An ISO 9001 Company

Bharat Heavy Electricals Limited
(High Pressure Boiler Plant**)**
Tiruchirappalli – 620014, TAMIL NADU, INDIA
CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY **NOTICE INVITING TENDER**	Phone: +91 431 257 79 38 Fax : +91 431 252 07 19 Email : tvenkat@bheltry.co.in Web : www.bhel.com

TWO PART BID Tender to be submitted in two Parts	**Enquiry Number:** **2620900205**	**Enquiry Date:** **23.09.2009**	**Due date for submission of quotation:** **02.11.2009**

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order

Please note that under any circumstances both **delayed offer** and **late offers** will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 hrs on the date of tender opening.

Item	Description	Quantity
10	**600 Ton Goose Neck Hydraulic Press for Bow Correction** as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	**1 No**.

Important points to be taken care during submission of offer:

1. **Delivery required 12 months from the date of purchase order.**
2. **Grace period of 3 months beyond the above delivery period will be considered.**
3. **Check-list to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.**

BHEL's General guidelines / instructions including bank guarantee formats and list of consortium banks, Commercial terms check-list can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website http://tenders.gov.in (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference "2620900205".

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED Manager / Capital Equipment / MM

PART A.

QUALIFYING CRITERIA FOR THE SUPPLY OF 600 Ton CAPACITY GOOSE-NECK ['C' Frame] HYDRAULIC PRESS

SECTION – I : COMPANY PROFILE

The BIDDER is requested to provide details listed in the table given below :

S.No.	PARTICULARS	VENDOR's RESPONSE
1.0	Number of Years of Experience of the BIDDER [OEM - Original Equipment Manufacturer] in the field of Design, Manufacture, Supply and Commissioning of Hydraulic Presses.	
2.0	Number of Hydraulic Presses supplied and installed till date in the following category (Classification based on CAPACITY) with details on customers : a) Above 500 Tons b) Upto 500 Tons	
3.0	Details on International Standards or Codes followed in the Design of Presses	[Elaborate Details are to be compulsorily provided]
4.0	Details of Manufacturing Facilities : a) Fabrication Facilities b) Heat Treatment Facilities c) Heavy Machining Facilities d) Assembly & Load Testing Facilities	
5.0	Details of Quality System (with Stages of Internal Inspection) followed for the Fabrication and Non-Destructive Testing (NDT) of Weldments	
6.0	Details on AFTER-SALES-SERVICE Set-Up in INDIA for providing timely service support to BHEL	

SECTION – II : QUALIFYING CRITERIA

The BIDDER has to meet the following requirements to get qualified for submitting an offer for 600 Ton GOOSE NECK ('C' Frame) HYDRAULIC PRESS:
[Additional Sheets shall be attached with the OFFER, to provide requisite details]

S.No.	REQUIREMENTS	BIDDER's RESPONSE
7.0	Only those BIDDERs (OEMs), who have supplied and commissioned at least five Down-Stroking type Hydraulic Press of 500 Ton or above capacity, for cold or hot working in a Heavy Fabrication / Forging Shop. The Press should presently be working satisfactorily for more than one year after commissioning & acceptance . The following information should be submitted by the vendor about the companies where similar presses have been supplied.	
8.0	Name of the Customers / Companies where such Presses are installed.	
9.0	Complete Postal Address of the Customers.	
10.0	Year of Commissioning for such Presses.	
11.0	Parameters of the Presses supplied (parameters as mentioned in **Clause 7.0** above) and application for which the presses are supplied.	
12.0	Name and designation of the contact person of the Customer(s).	
13.0	Phone No., FAX No. and E-mail address of the contact person of the Customer(s).	
14.0	Performance Certificate from two customers regarding satisfactory performance of the Press 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 by the Bidder. A model format of the Performance Certificate is given on Page 4.	

SECTION – III : BID / OFFER FORMAT

The BIDDER has to note the following :

S.No.	REQUIREMENTS	BIDDER's COMPLIANCE
15.0	The BIDDER shall submit the offer in TWO PARTS - Technical [with PART A & PART B] & Commercial and Price Bid.	

