

BHRAT HEAVY ELECTRICAL, LIMITED JHANSI

Enquiry No. :

Due Date :

Machine No. MT-1/1/1518

Specification no. 6216/R2

Qty 1no

Note:-

1. 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.
2. The offer and all documents enclosed with offer should be in English language only.
3. Vendor(OEM) must submit complete information against clause no. 23. The offer meeting this clause would only be processed.

Name & Address of the supplier:

Telephone No.	Name & Address of the Indian Agent:
Fax No.	Telephone No.
e-mail :	Fax No.
	e-mail :

Scope: Supply, Erection & Commissioning of 500 Ton PRESS BRAKE MACHINE (Plate bending machine) complying with specification as below.

S No. Description - BHEL's Requirement

	Specified	Offered	Deviations(Y//Remarks
1	Application :- The press brake should be able to carry - out bending operation upto 32 mm thick M.S sheets and equivalent thickness of S.S. sheets.	Vendor to offer	
2	Type:- Hydraulic Press Brake.	vendor to offer	
3	Technical specification :-		
3.1	Job requirement / capacity		
3.1.1	Maximum sheet thickness- 32 mm (thick) of MS with UTS between 42-59 kg/mm ²	Vendor to confirm and submit	
3.1.2	Vendor to provide capacity in Tonnage, considering minimum inside bending radius. Vendor to provide calculation for Tonnage & bending chart.	Vendor to submit	
3.1.3	Capacity of Press - 500 MT (minimum)	Vendor to submit	
3.2	Maximum bending length -3200 mm	Vendor to confirm	
3.4	Distance between housing	Vendor to specify	

