

SCOPE OF WORK

To: Deva Moodley

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SUBJECT: PURCHASE OF EQUIPMENT SPECIFICATION

TYPE OF EQUIPMENT

Horizontal Boring and Milling machine

The machine must be capable of machining turbo white metal bearings pre- dominantly on for turbo generators. The machine must be capable of machining to specified tolerances on all 5 axis 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

On Site Machining Services
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Eskom Rotek Industries SOC Ltd Reg. No. 1990/006897/30

- Power of spindle motor motor - 22KW AC servo spindle
- 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.
- 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

Machine tolerances	
Parameter	Tolerance – Single hole – (mm)
Machining axis X,Y,Z,W	<0.001 over the total specified cutting length
Tool mounting run-out relative to tool path (Ovality)	<0.001
Machine Table B axis	<0.001
Head rotational U axis	<0.001
Surface finish	Comply to ISO

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

Compiled by:



Mr Njabulo Mpanza

ACTING BOSM HEAD OF DEPARTMENT: TGS

Date: 24 November 2022

Supported by:



Mr Deva Moodley

SENIOR ENGINEER: TGS

Date: 24 November 2022