S.No.	REQUIREMENTS	BIDDER's COMPLIANCE
16.0	The OFFER shall compulsorily contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each Clause. A just 'YES' or 'CONFIRMED' or 'NO-DEVIATION' or 'COMPLIES' or 'ACCEPTED' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	
17.0	The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details of 'Bought-Out-Items' with copies of Product Catalogue and Selection Criteria	
18.0	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation of the inclusion of all the accessories, tooling, attachments, auxiliary parts, spares, consumables, etc. with the main and basic equipment, to meet the technical specification requirements.	
19.0	The expected delivery period (including the time for Pre-Dispatch Inspection clearance by BHEL) for the subject 600 Ton Press is not more than TWELVE Months (which includes time for approval of General Arrangement Drawing by BHEL also) from the date of issue of BHEL Purchase Order. In case the quoted delivery period extends beyond TWELVE Months, an additional grace period of three months is permitted, but with a loading for arriving at the PRICE COMPETITIVENESS of the Commercial Offer (if the Offer is technically acceptable on all accounts). Details are given in the Commercial Terms of this Tender.	

PERFORMANCE CERTIFICATE – [SAMPLE FORMAT]

(On Customer's Letter Head and with Additional Sheets – if required)

1. Supplier of the Hydraulic Press :

2. Make & Model of the Press :

3. Month & Year of Commissioning :

4. Application for which the Press is used :

5. a. Equipment/Press Serial Number :
   b. Capacity of the Press :
   c. Make & Model of the Hydraulic Pump(s) used :
   d. Day Light, Shut Height, Main Piston Stroke, etc. :
   e. Other Specifications [optional] :

6. Performance of the Machine : Satisfactory / Good / Average / Not Satisfactory

7. Feed-back on "After Sales Service" from the Supplier / OEM :

8. Remarks / Reasons for Recommendations to BHEL :

Date:

Signature & Seal of the Authority Issuing the Performance Certificate

PART B

TECHNICAL SPECIFICATIONS for 600 Ton CAPACITY GOOSE-NECK ['C' FRAME] Type HYDRAULIC PRESS

1.0 PURPOSE / APPLICATION:

The down-stroking and vertical hydraulic press is intended to correct the two-plane bend (bow) introduced due to the deformation caused by heavy welding of tubular parts and other attachments to seamless steel pipes (forming the main part of the boiler component – called as HEADER) or that developed during heat treatment operation of these fabricated boiler components. Invariably, the job subjected to straightening (bow correction by pressing) process is stress relieved after welding operation.

The pictorial view / photograph of a typical job is given in the **ANNEXURE-1,** attached for reference. The straightening is done by inverting the header and positioning on two vertical supports, such that the job becomes simply supported at two points and inserted within the "C" Frame of the Press. For bow correction, the force is applied through the ram of the press with controlled downward movement. A line sketch for this arrangement is given in **ANNEXURE – 2.**

2.0 MACHINE SPECIFICATIONS :

Sl.No.	SPECIFICATION	PARAMETER	OFFER
2.1.0	**HYDRAULIC PRESS**		
2.1.1	Type of Press	Vertical, Single – Point Hydraulic, Gap-Frame type, Down-Stroking Press.	
2.1.2	Capacity	600 Tons (minimum)	
2.1.3	Working Pressure	250 kg./sq.cm. (maximum)	
2.1.4	Return Capacity	Around 15 Tons	
2.1.5	Frame	Goose-Neck type	
2.1.6	Stroke of Piston	500 mm	
2.2.0	**DIE SPACE**		
2.2.1	Shut Height (stroke down adjustment up to top of the bolster and to bottom of ram)	2500 mm	
2.2.2	Daylight	3000 mm	
2.2.3	Gap (distance between ram centre-line and face of press column)	1700 mm	
2.2.4	Bolster Size (F-B x R-L)	2000 x 1500 mm	
2.2.5	Slide Area (Ram Diameter)	480 mm dia.	
2.2.6	Thickness of Bolster	200 mm	

