



BHARAT HEAVY ELECTRICAL LIMITED

UNITS ADDRESS:

UNITS ADDRESS:

Enquiry No. :

Due Date :

Supplier Qtn. No.:

Date :

SPECIFICATION CUM COMPLIANCE SHEET OF 'POWER OPERATED 3 JAW CHUCK FOR 13C CNC LATHE'

IMPORTANT NOTE:-

1. Vendor must specify in DETAIL with evidence complete specification against each clause. Offers with incomplete clause no.20 will be treated as technically disqualified.
2. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance and will be treated as technically disqualified. Participants shall write the technical parameters where ever "Vendor to specify is written".

3. All documents enclosed in offer should be in ENGLISH language only.

NAME & ADDRESS OF THE SUPPLIER :

TELEPHONE NOS.:

FAX NOS.:

E-MAIL ADDRESS :

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
1.0	PURPOSE The Ward Turret lathe 13C of Traction motor division is used for finish machining of various types of bearing components and shafts. This machine has conventional/manual chuck .It is proposed to install 3 Jaw hydraulic chuck on the machines to improve utility of machine, reduce the job setting time and to eliminate fatigue of the Operator.	Vendor to Note		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
2.0	CONFIGURATION:- WARD 13C CNC LATHE(Machine No. 5/A/124): The 3 Jaw Hydraulic closed center chuck of dia.600 to 630mm is required to hold jobs of maximum 150Kg. The Chuck should be complete with hydraulic rotating cylinder ,cylinder flange,chuck flange,draw tube/draw bar, hydraulic power packs with its all accessories & hoses suitable for cylinder,suitable heat exchanger for power pack if required,foot switch for rotating cylinder and control panel.The chuck should have one of the standard soft jaws.One Allen wrench for adjusting the draw bar,One Allen wrench for jaw screw,one set of jaw screw,allen keys,grease gun,box spanner and one set of chuck clamping screw are to be included in scope of supply. Also width and serrations on the top of base jaws/bottom of the soft/hard jaws & the T-Nut for clamping the jaws should be such that the existing jaws of our other machines can also be adopted on this machine. Since the chuck will be interfaced with a CNC Machine ,details of control mechanism for movement of the jaws,sensors for job clamping(both ID & OD)are to be clearly specified.In case the existing spindle encoder needs to be translocated ,the entire fitments(timing belt,pulley assembly etc)will have to be provided by the Vendor.	Vendor to confirm		
2.0.1				
	<i>Note:The Vendors are strongly recommended to visit BHEL Works to understand Our requirement and take necessary details of machines required for designing before quoting in the tender.</i>			
3.0	<u>Details of Existing Machine:-</u> Ward 13C CNC Lathe (Machine No. 5/A/124) : (a)Swing over bed (SOB): 737mm (b)Spindle bore :134mm (c) Spindle length : 1310 mm (d) Length between centers : 1900 mm	Vendor to confirm		
3.0.1		Vendor to Note		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
4.0	DESIRED FEATURES OF THE THREE JAW HYDRAULIC CHUCK :-			
4.0.1	The chuck body should be of forged steel (40Cr4Mo3). The guide ways should be hardened and ground. The wedge should be made of nickel chrome steel, case hardened and ground on all the working surfaces.	Vendor to Note		
4.0.2	The base jaw should be made of nickel chromium steel,guided in deep, wide, hardened slot in body,to provide the ample bearing area necessary to withstand the forces resulting from high gripping pressures.	Vendor to confirm		
4.0.3	The reversible, hardened and ground hard jaws should have serrations/ dimensions on the bottom to match the base jaws. The various radii on the hard jaws in conjunction with the serrations,should be designed to grip a wide range of diameters.	Vendor to confirm		
4.0.4	Three jaw chuck should be provided with suitable chuck adaptor plate to suit CNC retrofitted 13C lathe.	Vendor to confirm		
4.0.5	The power operated chuck should be actuated by a double acting hydraulic rotating cylinder and to be designed to work at high operating pressures. The primary requirement of the cylinder is to give a linear motion either push or pull the wedge of the power operated chuck. The cylinder should be dynamically balanced and to be capable of rotating at high speeds and should be complete with safety non return valve to maintain the clamping pressure in the event of an emergency caused by loss hydraulic pressure or failure of hydraulic hose.	Vendor to confirm		
4.0.6	The body of the cylinder to be made from medium carbon steel and suitably heat treated.	Vendor to confirm		
4.0.7	Hydraulic rotating cylinder should be provided with a suitable cylinder flange to suit CNC retrofitted 13C lathe & its piston should be made of nickel chromium steel.	Vendor to confirm		
4.0.8	A suitable draw bar/ tube is to be provided for chuck and cylinder.	Vendor to confirm		