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviations(Y/N)	Remarks
3.5	Adjustable Ram Stroke -300 mm	Vendor to confirm			
3.6	Throat Gap -500 mm	Vendor to confirm			
3.7	Table width -	Vendor to specify			
3.8	Speed				
3.8.1	Approach speed -100 mm/sec(Approx)	Vendor to confirm			
3.8.2	Return speed - 90 mm/sec (Approx)	Vendor to confirm			
3.8.3	Working speed- 8-10 mm/sec(Approx)	Vendor to confirm			
3.9	Stroke-length/stroke-adjustment	Vendor to confirm			
3.1	Motor Power	Vendor to specify			
3.10.1	Vendor to specify with necessary calculation to ensure required tonnage capacity				
3.11	Size & weight of the machine	Vendor to submit			
3.12	Oil tank capacity	Vendor to submit			
3.12.1	Vendor to specify w.r.t. tonnage capacity				
3.13	Accuracies	Vendor to submit			
	X-axis(back and front movement) - ± 1 mm or better				
	Z-axis (vertical movement)- ± 1 mm or better	Vendor to specify			
3.13.1	Suitable gauging and read-out at front to be provided	Vendor to specify			
3.14	Backgauge- motorised backgauge for X axis movement of components	Vendor to confirm and submit details			
3.15	Working condition: Vendor to confirm that machine is suitable for following conditions				
3.15.1	Ambient temperature 0 to 50 deg.C	Vendor to note			
3.15.2	Relative humidity upto 95% .				
4	TECHNICAL FEATURE:-				
4.1	Construction	Vendor to confirm / offer			
4.1.1	Rigid and compact suitable for tough working condition at Fabrication				
4.1.2	Mono-lithic construction to ensure precision and machine's lasting reliability and efficiency	Vendor to confirm			
4.2	Special feature	Vendor to confirm			
4.2.1	operator panel/pendant	Vendor to confirm			
4.2.2	Automatic Centralized lubrication system	Vendor to confirm			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviations(Y/N)Remarks
4.3	INSTALLATION:- Block diagrams for layout details, foundation details, electrical cable sections, weight of assemblies to assess working space requirements & handling during erection to be furnished within 1 month after LOI/PO.			
4.3.1		Vendor to confirm		
4.4	Air conditioning /ventilation Cabinets housing, drive controllers & operator's pendant are to be equipped with proper air conditioning mechanism/ air ventilation considering the working conditions	Vendor to confirm		
4.4.1		Vendor to confirm		
5	STANDARD ACCESSORIES AND TOOLINGS:-			
5.1	All standard toolings /hand tools for easy operation.	Vendor to confirm and furnish list		
5.2	Clamping system for dies and punches.	Vendor to specify		
5.3	Adjustable front sheet support attachments.	Vendor to confirm		
5.4	In- built safety devices for both hydraulic and electrical system	Vendor to confirm		
6	OPTIONAL ACCESSORIES:			
6.1	Handling facility for components during bending covering the total span (Jib crane / hoists)	Vendor to confirm		
6.3	Adjustable intermediate clamps for top beam to facilitate folds on plate with very high side edge and making of box type jobs.	Vendor to confirm		
6.4	Provision of sheet follower to allow processing of medium and large size sheets with one operator. This helps in eliminating sagging / counter folding in large jobs of sheet metals.	Vendor to confirm		
6.5	Universal type hardened , ground and sectioned dies and punches for bending radius 2 mm and above like Multi V- Block, Straight Punch, Semi-gooseneck punch for 30deg,45 deg , 60 deg and 90 deg bending angle. Vendor to quote itemwise price of tools. Vendor to specify bending radius too.	Vendor to confirm and quote		
7	SPARES			
	Recommended mechanical /hydraulic /electrical / electric spares / toolings for minimum 2 years of smooth operation of the machine with individual identification no. and price including the following :			
7.1	Mechanical & Hydraulic Spares:			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviations(Y/N)	Remarks
	Switches, Transducers, Flow Switches, Filters, Seals, O-rings, Hydraulic Hoses etc.				
7.2	Electrical/Electronics: Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch, etc. All types of spares for total machine and accessories should be available for at least ten years after supply of the machine. If machine or control is likely to become obsolete in this period, the vendor should inform BHEL Jhansi sufficiently in advance and provide drawings of parts / details of spares & suppliers to enable BHEL to procure these in advance, if required	Vendor to furnish			
7.3	Vendor to confirm that complete list of spares for machine and accessories, along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the machine	Vendor to confirm			
7.4	Vendor to supply 2 Sets of Electronic cards or PCBs, Modules of PLCs, Display Boards if any used in the machine as essential spares.	Vendor to offer			
8	TRAINING BHEL Persons should be trained at supplier's Works for mutually agreed period in the area of				
8.1	(a) Electrical, Electronic maintenance for machine & other supplied equipments	Vendor to confirm			
	(b) Mechanical & Hydraulic maintenance of the machine & other supplied equipments	Vendor to confirm			
	(c) Operation of the machine & other supplied equipments.	Vendor to confirm			
8.2	Fare, boarding & lodging for the trainees shall be borne by BHEL.	Vendor to confirm			
8.3	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel.	Vendor to confirm			
8.4	Vendor to quote for training on per man-day basis	Vendor to quote			
9	DOCUMENTS / INSTRUCTION MANUALS: Five sets of documents to be provided as below:-				
9.1	Installation / commissioning manual.	Vendor to confirm			
9.2	Functions of all major components / accessories with assembly	Vendor to confirm			
9.3	Interface description.	Vendor to confirm			
9.4	Programming manual. (If applicable)	Vendor to confirm			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviations(Y/N)Remarks
9.5	Electrical schematic diagram.	Vendor to confirm		
9.6	Wiring diagram	Vendor to confirm		
9.7	Hydraulic & details assembly diagrams of machine.	Vendor to confirm		
9.8	Lubrication chart with oil /grease grades.	Vendor to confirm		
9.9	PLC ladder diagram & PLC programming manual along with cross reference list.(if applicable)	Vendor to confirm		
10	Circuit diagram of PCB's used in the machine.(if applicable)	Vendor to confirm		
10.1	Machine operation /maintenance manual.	Vendor to confirm		
10.2	Details spare part list for mechanical / electrical/ electronics with identification.	Vendor to confirm		
10	ELECTRICAL : 415V + 10% / -10%, 50HZ +/-3 HZ, 3 Phase AC (4 wire system with neutral) Power Supply Voltage will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor. All types of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine/control cabinets, shall be the responsibility of vendor. Requirement of grounding/earthing with required material details is to be informed by vendor well in advance so that same could be incorporated during construction of foundation.	Vendor to confirm		
10.1.				
11	Tropicalisation: All electrical / electronic equipment shall be tropicalized	Vendor to confirm		
11.1	All electrical & electronic control cabinets & panels should be dust and vermin proof	Vendor to confirm		
11.2	All electrical components in the cabinets should be mounted on DIN Rail	Vendor to confirm		
11.3	All electrical and electronic panels including operator's panel should be provided with Compact Fluorescent Lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters/receptacles should have compatibility with Indian equivalents.	Vendor to confirm		
11.4	Motors shall conform to IEC or Indian Standards and shall be reputed make	Vendor to confirm		
11.5	All cables and cable trays required for the machine should be included in the offer.	Vendor to confirm		
11.6	Vendor should ensure the proper earthing for the machine and its peripherals.	Vendor to confirm		