Sl.No.	SPECIFICATION	PARAMETER	OFFER
2.3.0	**FRAME**		
2.3.1	Type	Welded steel gap	
2.3.2	Floor to top of Bolster Plate	200 mm (The bottom flange of the C-Frame shall be kept inside the pit so that the bottom of Bolster Plate be made in line with floor level).	
2.3.3	Overall Height of Press above Floor Level (height shall be limited to 7200 mm above floor level, to facilitate EOT crane travel)	Supplier to specify	
2.4.0	**SPEEDS**		
2.4.1	Pressing Speed	6 mm / sec.	
2.4.2	Fast Advance	15 mm / sec.	
2.4.3	Fast Return	40 mm / sec.	
2.4.4	Speed shall be decelerated before the end of return stroke to avoid jerk and vibration.	Supplier to Confirm	
3.0.0	**DESIGN & CONSTRUCTIONAL FEATURES :**		
3.1.0	**MECHANICAL FEATURES :**		
3.1.1	Press construction shall be such that it consists of a single extra heavy inner plate and reinforcing members to ensure adequate strength (fully stress relieved prior to machining)		
3.1.2	All structures are to be built with high quality rolled steel plates, cut to shape, interlocked and welded into strong rigid box sections. Bidder to specify the Specification of Plate Materials, proposed to be used in the structure.		
3.1.3	Hydraulic unit shall be located on the frame compactly arranged and piped using manifold blocks. Bidder to ensure approachability of components for easy maintenance.		
3.1.4	Press anchoring material and Foundation Design shall be so rigid to withstand the pressing load and lifting of Press due to reaction force during pressing.		
3.1.5	Maintenance platform to be provided at required locations on the structure and suitable approach ladders with hand rails to be included.		
3.1.6	The Press function shall be smooth and vibration free during press operating cycles.		
3.1.7	The Bidder is expected to give a draft sketch on the pattern of the Press Structure Design (with tentative dimensions of the plate segments forming part of the Press Structure) and the estimated weight of the complete Press Structure. [As per BHEL estimation, the total weight comes to about 75 Metric Tonnes].		

Sl.No.	PARAMETERS / FEATURES	OFFER
3.2.0	**HYDRAULIC SYSTEM FEATURES**	
3.2.1	The System should be centralized, modular / stacked valve construction having minimum number of pipes / pipe joints and located on ground level with easy accessibility of components for maintenance.	Vendor to specify
3.2.2	Pumps, valves, accessories etc shall be of Rexroth / Vickers or equivalent reputed make acceptable to BHEL. (Details to be submitted). The seals used in cylinders shall be of Merkel / Parker / Bushak + Shamban / Hunger / Simrit make.	Vendor to specify
3.2.3	Suitable filtration system should be provided with Duplex / standby filter units. It is preferable to use re-usable type of filter elements in the system. The filter unit shall be of Hydac / Parker / Rexroth or equivalent reputed make acceptable to BHEL. (Details to be submitted).	Vendor to specify
3.2.4	The flexible hoses used in the system shall be of Gates / Aeroquip / Parker or any other reputed make acceptable to BHEL.	Vendor to specify
3.2.5	Failure indication for oil level, temperature, pressure, filter clogging should be provided	Vendor to specify
3.2.6	Refrigerated type cooling system of sufficient capacity to maintain complete Hydraulic System at a temperature not exceeding 50 deg C irrespective of the ambient conditions. BHEL prefers to have direct cooling of oil in the chiller rather than indirect water cooling type. Complete details should be submitted with the offer.	Vendor to specify
3.2.7	The Pressure gauges used in the system shall be of Glycerin filled ones and to be provided with suitable Gauge Isolators.	Vendor to confirm
3.2.8	It should be possible to replace hydraulic elements like valves, manifolds etc without disturbing the associated pipelines. The positioning of hydraulic elements should allow easy maintenance	Vendor to specify
3.2.9	Maximum Operating Pressure of hydraulic system. It is preferable not to exceed 250 bar.	Vendor to specify
3.2.10	Main Pump flow in lpm and Motor Power in kW	Vendor to specify
3.2.11	Reservoir Capacity (in Litres)	Vendor to specify
3.2.12	All oil pipelines shall be of seamless steel and should undergo pickling process.	Vendor to specify
3.2.13	Pressure measuring minimess check points (preferably with ¼" BSP stud end) shall be provided for important pressure measurements from operation, trouble shooting and maintenance point of view. Two sets of hand held minimess pressure gauge of suitable range with minimess hose (1.0 to 1.5m length) also to be supplied along with the power pack.	Vendor to specify

