



Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT/ MATERIALS MANAGEMENT

An ISO 9001
Company

ENQUIRY	Phone: +91 431 257 70 49 Fax : +91 431 252 07 19 Email : csguna@bheltry.co.in Web : www.bhel.com
NOTICE INVITING TENDER	

TWO PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
Tender to be submitted in two parts.	2620900232	20.10.2009	24.11.2009

You are requested to quote the Enquiry number date and due date in all your correspondence. 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	Hydro Test Facility for Oil Field Equipments as per the technical specification, general guidelines instructions & 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

- Delivery required 14 months from the date of purchase order.**
- Grace period of 2 months beyond the above delivery period will be considered.**
- Checklist to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.**

BHEL's General guidelines / instructions (refer MM/CE/GT/001) 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 "2620900232".

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 Sr.Manager / MM / Capital Equipment
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PART A**HYDRO TEST STATION – 30000 PSI****SECTION – I : QUALIFYING CRITERIA**

The BIDDER has to compulsorily meet the following requirements to get qualified for consideration of the offer

S. No.	REQUIREMENTS	VENDOR's RESPONSE
1	Only those vendors (OEMs), who have supplied and commissioned at least ONE HYDRO TEST STATION with test pressure of 15000 PSI or higher, for testing valves / Oil Field components, in the past and such station is presently working satisfactorily for more than one year (as on the date of opening of this Tender), should quote. However, if such station (s) has/ had been supplied to BHEL, then such station should presently be working satisfactorily for more than six months after its commissioning and acceptance (as on the date of opening of this Tender) in BHEL.	
The vendor should submit the following information where similar station has been supplied, for qualification of their offer.		
1.1	Name and postal address of the customer / company where similar station is installed.	
1.2	Name and designation of the contact person of the customer.	
1.3	Phone, FAX no. And email address of the contact person of the customer.	
1.4	Month and Year of commissioning.	
1.5	Application for which the station is supplied	
1.6	Performance certificate from the customer regarding satisfactory performance of test station supplied to them.	
2.0	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.	
2.1	DELIVERY: The bidder shall quote the best possible delivery. However the delivery shall not exceed 14 months with an additional grace period of 2 months. The additional grace period will attract a penalty, which is explained in the commercial terms of the enquiry. The delivery period shall be reckoned from the date of purchase order to dispatch from the vendor works.	

SECTION – I I

The BIDDER / VENDOR is requested to provide the following information:

S. No.	REQUIREMENTS	VENDOR'S RESPONSE
3.0	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where HYDRO TEST STATION has been supplied in the past.	
4.0	Details of HYDRO TEST STATION supplied to other BHEL units, if any, (Year of commissioning, Max test Pressure, Testing Diameter range).	
5.0	Details on SERVICE-AFTER-SALES Set-Up in India including the Addresses of Agents / Service Centers in South India.	
6.0	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

SECTION – III

The BIDDER to note:

S. No.	PARTICULARS	VENDOR'S RESPONSE.
7.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS. 1. Technical Offer [with PART A & PART B] and Commercial offer. 2. Price Bid.	
8.0	The Offer shall contain a comparative statement of Technical Specifications demanded by BHEL and Offer Details submitted by the Bidder , against each clause. A just 'CONFIRMED' or 'COMPLIED' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	
9.0	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	
10.0	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	

11.0	For obtaining the performance certificate from the customer, a suggestive format is provided in SECTION - IV .	
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SECTION – IV

The Performance Certificate should be produced on Customer’s Letter Head.

PERFORMANCE CERTIFICATE

1. Supplier of the Hydro Test station	
2. Make & Model of the Test station	
3. Month & Year of Commissioning	
4. Area of application for which the test station is used.	
5. a. Max. Test Pressure of Test station. b. Max. Test Load of Test station c. Max. Distance between the sealing heads. d. The diameter of the largest sealing head.	
6. Performance of the Station (Strike off whichever is not applicable)	Best in the market Satisfactory Good Average Not Satisfactory
7. Any Other remarks	
Date:	Signature & Seal of the Authority Issuing the Performance Certificate

PART- B**Technical Specification of 30,000 Psi HYDRO TEST STATION** (for oil Field Components)

S. No	BHEL SPECIFICATION	BIDDER's OFFER With Technical details
1	<p>AREA OF APPLICATION</p> <ol style="list-style-type: none"> 1. The hydraulic test station is intended for testing oil field components such as Casing spools, tubing spools and Casing Heads (here in after called as Jobs) as per API 6A. 2. Please refer Annexure – 1 furnished at the end of this specification, for sketch and dimensions of the Casing spools and tubing spools. The spools to be tested will have flange with RJ Groove (Ring Joint Gasket groove) on both ends as per API standard. Shell test shall be carried out using RJ grooves as sealing surface with suitable metallic gaskets. The clamping force shall be based on these diameters and test pressures. 3. Please refer Annexure – 2 furnished at the end of this specification, for sketch and dimensions of Casing Heads. These Casing Heads to be tested will have flange on one end only. The other end will have either flat bottom (BTC bottom) or conical bottom (SOW bottom). For shell test, RJ groove on the flanged end and suitable O Ring on the other end shall be used as sealing surface. The clamping force shall be based on these diameters and test pressures. 4. While testing the flow axis of the Casing spool / tubing spool / Casing Head shall be vertical. 5. For all sizes mentioned in Annexure – 1 and 2, the vendor should supply RJ Gaskets and O Rings required for testing. 	

