

SCOPE OF WORK

To: Deva Moodley

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SUBJECT: PURCHASE OF EQUIPMENT SPECIFICATION

TYPE OF EQUIPMENT

Large line boring machine capable of machining turbo – generator components, typically casings, valves and gland box bores and faces. This portable line boring machine must have the capability to achieve the specified tolerances across the machining length and diameters.

SPECIFICATIONS OF EQUIPMENT

Boring Bar Assembly

- Must include an integrated accessible leadscrew with bearing supports for the y-axis.
- Length of bar: 3000 -10000 mm.
- Material: High strength steel, heat treated, ground, hard chromed.

Main Drive Unit- for main bar rotation (C-axis)

- The main drive gear-box unit to be supplied with a pre-loaded bearing arrangement.
- The transmission to be driven preferably with worm gears
- The gearbox must have capability to transverse along the bar for flexible positioning.
- Gearbox housing preferably high strength aluminium.
- Gearbox bushing preferably high strength steel (42CrMo4 or 34CrNiMo6), Surface: oxide black
- Gearbox adapter to accept Servo-electric, Hydraulic or Pneumatic motors

Axial Feed System (Y-Axis)

- Feed system to rotate with the boring bar assembly.
- Universal adaptation assembly for accepting Servo-electric, Hydraulic or Pneumatic motors.
- Must include a single differential assembly integrated into the feed system.

Net Tool Support including extension kits

- Machine boring range: 200 -2000 mm.
- Extension kits to be supplied to achieve 200 – 1000 mm with the first set and 1000mm - 2000mm with a second set.
- The machine is preferred to be supplied with extension kits to achieve the boring range.
- The machine support is preferred have integrated exchangeable extension blocks and have capability to be mounted on the boring bar.
- The axial movement (Y-axis) of the slide along the bar is preferred to be achieved by special pre-loaded and adjustable half-nuts, which connect to the lead screw.
- Fine adjustments and pre load to be done with 3 adjustable guide-shoes connecting to the bar.
- Extension sets to connect with lead screws preferably.

Preferred features:

- An easily accessible and adjustable Y-axis leadscrew for backlash-free operation.
- System to allow for lead screw replacement.
- Material: Special high-strength bronze.
- Y-axis guide system to be adjustable to achieve pre load and limit movement of the supports.
- Main support housing material high strength steel 42CrMo4 that is hardened to improve wear resistance.
- 1 tool slide including extension pieces, machining range: 200mm-1000mm
- Acceptable cutting tool sizes: 12X12mm.

2x End Bearing Supports

- Preferred 4-Arm Support with stand-off for adapting to workpiece.
- Bearing Assembly to include adjustable lead screws for alignment.
- Preferred square-type spherical bearing unit.
- Bearing sealed- ball roller bearing type with sphere on the outer ring.

Preferred Facing Head Assembly:

- Facing head assembly mounts directly on the net tool carrier or the extension kits.
- Should have interchangeable guideways, for 100mm and/or 200mm stroke.
- Facing range: 200mm-2000mm.

Electric control cabinet in the following configuration:

- Preferably include an electronic control cabinet
- Must have PLC capability

Motor Selection:

- Synchronous servo gear motor
- Capability to connect to a 220 V Ac power source or driven by hydraulic or pneumatic supplies
- Rated power: 2-4 KW depending on machining range

AUTOMATION

- Moving parts to be automated or incorporate or make provision for automation.

CAMERA SYSTEM

- Machine to make use of a camera system which is accessible by the machinist when machining.

SHIPPING CONTAINER

- Metal shipping container.

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.

MACHINING TOLERANCES

Machine tolerances	
Parameter	Tolerance – Single hole – (mm)
Boring Bar run-out (Taper)	0.0127 over the total specified cutting length
Tool mounting run-out relative to tool path (Ovality)	0.005
Hole diameter tolerance	0.01

Supplier to quote highlighting deviations from required tolerances.

TECHNICAL SUPPORT AND TRAINING

- Technical Assistance on site in South Africa
Including: commissioning, operator training
- 2-year warranty


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Supported by:


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