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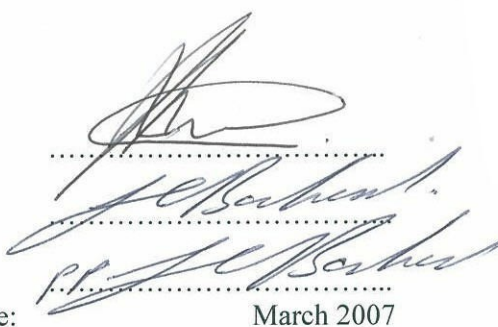
## TECHNOLOGY MANAGEMENT SPECIFICATION

### SUPPLY OF TOOLS FOR ATTACHING DU BUIS EXPANDED COLLAR TYPE FASTENINGS TO RAIL FOR ELECTRIFICATION BONDS

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## **1.0 SCOPE**

This specification covers the supply of tools required for affixing Du Buis type expanded collar rail bond type fastening systems and the associated bond termination.

## **2.0 BACKGROUND**

2.1 The Du Buis fastening system is Spoornet approved for fastening rail bonds.

2.2 Spoornet has standardised on a 13.5mm hole size for expanded collar bonding fasteners. Both single sided and back-to-back systems in the same hole must be accommodated.

2.3 The fastener comprises a stainless steel conical dowel with M10 cylindrical thread, a malleable expandable copper collar that is round on the outside and conical on the inside and provides a contact flange for connecting a standard bond lug.

## **3.0 TENDERING PROCEDURE**

3.1 Tenderers shall submit their main offers in terms of this specification. Deviations which are of a minor nature and do not depart materially from this specification will be considered at the discretion of Spoornet.

3.2 Tenderers shall indicate clause-by-clause compliance with the specification. This shall take the form of a separate document listing all the specifications clause numbers indicating the individual statement of compliance or non-compliance.

3.3 Failure to comply with clauses 3.1 and 3.2 could preclude a tender from consideration.

## **4.0 REQUIREMENTS**

4.1 Rail Drilling machines.

4.1.1 The drilling machine must clamp onto the underside of the rail base and clear the rail vehicle gauge so as not to endanger rail traffic passing on the line during the drilling process.

4.1.2 The drilling machine shall attach to the rail such that the hole is drilled through the neutral axis of the rail for different rail profiles. The supplier shall state in his tender how this is accomplished.

4.1.3 Drills shall be high-speed steel-cobalt armour piercing drill bit.

4.1.4 The drilling speed shall be 150 - 200 revolutions per minute.

4.1.5 Cooling lubricant, similar to that used for general machining shall be used to overcome overheating.

4.1.6 The cutting edges of the drill shall be sharp to ensure minimum friction during drilling.

4.1.7 The tip of the drill bit shall be sharpened to a 118-degree angle.

4.1.8 A minimum of fifty holes must be drilled through Chrome Magnesium Rail before the drill require re-sharpening.

- 4.1.9 A suitable reamer and counter sink drill shall go with the drilling machine to clear the hole of all sharp edges and burrs. The counter sink shall be 1,5 mm wide.
- 4.1.10 The electrical drill motor must be rated at  $220V \pm 10V$  and will be driven from an equally rated power generator.
- 4.2 Hydraulic setting tool.
- 4.2.1 A manual hydraulic tool with M10 pulling unit is required to set the dowel into the collar.
- 4.2.2 The supplier must pre-adjust the pulling effort to the appropriate force for the hole and dowel size, and a protection system against over-tension must be inherent in the design of the tool. The operator must receive an indication when the appropriate pulling force has been reached.
- 4.3 Collar removal punch.
- 4.3.1 A punch shall go with the setting tool for removing the collar when required, appropriately sized for a 13.5mm hole.
- 4.4 Torque wrench
- 4.4.1 Release torque wrenches shall be preset by the manufacturer, and alert the operator by angular slippage.
- 4.4.2 A M10 socket shall be provided with each torque wrench.
- 4.5 Manual crimping tool.
- 4.5.1 A manual crimping tool where provided shall have suitable dies to perform a hexagon crimp on a 120mm lug (internal barrel diameter 15,5mm, spade diameter 22mm with 12mm diameter hole) for a 97mm<sup>2</sup> steel wire bonding cable.
- 4.6 Carrying cases.
- 4.6.1 A carrying case shall be suitable to enclose the hydraulic setting tool, the torque wrench, collar removal punch, crimping tool and dies.
- 4.6.2 A carrying case for the drilling machine shall be suitable to enclose the drilling machine, drills and reamer.