2.	OPERATING PARAMETERS	
2.1	Test Medium	Water
2.2	Max Test Pressure	30,000 PSI
2.3	Type of Test	Shell test
2.4	Weight of spools	Maximum weight of jobs loaded on this test station shall be considered as 2100 Kg.

S. No	BHEL SPECIFICATION		BIDDER's OFFER With Technical details
2.5	Testing capacity	The Hydro Test Station is expected to have an average testing capacity of 10 jobs in 8 hrs shift period with pressure holding up to 30 minutes for each test cycle. The Hydro test station shall be suitable for operation on 3 shifts per day.	
3.	HYDRO TEST STATION REQUIREMENTS		
3.1	Configuration of Test Station	<p>The test station shall have all required elements for testing of Casing spools, tubing spools and Casing Heads keeping the flow axis in vertical position. The test station shall have Base, Columns to withstand the reaction force at max operating pressure, Horizontally Movable Bottom table, Vertically Moving ram to hold sealing head, Pre-filling system, pressurizing system, Depressurizing system and operator control panel.</p> <p>The bottom table shall have a linear horizontal travel to bring the table outside the machine frame / column in order to facilitate loading and unloading of the job using BHEL's overhead crane.</p> <p>For spools: The bottom flange will be seated on the RJ gasket of the Bottom sealing head. After loading, the spool shall be held in position by suitable clamps. Then the bottom table shall be moved inside the Machine frame / column where it shall be positioned through a suitable locator.</p>	

S. No	BHEL SPECIFICATION		BIDDER's OFFER With Technical details
3.1 contd	Configuration of Test Station	<p>For Casing Heads: The bottom sealing face (BTC or SOW) of casing Head will be seated on a bottom plate, which has a rubber O-ring. The orientation of this O-ring groove will be either horizontal or at a sloped surface depending on the type of casing head (BTC OR SOW). After loading, the Casing Head shall be held in position by suitable clamps. Then the bottom table shall be moved inside the Machine frame / column where it shall be positioned through a suitable locator.</p> <p>The movable clamping flange holding the top sealing head shall be lowered to come in contact with the top flange of the job. Centerline of job and centerline of top and bottom sealing flanges of the machine shall be aligned in a line.</p>	
3.1.1	Machine Frame / Columns	There shall be enough space between the machine columns such that it could accommodate the job assembled with two full bore Valves on both sides. The gap between columns / frames shall be minimum 1500 mm.	
3.1.2	Day light	Day light between top and bottom clamping flanges when sealing heads / adapters in position shall be minimum 950 mm. --- vendor to confirm	
3.1.3	Stroke of top flange	The stroke of the top clamping flange shall be minimum 450 mm.--- Vendor to confirm	
3.1.4	Bottom table size	The size of bottom table shall be suitable to clamp spools with a flange dia of 1000 mm.---- Vendor to specify the Table size.	
3.1.5	Mechanism of Bottom table movement	Vendor to describe the traversing Mechanism / arrangement of bottom table for loading or unloading of job. Vendor to describe how the bottom table is going back to the exact position under the movable clamping flange to ensure alignment.	

S. No	BHEL SPECIFICATION		BIDDER's OFFER With Technical details
3.1.6	Top Clamping unit	The top clamping unit shall have up & down movement The top Clamping unit shall have low & rapid feed in both directions. The top Clamping unit shall move as long as the push button is pressed. The movement of top clamping unit shall be by mechanical means and the final clamping shall be achieved by hydraulic means.	
3.1.7	Interlock and safety	The clamping force on the test body shall increase proportional to the increase of pressure inside the test body. Suitable feedback and protection system shall be provided in the clamping system to avoid excessive overloading of the test body which will otherwise cause deformation and damage the test body. --- Vendor to furnish details.	
3.1.8	Clamping flanges	The clamping flanges shall hold sealing heads and have outlet for venting and inlet for pre-filling and pressurizing systems.	
3.1.9	Sealing area	The spools shall be tested with RJ gaskets. Casing Heads shall be tested with RJ gasket and O-ring.	
3.1.10	Sealing heads	Vendor to provide suitable sealing heads for the entire range of jobs specified in Annexure – 1 and 2: Vendor to confirm	
3.1.11	Sealing heads	The design / arrangement of the sealing head shall be detailed in the offer.	
3.1.12	Re-circulation of test medium	Provision shall be made for re-circulation of the test medium (water) with suitable size SS tank and necessary filtration system. Capacity of tank shall be minimum 1500 liters	
3.2	AIR VENTING SYSTEM		
3.2.1	Air venting	Air venting shall be provided to evacuate the air from inside the test body.	
3.3	WATER PRE-FILLING SYSTEM:		
3.3.1	Pre-filling pump capacity	A centrifugal pump shall be provided for pre-filling Pump capacity should be at least 125 liters per minute at around 4 bars.	
3.3.2	Pump cut-off limit	The pre-filling pump shall switch off automatically once the desired pre-filling is achieved. Vendor to specify the pre-filling details.	

