



A Division of Transnet SOC Limited

INFRASTRUCTURE ENGINEERING

**ELECTRICAL DEPARTMENT
SPECIFICATION**

CORDLESS BOLT CUTTER

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Two handwritten signatures are shown, each on a horizontal dashed line. The top signature is for Rotondwa Ludzulu and the bottom signature is for Molefi Moeketsane.

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Transnet Freight Rail - Infrastructure

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1. Scope

This specification defines the requirements for the supply of a railway-grade cordless hydraulic bolt cutter intended for use in railway maintenance activities, including cutting of:

- High-tensile bolts
- Steel rods
- Stay wires
- Steel fencing wire
- Overhead line auxiliary wires

The equipment shall be suitable for use in railway operational environments, including traction substations, signalling installations, trackside maintenance areas, and overhead line equipment (OHE) installations.

2. Applicable Standards

The equipment shall comply with applicable international standards and/or equivalent, including but not limited to:

- International Electrotechnical Commission IEC 62841 – Safety of motor-operated hand-held tools
- International Organization for Standardization ISO 12100 – Safety of machinery
- European Committee for Electrotechnical Standardization EN 62841 – Electric hand-held tools safety

3. General Requirements

- 3.1. The equipment shall be a portable battery-powered hydraulic bolt cutting tool designed for industrial and railway maintenance applications.
- 3.2. The tool shall be capable of reliable operation in harsh outdoor railway environments, including dust, vibration, rain, and temperature variations.
- 3.3. The equipment shall be supplied as a complete operational kit consisting of:
 - Cordless hydraulic bolt cutter
 - Minimum two rechargeable batteries
 - Rapid battery charger
 - Protective heavy-duty carrying case
 - Spare cutting blades
 - Tool maintenance kit
 - Operating and maintenance manuals
- 3.4. The equipment shall be suitable for single operator use.
- 3.5. The design shall permit safe operation while wearing PPE, including insulated gloves.

4. Mechanical Design Requirements

- 4.1. The cutter head shall be manufactured from chrome vanadium steel or any equivalent hardened alloy steel suitable for cutting high-tensile steel fasteners.
- 4.2. Cutting blades shall be Precision machined, Replaceable, and manufactured from hardened alloy steel.
- 4.3. The cutter head shall be fully enclosed to protect the operator from flying fragments.
- 4.4. The hydraulic system shall incorporate:
 - Automatic pressure relief
 - Overload protection
 - Automatic return mechanism after cutting cycle
- 4.5. The tool body shall be constructed from high-impact reinforced composite or metal alloy housing.

5. Electrical and Battery Requirements

- 5.1. The tool shall operate using high-capacity rechargeable lithium-ion batteries.
- 5.2. Each battery shall provide a minimum of 60 full cutting cycles under normal operating conditions.
- 5.3. The battery charger shall operate from 220–240 V AC

6. Performance Requirements

The equipment shall meet or exceed the following minimum performance parameters

- 6.1. The tool shall be a battery-powered hydraulic bolt cutter designed for heavy-duty industrial and railway maintenance applications.
- 6.2. The tool shall be powered by a rechargeable lithium-ion battery with a nominal voltage of not less than 18 V.
- 6.3. The equipment shall have a hydraulic cutting force of at least 55 kN.
- 6.4. The tool shall be capable of cutting hardened steel bolts with a diameter of not less than 16 mm.
- 6.5. The tool shall be capable of cutting mild steel with a diameter of not less than 20 mm.
- 6.6. The tool shall be capable of cutting steel wire or stay wire with a diameter of not less than 16 mm.
- 6.7. The total weight of the tool, including the battery, shall not exceed 6 kg.
- 6.8. The cutting head shall be fully rotatable through 360° to facilitate operation in confined working spaces.
- 6.9. The tool shall be capable of performing not less than 60 cutting cycles per fully charged battery under normal operating conditions.
- 6.10. The tool shall have a minimum service life of 20 000 cutting cycles under normal operating and maintenance conditions.

7. Safety Requirements

- 7.1. The tool shall incorporate a two-stage safety trigger to prevent accidental activation.
- 7.2. The tool shall automatically stop once the cutting cycle is complete.
- 7.3. The tool shall include LED indicators or electronic diagnostics for:
 - Battery status
 - Fault conditions
 - Maintenance alerts
- 7.4. The handle shall be:
 - Ergonomically designed
 - Non-slip
 - Electrically insulated
- 7.5. The tool shall not produce sparks during cutting operations.

8. Environmental and Operating Conditions

The equipment shall be designed for operation under the following conditions:

- Outdoor railway construction environments
- Ambient temperature range: $-10\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$
- Dusty and humid conditions typical of railway infrastructure worksites
- Operation on uneven ground surfaces.

9. Documentation

The supplier shall provide the following documentation:

- Technical datasheets
- General arrangement drawings
- Hydraulic system schematics
- Operation and maintenance manuals
- Spare parts catalogue