

Heavy Power Equipment Plant,  
**Bharat Heavy Electricals Limited,**  
 Ramachandrapuram -502032, Hyderabad, INDIA.

Enquiry No. & Dt.:	
Due Date :	
Supplier's Ref.:	
Date :	

**Specification cum Compliance Certificate for 100T Hydraulic Press**

**Note:-**

1. Vendor must submit complete information against **clause no. 20.0** 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.

Name & Address of the supplier:

Name & Address of the Indian Agent:

Telephone No.

Telephone No.

Fax No.

Fax No.

e-mail :

e-mail :

**Scope: Supply, Erection & Commissioning of 100T Hydraulic Press complying with the following specification**

SNO	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATIONS	REMARKS
1.0	TYPE	Four Pillar type down stroking Hydraulic press with motorised moving table (Trolley).			
1.1	PURPOSE	For assembly / pressing of Lower Journal Housings in to the Grinding Rolls, Removal of Upper Journal Housing Bearings, Bevel shaft & Bevel gears, Bottom cover, Pinion shaft assembly(PGB) & pressing of lower bearing races in Journal assemblies etc.			
1.2	Component loading / Unloading details	The Hydraulic press shall be provided with a loading platform arrangement for moving the motorised trolley / table with four wheels above the bottom frame so that components loading / unloading can be loaded by crane and moved in to the press (working area) for pressing.			

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<b>2.0</b>	<b>TECHNICAL PARAMETERS :</b>				
2.1	Ram Capacity: (Forward):	1000KN (100T)			
2.2	Ram Capacity: (Return):	360KN (36T)			
2.3	Daylight	1200mm			
2.4	Cylinder Bore/Ram dia.	ø250/200mm			
2.5	Main Cylinder should be Hydraulic Double acting. The ram should be ground and hard chrome plated.	Vendor to confirm.			
2.6	Ram Stroke:	200mm (Min)			
2.7	<b>Ram Speeds:</b>				
	a) Approach	25 mm/sec (min)			
	b) Pressing	1 to 3 mm/sec			
	c) Return	45 mm/sec (Min)			
2.8	Mode of operation: Push Button / Selector switch / Control logic (Manual Mode)	In Inch and single cycle through selector switch			
2.9	Ram should be independently controlled through their hold to run manual (INCH) push button.	Vendor to confirm.			
2.10	Working Pressure	Vendor to specify			
2.11	Max. Pressure:	Vendor to specify			
<b>2.12</b>	<b>Power Pack Unit with push button opted :</b> The Power Pack, Oil Tank together with pumps shall be of International Reputed make. The Pump shall be driven by separate Electric motor and is mounted outside the tank for easy maintenance and inspection. The power pack shall be of manifold design to avoid all piping except input and out feed pipes to respective cylinders.	Vendor to specify & furnish the details of all items of power pack along with their rating & make.			
2.12.1	Type and capacity of Hydraulic pumps - Radial Piston/Axial Plunger & Vane/Gear pumps (flow / pressure)	Vendor to Specity			
2.12.2	Type and capacity of electric motor & RPM	Vendor to Specity			
2.12.3	Oil tank capacity	350 Lts. (Min)			
2.12.4	Out put (Oil flow - LPM)	Vendor to Specity			
2.12.5	Oil level indicator on the power pack shall be on the operator side.	Vendor to confirm.			
2.12.6	Filtration System, Details to be submitted.	Vendor to Specity			
2.12.7	Pressure gauges of Glycerin filled (Type, Make & Capacity/Rating)	Vendor to Specity			
2.12.8	The power pack should have all types of valves & gauges (i.e. Directorial control valves, flow control valves, pressure relief valves, oil level gauges, pressure gauges, Oil temp gauges), suction strainers, return line filters etc.	Vendor to confirm.			