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11.7	The electrical components used shall be from reputed international makes such as Siemens / Telemechanique / Merlin Gerin / GE/ ABB and shall be accordance with DIN/IEC Standards.	Vendor to confirm			
12	SAFETY ARRANGEMENTS: Following safety features in addition to other standard safety features should be provided on the machine:				
12.1	Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, work piece and the operator due to the malfunctioning or mistakes. Details shall be submitted in the technical bid.	Vendor to confirm			
12.2	In case of overloads due to wrong manoeuvres / malfunctions the machine should stop to avoid damage to machine and man.	Vendor to confirm			
12.3	Detailed list of safety alarms / indications provided on the machine shall be submitted along with the offer.	Vendor to confirm			
12.4	All the pipes, cables etc. on the machine should be well supported and protected. These should not create any hindrance to machine operator's movement for effective use of machine.	Vendor to confirm			
12.5	Emergency Switches at suitable locations as per International Norms should be provided.	Vendor to confirm			
12.6	Necessary protection shall be provided in the Hydraulic power pack to prevent from over loading.	Vendor to confirm			
13	ENVIRONMENTAL PERFORMANCE OF THE MACHINE :				
	The Machine shall conform to following factors related to environment :				
	(a) Maximum noise level shall be 85 dB(A) at normal load condition, 1 meter away from the machine with correction factor for back ground noise, if necessary. This will be measured as per international standards like DIN 45635-16. Supplier to demonstrate compliance to noise level, if so required.	Vendor to confirm			
	(b) If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.	Vendor to confirm			
	(c) Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.	Vendor to confirm			
14	LEVELING & ANCHORING SYSTEM				
14.1	Complete anchoring system including foundation bolts, anchoring materials, leveling shoes etc should be supplied	Vendor to confirm			
15	TOOLS FOR ERECTION, OPERATION & MAINTENANCE :				

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations(Y/N)	Remarks
15.1	Special tools and equipment required for erection of the machine shall be brought by the vendor. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the machine should be supplied. List of such tools should be submitted with offer.	Vendor to confirm			
16	FOUNDATION Vendor shall submit the foundations layout drawings giving load points, static/dynamic loading for BHEL's approval within one month from the date of Letter of Intent (LOI) or Purchase Order, whichever is earlier.	Vendor to confirm			
16.1	Foundation of the machine will be designed by the supplier.	Vendor to confirm			
16.2	Construction of foundation will be carried out by BHEL under the supervision of supplier/ supplier representative.	Vendor to confirm			
16.3		Vendor to confirm			
17	ERECTION & COMMISSIONING Supplier to take full responsibility for carrying out the erection, start up, testing of machine; it's control & all types of other-supplied equipment, machining of test pieces etc. Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by supplier in their foundation/layout drawings. Other requirements like crane and helping personnel shall also be provided by BHEL. Details of these requirements should be informed by vendor in advance.	Vendor to confirm			
17.1	Successful working of full capacity of the machine by the supplier shall be considered as part of commissioning. All tests, as mentioned at clause 18 activity.	Vendor to confirm			
17.2	Tools, Tackles, instruments and other necessary equipments required to carry out all above activities should be brought by the supplier.	Vendor to confirm			
17.3	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to confirm			
17.4	All Cover Plates required for the machine and its peripherals including pits, if any, shall be supplied and installed by the vendor.	Vendor to confirm			
17.5		Vendor to confirm			

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviations(Y/N)	Remarks
17.6	Portion, if any, of the machine, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colours of paint used.	Vendor to confirm			
17.7	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to confirm			
17.8	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	Vendor to confirm			