S. No	BHEL SPECIFICATION		BIDDER's OFFER With Technical details
3.4	PRESSURIZING SYSTEM:		
3.4.1	Multiple stage pump	<p>The water pressurizing system shall consist of Multiple stages of Air operated pump to achieve a maximum test pressure of 30000 Psi</p> <p>Make: (Preferably Haskel / Maimator or any other reputed make subject to BHEL's approval) - Vendor to confirm Number of stages- Vendor to specify Discharge details- Vendor to specify</p> <p>An air compressor of adequate capacity and reputed make (subject to BHEL's approval) shall also be supplied.</p> <p>Make- Vendor to specify Type- Vendor to specify Capacity in CFM- Vendor to specify Pressure rating in Kg/ sq cm- Vendor to specify</p>	
3.4.2	Isolating valve	The pressurizing system shall have suitable isolating devices such as non-return valve and also stop valve to isolate the pumps from the test body.	
3.4.3	Pump On/Off control	ON/OFF controls for operating the pumps shall be provided	

S. No	BHEL SPECIFICATION		BIDDER's OFFER With Technical details
3.4.4	Digital Pressure gauges	<p>Digital Pressure gauges with accuracy of 0.2 % full-scale shall be provided on the test bench. The gauge mounting shall be 9/16 inch – 18 UNF – 2B (Female) as per autoclave AE F 250 – C on a 1 in Hex</p> <p>0-35000 PSI - 2 Nos 0-60000 PSI - 2 Nos</p> <p>These gauges shall use transducer technology and have overload protection against unexpected very high pressures. Wetted parts and case material shall be of S.S. These gauges shall have ON / OFF switch, disable feature and raised buttons. The display shall be 4 1/2 digits with 0.5 inch Height. The operating temperature range shall be between 30° F to 160° F.</p>	
3.4.5	Accumulators	Suitable accumulators shall be provided to even out pressure surges in the hydraulic circuit.	
3.4.6	Pressure Holding	Maximum Pressure holding time shall be 30 minutes on actual Jobs.	
3.4.7	Leak Measurement	Suitable arrangement shall be provided for assessing the quantum of water leak during testing.	
3.5	DEPRESSURIZING		
3.5.1	Depressurizing	After completion of testing, the pressure inside the test body shall be relieved slowly by means of suitable drain valve. Provision to be made for draining the water into the tank.	
3.6	OPERATOR CONTROL PANEL		
3.6.1	Operating system requirement	PC based PLC system for setting the test cycle shall be provided. i.e.) given the spool specification , test pressure(s) , duration(s) etc., through a console the machine shall automatically select the clamping pressure to carry out the test cycle. Repetition of the test cycle should be possible based on pre set data. As soon as the desired pressure is reached the pump shall be switched off automatically. Suitable AC unit shall be provided for the panel.	

S. No	BHEL SPECIFICATION		BIDDER's OFFER With Technical details
3.6.1 contd	Operating system requirement	Provision must be built / provided in the system to capture / store data and recording to take print out the test details in the form of charts / graphs.	
3.6.2	Controls	The control panel shall have the following minimum essential controls Venting system controls Pre-filling system controls Pressurizing system controls Draining system valves Provision for Pressure gauge mounting. Independent pressure gauges for each line or port. Test load indicator.	
3.6.3	Other controls	Details of any other controls required on the operator panel, shall be specified by the Vendor	
3.6.4	Manual mode	Provision shall also be made for manual setting of the desired pressure. Provision for manual setting of the test duration shall also be provided	
3.6.5	Alarm / Indication	Audio / LED signals shall be provided to indicate completion of testing.	
3.7	Foundation for the machine		
3.7.1	Vendor shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of P.O. Vendor shall submit complete foundation details including static and dynamic loads within three months after getting BHEL's approval. The layout should consist of all requirements pertaining to complete machine including space requirement for accessories. BHEL will construct the foundation for the machine as per the Vendor's recommendation.		
3.7.2	The Vendor shall indicate specification of grouting compound, Grouting procedure etc.		

S. No	BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
4	SPECIMEN TEST BODY	
4.1	<ol style="list-style-type: none"> 1. Vendor shall design and supply one specimen test body suitable for the following. 2. The material specification of the test body shall be AISI 4140 3. Specimen test body shall be of shape similar to the spool shown in Annexure – 1. 4. This test body shall have two RJ grooves on each flange with diameters 328 mm and 584.2 mm. 5. This specimen test body will be pressure tested for a max pressure of 30000 Psi when the gasket is in 328 Position. 6. This specimen test body will be load tested for a max load by taking the test pressure up to 13000 Psi when the gasket is in 584.2 Position. 7. The design of the test station including clamping system should be sufficient to withstand the tests mentioned at 5 and 6 above. 	
5	SAFETY	
5.1	Safety features shall be built into the system. The supplier shall indicate all the safety interlocks that are provided in the equipment.	
5.2	High-pressure equipments including pressure vessels if any shall have suitable safety relief valve.	
5.3	Safety protection doors if any shall be fitted with transparent, impact resistant polycarbonate sheet. Vendor to specify.	
5.4	All moving mechanical parts are to be suitably guarded for safe operation.	
5.5	The test bench shall have maximum test pressure limiting device.	
5.6	The test bench shall also have maximum test Load limiting device.	
5.7	Maintenance plat form and ladder shall be provided for the main equipment to access the cylinder and other parts.	

