

Title: **Supply and delivery of a  
Horizontal Boring Mill**

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Compiled by

Functional Responsibility

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**1. PURPOSE**

The purpose of this document is to define the specifications of equipment to be supplied and delivered to Bearing Services section of Eskom Rotek Industries

**2. CONTEXT FOR MACHINES AND EQUIPMENT MAINTENANCE AND REPAIRS**

Eskom Rotek Industries Bearing Services is in need of a supply and delivery service of equipment as detailed on the below scope of work.

**3. SCOPE OF WORK****TYPE OF EQUIPMENT**

- Horizontal Boring and Milling machine

The machine must be capable of machining turbo white metal bearings predominantly on for turbo generators. The machine must be capable of machining to specified tolerances on all 5 axes and have CNC capability.

**SPECIFICATIONS OF EQUIPMENT**

- Supplied Machinery to comply to ISO 9001, 14001 and 45001
- Spindle diameter - 130mm
- Spindle taper - I.S.O. 50
- W axis stroke (axial travel of spindle quill) - 900mm
- Boring spindle speeds - 5-1000rpm, variable
- Table size (LxW) - 1800-1600mm
- Max. table load capacity - 10 tons
- X axis stroke (Cross movement of table) - 2000mm
- Y axis stroke (Vertical movement of head) - 1800mm
- Z axis stroke (Longitudinal movement of table) - 2000mm without tail stock
- W axis stroke (Axial movement of boring quill) - 900mm
- B axis (table rotation) - 360°
- U axis stroke (Radial movement of facing head slider) - 250mm
- Facing head diameter - 750mm
- Facing head speeds - 3.5 – 150 rpm variable
- Rapid transverse speed of axis X | Y | Z | W | axes - 2500mm/min

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- Power of spindle motor - 22KW AC servo spindle motor
- Machine weight (approx.) - 29 300 kg
- Machine dimensions (approx. L X W X H) - 7030mm X 4665mm X 3800mm
- CNC capability
- Rigid & robust structure of high-grade cast iron to influence stability and rigidity.
- Rigid nitrified spindle (with metric 80 taper) with support at optimum distance featuring wear resistance.
- Allow for easy tool mounting capability with 80 metric taper spindles.
- Allow for easy operation with hydraulic actuated / driven gears shifting from different speeds and feed rates,
- Head stock to be balanced to ensure precision
- or more spindle speed steps to support machining different materials
- Must Include an optical positioner for table positioning with high accuracy
- Have a automatic lubrication system equipped for affluent lubrication and easy maintenance
- To have a capability to include Electro-hydro interlocks integrated with moving parts to allow for safer operation
- Contain a programmable logic controller (PLC) unit integrated with electric system for reliable control
- Equipment to be supplied with a built-in facing head is provided standard
- Include a swivel operation panel with centralized buttons and switches which has cordless capability
- Machine capability to include a robust modular design with wide options for diverse needs: not limited to tool holders, boring bars, milling heads, etc.
- Must have a rigid nitrified spindle with ISO 50 taper capability and hydro-mechanical tool clamp & unclamp system
- Machinery must include a AC servo spindle motor for variable spindle speeds and a AC servo motor for variable feed rates to support cutting of different work pieces
- Equipment must be user friendly and easily operatable

## **DOCUMENTATION**

- Maintenance and operational manuals, BOM's and maintenance schedules to be included.
- Wiring Scheme/diagram of connection
- EC declaration of conformity
- Test Certificate
- User friendliness of machine must be explained by the supplier on the quotation.
- Supplier to provide life cycle / design life curve with asset management instruction.
- Supply annual failure rate of the machine (for calculating annual failure cost).
- The specification and supply of the first fill of operating fluids
- Spare parts list.
- Specify and supply special tools.
- Specify Painting and Protective Coatings.
- Specify Export Packaging.
- Specify Stainless steel nameplate.

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- Outline drawings including the mass and Centre of Gravity of the machine itself.
- Specify Motor schedules.
- Supply lubrication and coolant schedules.
- Supply design information as required by Rotek, such as absorbed power, installed power and safety factors.
- Provide a metal shipping container to transport the machine.
- Supplier to provide details of successful completion of work within tolerances using the recommended boring machine.
- Machine design to accommodate future upgrades easily.

**MACHINE TOLERANCES**

Supplier to quote highlighting deviations from required tolerances.

**TECHNICAL SUPPORT AND TRAINING**

- Technical Assistance on site in South Africa
- Including: Installation, commissioning, operator training
- 2-year warranty on hardware and software
  - 5-year service and maintenance plan inclusive of spares

**PROOF OF COMPLIANCE WITH THE LAW****The contractor shall ensure that:**

1. All employees are registered with the Workmen's Compensation Commissioner in a manner which is acceptable to the Department of Labour and which satisfies the requirement of the compensation for occupational injuries and diseases act.
2. All employees are registered for unemployment.
3. All unskilled/casual staff must be paid in accordance with the Labour Act. The contractor will be responsible for their training.
4. All personnel shall wear the necessary protective clothing in accordance with Occupational Health and Safety Act No.85 / 1993 and the Construction Regulations of 2003.

**HEALTH AND SAFETY**

The Contractor shall at all times comply with the requirements of the Occupational Health & Safety Act (1993), Construction Regulations (2003) and the Employer's Pre-construction Health and Safety Specification. In pursuit of the aforementioned, the Contractor shall allow for:

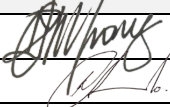
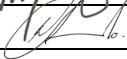
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- Carrying out and documenting risk assessments of all work to be carried out under the contract.
- Preparation of safe work procedures for all work to be carried out under the contract.
- Preparation of an H&S plan, discussing it with the Employer, and then amending it as agreed.
- Preparation for and conducting “toolbox talks” with relevant employees.
- Induction and training as and where required.
- Preparation of a Project H&S File.
- Regular updating of all of the foregoing.
- Provision of PPE and protective clothing for employees
- Complying with all H&S requirements for the duration of the contract
- Storage of cleaning material / equipment

**DOCUMENT SUPPORTED BY:**

NAME	POSITION	SIGNATURE	DATE
Njabulo Mpanza	Works BOSM Services Manager		25/10/2023
Sibusiso Khumalo	Works Bearing Services Senior Supervisor		25/10/2023

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