

BHARAT HEAVY ELECTRICALS LIMITED
UNIT: JHANSI
(WORK. ENGG. & SERVICES DEPTT.)

**EQUIPMENT : CNC VERTICAL BORING MACHINE (WITH
INTERNAL GRINDING ATTATCHMENT)**

ITEM NO : MT-3/3/1445

LOCATION : LOCOMOTIVE

QUANTITY : 1 NO.

SPECIFICATION : 6106/R-1

**CNC VERTICAL BORING MACHINE (WITH INTERNAL GRINDING
ATTATCHMENT)**

CNC vertical boring machine, single column to be of robust construction and capable of taking advantage of tungsten carbide as well as high speed steel, to be fitted with rise and fall cross rail carrying a single saddle with a vertical swivel slide, and a five position turret. To be fitted with a side head saddle on the upright, having horizontal ram with a four position turret, to have horizontal, vertical and angular feeds, quick power travel, horizontal and vertical feeds to the side head.

Table to be driven by a constant speed motor with a 12 speed gear box, having a location clutch and brake. To have independent built-in jaw slides with detachable steel jaws and radial machined T slots.

To be capable of SCREW cutting and taper-turning from the vertical slide.

Graduated scales to be provided to be easily read and to have adjustable setting points for each slides.

All feeds to be reversible and ram to be balanced. Machine to have centralized control-push button, table self lubricating, single helical table drive and all other gears to be of alloy steel, hardened and ground.

All necessary limiting switches for traverse head and raising and lowering of cross slide are to be included.

All appropriate interlocks to be provided to prevent conflict in motions being engaged simultaneously.

A swarf guard to be provided to ensure safety of operator while the machine is running at high speed.

A gear driven oil pump at the rear of the machine should supply thoroughly filtered oil to the entire main drive gear box, driving gear in the base and table bearings. The pump should be suitably interlocked with the main driving motor to ensure that all parts are properly lubricated before the machine is started, and also to obviate any risk of damage due to failure of the lubricating system. A clearly visible sight-glass to be provided to check functioning of the pumps at any time. Lead screw, lead nut & guide ways to be suitably lubricated.

Machine to be complete with all electrics suitable for 415V , 3-phase, 4wire 50Hz AC supply

All scales to be calibrated in metrics

SPECIFICATION FOR CNC VERTICAL BORING MACHINE (WITH INTERNAL GRINDING

ATTACHMENT) MACHINE WITH STANDARD ACCESSORIES.

| | | | |
|--|--|---|-----------------------|
| 1. | Table diameter | : | 1200 mm |
| 2. | Maximum turning diameter | : | 1250 mm |
| 3. | Maximum turning diameter with side head. | : | 1400 mm |
| 4. | Maximum working height over-table | : | 1100 mm |
| 5. | Maximum vertical travel of turret head | : | 700 mm |
| 6. | Maximum distance between table and under-side of cross- rail turret | : | 1325 mm |
| 7. | Horizontal traverse of side head ram | : | 600 mm |
| 8. | Maximum distance between table and underside of side head tool holder. | : | 700 mm |
| 9. | Vertical movement of cross rail | : | 700 mm |
| 10. | Maximum load on table | : | 3 Tons |
| 11. | Table speed | : | 2.8-315 RPM |
| (Table speed should be infinitely variable & should be controlled by CNC) | | | |
| 13. | Range of feeds (X & Z axis)(Infinitely variable) | : | 1 to 1000 mm |
| 15. | Rapid traverse to heads | : | 2000 mm/min |
| 16. | Rapid traverse to cross rail | : | 300 mm/min |
| 17. | Accuracy of M/c | : | 0.001 mm |
| 18. | Taperness of M/c | : | 0.01 in 100 mm length |
| 19. | H.P. of main motor | : | 40 |
| 20. | Automatic tool changer(ATC) | : | Disc type |
| 21. | No. of ATC station | : | 12 Nos. |
| 22. | M/c should have portable manual inching system | | |
| 23. | Provision for coolant oil on boring tool & drainage system in machine should be there. | | |
| 24. | Machine should be suitable for power supply- 415 volt,50Hz, 3-phase, AC | | |
| 25. | All standard accessories should be supplied with the machine as a part of machine at no extra cost | | |

ADDITIONAL REQUIREMENT:- Machine should be compatible with attachment for internal grinding of Railway wheels having internal dia from 125 mm to 350 mm, maximum outside dia upto 1100 mm, bore length 400 mm & weight of wheel as 1000 Kg

NOTE:- The machine with attached the internal grinding attachment is required. If machine is available without attachment then the same can be offered so that grinding attachment can be attached separately. Machine should have provision to attach the internal grinding attachment with coolant pouring system.

Following to be submitted with the offer:

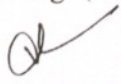
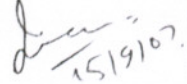
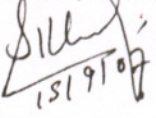
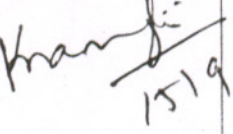
1. Dimensioned outline general arrangement drawing
2. Details of safety devices / guards provided.
3. Electrical schematic diagram.
4. Total electrical load.

5. Quotation with item wise prices of spares for 2 years normal working.
6. Details of standard & optional accessories offered.
7. Catalogues / leaflets of machine offered

QUALIFYING CONDITIONS

Only those vender, who have supplied and commissioned 3 Nos. such machines in the past ten years and such machine is presently working satisfactorily for more than one year (more than six month if supplied to BHEL) after commissioning should quote. The following information is to be submitted by the vender about the companies where similar machines have been supplied. This is required from all venders for qualifications of their offers.

1. Name of the customer/ company where similar machine/ crane is installed
2. Complete postal address of the customer
3. Year of commissioning
4. Name and designation of the contact person of the customer
5. Phone , Fax No. and e-mail address of the contact person of the customer
6. Performance certificate from the customer regarding satisfactory performance of the machine/ crane supplied to them

| Date | Prepared By | Checked By | Approved By | |
|---------|---|--|---|---|
| | Dy. Mgr (WEX) | Mgr.(WEX) | DGM.(WEX) | Sr. Mgr (LMM) |
| 15/9/07 |  |  15/9/07 |  15/9/07 |  15/9 |