S. No	BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
6	GENERAL		
6.1	The General Arrangement (G.A drawing) of the Hydro test station shall be submitted with the offer, Rating of individual Valves and other items shall be shown in the G.A drawing. Electrical circuit, Pneumatic circuit, Water circuit and hydraulic circuit (if any) shall also be submitted along with the offer.		
6.2	All hoses and cables from operator control panel to various systems of the hydro test station shall be neatly routed and suitably protected.		
6.3	All bright parts shall be Nickel / Chrome plated		
6.4	The noise level from the Hydro test station shall not exceed 85dBA		
6.5	The machine shall have high rigidity. Self-aligning /fitting, locking & piloting arrangement shall be incorporated in the parts and modules to ensure 'maintenance free' concept.		
6.6	All connections for filling water, creating water pressure, providing electrical current is to be fed through a band of hoses and cables from pilot board to the clamping flange. The hoses / cables are to be suitably protected		
6.7	The Hydro test station including accessories is to be supplied with first fill of oil and grease wherever needed.		
6.8	The equipment shall have suitable Machine lamp / Focus lamp so as to visibly check for leakage.		
7	ACCESSORIES		
7.1	Standard Accessories	The offer shall clearly indicate the list of standard accessories that will be supplied along with the machine.	
7.2	Sealing Heads	Sealing heads for all the job sizes mentioned in Annexure -1 and 2 shall be supplied. Multiple grooves for suiting different Ring joint diameters shall be provided in the sealing head so as to reduce the number of sealing heads. In every sealing head a threaded lifting hook shall be provided for handling. The sealing head shall be Nickel / Chrome plated.	
7.3	Special Accessories	Any other special accessories shall be quoted separately as optional items	

S. No	BHEL SPECIFICATION		BIDDER's OFFER With Technical details
7.4	Tool Kit	Tool kit consisting of necessary tools for operation and maintenance shall be supplied along with the Test station. Vendor to provide the list with the offer.	
8	SPARES		
8.1	Operation and Maintenance Spares	The supplier shall quote all spare parts item wise, required for two years of trouble free operation. The list shall include all valves such as DC valves, NRV, Flow regulating valves, Needle valves in the pressure line with seal kits, End fittings and Ferrules.	
8.2	Essential Spares	a) Digital Pressure gauges similar to the one mentioned in clause No 3.6.4 shall be supplied as spare. The gauge mounting shall be 9/16 inch – 18 UNF – 2B (Female) as per autoclave AE F 250 – C on a 1 in Hex 0-35000 PSI - 1 No 0-60000 PSI - 1 No b) Seal kit for air operated pumps - 10 sets for each pump. c) All high pressure hoses - 1 Set	
9	ELECTRICAL POINTS		
9.1	The electrical input power supply shall be AC 415 V $\pm 10\%$, 50 Hz $\pm 3\%$, 3 Phase 3 Wire System. No neutral conductor.		
9.2	BHEL will provide input power supply at one point only and the supplier has to take care of all other electrical distribution required for the Station.		
9.3	All electrical motors, limit switches etc, on the machine shall be wired using PVC sheathed cable, running in conduits and converging to common terminal block		
9.4	External wiring from / to control panel, control desk, external motors etc shall be by means of screened multi-core cables.		
9.5	Control Voltage for all Solenoid Valves shall be 24Volt DC.		
9.6	Electrical Control panel shall have built in 230V, 5 amps, 3pin plug.		
9.7	Electrical control panel shall be adequately illuminated for maintenance purpose.		
9.8	Machine is to be fitted with suitable lighting and also provision for 24 V hand lamp.		

S. No	BHEL SPECIFICATION	BIDDER's OFFER With Technical details
9.9	All parts/devices/terminals are identified with numbered ferrules.	
9.10	IP54 protection for all electrics. Totally enclosed Motors shall be used.	
9.11	All Electric Motors shall be of any of the following makes: SIEMENS / ABB / Other reputed makes acceptable to BHEL, conforming to IEC Standards.	
9.12	All electrical devices like contactors, relays, limit switches, push buttons etc shall be from Siemens/ L&T/ Cutler hammer / Telemecanique.	
9.13	The centrifugal pump and air pump shall be of reputed makes acceptable to BHEL	
10	PNEUMATICS	
10.1	Nylon reinforced synthetic rubber hoses shall be used to connect Pneumatics forming part of the machine and associated equipment.	
10.2	Compressed air is available through line at a pressure of 60 -70 Psi only. BHEL will supply compressed air at a single point. Vendor shall provide Filter / Regulator /Lubricator Unit at the inlet to the Hydro test station.	
11	HYDRAULICS	
11.1	Vendor to furnish details of any hydraulic circuits if deployed.	
11.2	Such Hydraulic circuits shall be designed with minimum number of control valves.	
11.3	Vendor to provide details of Oil chiller used, Hydraulic Tank Capacity, Hydraulic power pack.	
11.4	All hydraulic pipelines to be neatly laid out	
11.5	All Hydraulic elements shall be of Vickers / Rexroth / other reputed make acceptable to BHEL	
12	LUBRICATION:	
12.1	Automatic timer controlled lubrication system is to be provided for sliding surfaces and all mechanical drives.	

