

**Replacing existing ball screw system of Y - axis in AVEY CNC CROSS deep
hole drilling machine**

Part - B : Technical Specifications

Sl.No	Description	BHEL Comments	Vendor's reply
A	Machine Specifications		
1	3 Spindle Deep hole Gun drilling machine # Drilling capacity : 32 mm # Drilling Depth : 1000 mm # Horizontal column travel (X-axis) : 5000 mm # Vertical head travel (Y-axis) : 4000 mm # Spindle feed slide travel : 1400 mm # Spindle spacing adj. for pitch : 100-140 mm	Vendor to note	
B	Existing Y - axis ball screw details:		
1	a. Make: Thomson Saginaw b. Technical specifications: As per BHEL dwg. no.: 1M-04D03-01308 <u>(1) Ball screw: 1 No.</u> # Overall length 5788.4 mm # Thread length 5113 mm # Diameter 3 inch # Pitch 0.66 inch # Right hand thread; Rolled thread screw <u>(2) Ball nut details:</u> Saginaw part no.- 5703045; 2 ball circuits in each nut half # Ball dia 0.5 inch # Preload 8000 lbs # Wipers Teflon # Max. static load 169750 lbs <u>(3) Bearing details available in the Y axis ball screw assembly:</u> # FAFNIR Angular contact ball bearings No.- MM9313WI-5 QUAD E-8809, Class ABEC-7: 2 sets (One set consists of quadruplex set of bearings) # NEW DEPARTURE HYATT Angular contact bearings no. DTX-0L09: 2 sets (One set consists of duplex set of bearings)	Vendor to note	
C	Scope of Supply & work:		
1	Supply of Ball screw and Nut assembly system (1 No.) as per BHEL dwg. No. 1M-04D03-01308. The offered drawing is for reference only and it specifies the overall length and mounting arrangements of the ball screw.	Vendor to comply	
2	Carrying out Geometrical accuracy test & LASER calibration before re-conditioning to ascertain present machine accuracy levels.	Vendor to comply	
3	Removing the existing ball screw assembly from the machine without dismantling the other machine assemblies such as Z- axis drive system and saddle.	Vendor to comply	
4	Servicing of Y axis slide and guide ways for any scoring marks and the counterweight chain.	Vendor to comply	

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5	Replacing the old ball screw assembly with the newly supplied ball screw assembly.	Vendor to comply	
6	Supply & replacing of all the bearings in the ball screw assembly system mentioned in Clause B.3.	Vendor to comply	
7	Carrying out Geometrical accuracy test & LASER calibration after re-conditioning to ascertain machine accuracy levels after re-conditioning.	Vendor to comply	
8	After assembly of new ball screw, the backlash error should be proved within 0.02 mm with only motor encoder feedback system.	Vendor to comply	
9	The scope of supply shall also include a Bosch make electrical hand drilling machine of Drill capacity upto 13 mm- 1 no.	Vendor to comply	
D	General points		
1	At present with only motor encoder feedback system, a backlash error of 0.7mm is being faced in Y- axis drive system.	Vendor to confirm	
2	The make of the ball screw shall be Thomson Saginaw/ THK/ HIWIN/Rexroth/ Korta. Vendor has to mention the make of the ball screw in the offer. The manufacturer test certificate for the supplied ball screw should be provided along with material supply.	Vendor to specify the make of ball screw	
3	The make of the bearings shall be anyone of the following only: FAFNIR/ NEW DEPARTURE HYATT/ TIMKEN/ SKF/ FAG/ INA	Vendor to specify the make of bearings	
4	The vendor shall visit BHEL to understand the scope of supply before giving quotation.	Vendor to note	
5	The ball nut housing is mounted in the saddle with bolt and pin arrangement.	Vendor to note	
6	During the re-conditioning work, the Z axis saddle shall be positioned safely with necessary supports like wooden blocks. The necessary supports will be arranged by BHEL.	Vendor to note	
7	The Vendor has to bring all the sufficient skilled man power and helpers so as to complete the job within stipulated period. The approximate number of employees who may be deployed for carrying out the work shall be indicated in the offer.	Vendor to note	
8	The vendor has to bring necessary tools required for the above work.	Vendor to note	
9	The vendor has to bring necessary measuring equipment like Straight edge, Spirit levels, Dial indicators etc. on returnable basis for carrying out the GA tests and other accuracy checking purpose.	Vendor to note	
10	Consumables like cotton waste, kerosene, electrode, cutting gas, etc. will be provided by BHEL free of cost.	Vendor to note	
11	For the reconditioning work, EOT crane available in the shop including slings will be given by BHEL free of cost.	Vendor to note	

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12	The Vendor shall use applicable PPEs & follow safety precautions in carrying out the work.	Vendor to note	
13	For all the points in the scope of supply and work, point wise compliance/ response shall be furnished by the vendor.	Vendor to note	