

SPECIFICATION CUM COMPLIANCE SHEET OF POWER OPERATED 3 JAW CHUCK FOR 16C CONVENTIONAL 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 clause of 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 16C 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		

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2.0	CONFIGURATION:- WARD 16C CONVENTIONAL LATHE(Machine No.26/A/2032): The 3 jaw hydraulic open center chuck having OD 700 to 800 mm & ID (large through bore) 234 mm or ID bore of sufficient dia. to accomodate job of dia. 175mm inside the spindle bore is required to hold jobs of maximum weight 250 kg. The job on this machine will be clamped in such a manner that a portion of length of job will go inside the spindle bore and clamped by jaws. The job dia is 175 mm and the portion of job length which will go inside the spindle bore is approx 230 mm. The chuck should be complete 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 and a control panel. The chuck should have one set of standard reversible hard jaws and one set of 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 screws are to be included in the supply scope.	vendor to confirm		
2.0.1	Further, special jaws suitable for other components as per drawing no. 3-MTD-05-2549 should be included in the scope of supply. Also, the width & serrations on the top of the 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.			
	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.			
3.0	Details of Existing Machine:- Ward 16C Conventional Lathe (Machine No. 26/A/2032) : (a) Swing over bed(SOB): 889mm (b) Spindle bore : 220 mm (c) Spindle length : 1680 mm (d) Length between centers : 2400 mm	vendor to confirm		
		vendor to note		

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4.0	DESIRED FEATURES OF THE THREE JAW HYDRAULIC CHUCK :-	vendor to note		
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 confirm		
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 Conventional 16C Turret 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. The body of the cylinder to be made from medium carbon steel and suitably heat treated.	vendor to confirm		
4.0.6	Hydraulic rotating cylinder should be provided with a suitable cylinder flange to suit Conventional 16C Turret Lathe. & its piston should be made of nickel chromium steel..	vendor to confirm		
4.0.7	A suitable draw bar/ tube is to be provided for chuck and cylinder.	vendor to confirm		
4.0.8	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		
5.0	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		
5.0.1		vendor to confirm		

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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.	vendor to confirm		
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	Float 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.	vendor to confirm		
5.0.10	Make of Hydraulic Pump : Yuken/ Polyhydron/ Rexroth/ Bosch/ Hawel/ Dowty /Equivalent make	vendor to confirm		
5.0.11	Make of Hydraulic Seals: Parker/ Busak/ Shanbom/ Merkel/ Hallite/ Kastats/Technolane/Equivalent make	vendor to confirm		
6.0	BROAD SPECIFICATION OF CHUCK :-			
	For Ward 16C Lathe :-			

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6.0.1	Dia.of Chuck : 700 to 800 mm	Vendor to specify		
6.0.2	Width of the chuck : Approx. 200 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		
6.0.7	Hydraulic pump discharge : Min 20 LPM	Vendor to specify		
6.0.8	Hydraulic pressure : Min. 40 Kg/cm ²	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	<u>ACCURACY DESIRED:-</u>			
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	<u>SCOPE OF SUPPLY:-</u>			
8.0.1	For Ward 16C Lathe :-			

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a	Three jaw hydraulic open center chuck for Ward 16C 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, jaw screw, 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	Special jaws suitable for other components as per drawing no. 3-MTD-05-2549 ---- 3 Set.	vendor to confirm		
d	Complete erection, commissioning & proving of the complete system at BHEL Bhopal works.	vendor to confirm		
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. 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.	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		

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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. 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		
13.0				
14.0	ELECTRICALS:- 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 $415 \text{ V} \pm 10 \%$, 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. PACKING:- 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. PAINTING :- The Control panel, power pack etc are to be painted in verdigris green colour after two coats of red-oxide primer.	vendor to confirm		
15.0				
16.0				

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17.0	PRE DISPATCH INSPECTION & SYSTEM CHECK:- 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	LITERATURE:- Four Copies of drawings & Test Certificates are to be supplied with the system/equipment.	vendor to confirm		
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		
19.0	ERECTION , COMMISSIONING , PROVING & FINAL ACCEPTANCE FOR PERFORMANCE:- Supplier to take full responsibility for carrying out the erection , commissioning start up ,testing of machine , its control and all types of other supplied equipments,machining of test pieces etc . Other requirements like mobile crane and helping personal shall also be in the scope of suppliers.service requirements like power,air & water shall be provided by BHEL at only one point to be indicated by supplier in their foundation /layout drawing. Details of these requirements should be informed by vendor in advance . Complete installation & commissioning is to be done by supplier at our works.Supplier may quote charges for the above seperately.	vendor to confirm		
19.0.1				

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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 5 No jobs shall be done 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		

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19.0.3	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		
20	QUALIFYING CRITERIA:-			

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20.0.1	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. For micro and small enterprises in line with GOI circular 1(2)(1)/2016-MA 10/03/2016 relaxation permitted for prior turnover criteria only however prior experience is mandatorily required and no relaxation in this regard is given.	vendor to confirm		
20.0.2	Average annual T/O of the OEM for the last three financial years should be at least 3.42 lakhs. P/L statements for the years ending 2017-18, 2018-19 & 2019-20 to be provided. For micro and small enterprises in line with GOI circular 1(2)(1)/2016-MA 10/03/2016 relaxation permitted for prior turnover criteria only however prior experience is mandatorily required and no relaxation in this regard is given.	Vendor to submit (P/L statements to be submitted with the offer)		

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21	<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 is a must. It not complied, 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 %.			
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		