S. No	BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
13	AMBIENT ATMOSPHERIC CONDITION	
13.1	The Hydro test station with all Sub-Systems shall be suitable for operation in an ambient temperature of +45°C and with a Relative Humidity of 90%, both values do not occur simultaneously The entire equipment shall be Tropicalized in Design and construction.	
14	PAINTING	
14.1	RAL6011 Reseda Green (Polyurethane paint)	
15	ERECTION & COMMISSIONING	
15.1	<p>1. Supplier to take full responsibility for erection, start up, testing of machine, it's control system & all other supplied equipment etc.</p> <p>2. Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by supplier in their foundation or layout drawings.</p> <p>17. Crane required for erection will be provided by BHEL.</p> <p>The supplier shall depute his engineer(s) & personnel for erection, prove-out trials and commissioning of the machine at BHEL</p>	

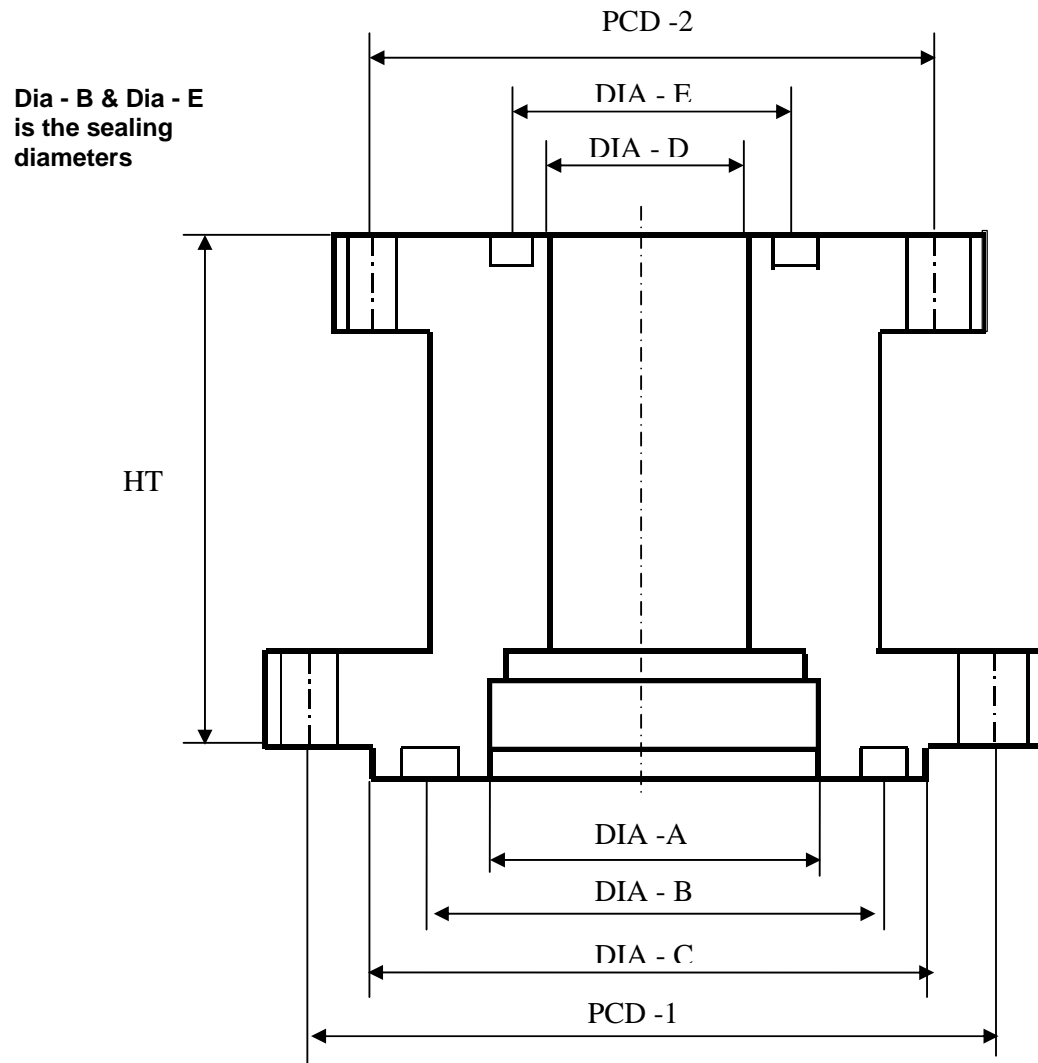
S. No	BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
16	INSPECTION AND PERFORMANCE PROVE-OUT AT SUPPLIER'S WORKS	
16.1	<p>BHEL Engineers will inspect the test station at Supplier's works. Supplier shall Prove-out the performance of Hydro test station for the following points.</p> <ol style="list-style-type: none"> 1. Specimen test body will be tested for a max pressure of 30000 Psi when the gasket is in 328 Position. 2. This Pressure test at 30000 Psi shall be conducted for a period of minimum 1 hour and the same shall be repeated for 3 cycles. 3. Specimen test body will also be tested once for a max test load at 13000 Psi when the gasket is in 584.2 Position. The vendor shall prove the working of the test load safety device, at the maximum test load. 4. Any visual leak and pressure drop indicated on the pressure gauges will not be acceptable 	
17	PERFORMANCE PROVE-OUT AT BHEL	
17.1	Supplier should repeat the performance Prove-out at BHEL also as per clause No.16.1	
17.2	Supplier should also prove out any two jobs listed in Annexure – 1 and 2.	
18	TRAINING	
18.1	The Supplier shall train two BHEL Engineers in the Operation, Trouble Shooting and Maintenance of the Hydro test station at the Supplier's Works for a minimum period of 5 working Days	
18.2	The Supplier's Service Engineer / Application Engineer shall train BHEL Engineers in the Operation, Trouble Shooting and Maintenance of the Hydro test station for a minimum period of 6 Working Days, after commissioning of the Equipment, at BHEL Works.	