5.0	DETAILS OF HYDRAULIC CKT. / POWER PACK :- As the actuation of the chuck is to be done hydraulically, a suitable power pack comprising of the following broad elements is to be incorporated in the scope of supply.	Vendor to confirm		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
5.0.1	Piston Pump of having min. 20 LPM discharge capacity and capable of operating upto a max. of 40 Kg/sq.cm.pressure.	Vendor to confirm		
5.0.2	Approx. 3 HP, 1440 rpm motor suitable for operation on 415 V, 3 phase, 50 HZ supply. Motor protection such as thermal overload relay, circuit breakers, fuses etc.	Vendor to confirm		
5.0.3	Flow control valve with graduations,pressure relief valves,solenoid operated direction control valves, 3 hoses(3m long each) for the double acting cylinder for the open/ close and drain purpose.Stack type modular valves are to be used for the purpose	Vendor to confirm		
5.0.4	Pressure gauge along with the needle valve.			
5.0.5	Suctions trainer, filter,reservoir/oil tank of suitable capacity, level indicator etc.	Vendor to confirm		
5.0.6	Pressure switches to sense the set pressure and trip the circuit/ give visual alarm (indication lamp) in case of low/ high pressure.	Vendor to confirm		
5.0.7	Floot switch is to be provided to sense the hydraulic oil level in the power pack and trip the circuit/ give visual alarm (indication lamp) in case of low oil level.	Vendor to confirm		
5.0.8	Piping/Tubing/Hoses with quick connect self sealing coupling from power pack to the fluid motors.	Vendor to confirm		
5.0.9	A suitable heat exchanger for hydraulic power pack for operation is to be supplied if required.			
5.0.10	Make of Hydraulic Pump : Yuken/ Polyhydron/ Rexroth/ Bosch/ Hawe/ Dowty /Equivalent make	Vendor to confirm		
5.0.11	Make of Hydraulic Seals: Parker/ Busak/ Shanborn/ Merkel/ Hallite/ Kastats/Technolane/Equivalent make	Vendor to confirm		
6.0	BROAD SPECIFICATION OF CHUCK :-			
	For Ward 13C Lathe :-			
6.0.1	Dia of Chuck : 600 to 630mm	Vendor to specify		
6.0.2	Width of the chuck : Approx. 150 mm	Vendor to specify		
6.0.3	Weight of chuck : Vendor to specify	Vendor to specify		
6.0.4	Jaw stroke radial : 10.5 mm or more	Vendor to specify		
	For Hydraulic power pack :-			
6.0.5	Oil tank capacity : Min. 100 Liter	Vendor to specify		
6.0.6	Pump Motor rating : Min. 2.5 HP	Vendor to specify		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
6.0.7	Hydraulic pump discharge : Min 20 LPM	Vendor to specify		
6.0.8	Hydraulic pressure : Min. 40 Kg/cm2	Vendor to specify		
6.0.9	Capacity of heat exchanger : Vendor to specify	Vendor to specify		
6.0.10	Size of power pack : Vendor to specify	Vendor to specify		
7.0	ACCURACY DESIRED:-			
7.0.1	Chuck OD Run-out : 0.07 mm	Vendor to specify		
7.0.2	Chuck face Run-out : 0.05 mm	Vendor to specify		
7.0.3	Hard Jaw Run-out : 0.15 mm	Vendor to specify		
7.0.4	Repeatability with soft Jaws : 0.02 mm	Vendor to specify		
7.0.5	Serration Accuracy : 0.1 mm	Vendor to specify		
	Note: All the dimensional details in the specification are tentative and are for reference only. Manufacturer preferably cross check actual dimension before submitting the manufacturing drawings for vetting after PO.			
8.0	SCOPE OF SUPPLY:-			
8.0.1	For Ward 13C Lathe :-			
a	Three jaw hydraulic closed center chuck for Ward 13C lathe (as per cl.no. 2.0.1) with hydraulic rotating cylinder, cylinder flange, chuck flange, draw tube/ draw bar, hydraulic power pack with its all accessories & hoses suitable for the cylinder, suitable heat exchanger for power pack if required, foot switch for rotating cylinder a control panel, allen wrench for adjusting the draw bar, allen wrench for jaws crew, jaws crew, allen keys, grease gun, box spanner and chuck clamping screws,..... 1 Set	Vendor to confirm		
b	Standard reversible hard jaws and standard soft jaws. ---- 1 Set each.	Vendor to confirm		
c	Suitable timer belt, pulleys, bracketories, etc. required if shifting of the encoder to be done. ---- 1 Set.	Vendor to confirm		
d	Any hardware, (a part from standard 24VDC input/output boards) required for interfacing of the chuck controls, will have to be supplied by the bidder ---- 1 Lot.	Vendor to confirm		
e	Complete erection, commissioning & proving of the complete system at BHEL Bhopal works.	Vendor to confirm		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
9.0	SPARES:(Optional- to be quoted seperately):- List of necessary spares for the successful running of the system for 2 years should be quoted separately. A list of spares,along with address of the suppliers,required there after, with information on their normal life should be given. <i>Note: The price of the spares will not be considered for the evaluation of the machine cost (1.1 criteria) and should be quoted separately.</i>	Vendor to confirm		
10.0	GUARANTEE: System should be guaranteed for successful performance and for free replacement of faulty material or components /defective workmanship for a period of 12 months from the date of commissioning.	Vendor to confirm		