Sl.No.	PARAMETERS / FEATURES	OFFER
3.2.14	All cylinders used in the machine should have standard bore and rod sizes. The piston rod shall be hard chrome plated. The hardness and thickness of chrome plating to be specified by the vendor.	Vendor to specify
3.2.15	Suitable stand-by pump unit, filter unit, etc shall be provided for critical areas	Vendor to specify
3.2.16	The Power pack should be designed taking into account the energy efficiency (Hi-low pump system, proper unloading during idling, etc.). The motor used for pumps shall be of energy efficient ones.	Vendor to specify
3.2.17	All the pipe / hose end fittings shall be of standard weld nipple with O-ring seating type (DIN 3865 or equivalent) - female swivel nut with 24 deg cone and O-ring and no ferrule joints are to be used in the hydraulic system. All threaded connections shall be of metric sizes only.	Vendor to confirm
3.2.18	Suitable vibro-mounts, compensators (flexible bellows), flexible hose at the pump outlet, polypropylene clamps for pipes & hoses, etc are to be provided to minimize the vibration induced and transmitted to the hydraulic joints.	Vendor to confirm
3.2.19	The oil to be used shall be of standard ISO Viscosity Grades – 32 / 46 / 68	Vendor to specify
3.2.20	All the pipe lines to be provided with dust seals at the point of entry to the oil reservoir.	Vendor to specify
3.2.21	The control voltages for all the Solenoids of the valves shall be of 24-V DC and all solenoid operated DC valves should have manual over-ride provision and light indicating solenoids	Vendor to specify
3.2.22	The pipelines to be painted with standard colours as per the colour coding accepted internationally for hydraulic systems.	Vendor to specify
3.2.23	All hydraulic pipelines, hoses and electrical control cables to be neatly laid out with proper clamps and flexible hose conveyors wherever required.	Vendor to confirm
3.2.24	Suitable leakage oil collection metallic tray to be provided wherever required.	Vendor to confirm
3.2.25	All the components in the hydraulic power pack shall be provided with identification numbers, as per the hydraulic circuit and should be pasted with metallic identification number plates.	Vendor to confirm
3.2.26	First filling of all required Oils & Grease etc. should be supplied by vendor. It is preferable to supply Indigenous (Indian) source (Indian Oil Corporation make) of oils/ greases.	Vendor to confirm

Sl.No.	PARAMETERS / FEATURES	OFFER
3.3.0	**PRESS OPERATIONAL FEATURES**	
3.3.1	The Press shall be provided with suitable PLC and should be able to work in Manual / Semi-auto mode with a selector switch.	Vendor to confirm
3.3.2	The Press shall be provided with the feedback elements like electronic stroke measurement system (linear scale), Limit switches, Pressure Switches, etc. to perform the required operational features.	Vendor to confirm
3.3.3	Safety stroke limit switches for extreme limits to be provided.	Vendor to confirm
3.3.4	The Press should perform the following functions in Manual Mode : 1. Fast Advance of ram – initiated by a joystick switch, upto the desired stroke value, preselected in the PLC as soft limit by the operator. 2. Controlled Pressing at the set speed (through a flow regulating valve). The stroke of pressing is controlled by the operator manually by releasing the joystick switch. 3. Holding the ram at desired stroke in the loaded condition for a max. of 2 minutes. 4. Slow return of ram at set speed – by actuating the joystick up up-to the limit value set for fast advance function. 5. Fast return of ram – by actuating the joystick up above the limit value.	Vendor to confirm
3.3.5	The Press should perform the following functions in Semi-Auto Mode : 1. Fast Advance of ram – initiated by a joystick switch, upto the desired stroke value, preselected in the PLC as soft limit by the operator. 2. Controlled Pressing at the set speed (through a flow regulating valve). The stroke of pressing is controlled by the operator manually by releasing the joystick switch. The max. value of down stroke is set in the PLC by the operator depends on the job. 3. Holding the ram at desired stroke in the loaded condition for a max. of 2 minutes. 4. Slow return of ram at set speed – by actuating the joystick up up-to the limit value set for fast advance function. 5. Fast return of ram – by actuating the joystick up above the limit value.	Vendor to confirm
3.3.6	The pressing load shall be set at the desired value by the operator through an adjustable knob operated pressure regulating valve at the easily approachable location by the operator from the working level.	Vendor to confirm