S. No	BHEL SPECIFICATION	BIDDER's OFFER with Technical details
18.3	The training shall include the following: <ol style="list-style-type: none"> 1. Operation of the machine 2. Trouble-Shooting 3. Electrical / Mechanical / Electronics systems 4. Safety 5. All special features of the machine 	
19	DOCUMENTS AND MANUALS	
19.1	Operation & Maintenance Manuals: --- Hard copy: 3 Nos & CD Media: 1 No Operation manual shall include all operations of the machine and its accessories with full details and safety instructions. All the features of the machine and how to operate them shall be explained in detail. Maintenance manual shall include all machine construction drawing, part drawings, assembly drawings, explanation and details about the sequence of operations of Electrical, Electronic & Hydraulic circuits.	
19.2	Detailed spare parts specification for the electrical, electronics, mechanical, hydraulics (and pneumatic if any) to be furnished for items made by the supplier and for the items bought out and assembled by the supplier. --- Hard Copy: 3 Nos.	
19.3	Electrical Wiring Drawings – Power & Control Circuits. Pneumatic/Hydraulic Circuit Diagrams, PLC circuit diagram, Specifications / Ratings of All Bought-Out-Items. Trouble Shooting Chart for Main and all Sub-Systems. -- Hard copy: 3 Nos. & CD Media: 1 No.	
19.4	PLC Loading software in CD media – 1 No PLC Backup in CD has to be provided.	
19.5	Drawings of the Sealing head / adapter. --- Hard Copy: 2 Sets.	
19.6	Equipment data / Commissioning data to be provided	

S. No	BHEL SPECIFICATION	BIDDER's OFFER with Technical details
20	GUARANTEE	
20.1	Performance guarantee for the complete equipment is essential for a period of 12 months after commissioning or 18 months after dispatch which ever is earlier. Vendor to confirm.	
21.0	GENERAL INFORMATION	
21.1	Machine Model: Vendor to specify	
21.2	Total connected load (KVA): Vendor to specify	
21.3	Space required for complete machine & accessories: (L x W x H). Vendor to specify	
21.4	Total weight of the machine: Vendor to specify	
21.5	Approximate weight of heaviest part of machine: Vendor to specify	
21.6	Approximate weight of the heaviest assembly / subassembly of Machine: Vendor to specify	
21.7	Dimensions of largest part / subassembly of machine: Vendor to specify	
21.8	The supplier shall describe the test procedure of the equipment offered. Vendor to specify	
21.9	The supplier shall give point-by-point response with reference to the above specification. Preferably the supplier shall give the comparative table of the specification called for and the offer in magnetic media in addition to the hard copy.	

Note: Please refer the following sketch and table in Annexures –1 and 2 for job details.

ANNEXURE – 1: SKETCH AND DIMENSIONAL DETAILS OF TUBING SPOOLS AND CASING SPOOLS



DGS

KPL

SSP

NRM

TUBING SPOOLS											
S.NO	DESCRIPTION	DRAWING NO	DIA-A	DIA-B	DIA-C	DIA-D	DIA-E	PCD-1	PCD-2	HT	Wt (Kgs)
1	BODY-TUBING SPOOL 13 5/8"	1-V-4745-03360	315.8	388.0	457.2	281.9	323.9	590.6	482.6	689	600
2	BODY-TUBING SPOOL	1-V-4540-03311	183.0	323.9	-	183.0	211.2	483.0	317.5	628	341
3	BODY-TUBING SPOOL	1-V-4543-03389	230.1	342.7	228.5	181.2	228.5	565.2	403.2	684	790
4	BODY-TUBING SPOOL	1-V-4F64-03436	315.8	388.0	457.2	282.0	328.05	590.6	565.2	740	942
5	BODY-TUBING SPOOL	1-V-4F54-03435	315.8	388.0	457.2	282.0	306.2	590.6	482.6	690	585
6	BODY-TUBING SPOOL 11"-10M X 7-1/16"-15M		315.8	388.0	457.2	182.0	200.7	590.6	428.7	740	850
7	BODY-TUBING SPOOL 13 5/8"-10MX11"-5M	1-V-4K60-03468	325.8	400.15	518	282	328.05	673.1	565.2	762	1205
8	BODY-TUBING SPOOL 13 5/8"-3MX11"-5M	1-V-4C97-03408	287.15	381.12	--	282	323.85	533.4	482.6	688	520
9	BODY-TUBING SPOOL 11"-3MX7 1/16"-5M	1-V-4J21-03457	230.10	323.85	----	183	211.15	469.9	317.5	631	335
10	BODY-TUBING SPOOL 13 5/8"-3MX11"-3M	1-V-4J04-03455	287.15	381	----	282	323.85	533.4	469.9	688	458
11	BODY-TUBING SPOOL 11"-15M X 7-1/16"-20M		282	328	711.2	181.2	219.3	673.1	554	780	1200