## **5.0 DOCUMENTATION**

- 5.1 The supplier shall provide user's instructions with each set and shall grant Transnet the right to duplicate the literature or parts thereof for training, or further purchasing purposes such as contract documentation.

## **6.0 ANNEXURES**

- 6.1 Annexure 1: Schedule of requirements

END

## ANNEXURE 1

## SCHEDULE OF REQUIREMENTS

|    |   | Quantity<br>required |
|----|---|----------------------|
| 1  | Electrically powered rail drilling machines                   |                      |
| 2  | Rail templates  |                      |
| 3  | Chamfering reamer   |                      |
| 4  | High-speed steel-cobalt armour piercing drill bit             |                      |
| 5  | Go/No-go gauge for 13,5-mm holes                              |                      |
| 6  | Coolant dispenser   |                      |
| 7  | 4.6 Hydraulic setting tool                                    |                      |
| 8  | Collar removal punch  |                      |
| 9  | Torque wrench (preset) with M10 socket.                       |                      |
| 10 | Manual crimping tool  |                      |
| 11 | Test gauge for pulling tool calibration                       |                      |
| 12 | Carrying case for setting tool and accessories (see 4.6.1)    |                      |
| 13 | Carrying case for drilling machine and accessories(see 4.6.2) |                      |

END

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## CASE HISTORY OF SPECIFICATION BBB 5985

### 1.0 SPECIFICATION TITLE

SUPPLY OF TOOLS FOR ATTACHING DU BUIS EXPANDED COLLAR TYPE FASTENINGS TO RAILS FOR ELECTRIFICATION BONDS

### 2.0 SCOPE OF SPECIFICATION

This specification covers the supply of tools required for affixing DuBuis type expanded collar rail bond type fastening systems and the associated bond termination.

### 3.0 CHANGES TO SPECIFICATION

#### 3.1 Amend specification title to read as follows:

Original wording: Supply of tools for attaching expanded collar type fastenings to rail for electrification bonds.

New Wording: Supply of tools for attaching Du Buis expanded collar type fastenings to rails for electrification bonds.

#### 3.2 Amend index page, add tendering procedure, and then therefore add tendering procedure clause number 3. This will shift Requirements to clause number 4, Documentation to clause number 5 and annexures to clause number 6.

#### 3.3 Amend clause 1.0 to read as follows:

Original wording: This specification covers the supply of tools required for affixing expanded collar rail bond type fastening systems and the associated bond termination

New Wording: This specification covers the supply of tools required for affixing DuBuis-type expanded collar rail bond type fastening systems and the associated bond termination.

#### 3.4 Amend clause number 2.1 to read as follows:

Original wording: Transnet requires a standardized fastening system based on the expanded collar fastening technology.

New Wording: Du Buis fastening system is Spoornet approved.

#### 3.5 Amend clause 2.2 to read as follows:

Original wording: First line states; Transnet has standardised on a 14 mm hole size for expanded collar bonding fasteners.

New Wording: Spoornet has standardised on a 13.5mm hole size for expanded collar bonding fasteners.

#### 3.6 Amend cause 4.1.8 to read as follows:

Original wording: A minimum of fifty holes must be drilled before the drill needs re-sharpening.

New Wording: A minimum of fifty holes must be drilled through Chrome magnesium Rail before the drill needs re-sharpening.

#### 3.7 Amend cause 4.3.1 to read as follows:

Original wording: A punch shall go with the setting tool for removing the collar when required, appropriately sized for a 14mm hole.

New Wording: A punch shall go with the setting tool for removing the collar when required, appropriately sized for a 13.5mm hole.

#### 3.8 Annexure 1: Schedule of requirements numbering updated.

#### 3.9 Annexure 1: Number 5 (Go/No-go gauge for 13,5-mm holes) requirement, added under Schedule of requirements.