Sl.No.	PARAMETERS / FEATURES	OFFER
3.3.7	Pressure gauge with gauge isolator, at the working level of the operator (for better visibility nearer to the pressure adjusting valve) to be provided for indicating the oil pressure inside the cylinder. The pressure gauge to be calibrated in terms of pressing load (in Metric Ton)	Vendor to confirm
3.3.8	As a safety measure, a lockable pressure safety relief valve to be provided in the system at the power pack.	Vendor to confirm
3.3.9	Complete control switches, joystick, key pad, display unit, etc shall be provided on an operation panel (movable trolley type on castor wheels), located in front and away from the press with a minimum 3 m long control cable.	Vendor to confirm
4.0.0	**GENERAL POINTS**	
4.1.0	The offer shall clearly indicate the list of standard accessories that will be supplied along with the machine.	
4.2.0	Other special accessories shall be quoted separately as optional items	
4.3.0	The PLC controls shall be from Messung / Seimens / Allen Bradley / ABB.	
4.4.0	All controls and other operating systems shall be located in a centralized convenient place for easy operation.	
4.5.0	The linear electronic scale / encoder shall be of Heidenhein / Fagor make.	
4.6.0	All motors shall be from M/s Siemens / NGEF / KEC / ABB. If outside INDIA, make shall confirm to IEC standard.	
4.7.0	All electrical devices like contactors, relays and limit switches, push buttons etc. shall be from Siemens / L&T / Alstom / Cuttler Hammer / Telemechanique.	
4.8.0	All components/devices/terminals are to be incorporated with ferrules. (Numbered)	
4.9.0	Control panel shall have built in 230 V, 5 Amps., 3 Pin Plug.	
5.0.0	**MACHINE LIGHTS**	
5.1.0	Fluorescent Machine Light to be provided as built-in with “C” Frame of the Press for sufficient illumination of complete working area for clear visibility.	
5.2.0	A magnetic base 24-volt portable spotlight with sufficiently long cable should also be provided.	
6.0.0	**ELECTRICAL SYSTEM:**	
6.1.0	415V ± 10%, 50Hz ±1.5, 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 the Bidder. 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.	

Sl.No.	PARAMETERS / FEATURES	OFFER
6.2.0	All electrical equipment shall be Tropicalized	
6.3.0	All electrical control cabinets & panels should be dust and vermin proof	
6.4.0	All electrical components in the cabinets should be mounted on DIN Rail	
6.5.0	All electrical panels should be provided with CFL lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters/receptacles should have compatibility with Indian equivalents.	
6.6.0	Vendor should ensure the proper earthing for the machine	
7.0.0	**SAFETY ARRANGEMENTS**	
7.1.0	Machine shall have adequate and reliable safety interlocks / devices to avoid damage to the machine, work piece and the operator due to the malfunctioning or mistakes.	
7.2.0	A detailed list of all alarms / indications provided on machine should be submitted by the Vendor.	
7.3.0	All the pipes, cables etc. on the machine should be well supported and protected.	
7.4.0	All the rotating parts (if any) used on machine should be statically & dynamically balanced to avoid undue vibrations and suitable covers to be provided.	
7.5.0	Safety devices for hydraulic circuit, emergency stop buttons as per international norms are to be provided in the operation panel as well as in the press frame.	
8.0.0	**ENVIRONMENTAL PERFORMANCE OF MACHINE**	
8.1.0	Maximum noise level shall be 85 dB (A) at normal load condition, 1 M 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. Vendor to demonstrate compliance to noise level, if so required.	
8.2.0	If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.	
8.3.0	Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.	
9.0.0	**LEVELING & ANCHORING SYSTEM**	
9.1.0	Complete anchoring system including foundation bolts, anchoring materials, fixtures, leveling shoes etc shall be supplied in advance before dispatch of the machine.	
10.0.0	**TOOLS FOR ERECTION, OPERATION & MAINTENANCE**	
10.1.0	The vendor shall bring special tools and equipment required for erection of the machine. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc.for operation & maintenance of the machine should be supplied along with the machine. List of such tools shall be submitted with offer	