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2.12.9	Hydraulic & 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.			
<b>2.13</b>	<b>Motorised Working Table (Moving table) with a pair of drive wheels &amp; a pair of idle wheels.</b>				
2.13.1	Table size	1600mm x 1600mm (Min)			
2.13.2	Table load carrying capacity	15T (Min)			
2.13.3	Capacity of Electric motor for moving table (trolley)	Specify			
2.13.4	Sliding / moving speed of table (Trolley)	50mm/Sec (Min)			
2.13.5	Table center should be indicated with two slots of suitable size on two axes (X&Y) for loading the components / jobs exactly at the center of table for uniform pressing & proper assembly of them.	Vendor to confirm.			
2.13.6	Motorised Working Table (Moving table) should be built in with hydraulic single acting lift cylinder units (4 Nos.) below the wheels to avoid load of the press on trolley wheels and to collapse while moving the table for loading / unloading.	Vendor to confirm.			
2.13.7	Double acting clamping cylinder units (4 Nos.) shall be provided to locate table in the press centre.	Vendor to confirm.			
<b>2.14</b>	<b>Ram should be provided with cap / adopter / Top Table for pressing the components.</b>	Vendor to confirm.			
2.14.1	a) Top Table Size (B x L)	800mm x 1000mm			
	b) T-slot in Top table	T 28			
	c) Distance between T-slots of top table	200mm			
	d) The movement of Top Table shall be guided with two guiding pins with in the top frame.	Vendor to confirm.			
2.14.2	Round Adopter of suitable size	Vendor to confirm & Specity the size.			
<b>2.15</b>	<b>Control system :</b>				
2.15.1	The whole unit shall have automatic controls as well as manual operation. A suitable pendent control is to be provided so that the press can be operated from any position from front side. This pendent to be hanged from a separate pillar about 4 ft. away from press. An down stroke inching device should also be provided.	Vendor to confirm.			
2.15.2	Push Button operated manipulation shall be incorporated in the electrical control system to ensure the safety of the operator.	Vendor to confirm.			

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3.0	<p><b>Consturction details:</b></p> <p>a) The Top &amp; Bottom frames (Fixed) are connected with Four Pillars (Tie rods).</p> <p>b) Ram head assembly should be housed in the top frame.</p> <p>c) Mechanism for motorised moving Table (Trolley) and loading platform arrangement should be in the bottom frame so that components loading / unloading can be done by crane and moved in to the press for pressing.</p> <p>d) Vendor to furnish details of materials, hardness &amp; constructional details, including explanatory drawings of various components / sub-assemblies like Ram head, Moving table, Table guide ways, Transmission system, Hydraulic &amp; Lubrication system, Feed back system etc.</p>	Vendor to confirm.			
3.1	<b>Top Frame</b>				
3.1.1	The top frames are shall be fabricated with standard steel plates <b>confirming to Fe410W</b> . The fabricated frames shall be properly Stress relieved and checked for weld defects before machining. The top frame shall be housed with Ram / Cylinder head assembly and frame shall be designed to with stand the load of 120% of rated capacity & machined to close tolerance so that long lasting accuracies are ensured.	Vendor to confirm.			
3.2	<b>Bottom Frame</b>				
3.2.1	The Bottom frames shall be fabricated with standard steel plates <b>confirming to Fe410W</b> . The fabricated frames shall be properly Stress relieved and checked for weld defects before machining. Mechanism for motorised moving Table (Trolley) and loading platform arrangement should be in the bottom frame so that components loading / unloading can be done by crane by moving table out side the frame and moved in to the press for pressing. The frame shall be designed to withstand uneven loading & machined (Including platform guide ways) to close tolerance so that long lasting accuracies are ensured.	Vendor to confirm			
3.3	<b>Pillers / Tie Rod:</b>				
3.3.1	The top frame, bottom frame are to be connected with solid Pillers / tie rods of sufficient cross section.	Vendor to confirm			
3.4	<b>Main Cylinder :</b>				