11.0	SAFETY: All the movable parts should be protected with appropriate safety guards. The Chuck should be provided with suitable safety devices to guard the system from any damage and also for the safety of the operator.	Vendor to confirm		
12.0	LUBRICATION :- Suitable arrangement for lubrication is necessary. Provision is to be made for the above by providing nipples etc. For grease lubrication at strategic places wherever required. Periodicity of lubrication should be brought out by colour code system.	Vendor to confirm		
13.0	DRAWING APPROVAL:- The system is to be generally laid out in line with our specification. Design of the system should be according to the latest standards keeping latest trends and developments in mind. Before taking up manufacturing,the manufacturer should get the G.A drawing of their proposed system duly approved by us. However the responsibility of proving would lie with manufacturer.	Vendor to confirm		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
14.0	<u>ELECTRICALS:-</u> All electricals should have suitable safety devices such as thermal overload trip devices, current limiting devices, electronic shear pin, fuses etc. Electrical power supply available is 415 V $\pm$ 10 %, 3 phase, 3 wire system at 50 Hz. (No neutral is available). Provision of neutral will be in the scope of supplier. Hence, if there's a requirement of 220/ 110 Volts suitable transformers may be incorporated. All wiring should be suitably numbered for easy maintenance.	Vendor to confirm		
15.0	<u>PACKING:-</u> Rigid/ sea-worthy packing for equipment, control and all other supplied items to avoid any damage/loss in transit. All small loose items should be suitably packed in boxes.	Vendor to confirm		
16.0	<u>PAINTING :-</u> The Control panel, power pack etc are to be painted in verdigris green colour after two coats of red-oxide primer.	Vendor to confirm		
17.0	<u>PRE DISPATCH INSPECTION & SYSTEM CHECK:-</u> Inspection of chucks will be carried at the manufacturer works before dispatch of the system for satisfactory performance of the system and for the accuracy mentioned in this specification. Broadly following items shall be checked before dispatch: (a) Hydraulic pack as per cl no.2.0.1 (b) broad specification as per cl no.5 (c) accuracies as per cl no.7 (d) scope of supply as per cl.no.8 (e) Workmanship	Vendor to confirm		
18.0	<u>LITERATURE:-</u>			
18.0.1	Four Copies of drawings & Test Certificates are to be supplied with the system/equipment.	Vendor to confirm		
18.0.2	Four Copies of Operation & Maintenance manual are to be supplied with the system/equipment.	Vendor to confirm		
18.0.3	Complete electrical & mechanical assembly drawing of equipment as commissioned.	Vendor to confirm		
18.0.4	Complete Master list of parts used in machine shall be supplied by Vendor.	Vendor to confirm		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
19.0	ERECTION ,COMMISSIONING , PROVING FOR PERFORMANCE & FINAL ACCEPTANCE :-			
19.0.1	Complete installation & commissioning is to be done by supplier at our works.Supplier may quote charges for the above seperately.	Vendor to confirm		
19.0.2	Proving of the system and acceptance criteria for desired performance at BHEL Bhopal works will be done by as follows:: (i)Full load test to demonstrate the working of system/chuck as per cl.no.2.0.1. (ii)Demonstration of all features of the machine, control system as per cl.no. 4 & 6 to the satisfaction of BHEL for efficient and effective use of the machine. (iii)Job trials of any 5 jobs for desired performance regarding proper gripping of jobs by the jaws and working of system. (iv)Two weeks supervision of independent operation of machine by BHEL after tests & demonstration mentioned above at (i) to (iii). (v)Accuracy as per clause 7.0.	Vendor to confirm		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
	Manufacturer should comply with the following during Erection, Commissioning and proving: (a) Experienced & qualified team fully conversant with the work scope should be deputed. It is the sole responsibility of the supplier to ensure that all the team members have valid ESI, PF and other statutory account & confirming to factories act. BHEL would presume that all the members deputed fulfill the above requirements. Further, the party would have to deal with any non-conformance/ obligation arising out of the same. (b) E & C work has to be completed in one go except where it is agreed with mutual consent. (c) Drawings related to civil work should be sent to BHEL atleast 8 weeks in advance. (d) Any help required from BHEL during E & C has to be indicated in the offer itself. Except where agreed, rest has to be organised by the manufacturer. (e) Manufacturer's team is required to comply with general discipline, industrial safety rules and workshop norms while doing the work. Any work with safety hazards etc. should not be done in any case. No work should be done without proper authorization or permission. (f) The E&C of system/ machine should be completed within 1 month from the date of intimation via email of site readiness from BHEL.	Vendor to confirm		