Sl.No.	PARAMETERS / FEATURES	OFFER
11.0.0	**MACHINE SPARES**	
11.1.0	Item-wise break-up of mechanical, hydraulic, electrical spares used on the machine 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. The proposed list shall include the following, in addition to other vendor recommended spares and those listed by BHEL in **ANNEXURE-3 :** (Unit Price of each item of spare should be offered)	
11.2.0	Mechanical & Hydraulic Spares: Bearings, all types of pumps, Valves, pressure switches / transducers, filters, seals, O-rings, Hydraulic Hoses, Fittings, etc.	
11.3.0	Electrical: All types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Special Fuses, Semiconductor Fuses, Circuit Breakers, Main Power Switch.	
11.4.0	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 sufficiently in advance and provide drawings of parts / details of spares & Vendors to enable BHEL to procure these in advance, if required.	
12.0.0	**DOCUMENTATION**	
12.1.0	Set of Documents **to be submitted along with the Offer for technical evaluation :**	
12.1.1	General Lay-out of the machine with major and critical dimensions in line with the specification	Vendor to confirm
12.1.2	General Assembly drawing of the machine with bill of materials and critical dimensions	Vendor to confirm
12.1.3	General Assembly drawing of Hydraulic Cylinders with major and critical dimensions and details of seals used.	Vendor to confirm
12.1.4	List of bought out items with make and specification along with catalogues: Motors, Gear boxes, Cylinders, Seals, PLC, etc.	Vendor to confirm
12.1.5	Hydraulic Circuit with Bill of Materials giving specification and make of components used.	Vendor to confirm
12.1.6	Electrical Circuit with Bill of Materials giving specification and make of components used.	Vendor to confirm
12.1.7	Video images on CD /Hard copy of literature with photographs & drawings explaining the technical features.	Vendor to confirm
12.2.0	Set of Documents **to be submitted after placement of order for approval / verification before manufacturing:**	
12.2.1	General Lay-out of the machine with major and critical dimensions in line with the specification	Vendor to confirm

Sl.No.	PARAMETERS / FEATURES	OFFER
12.2.2	General Assembly drawing of the machine with bill of materials and critical dimensions, including thickness of plates used for fabrication.	Vendor to confirm
12.2.3	Cross-sectional Assembly Drawing of Hydraulic Cylinders with major and critical dimensions and details of seals used.	Vendor to confirm
12.2.4	Hydraulic Circuit with Bill of Materials giving specification and make of components used.	Vendor to confirm
12.2.5	Electrical Circuit with Bill of Materials giving specification and make of components used.	Vendor to confirm
12.2.6	Preliminary Foundation Drawing.	Vendor to confirm
12.2.7	Geometrical Accuracy Test Chart.	Vendor to confirm
12.2.8	Quality Plan	Vendor to confirm
12.3.0	Set of Documents **to be submitted along with machine**:	
12.3.1	Three sets of following documents as Hard copies and 1 set of all documents including bought out item catalogues – soft copy in CD in English Language should be supplied along with the machine.	Vendor to confirm
12.3.2	One set of complete documents as Hard copy and complete documents in CD / Pen drive to be submitted during inspection at supplier's works for verification. This forms part of acceptance criteria for dispatch clearance at supplier's works.	Vendor to confirm
12.3.3	Operating Manuals of equipments	Vendor to confirm
12.3.4	Programming Manuals if any for the machine.	Vendor to confirm
12.3.5	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical circuit diagrams/ Hydraulic Circuit Diagrams/ Cylinder Cross section drawings. All Assembly/ Sub Assembly Drawings shall be supplied with the part list / Bill of Materials giving complete specification and make of components.	Vendor to confirm
12.3.6	Hydraulic / Pneumatic Circuit with Bill of Materials giving specification and make of components used. Function diagram of the Hydraulic / Pneumatic system to be provided with the circuit.	Vendor to confirm
12.3.7	Hydraulic Trainer catalogue in original print from the manufacturer of the hydraulic system (Rexroth / Vickers)	Vendor to confirm
12.3.8	Electrical Circuit with Bill of Materials giving specification and make of components used.	Vendor to confirm
12.3.9	Manufacturing drawings for all wearing components like bushes, gears, etc.	Vendor to confirm