DGS

KPL

SSP

NRM

CASING SPOOLS											
S.NO	DESCRIPTION	DRAWING NO	DIA-A	DIA-B	DIA-C	DIA-D	DIA-E	PCD-1	PCD-2	HT	Wt (Kgs)
1	13-5/8"-3M X 11"-5M	1-V-4C18-03402	287.1	381.0	---	287.15	323.9	533.4	482.6	610	490
2	13-5/8"-5M X 11"-10M	1-V-4245-03407	315.7	388.0	457.2	287.15	328.05	590.6	565.2	740	1043
3	20-3/4"-3M X 13-5/8"-5M	1-V-4258-03264	442.7	584.2	----	347.4	388.0	749.3	590.6	708	870
4	21-1/4"-2M X 13-5/8"-3M	1-V-4128-03405	442.7	584.2	---	347.4	381.0	723.9	533.4	693	711
5	13 5/8"-2MX11"-5M	1-V-4H59-03454	287.1	381	---	287.15	323.9	489	482.6	612	532
6	13 5/8"-2MX11"-3M	1-V-4J18-03456	287.1	381	---	287.15	323.9	489	470	610	472
7	16-3/4"-5MX13-5/8"-10M		316	461.27	535	282	420	676.3	673.1	813	1450
8	13-5/8"-10M X 11"-15M		316	420	518	282	328	673.1	711.2	815	1400

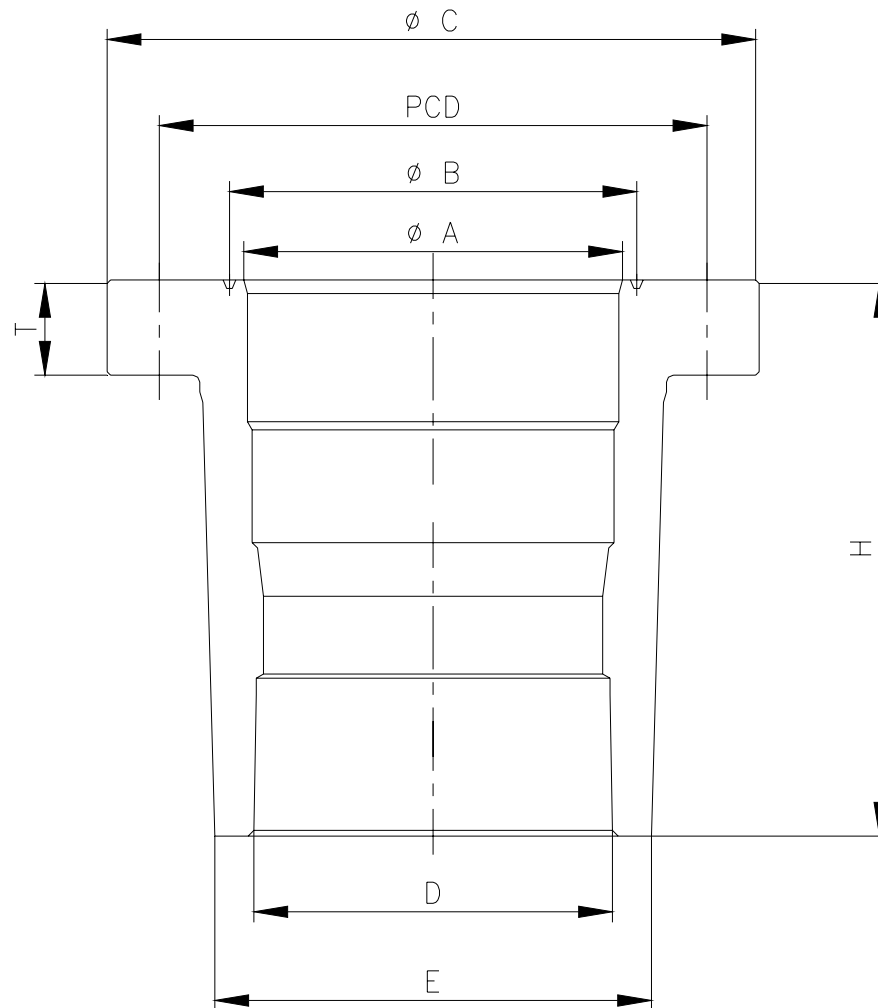
DGS

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ANNEXURE – 2: SKETCH AND DIMENSIONAL DETAILS OF CASING HEADS WITH BTC BOTTOM



