

	<b>BHARAT HEAVY ELECTRICAL LIMITED</b>		Enquiry No. :	
	<b>UNIT'S ADDRESS:</b> Centralised Stamping Unit Bharat Heavy Electricals Limited Industrial Area jagdishpur, District: Sultanpur Uttar Pradesh-227817 (India) Ph: +91-5361-271378 Fax: +91-5361-271382		Due Date :	
	<b><u>CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL (FROM PURCHASE DEPTT.)</u></b>		Supplier Qtn. No.:	
			Specification No: BHEL/CSU/RNM_TS_R0	
<b><u>SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR 12.5 TON SLOT NOTCHING PRESS.</u></b>				
	<b>NOTE:-</b>			
	1. Vendor must submit complete information against clause no. 19. The offer meeting this clause would only be processed.			
	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.			
	3. The offer and all documents enclosed with offer should be in English language only.			
<b>NAME &amp; ADDRESS OF THE SUPPLIER :</b>			<b>NAME &amp; ADDRESS OF THE INDIAN AGENT :</b>	
<b>TELEPHONE NOS.:</b>			<b>TELEPHONE NOS.:</b>	
<b>FAX NOS.:</b>			<b>FAX NOS.:</b>	
<b>E-MAIL ADDRESS :</b>			<b>E-MAIL ADDRESS :</b>	

SCOPE: SUPPLY AND COMMISSIONING OF 12.5 TON SLOT NOTCHING PRESS COMPLYING WITH SPECIFICATIONS AS FOLLOWS:					
SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	DEVIATIONS	REMARKS
1.0	<b>PURPOSE</b>				
	Heavy duty Notching Machine is required for manufacturing of circular stator and rotor lamination. The machine should be equipped with pneumatically operated friction clutch & brake unit, variable speed AC Drive, Cam Indexing Unit and Centralized oil lubrication System	Indentor			
2	<b>SPECIFICATION:</b>				
2.01	The press should be of latest design comprising all the features, which guarantee reliable service, most convenient and safe operating conditions and best quality production with least maintenance.	vendor to confirm			
2.01.01	<b>Frame:</b> It should have rugged steel fabricated frame with minimum deflection. All structures built with high quality rolled steel plates cut to shape, interlocked and welded into strong rigid box section fully stress relieved before machining to withstand high speed and repeated impact loads encountered in production. The frame should be able to ensure low vibration & noise.	vendor to confirm			
2.01.02	<b>Indexing unit :</b> The indexing Spindle unit should be driven by AC motor and Ferguson / Miksch drive unit for Stator & Rotor Notching. The number of notches shall be selected by change Gears. The drive should ensure high precision & accuracy and low vibration at high speed. The machine should have cam-indexing arrangement for indexing main spindle. It should be fitted on saddle to gets its drive directly from the crankshaft.	vendor to confirm			
2.01.03	The mounting of change gears shall be such that the gears are mounted in least possible time so a to reduce setting time, with the help of lip clutch, which will ensure uniform contact pressure.	vendor to confirm			
2.01.04	The position of notches to fixing notch should be by turnover setting device.	vendor to confirm			
2.01.05	The Slide Guide ways should be play-free and provided with pre loaded roller gibs.	vendor to confirm			
2.01.06	The machine should have Electro-pneumatically controlled single disk clutch and brake system for quick start stop without overlapping preferably ORTLINGHAUS make.	vendor to specify			
2.01.07	The main eccentric shaft should be driven by AC motor with variable speed drive and gearbox.	vendor to confirm			

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2.01.08	The Machine should have mass balancing of the entire slide drive including the upper part of the tool (tool wt. about 25 kg.)		vendor to confirm			
2.01.09	Tool loading and unloading should be done without changing the pre-set notching diameter. Clamping of tool shall be manual .		vendor to confirm			
2.01.10	Slide adjustment shall be manual.		vendor to confirm			
2.01.11	The Machine stroking shall be engaged by portable pedal switch / Hand Operated Switch.		vendor to confirm			
2.01.12	The oil Lubrication system should be automatic re-circulating type with pump & filtration system with electronic monitoring, with lubricant at all rotating points.		vendor to confirm			
2.01.13	The controls should be Electro-pneumatic with latest safety standard.		vendor to confirm			
2.01.14	Provision for Digital read out system for conveniently adjusting of indexing spindle so that resetting of thae same job can be done in minimum time . Vernier Scale also to be provided for diameter adjustment.		vendor to confirm			
2.01.15	Arrangement should be provided for easily loading and unloading of tool on press.		vendor to specify			
2.01.16	The cam switch to be of reputed make preferably BALLUFF make.		vendor to confirm			
<b>3</b>	<b>PERFORMANCE</b>					
3.01	The Machine should be able to give the guaranteed performance as specified in Clause No. 4		vendor to confirm			
3.02	Accuracy test chart of the press offered should be furnished with the offer.		vendor to confirm			
3.03	The test & Calibration of Machine should be confirmed to relevant standard.		vendor to confirm			
3.04	The Notching accuracy should achieve within +/- 0.05 mm per 500 diameter of laminations.		vendor to confirm			
<b>4</b>	<b>TECHNICAL REQUIREMENTS</b>					
4.01	Capacity	125 KN	vendor to confirm			
4.02	Lamination Thickness	0.5 to 1.6 MM	vendor to confirm			
4.03	Depth of Throat	300 MM	vendor to confirm			
4.04	Maximum Lamination Diameter	1400 MM	vendor to confirm			