Sl.No.	PARAMETERS / FEATURES	OFFER
12.3.10	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable highlighting the specific model used in the supplied machine.	Vendor to confirm
12.3.11	Detailed specification of all rubber items, hoses, fittings, etc. List of bearings, belts used to be provided.	Vendor to confirm
12.3.12	Operating Manuals, Maintenance Manuals & Catalogues for all supplied Accessories.	Vendor to confirm
12.3.13	Complete Master List of parts used in the equipment.	Vendor to confirm
12.3.14	Complete list of spares for equipments and accessories, along with item part no / specification / type / model, and name & address of the spare supplier to be furnished.	Vendor to confirm
13.0.0	**MACHINE FOUNDATION**	
13.1.0	BHEL shall construct complete foundation for the machine. Vendor to furnish the foundation details in advance.	
14.0.0	**ERECTION & COMMISSIONING**	
14.1.0	Vendor to provide supervision for carrying out the erection, start up, testing of machine, it's control system & all associated equipment supplied. Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by Vendor in their foundation / layout drawings.	
14.2.0	Successful proving of BHEL components by the Vendor shall be considered as part of commissioning. All tests, as mentioned at Specification Clause No. 16.0.0 (Machine Acceptance) shall form part of the commissioning activity.	
15.0.0	**AMBIENT CONDITIONS & THERMAL STABILITY**	
15.1.0	Total machine and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies. Ambient Conditions: Temperature = 25 to 50 Degree Celsius Relative Humidity = 95% maximum.	
15.2.0	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.	
15.3.0	The machine, including attachments and accessories, should be suitable for 24 hrs. Continuous operation to its full capacity for 24 hour a day and 7 days a week throughout. Vendor to ensure and confirm the same.	

S.No.	PARTICULARS	OFFER
16.0.0	**MACHINE INSPECTION and ACCEPTANCE:**	
16.1.0	**Tests / Activities to be performed at Vendor's Works**	
16.1.1	Stage Inspection for Fabricated Parts prior to heat-treatment and machining, Physical Verification of Piston, Cylinder and Seals prior to assembly at Vendor's Works	
16.1.2	Physical Inspection and Design/Constructional Compliance.	
16.1.3	The machine (motors & pumps) should be tested for continuous running of 48 hrs. If any break down occurs during this test, the test should be repeated for 48 hrs from that time.	
16.1.4	Full load test to demonstrate the maximum capacity of the machine.	
16.2.0	**Tests to be carried out at BHEL Works**	
16.2.1	Physical Inspection and Design/Constructional Compliance.	
16.2.2	Geometrical accuracy test, for which the vendor to provide the test chart along with drawing approval documents.	
16.2.3	Full load test to demonstrate the maximum capacity and other operational requirements.	
16.2.4	The machine should be tested for continuous running of 48 hrs. If any break down occurs during this test, the test should be repeated for 48 hrs from that time.	
16.2.5	Training of BHEL machine operators in operation and maintenance of complete machine by the Vendor's experts/engineers during their stay at BHEL works	
17.0	**MACHINE PAINTING**	
17.1	The machine and electrical panels shall be painted with RAL 6011 / IS-5/1994 : ISC – 281 Apple Green Colour.	
17.2	The hydraulic pipelines to be painted with standard colours as per the colour coding accepted internationally for hydraulic systems.	
17.3	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 colors of paint used.	
18.0	**PACKING**	
18.1	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 dispatched in containers, all small loose items shall be suitably packed in boxes	

S.No.	PARTICULARS	OFFER
19.0	**PERFORMANCE GUARANTEE**	
19.1	TWELVE months from the date of commissioning & acceptance of the machine, at BHEL Works, for all the parts and functional performance of the Press.	
20.0	**SPECIAL NOTES :** The vendor should submit the following information along with offer:	
20.1	Machine/Press Model	
20.2	Total connected load in kVA	
20.3	Floor area required (Length, Width, Height) for complete Press & Accessories (sub-systems)	
20.4	Total Weight of the Press	
20.5	Weight of heaviest part of Press	
20.6	Weight of the heaviest assembly/sub-assembly of the Press	
20.7	Dimensions of largest part/ sub-assembly/ assembly of the Hydraulic Press	