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3.4.1	The Main Cylinder shall be double acting type, machined from solid steel bar (ST42W / C40 / En8D / ASTM A 106 Grade B) and honing shall be carried out to improve the surface finish and to enhance the life of Piston Head and Oil Seals. The Seal Box shall be manufactured from Standard Solid Steel Bars. The Phosphor Bronze Guide Bushes or poly urithin guide tapes shall be fitted in the seal box and are machined and polished precisely for the smooth movement of the main Ram. Grooves are provided in the bush for the lubrication of the Main Ram and for the equal application of the pressure on the oil seals.	Vendor to confirm.			
<b>3.5</b>	<b>Ram :</b>				
3.5.1	The Ram shall be made from ultrasonically tested solid alloy Forged Steel and hardened / hard chrome plated & ground / super finished for better surface finish. The piston head and seal box are fitted with good quality Oil Seals. A wiper shall be provided in the seal box to clean the Ram from dust and foreign particles during the movements and to avoid the Ram from getting damaged.	Vendor to confirm.			
3.6	The press shall be a rigid and well designed frame support.	Vendor to confirm.			
3.7	The material used for construction of the press should be good tested quality material and of sufficient thickness.	Vendor to confirm.			
3.8	All the seals used in the hydraulic system shall be of good quality & long life material.	Vendor to confirm.			
3.9	First filling of all required Oils & Grease etc. to be supplied by vendor. Indigenous (Indian) source or Indian equivalent and specifications of oils/ greases are also to be provided by the vendor.	Vendor to confirm.			
<b>4.0</b>	<b>Indications on the control pannel :</b>				
4.1	Failure indication (Motors, Hydraulic Pumps, Filtration system etc.)	Required			
4.2	Automatic shut off provision, Details to be submitted.				
4.3	Moving table not in-side the press				
4.4	Component not located and clamped properly.				
4.5	Over load indication				
4.6	A wire mesh guard doors opening all around the machine.				
4.7	Any other malfunctioning or mistakes.				

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<b>5.0</b>	<b>ELECTRICAL SYSTEM :</b>				
5.1	415V(fluctuation + 10% / -10%), 50HZ (fluctuation+/-3 Hz), 3 Phase AC (3 wire system with out neutral) Power Supply Source 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.			
5.2	Tropicalisation: All electrical / electronic equipment shall be tropicalized	Vendor to confirm.			
5.3	All electrical & electronic control cabinets & panels should be dust and vermin proof	Vendor to confirm.			
5.4	Motors shall conform to IEC or Indian Standards	Vendor to confirm.			
5.5	Vendor should ensure the proper earthing for the machine and its peripherals.	Vendor to confirm.			
5.6	Electrical Controls : All controls shall be provided on ergonomically designed centralised control panel. All operations shall be through Logic Control. The selector switch shall select the mode of operation. All electrical controls like motor starter, fuses, contactors, MCBs, single phase preventor etc. are neatly housed in a separate electrical control cabinet. Operation controls are provided to operate the machine in inch and single cycle mode, selectable through selector switch. Limit swiches are provided for adjusting stroke of the main cylinder.	Vendor to confirm.			
<b>6.0</b>	<b>SAFETY ARRANGEMENTS:</b> Following safety features in addition to other standard safety features should be provided on the machine:	Vendor to confirm.			
6.1	Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, workpiece and the operator due to the malfunctioning or mistakes. Alarm / warning indications should be available.	Vendor to confirm.			
6.2	All the pipes, cables etc. on the machine should be well supported and protected.	Vendor to confirm.			
6.3	Emergency Switches at suitable locations as per International Norms shall to be provided.	Vendor to confirm.			
6.4	Emergency switch shall be provided on auxiliary pendant for easy accessibility of the operator	Vendor to confirm.			

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6.5	Oil pipe lines should not run with electrical cable in the same tray / trench.	Vendor to confirm.			
6.6	Any conduit or hydraulic line in front of the press shall be avoided.	Vendor to confirm.			
6.7	All safety interlocks such as pressing cycle should not start incase the sliding table is not in-side the press / component is not located and clamped properly.	Vendor to confirm.			
6.8	A wire mesh guard of suitable gauge with opening doors shall be provided all around the machine to protect the operator from causing any accidents.	Vendor to confirm.			
6.9	Overload relay trip	Vendor to confirm.			
<b>7.0</b>	<b>ENVIRONMENTAL PERFORMANCE OF THE MACHINE :</b> The Machine shall conform to following factors related to environment				
7.1	(a) No hazardous chemicals shall be required to be used in the machine.	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.			
<b>8.0</b>	<b>SPARES:</b>				
8.1	Itemised breakup of mechanical, hydraulic, electrical and electronic spares used on the machine in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation should be offered by vendor. The list to include following, in addition to other recommended spares: <b>(Unit Price of each item of spare should be offered)</b>	Vendor to confirm & specify the list of spares			
8.2	<b>a) Mechanical &amp; Hydraulic Spares:</b> All types of Valves, All types of pressure switches / transducers, All types of filters, All types of seals	Vendor to confirm & specify the list of spares			
8.3	<b>b) Electrical /Electronic :</b> All types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers.	Vendor to confirm & specify the list of spares			
8.4	All types of spares for total machine and accessories should be available for atleast ten years after supply of the machine. If machine 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.			