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4.05	Stroke of Slide	25 MM	vendor to confirm			
4.06	Slide Adjustment	25 MM	vendor to confirm			
4.07	Slide Area LR x FB	320x150 MM	vendor to confirm			
4.08	Slide Lift	10 MM	vendor to confirm			
4.09	Spigot Diameter	32H7x25 MM	vendor to confirm			
4.10	Shut Height over bolster (SDAU)	240 MM	vendor to confirm			
4.11	Distance from Top of Bolster to Top of Blank Locator	70 MM	vendor to confirm			
4.12	Height From Floor to Top of Bolster	950 MM	vendor to confirm			
4.13	Minimum Number of Slots / Circle	11 slot	vendor to confirm			
4.14	Maximum Number of Slots / Circle	192 slots	vendor to confirm			
4.15	Maximum Stator Slot Size	30 x 150 MM	vendor to confirm			
4.16	Maximum Rotor Slot Size	40 x 220 MM	vendor to confirm			
4.17	Stroking speed	200-600 SPM	vendor to confirm			
<b>4.18</b>	Air Pressure Requirement		vendor to Specify			
<b>4.19</b>	<b>Air Compressor Unit</b>		Vendor to confirm			
	Air compressor, air dryer, air reciever, connecting hoses/pipes, valves, pressure switches etc. of suitable type and capacity to be supplied along with the machine. The air delivery of compressor shall meet all the air requirement of machine. Vendor to ensure the quality of air supplied by compressor shall be suitable to machine under operation. all pressure valves, pressure guages, pressure switches, hose pipes, pneumatic controls etc. required for smooth and trouble free running of compressor shall be provided by the vendor. vendor to include spares for two years of trouble free working of air compressor in his offer.		vendor to confirm			
<b>5</b>	<b>Electrical Supply &amp; Controls</b>					
5.01	The press to be suitable for operation on 415 volts +/- 10%, 3-phase, 3 wire , 50 HZ +/- 3% AC supply.		vendor to confirm			

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5.02	The necessary transformer for stepping down to lower voltages for controls etc. fuses; terminals, bars, contactor, indicators pilot lamps and other auxiliaries are to be included. Controls should also included provision for operating each unit through push buttons, schematic and other technical details for these are to be forwarded with the quotation.	vendor to specify			
5.03	Suitable isolation transformer for main supply to be included with the specification.	vendor to specify			
5.04	The connections should be made through Terminal board. Supply to be complete with all inters connecting piping and wiring. Only the main cable for giving 415 volts +/- 10%, 3-phase, 3 wire 50 HZ +/- 3% AC supply upto the main supply terminals in the press offered will provided by us. The size of the cable and the total power requirement are to be detailed in the offer.	vendor to confirm			
5.05	All controls and elements electrical and electronic circuits are to be grouped together and located in the control panel. The control cabinet housing all the electrical controls and other components should be provided with a key lock to obviate the risk on unauthorized tampering.	vendor to specify			
5.06	Control panel wiring to be made by standard copper conductor PVC pipe with ferrule. The press lighting should be suitable for 220 volts supply.	vendor to specify			
5.07	The motors should be reputable make such as Siemens / Indramat.	vendor to confirm			
5.08	The motors should have the requisites control gear and protection like overload protection, and under voltage protection, single phase prevention device etc.	vendor to confirm			
<b>6</b>	<b>MAINTENANCE</b>				
6.01	All the parts of the press should have easy accessibility for maintenance work, lubrication inspection and repair work without need for excessive dismantling	vendor to specify			
6.02	Any special tools required for maintenance and repair of the press should be indicated and quoted separately with item wise price details.	vendor to specify			
6.03	Set of spare parts list with specification including all spares required for servicing and maintenance for a time of approx. 2 years should be quoted.	vendor to specify			
6.04	Necessary guard and protection covers should be provided to protect the press against dirt and dust.	vendor to specify			
6.05	Safety guard electronic / mechanical for safety of operator to be provided.	vendor to confirm			

