.0 GUARANTEE

- 7.1 The contract shall include the full commissioning of the equipment and hand-over to production and maintenance personnel of Transnet Engineering. A time period is to be defined for the purposes of identifying all operation problems that might exist. Thereafter, a 12-month guarantee period will be given during which any fault and failures due to installation or design shall be fully covered by the contractor.

8.0 TRAINING

- 8.1 The contractor must provide training of Transnet Engineering personnel.
- 8.2 It is required that all operational staff and maintenance staff to be fully trained on the functioning, fault finding and normal maintenance on the equipment.
- 8.3 Training must be done on site while installation and commissioning is done.

8.4 A copy of relevant training documents must be supplied to the Local Wheels Business and the project manager.

8.5 The contractor shall issue the operator and maintenance staff certificates of competence. Copies of these certificates must be supplied to the Local Wheel Business as well as to the project manager.

9.0 AFTER SALES SERVICE

9.1 The tenderer shall give full details of who the supplier of the equipment is as well as the availability of spares. It shall be indicated whether a local supplier exists.

9.2 Technical support and parts to be locally available for a period of at least 10 years.

10.0 DOCUMENTATION

10.1 Full documentation including the following shall be supplied as 1 x electronic copies on memory stick and 3 x paper copy:

- i. An operation manual explaining the safe operation and use of the equipment
- ii. A maintenance manual to cover the routine maintenance and fault-finding procedures.
- iii. A manual indicating all the recommended spares, with accompanied part numbers and drawings.
- iv. All relevant training manuals.

10.2 The tender shall indicate any other documentation available and whether recommended or not.

ANNEXURE A:

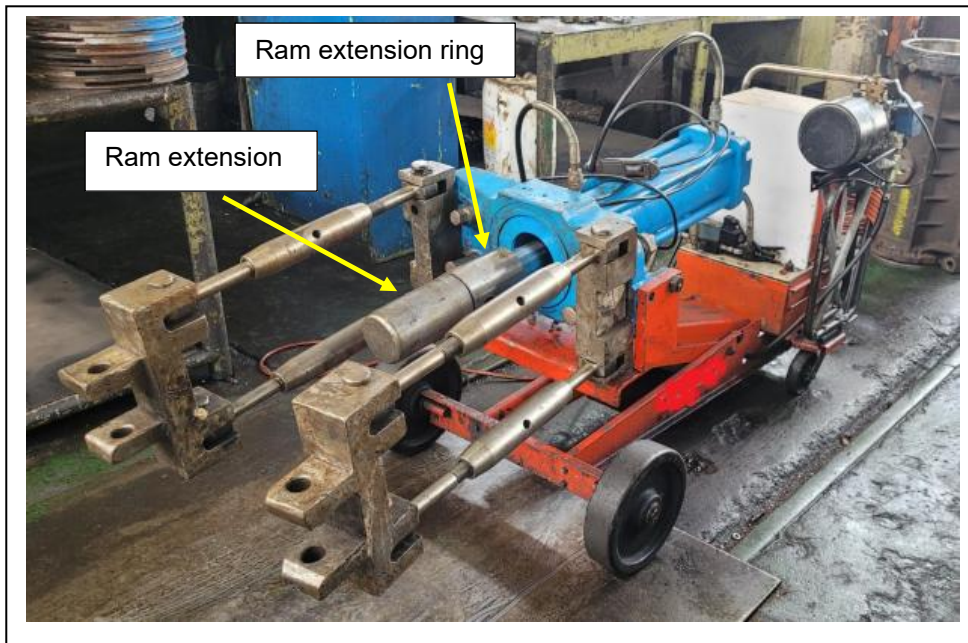


Figure 1: Current bearing / wheel press-off machine

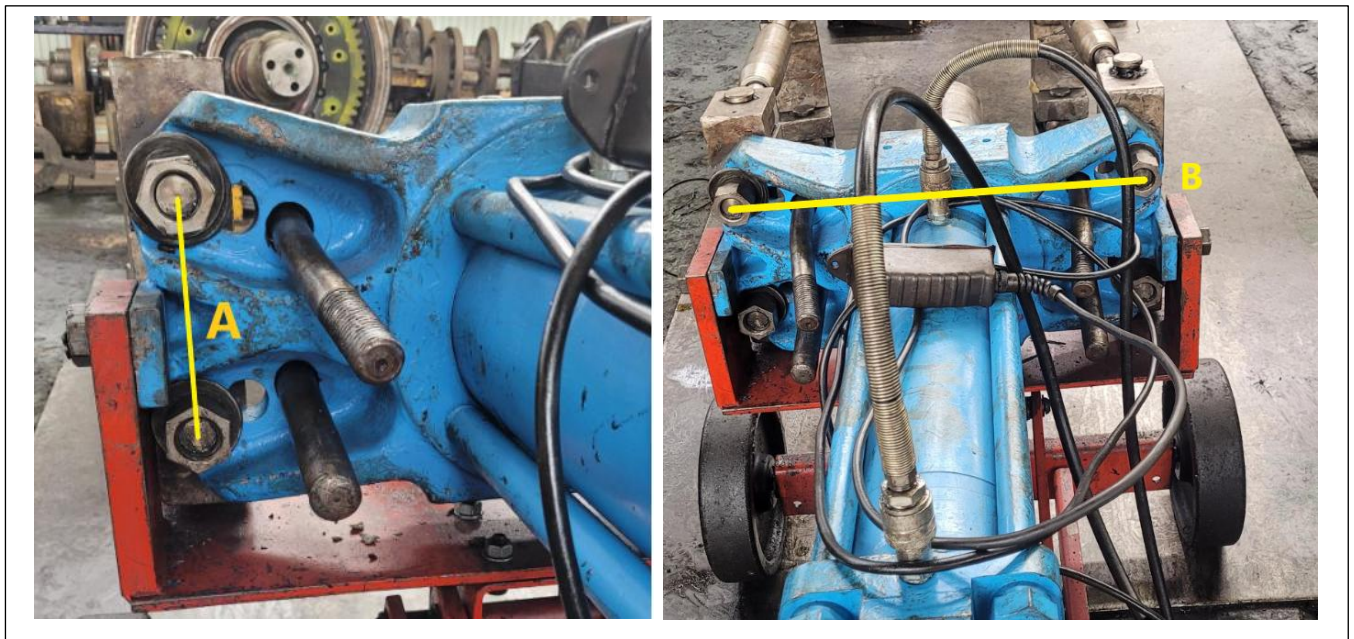


Figure 2: Position A and B

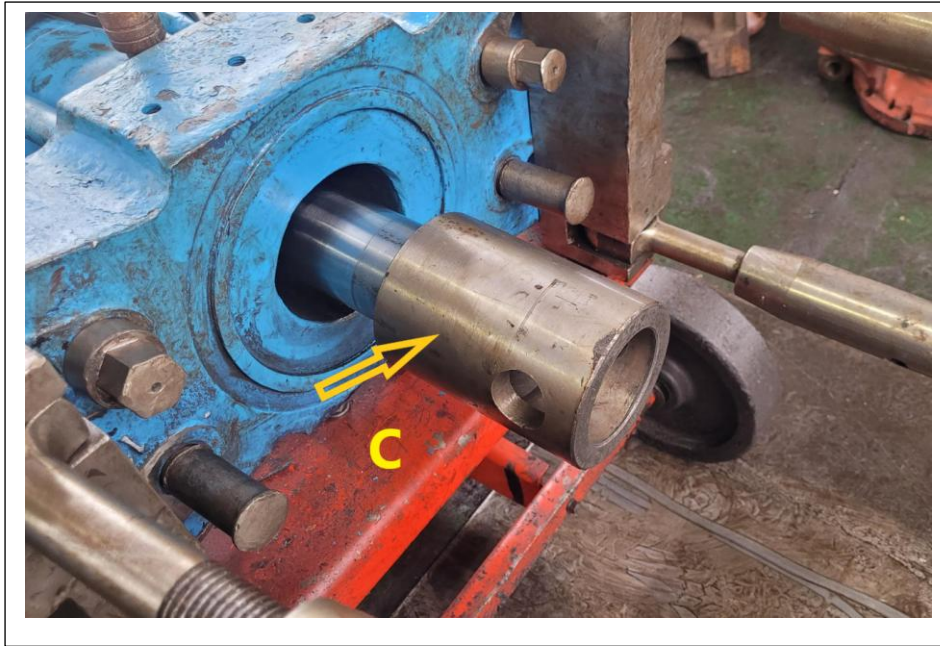


Figure 3: Ram extension ring

ANNEXURE B

No.	Heading / Sub-section	Comply		Comments
		Yes	No	
1.0	SCOPE OF WORK			
1.1				
1.2				
1.3				
1.3.1				
1.3.1.1				
1.3.1.2				
1.3.1.3				
1.3.1.4				
1.3.2				
1.3.3				
1.3.4				
1.3.5				
1.3.6				
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1.3.7.3				
1.3.8				
1.3.9				
1.3.10				
1.3.11				
1.3.12				
1.3.13				
1.3.14				
1.3.15				
1.3.16				
1.3.17				
1.3.18				
1.4				
1.5				
1.6				
2.0	DEFINITIONS			

2.1				
2.2				
3.0	OPERATIONAL REQUIREMENTS FOR THE BEARING PRESS			
3.1	OPERATING ENVIRONMENT			
3.1.1				
4.0	SAFETY			
4.1				
4.2				
5.0	MANUFACTURING STANDARD			
5.1				
5.2				
5.3				
6.0	MAINTENANCE			
6.1				
6.2				
6.3				
6.4				
6.5				
6.6				
6.7				
6.8				
7.0	GUARANTEE			
7.1				
8.0	TRAINING			
8.1				
8.2				
8.3				
8.4				
8.5				

9.0	AFTER SALES SERVICE			
9.1				
9.2				
10.0	DOCUMENTATION			
10.1				
i.				
ii.				
iii.				
iv.				
10.2				