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8.5	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.			
<b>9.0</b>	<b>DOCUMENTATION :</b> Three sets of following documents (Hard copies) in English language should be supplied along with the machine	Vendor to confirm.			
9.1	Operating manuals of Machine				
9.2	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Pneumatic/Hydraulic circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also				
9.3	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.				
9.4	Detailed specification of all rubber items and hydraulic/lube fittings				
9.5	Complete Master List of parts used in the machine shall be submitted by the vendor.				
9.6	One additional set of all the above documentation on CD ROM, wherever possible.				
<b>10.0</b>	<b>TRAINING:</b>				
10.1	BHEL Persons should be trained at supplier's Works during PDI period in the area of (a) Mechanical, Electrical, Electronic & Hydraulic maintenance for machine & other supplied equipments (b) Operation of the machine & other supplied equipments.	Vendor to confirm.			
<b>11.0</b>	<b>LAY OUT DRAWINGS &amp; FOUNDATION:</b>				
11.1	Vendor shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of Letter of Intent (LOI)/ P.O. Soil condition data will be furnished by BHEL alongwith the approval. Complete Foundation Design including details, like Static/ Dynamic load details etc. and final Layout Drawings shall be submitted by the supplier within three months after getting BHEL's approval. The Layout should consist of all requirements pertaining to complete machine and all accessories. BHEL shall construct complete foundation for the machine under supervision of supplier and at supplier's responsibility. Vendor should arrange equipment required for the testing of foundation, if required by the vendor. The vendor shall also indicate detailed specifications of grouting compound and grouting procedure etc. for foundation bolts of the machine.	Vendor to confirm.			

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11.2	Complete anchoring system including foundation bolts, anchoring materials, Fixators, leveling shoes etc. should be supplied by the vendor.	Vendor to confirm.			
<b>12.0</b>	<b>ERECTION &amp; COMMISSIONING</b>				
12.1	Supplier to take full responsibility for carrying out the erection, start up, testing of machine, it's control system & all types of other supplied accessories / equipment etc. Service requirement like power & air 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.			
12.2	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned at <b>clause 16</b> (Machine Acceptance) shall form part of the commissioning activity.	Vendor to confirm.			
12.3	Tools, Tackles, instruments and other necessary equipment required to carry out all above activities should be brought by the supplier.	Vendor to confirm.			
12.4	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.			
12.5	Schedule, duration, terms & conditions for Erection and Commissioning shall be submitted with the offer.	Vendor to confirm.			
<b>13</b>	<b>PAINTING</b>				
13.1	Painting of Machine/ Electrical Panels: RAL 6011 Apple Green (Polyurethane Paint)	Vendor to confirm.			
<b>14.0</b>	<b>OPERATING CONDITIONS &amp; THERMAL STABILITY :</b>				
14.1	Total machine and all supplied items should work trouble free and efficiently under following operating conditions. Power Supply: Voltage: 415 V $\pm$ 10%, Frequency: 50 Hz $\pm$ 3%, No. of phases = 3 Ambient Conditions: Temperature = 5 to 45 degree celsius Relative Humidity = 95% max.	Vendor to confirm.			
14.2	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. Machine shall be kept in the normal shop floor condition. Max. temperature variation is up to 25 deg Celsius in 24 hours.	Vendor to confirm.			
14.3	Thermal Stability of the complete machine keeping in view specified Ambient Conditions, trouble free operation of the machine should be ensured by vendor.	Vendor to confirm.			