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18	MACHINE ACCEPTANCE: (Tests/Activities should be Performed by Vendor) Tests/Activities should be carried out at supplier's works on the machine before dispatch :				
18.1	The machine should be tested for all functions at supplier works before despatch.	Vendor to confirm			
18.1.1	Demonstration of all features of the machine, control system (if applicable) & accessories.	Vendor to confirm			
18.1.2	Tests/Activities should be carried out at BHEL works while commissioning the machine :	Vendor to confirm			
18.2	Full load test to demonstrate the maximum power & bending capacity of the machine at BHEL works.	Vendor to confirm			
18.2.1	Demonstration of all features of the machine, control system & accessories to the satisfaction of BHEL for efficient and effective use of the machine.	Vendor to confirm			
18.2.2	Training of BHEL machine operators in operation of complete machine & accessories etc by the supplier's experts / engineers during their stay at BHEL works.	Vendor to confirm			
18.2.3	Demonstration by actual use of all supplied attachments and accessories to their full capacity for actual jobs.	Vendor to confirm			
18.2.4	PACKING:				
19	Sea worthy & rigid packing for all items of complete machine with all Accessories and other supplied items to avoid any damage/loss in transit. When machine is despatched in containers, all small loose items shall be suitably packed in boxes.				
19.1	GUARANTEE:	Vendor to confirm			
20	24 months from the date of acceptance of the machine at BHEL works.	Vendor to confirm			
20.1	GENERAL:				
21	Machine Model	Vendor to submit			
21.1	Total connected load (KVA):	Vendor to submit			
21.2	Floor area required (Length, Width, Height) for complete machine & accessories	Vendor to submit			
21.3	Painting of Machine / Electrical Panels : RAL 6011 Apple Green (Polyurethane Paint)	Vendor to submit			
21.4	Total weight of the machine	Vendor to submit			
21.5	Weight of heaviest part of machine	Vendor to submit			
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S No.	Description - BHEL's Requirement	Specified	Offered	Deviations(Y/N) Remarks
21.7	Weight of the heaviest assembly / sub-assembly of the Machine	Vendor to submit		
21.8	Dimensions of largest part/ sub-assembly/ assembly of the machine Vendor to submit, along with offer, reference list of customers were similar machines have been supplied mentioned broad specifications of the supplied machine i.e. Model, capacity, etc	Vendor to submit		
21.9	Detailed catalogues, sketch/photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to submit		
21.11	Hydraulic, Pneumatic & oil pipings should be preferably metallic except places where flexible pipings are essential. All the pipes required for the same shall be included in the standard scope of the machine.	Vendor to confirm		
22	Technical condition:-			
22.1	All wires are to be properly numbered/ marked in control cabinet /	Vendor to confirm		
22.2	All machine elements e.g. solenoids, switches must have identification tags.	Vendor to confirm		
22.3	All cabinet must have power point and tube lights.	Vendor to confirm		
22.4	Machine Light to be offered to provide sufficient illumination of working area.	Vendor to confirm		
22.5	Complete Erection, Installation, Commissioning & trial job provingat BHEL works is the responsibility of vendor	Vendor to confirm		
22.6	Guarantee for 2 year trouble free operation and prompt after sales service during & after guarantee period.	Vendor to confirm		
23	QUALIFYING CONDITION:-			
23.1	Only those vendors(OEMs), who have supplied and commissioned at least two hydraulic press brakes of 300 Ton or higher capacity for similar applications in the past ten years (on the date of opening of tender) and such machine are presently working satisfactorily for more than one year after commissioning (on the date of opening of tender) , should quote. . The following information should be submitted by the vendor about the companies where similar machines havebeen supplied. This is required from all thevendors for qualification of their offer.			
23.1.1	Name of the customer / company where similar machine is installed.	Vendor to Submit		
23.1.2	Complete postal.address of the customer.	Vendor to Submit		
23.1.3	Month & Year of commissioning.	Vendor to Submit		
23.1.4	Application for which the machine is supplied .	Vendor to Submit		

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S No.	Description - BHEL's Requirement	Specified	Offered	Deviations(Y/N) Remarks
23.1.5	Name and designation of the contact person of the customer.	Vendor to Submit		
23.1.6	Phone, FAX no. and email address of the contact person of the customer.	Vendor to Submit		
23.1.7	Performance certificate from the customers regarding satisfactory performance of machine supplied to them in original.	Vendor to Submit		
23.1.8	BHEL reserves the right to verify information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to Submit		
23.1.9		Vendor to confirm		

<p><i>[Signature]</i> V S Chauhan DGM(Fab)</p>	<p><i>[Signature]</i> Arjun Singh Sr Mgr. (WEX)</p>	<p><i>[Signature]</i> Y K Dhingra Sr. Engr(WEX)</p>
<p><i>[Signature]</i> R N Jha AGM (Fab)</p>	<p><i>[Signature]</i> S.J. Chakraborty AGM (WEX & TEX)</p>	<p><i>[Signature]</i> A K Shivpuri DGM(WEX)</p>