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<b>7</b>	<b>LUBRICATION</b>					
7.01	The press should be provided with suitable lubrication system for effective lubrication. Details of lubricating system provided and the type of lubricating oil / grease to be used are to be furnished along with the offer. Lubrication colour code is to be displayed at suitable location in the press. Number of oiling / greasing points etc. are also to be indicated in respective location as per the above code.		vendor to specify			
<b>8</b>	<b>TROPICALIZATION</b>					
8.01	All electrics including CNC should be suitably tropicalised to relevant Indian Standards to work under the ambient temperature varying from 5° C to 50°C and relative humidity upto 100% maximum. The digital read out unit should be properly ventilated. The cooling requirements of digital read out unit should be indicated.		vendor to confirm			
<b>9</b>	<b>SAFETY</b>					
9.01	Suitable electrical and mechanical interlocks, limit switches, overload protection, etc. should be incorporated in the press wherever necessary to prevent the press from damage and for the safety of operator in case of inadvertent operation / malfunctioning of the press.		vendor to confirm			
9.02	Suitable safety device should be provided for longitudinal vertical and transverse movements to prevent engagement of any of them if the respective slide has been locked.		vendor to confirm			
9.03	All moving parts should be covered by hinged guards		vendor to confirm			
9.04	All the motor starters should be provided, with single-phase prevention device of reputable make in addition to normal voltage and over load protection.		vendor to confirm			
<b>10</b>	<b>SPARES&amp; SERVICES , ACCESSORIES:</b>					
<b>10.01</b>	<b>SPARES&amp; SERVICES:</b>					
10.01.01	Item wise breakup of mechanical, electrical and electronic spares used on the press in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation on three shifts continuous running basis should be offered by vendor. <b>(Unit Price of each item of spare should be offered)</b>		vendor to confirm			

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10.01.02	All types of spares along with Service back up for total press machine and accessories should be available for <b>atleast ten years</b> after supply of the notching press. If press or control is likely to become obsolete in this period, the vendor should inform BHEL sufficiently in advance and provide drawings of parts / details of spares. Suppliers to enable BHEL to procure these in advance, if required.	vendor to confirm			
10.01.03	The after sales service backup should be provided by the supplier at least for 10 years for trouble free service of the notching press.	vendor to confirm			
10.01.04	Vendor to confirm that complete list of spares for press 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			
<b>10.02</b>	<b>ACCESSORIES: following essential accessories shall be supplied along with</b>	vendor to confirm			
10.02.01	Pneumatic Blank Holder	vendor to confirm			
10.02.02	Adjustable Height Bolster	vendor to confirm			
10.02.03	Blank Lubrication Unit	vendor to confirm			
10.02.04	PLC (Preferably Mitsubishi or equivalent make) for Skip Notching	vendor to confirm			
10.02.05	Automatic Pneumatic Blanking Stripping Device	vendor to confirm			
<b>11</b>	<b>DOCUMENTATION :</b>				
	Following details in English should be included in the offer. (4 copies each)	vendor to confirm			
11.01	General arrangement drawing of the press showing the following details: -	vendor to specify			
11.01.01	Construction features, dimensional details and capacities of the items, details of accuracy / alignment etc. Accuracy test chart of the press offered should be furnished.	vendor to specify			
11.01.02	Foundation drawings showing all details of press foundations as well as loading data.	vendor to specify			
11.01.03	Operators manual consist of technical specifications, transportation and installation, Safety instruction, Operating instructions and Maintenance instructions.	vendor to specify			
11.01.04	Details and type of lubrication and hydraulic circuit diagram. Make of hydraulic valve etc.	vendor to specify			
11.01.05	Details of pneumatic circuit diagram.	vendor to specify			

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11.01.06	List of wear and spare parts.	vendor to specify			
11.01.07	Drawings for component related accessories.	vendor to specify			
11.01.08	Electrical Circuit Diagram.	vendor to specify			
11.01.09	Catalogue for bough out items with details, specifications and maintenance manual should be provided.	vendor to specify			
11.01.10	List of electrical units and cam development.	vendor to specify			
<b>12</b>	<b>PAINTING</b>				
12.01	The machine should be painted to DIN RAL 6011 apple green.	vendor to confirm			
<b>13</b>	<b>MISCELLANEOUS</b>				
13.01	The entire press is to be completely tested and inspected before dispatch of machine at Supplier's works and four copies of test and inspection guarantee certificates are to be provided. BHEL Engineers may witness the test and inspection of the machine before diapatch of the machine.	vendor to confirm			
13.02	Four copies of descriptive leaflets technical literature drawings electrical wiring diagram. Hydraulic circuit diagrams and spare parts manuals, drawings details for erection and commissioning of the press and for sub-assemblies of the machine should be supplied. Two copies of each of these are to be forwarded within four weeks of placing of Purchase Order.	vendor to confirm			
13.03	Fault Indicator & remedial action guide manual should be supplied.	vendor to confirm			
13.04	The Notching Press should be trouble free from frequent problem of play in ram slide assembly.	vendor to confirm			
<b>14</b>	<b>INSPECTION AND TEST</b>				
14.01	Accuracy and performance test to be demonstrated to BHEL Engineers during pre acceptance test at supplier works and during commissioning at BHEL works.	vendor to confirm			