DGS

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NRM

Sl No	Description	Dia A	Dia B	Dia C	Dia D	Dia E	PCD	T	H
01	21-1/4"-2000 PSI 18" casing	526.85	584.2	813	479.3	603	723.9	100	508
02	21-1/4"-2000 PSI, 20" casing	526.85	584.2	813	498.5	603	723.9	100	508
03	20-3/4"-3000 PSI 20" casing	526.85	584.2	858	498.5	603	749.3	122.2	508
04	20-3/4"-3000 PSI 18" casing	526.85	584.2	858	479.3	603	749.3	122.2	508
05	13-5/8"-2000 PSI	347.47	381	559	331	410	489	76.2	473
06	13-5/8"-3000 PSI	347.47	381	610	331	411	533.4	89	508
07	13-5/8"-5000 PSI	347.47	388.03	673	331	419	590.6	114.3	508
08	13-5/8"-10000 PSI	347.47	401.02	770	331	425	673.1	168.3	510
09	11"-3000 PSI	287.15	323.85	546	248.8	343	469.9	79.2	479.6
10	11"-5000 PSI	287.15	323.85	584.2	248.8	350	482.6	120.7	479.6
11	11"-10000 PSI	287.15	328.9	655	248.8	355	565.2	141.3	485
12	11"-15000 PSI	287.15	328.9	815	248.8	370	711.2	187.4	488

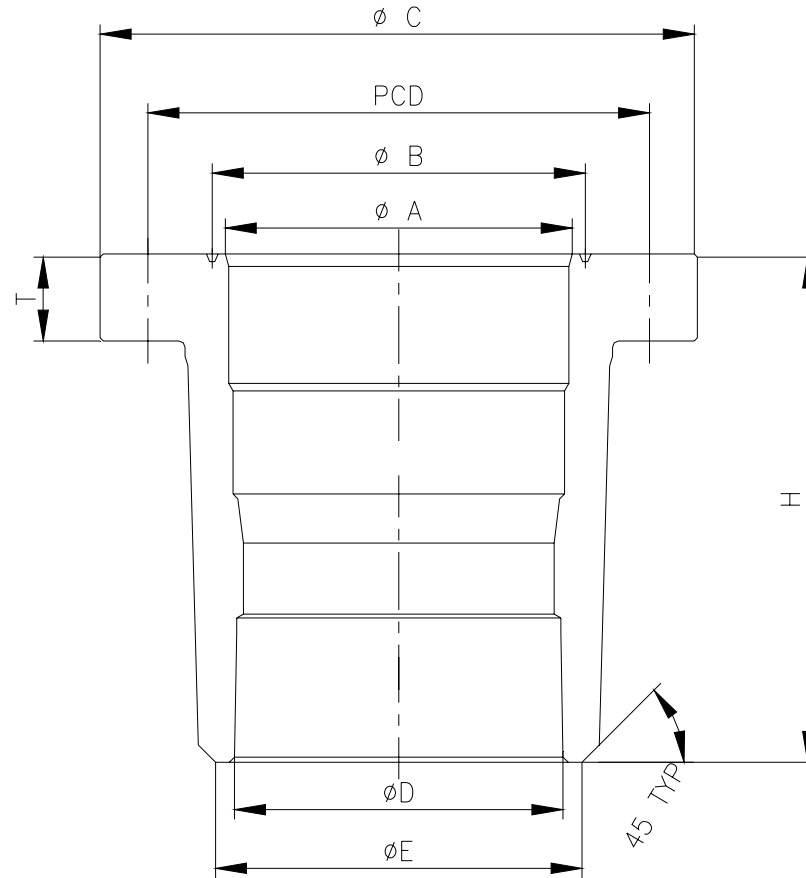
DGS

KPL

SSP

NRM

ANNEXURE – 2: SKETCH AND DIMENSIONAL DETAILS OF CASING HEADS WITH SLIP ON WELD (SOW) BOTTOM



DGS

KPL

SSP

NRM

SI No	Description	Dia A	Dia B	Dia C	Dia D	Dia E	PCD	T	H
01	21-1/4"-2000 PSI 18" casing	526.85	584.2	813	479.3	497	723.9	100	508
02	21-1/4"-2000 PSI, 20" casing	526.85	584.2	813	515.2	537	723.9	100	508
03	20-3/4"-3000 PSI 20" casing	526.85	584.2	858	515.2	540	749.3	122.2	508
04	20-3/4"-3000 PSI 18" casing	526.85	584.2	858	479.3	505	749.3	122.2	508
05	13-5/8"-2000 PSI	347.47	381	559	345.3	368.3	489	76.2	473
06	13-5/8"-3000 PSI	347.47	381	610	345.3	368.3	533.4	89	508
07	13-5/8"-5000 PSI	347.47	388.03	673	345.3	368.5	590.6	114.3	508
08	13-5/8"-10000 PSI	347.47	401.02	770	345.3	375	673.1	168.3	510
09	11"-3000 PSI	287.15	323.85	546	248.8	304.8	469.9	79.2	479.6
10	11"-5000 PSI	287.15	323.85	584.2	248.8	269.7	482.6	120.7	479.6
11	11"-10000 PSI	287.15	328.9	655	248.8	280	565.2	141.3	480
12	11"-15000 PSI	287.15	328.9	815	248.8	282	711.2	187.4	480