

ANNEXURE-1

SPECIFICATION, SCOPE OF SUPPLY AND WORK IN INSTALLATION OF NEW RACK & PRELOADED DOUBLE PINION GEAR BOX ON RIGHT HAND RAM OF CNC VERTICAL BORING M/C ITEM NO: 2/A/45 OF WTM DIV OF B H E L BHOPAL FOR RESTORATION OF MACHINING ACCURACY.

1. MACHINE :-

- 1.1 Make: CRAVEN BROS LTD, MANCHESTER, ENGLAND
- 1.2 Table diameter: 6705 mm.
- 1.3 Maximum diameter of job: 7696 mm
- 1.4 Maximum height under cross-rail: 4267 mm
- 1.5 Maximum height under tool-holder: 3969 mm
- 1.6 Maximum load on table: 90 Tons
- 1.7 Swiveling of Ram: 300 to vertical

2. REQUIREMENT :-

A set on new racks and preloaded double pinion gear box of adequate capacity is to be installed on RH RAM with necessary rework in Cross slide (X axis) of large CNC Vertical Boring machine 2/A/45 to meet the following requirements:-

- 2.1 Restoration of the capacity to take depth of cut of 10mm at feed rate of 0.6mm/rev on a job of maximum size and weight as specified in Para 1, with latest generation of coated carbide tool on MS/SS jobs.
- 2.2 Restoration of geometrical accuracy as per Dr. Schlingers test chart, positioning accuracies better than 0.02mm/m and repeatability within 0.01mm/m as per VDI/DGQ 3441/ ISO 230-2.
- 2.3 The mechanical characteristics of the new rack and preloaded double pinion gear box and allied mechanical assembly is to be matched with existing Siemens make AC Servo drive and Sinamics S120 and Servo Motor 1FT series. The machine has Sinumerik 802D SL Linear scales of Heidenhain for CNC application and DC drive of Siemens make 6RA70 for rotary Table.

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3. SCOPE OF SUPPLY: For Cross Slide (X-axis) of the machine

- 3.1 6 Nos. Module 8 drilled helical rack with length – 1000mm of reputed make like Atlanta/ Gudel / Redex /Andantex
- 3.2 2 Nos. planetary reducers in a universal housing of reputed make like Atlanta/ Gudel / Redex / Andantex make
- 3.3 1 No. Right angle motor flange in
- 3.4 2 No Preload coupling set
- 3.5 1 No Rack mounting and alignment kit.
- 3.6 1 Set of Gear box mounting arrangements with casting and brackets.
- 3.7 1 set of Motor mounting brackets.
- 3.8 1 set of New Turcite coating should be provided for X axis of the RH ram.
- 3.9 1 set of New Wipers should be provided for the guide-ways of X axis of RH ram.
- 3.10 1 Set of All the Mechanical & Electrical items and fittings required for the reconditioning work.
- 3.11 3 set of Documents containing Details of all mechanical modifications & fittings with drawings.

4. SCOPE OF WORK: Mechanical reconditioning of Cross slide

- 4.1 Dismantling of the complete machine
- 4.2 Scrapping of the entire guide-way of cross- slide (machining wherever required). No welding deposits will be allowed.
- 4.3 Installation of new turcite lining on saddle and scrapping again for restoration of alignment with RH Ram for restoration of geometrical accuracy, positioning accuracies & repeatability.
- 4.4 Jibs, keeper-plates are to be checked and replaced/rectified.
- 4.5 Assembly and alignment of Rack for cross axis.
- 4.6 Assembly of Pinions and gearbox.
- 4.7 Design and installation of gearbox mounting and motor mounting
- 4.8 Assembly of existing servo motors.
- 4.9 Tuning and interfacing
- 4.10 Checking of geometrical accuracy of the machine as per the Dr. Schlengers test and Positional accuracy (better than 0.02mm/m) & repeatability (better than 0.01mm/m) of the machine are to be checked as per VDI3441.
- 4.11 A standard test piece is to be machined to check the machine accuracy.
- 4.12 **COMPLETION:** M.1 Upon completion of the scope of supply and scope of work, successful machining of BHEL components shall constitute the FINAL HAND-OVER of the machine and completion of the job.

5. MISCELLANEOUS:

- 5.1. **Delivery: 06 (SIX) MONTH** from the date of issue of Purchase order.
- 5.2. **Commissioning: 2 (two) months** from the date of release of machine.

6. **Pre-Qualification Requirement (PQR):** Following will be the minimum pre-qualification criteria. Each eligible bidder should fulfill following pre-qualification criteria. Response not meeting the minimum pre-qualification criteria will be rejected and will not be evaluated.

6.1 Technical:

Only those vendors (OEM/OEM's authorized dealers/Machine Builders including those involved in re-building/ reconditioning of large Machines), who have successfully supplied and commissioned at least one set of new racks & preloaded double pinion gear box of same capacity (or more) for similar machine in the past ten years (on the date of opening of Tender) and the machine is presently working satisfactorily for more than one year after commissioning (on the date of opening of Tender) should quote. Following information should be furnished by the vendor about the companies where similar machines have been supplied.

1. Name of the customer / company where similar Gear is installed.
2. Complete postal address of the customer
3. Month & Year of commissioning
4. Application for which the Gear is supplied
5. Name and designation of the contact person of the customer
6. Phone and email address of the contact person of the customer
7. Performance certificate from at least one customer regarding satisfactory performance of similar items of same or more capacity supplied & commissioned issued within one year of tender opening
8. BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false /incorrect, the offer shall be rejected

6.2 Commercial: As per attached Annexure.

7. **Guarantee:** Vendor shall stand guarantee for smooth functioning of the machine as specified in clause 2, 3 & 4 of this Annexure, for a period of one year from the date of acceptance, against a PBG equal to 10% of total PO value valid for the period of one year from the date of acceptance by BHEL.



8. Payment Terms:

- 8.1 80% of total PO value shall be payable after delivery as per scope of supply.
8.2 Balance 20% shall be payable after completion of commissioning as per Scope of work and acceptance by BHEL.

9. Submission of Offer:-The offer should be submitted in 2-Bid system, the Techno-commercial & Price bids should be submitted in separate envelopes.

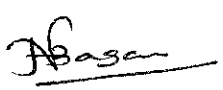
- 4.1. Techno-commercial Bid: In the Techno-commercial bid, the detailed technical specifications of the scope of supply and scope of work along with all the commercial terms and conditions should be included.
4.2. Price Bid: It should include the total price of the offer indicating taxes, P&F and duties.
4.3. Validity of Offer: the offer should be valid for 03 months initially which should be extendable further if required by BHEL.

10. Pre-Bid Inspection: In view of criticality of this machine for BHEL, complexity of this modification work and the Pre-Qualification Criteria, the vendors are strongly recommended to visit the machine site and thoroughly inspect the machine for assessment of scope of work and supply, before quoting.

11. Facilities available in BHEL :

- 11.1. All perishable items, consumables like cotton waste etc. will be supplied free of cost during renovation work inside our premises. However the contractor should make his own arrangements for all the types of hand tools including pneumatic/electrical /drill machines, grinders, scraping machines etc. along with the necessary tooling, general purpose measuring instruments, straight edges etc.
11.2. Crane facilities along with lifting tackles special tools and measuring instruments, trolleys, truck etc. will be made available free of charge while working inside BHEL premises only.
11.3. Facilities of minor welding, brazing, machining etc. free of cost are also available inside BHEL premises.


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