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<b>15.0</b>	<b>PROVEOUT OF BHEL COMPONENTS :</b>				
15.1	Vendor shall be fully responsible for proveout of BHEL components and other requirements specified by BHEL to the full satisfaction of BHEL. Clarifications, if any required by vendor, regarding the proveout components, whether specified or not, should be discussed and cleared by vendor during initial technical discussions.	Vendor to confirm.			
<b>16.0</b>	<b>MACHINE ACCEPTANCE: (Tests/Activities TO be Performed by Vendor)</b>	Should be accepted & confirmed by Vendor			
<b>16.1</b>	<b>Tests/Activities should be carried out at supplier's works on the machine before dispatch :</b>				
16.1.1	Demonstration of all features of the machine and all Accessories.	Vendor to confirm.			
16.1.2	Geometrical Accuracy Tests	As per IS 14877 (Part-1)			
16.1.3	Performance test	As per IS 14877 (Part-2)			
16.1.4	Full load & 120% load test to demonstrate the maximum power and capacity of the machine. Vendor to supply test piece.	Vendor to confirm.			
<b>16.2</b>	<b>Test to be carried out at BHEL works while commissioning the machine :</b>				
16.2.1	Geometrical Accuracy Tests	As per IS 14877 (Part-1)			
16.2.2	Performance test	As per IS 14877 (Part-2)			
16.2.3	Demonstration by actual use of all supplied accessories to their full capacity.				
16.2.4	Full load & 120% load test to demonstrate the maximum power and capacity of the machine.	Vendor to confirm.			
16.2.5	Job prove out as per clause no.15.1.	Vendor to confirm.			
16.2.6	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.			
<b>17.0</b>	<b>PACKING:</b>				
17.1	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 in containers, all small loose items shall be suitably packed in boxes.	Vendor to confirm.			
<b>18.0</b>	<b>GUARANTEE :</b>				
18.1	As per BHEL terms & conditions.	Vendor to confirm.			
<b>19.0</b>	<b>GENERAL : The vendor should submit the following information:</b>				
19.1	Machine Model No.	Vendor to Specify			

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19.2	Total connected load (KVA):	Vendor to Specity			
19.3	Overall approx. dimension / Floor area required (Length, Width, Height) for complete machine & accessories	Vendor to Specity			
19.4	Painting of Machine/ Electrical Panels: RAL 6011 Apple Green (Polyurethane Paint)	Vendor to confirm.			
19.5	Total weight of the machine	Vendor to Specity			
19.6	Weight of heaviest part of machine	Vendor to Specity			
19.7	Weight of the heaviest assembly/ subassembly of the Machine	Vendor to Specity			
19.8	Dimensions of largest part/ subassembly/ assembly of the machine	Vendor to Specity			
19.9	Vendor to submit, along with offer, the reference list of customers where similar machines have been supplied mentioning the customer, Machine Model, major specifications of the supplied machine, Year of Supply etc	Required			
19.10	Detailed catalogues , sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to confirm.			
19.11	Technical offer must have 3 view GA drawing of the offered Press with complete details of parts / components, Gear box details of moving table and calculations in selecting the power pack, motor ratings etc.	Vendor to confirm.			
<b>20.0</b>	<b>QUALIFYING CONDITIONS :</b>				
20.1	Only those vendors( <b>OEM's</b> ), who have supplied and commissioned at least one HYDRAULIC PRESS of same or higher capacity for similar applications in the past ten years (On the Date of opening of tender) and such machine is presently working satisfactorily for more than one year after commissioning (On the Date of opening of tender) , should quote. The following information is to be submitted by the vendor about the companies where referred machines have been supplied. This is required from all the vendors for qualification of their offer.	Vendor to accept & confirm.			
	1. Name of the customer / company where referred machine is installed.	Vendor to inform.			
	2. Complete postal address of the customer.	Vendor to inform.			
	3. Month and year of commissioning.	Vendor to inform.			
	4. Parameters / capacity of machine(s) supplied and application for which the machine is supplied..	Vendor to inform.			
	5. Name and designation of the contact person of the customer.	Vendor to inform.			

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	6. Phone, FAX no. and email address of the contact person of the customer.	Vendor to inform.			
	7. Performance certificate from the customers regarding satisfactory performance of machine supplied to them (Original certificate or Through E-mail directly from the customer). The Original performance certificate may be returned after verification by BHEL, if required.	Vendor to submit.			
	8. BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to accept & confirm.			
<b>21.0</b>	<b>DELIVERY</b>	Vendor to Specity			