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<b>15</b>	<b>TRAINING:</b>					
15.01	Training facilities to Mechanical, Electronic maintenance and Operating personnel to be provided at BHEL works minimum for Two Weeks with in the I&C period by qualified personel of vendor.		vendor to confirm			
<b>16</b>	<b>PACKING:</b>					
16.01	Sea worthy & rigid packing for all items of complete machine , all accessories and other supplied items to avoid any damage/loss in transit. When machine is despatched small loose items should be suitably packed in boxes.		vendor to confirm			
<b>17</b>	<b>FOUNDATION:</b>					
	Vendor shall submit the Layout & Foundation drawing within one month from the date of Letter of Intent (LOI) / P.O. Layout should contain layout of the machine and load points including details viz. static / dynamic load details etc. The layout should consist of all requirements pertaining to complete machine including space requirement for Air compressor & any other accessories. Foundation of the machine will be designed & Constructed by BHEL. Vendor shall supervise the construction of foundation if he requires so. all the foundation bolts, insert plates, anchor fasteners, cover plates etc. shall be supplied by the vendor.		vendor to confirm			
<b>18</b>	<b>ERECTION &amp; COMMISSIONING &amp; JOB PROOVING:</b>					
18.01	Supplier to take full responsibility for carrying out the complete erection & commissioning , start up, testing of press, it's control system & all types of other supplied equipments. Service requirement like power, shall be provided by BHEL at only one point to be indicated by supplier in their foundation/layout drawings.The first fill of oil & grease to be provided by vendor. 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			
18.02	Supplier to take full responsibility for Prooving of the machine at BHEL Plant for the intended Job (Notching of Slots for various Profiles of stampings etc.) as specified by BHEL adhering to the desired accuracy and precision.		vendor to confirm			
18.03	Special Tools, Tackles, instruments and other necessary equipment if required to carry out all above activities should be brought by the supplier.		vendor to confirm			
18.04	Commissioning spares required for commissioning of the notching press within stipulated time, should be brought by the supplier on returnable basis.		vendor to confirm			

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18.05	Portion, if any, of the press, 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			
18.06	Schedule of Erection and commissioning shall be submitted with the offer .	vendor to specify			
18.07	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	vendor to specify			
18.08	Free after sale services should be ensured periodically .	vendor to confirm			
<b>19</b>	<b>QUALIFYING CONDITIONS :</b>				
19.01	Only those vendors, who have supplied and commissioned at least one Notching press of same or higher sizes (as per clause no.4) for similar applications in the past ten years and such press is presently working satisfactorily for more than one year after commissioning (as on date of opening of tender), should quote. Vendor to provide the performance report from the customer for its satisfactory working after its commissioning as above. further following information is to be submitted by the vendor about the companies where similar press have been supplied. This is required from all the vendors for qualification of their offer.	vendor to confirm & Submit			
19.01.01	Name of the customer / company where similar notching press is installed.	vendor to submit			
19.01.02	Complete postal address of the customer.	vendor to submit			
19.01.03	Month & Year of commissioning.	vendor to submit			
19.01.04	Name and designation of the contact person of the customer.	vendor to submit			
19.01.05	Phone, FAX no. and email address of the contact person of the customer.	vendor to submit			
<b>20</b>	<b>GUARANTEE :</b>				
20.01	The press is to be guaranteed in respect of design material construction, operation and against any manufacturing defects for a period of 18 months from date of shipment / supply or 12 months from date of commissioning whichever is later. Free after sales service is to be provided during the guarantee period.	vendor to confirm			

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21	<b>GENERAL : THE VENDOR SHOULD SUBMIT THE FOLLOWING INFORMATION.</b>				
21.01	Total weight and dimension of the press , space requirement to install .	vendor to specify			
21.02	Vendor to submit, along with offer, the reference list of customers where similar notching presses have been supplied mentioning the customer, major specifications of the supplied notching press , Year of Supply etc	vendor to specify			
21.03	Floor area required (Length, Width, Height) for complete notching press & accessories	vendor to specify			
21.04	Total Electrical power requirement of machine	vendor to specify			