SN	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	REMARKS
20	<u>QUALIFYING CRITERIA:-</u> The OEM or authorized dealer may quote in the tender. Authorization certificate should be submitted by the dealer. 1)The OEM or authorized dealer should have commissioned at least one no. of power operated hydraulic chuck of diameter minimum 500 mm or more. 2)The above chuck should be working satisfactorily for more than one year after commissioning on the date of opening of tender. 3)The above chuck should have been commissioned within last 7 years from the date of opening of tender. The OEM or authorized dealer have to furnish a satisfactory performance certificate from their customer fulfilling above mentioned criteria. Offers of parties not meeting any one of the above criteria shall not be considered.	Vendor to confirm		
	<u>DETAILS TO BE FURNISHED WITH THE OFFER:-</u>			
	Following details must be supplied with the offer:-			
(a)	Machine model:	Vendor to specify		
(b)	Full technical details / specifications, general arrangement drawing, etc.	Vendor to submit		
(c)	Material specifications which are used in the manufacturing of the equipment.	Vendor to specify		
(d)	List of customers to whom similar machines have been supplied along with their contact details	Vendor to submit		
(e)	Point wise reply to each & every point of ours pecification isa m ust. Itn otc omplied then the offer will not be considered.	Vendor to submit		
22	<u>AMBIENT CONDITION & TROPICALISATION:-</u>			
	All electronic components should be tropicalised to withstand environmental temp. Variation from 4 to 50 degree C and RH variation from 5 to 95 %.	Vendor to confirm		
23	<u>TRAINING:-</u>			
	O&M Training: Training should be imparted to our operators & maintenance staff for min. 2 days so that they should be in a position to run / maintain the system, independently at BHEL works.	Vendor to confirm		