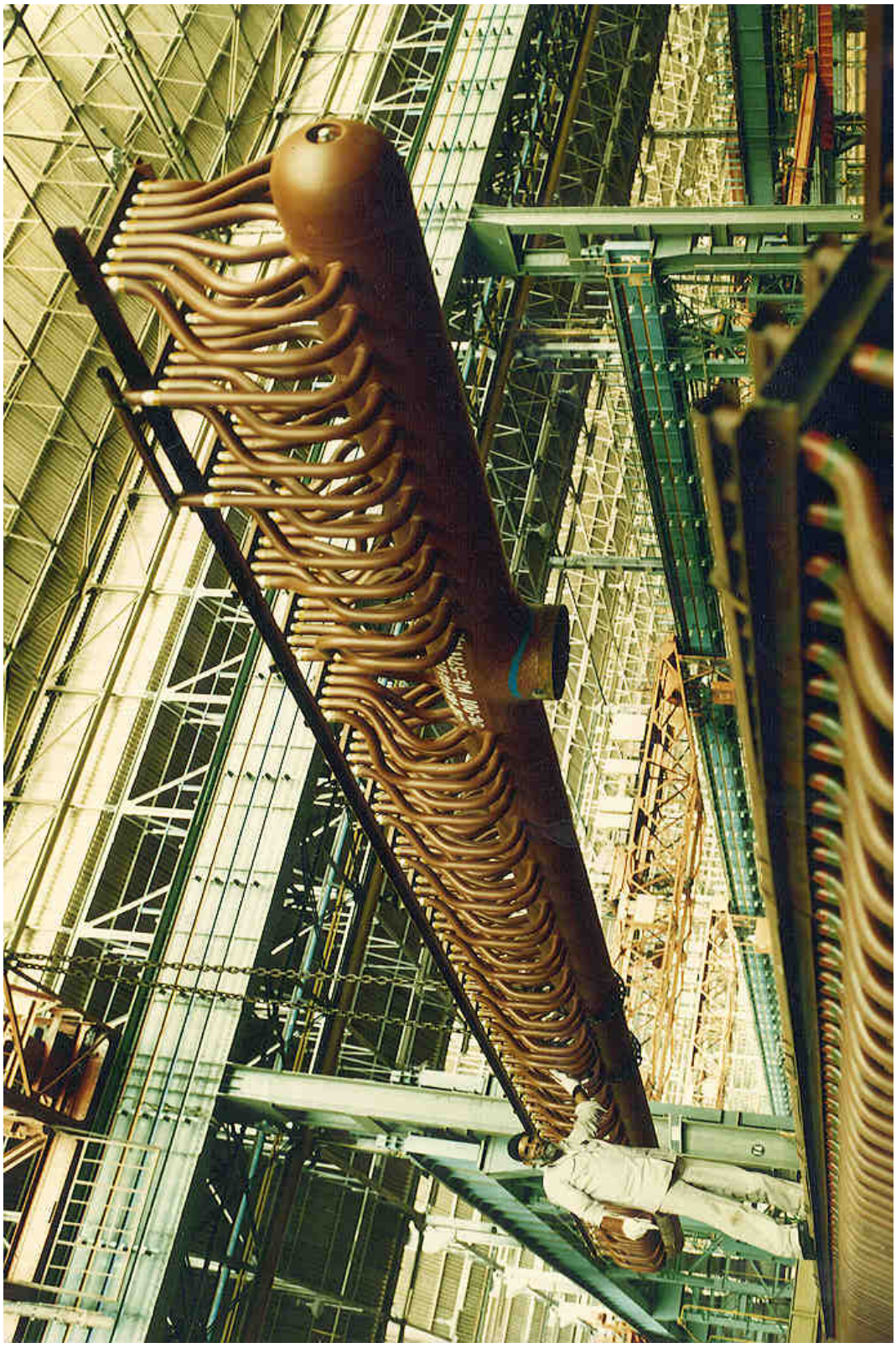
ENCLOSURES : ANNEXURE – 1 , 2 and 3

ANNEXURE – 3 :: SPARES LIST

S.No.	ITEM DESCRIPTION	QUANTITY
A.	**MECHANICAL & HYDRAULIC SPARES [1 Set shall consist of the following Parts]**	
1	Main Cylinder Seal kit including O-rings – complete Set	1 No.
2	Hydraulic pump (main pump)	1 No.
3	Hydraulic valves (1 No. in each type of valve used in the system) – complete Set	1 No.
4	Suction Strainer	4 Nos.
5	Return Line Filter elements	5 Nos.
6	Load indicating Pressure gauge (calibrated in tons)	2 Nos.
7	Main pump coupling	1 No.
8	Hydraulic hoses (1 No. in each type used in the machine) – complete set.	1 No.
B.	**ELECTRICAL SPARES [1 Set shall consist of the following Parts]**	
1	Limit Switches & Pressure switches (1 No. in each type used in the machine) – complete Set	1 No.
2	I/O Relay module	1 No.
3	Push Buttons	10 Nos.
4	Pilot Lamps	10 Nos.
5	PLC unit	1 No.

TYPICAL JOB AFTER STRAIGHTENING

ANNEXURE-1



ANNEXURE-2