



An ISO 9001
Company

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

ENQUIRY	Phone: +91 431 257 79 38 Fax : +91 431 252 07 19 Email : tvenkat@bheltry.co.in Web : www.bhel.com
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	Enquiry Number: 2620700020	Enquiry Date: 23.06.2007	Due date for submission of quotation: 24.08.2007
Your 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			

Item	Description	Quantity	Delivery Schedule
10	Pipe End Edge Preparation Station (Plunge Cutting) – End Preparation Machine for Pipes as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com)	6 Nos.	31.03.2008

Note:

Confirmation of acceptance for BHEL commercial terms & conditions and Price Bid formats have been posted in BHEL Corporate web site www.bhel.com under Enquiry reference “2620700020”. Your offer should be based on all the above documents.

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 Purchase / MM / Manufacturing

END PREPARATION MACHINE FOR PIPES- Ø 220

PART A

SECTION – I QUALIFYING CRITERIA

The BIDDER has to compulsorily meet the following requirements to get qualified for consideration of the technical offer for the Pipe End Chamfering Machine.

S. No.	PARTICULARS	VENDOR'S RESPONSE
1.0	The BIDDER / VENDOR shall have a minimum of FIVE Years of Continuous Experience in Design, Manufacture, Supply, Erection & Commissioning of heavy duty special purpose machines /Horizontal boring machines	
2.0	Performance Certificate in the enclosed format should be furnished from minimum 2 Customers for satisfactory performance of machine supplied to them. The supplied machines should have been working satisfactorily for a period of at least one year after commissioning. The date of commissioning of the machine and full contact details of the contact person of the customers should be furnished	

SECTION – II

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

S. No.	PARTICULARS	VENDOR'S RESPONSE
3.0	The BIDDER/VENDOR to furnish Reference List of Customers, with full address , details of contact person, where Horizontal boring machines / SPMs have been supplied in the past.	
4.0	Details of Quality System followed [Furnish the salient aspects of the Quality Assurance System followed] and Stages of In-House Inspection, including Third Party Inspection Schedule.	
5.0	Details on SERVICE-AFTER-SALES Set-Up in India including the Addresses of Service Agents in India	

6.0	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	
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SECTION – III

The BIDDER / VENDOR has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser:

S. No.	PARTICULARS	VENDOR'S RESPONSE
7.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical Offer [with PART A & PART B] & Commercial and Price Bid.	
8.0	The Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause. A just 'CONFIRMED' or 'COMPLIES' 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	BIDDER has to indicate the Country of Origin for the supply of main equipment / important bought-out items.	

PERFORMANCE CERTIFICATE

(On Customer's Letter Head)

1. Supplier of the machine :
2. Make & Model of the Equipment :
3. Month & Year of Commissioning :
4. Application :
5. Sizes / Specification of Jobs
Performed in the machine : **(facing and edge preparation of**
straight pipes & pipes with multi-
plane bends size OD from 60mm to.
220mm and thickness from 4.0 mm
to 30.0 mm)
6. Performance of the Machine : Best in the market /
(Strike off whichever is not applicable) Satisfactory /
Good /
Average /
Not Satisfactory
7. Any other remarks:

Date:

Signature & Seal of the Authority
Issuing the Performance Certificate

PART – B**TECHNICAL SPECIFICATION FOR HEAVY DUTY END PREPARATION MACHINE FOR PIPES**

1.3	Material Sizes	
S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)
1.0	PURPOSE & WORKPIECE MATERIAL:	
1.1	The machine is meant for facing and edge preparation of straight pipes & pipes with multi-plane bends , which form high pressure components for Power Boilers, and Industrial boilers of Process Industries. The machine shall be capable of forming various profiles of edge preparation on the above said components, using form tools. The Edge preparation of the above jobs shall be done by tools mounted on a rotating faceplate/chuck, keeping the pipe stationary by clamping the pipe on the straight portion of one end limb of the bend / straight pipe, on self-centering Electric / Hydraulic pipe clamping vice.	
1.2	Material specification:	
	A) CARBON STEEL: SA 106 Gr.B / Gr C (ASTM), AP15L Gr B (ASTM) B) ALLOY STEEL: SA 335 P11, P12 & P22, P91 SA 312 TP304H, SA 312 TP316 L	
1.3.1	The machine shall be suitable for pipe size OD from 60mm to 220mm and thickness from 4.0 mm to 30.0 mm. The standard sizes are furnished below. Max.Length of the pipe 5000mm.	

S.No	PARTICULARS AND BHEL SPECIFICATION				BIDDER'S OFFER (With complete Technical Details)
1.3.2	Sl. No.	Pipe Size (OD), mm	Wall Thickness Range, mm		
	1	63.5	4.0 to 12.5		
	2	70.0	4.0 to 12.5		
	3	88.9	4.0 to 22.2		
	4	108	4.0 to 20.0		
	5	114.3	3.95 to 30.0		
	6	127	4.0 to 25.0		
	7	133	6.0 to 16.0		
	8	141.3	6.35 to 30.0		
	9	159.0	4.0 to 30.0		
	10	168.3	7.11 to 30.0		
	11	219.1	6.32 to 24.0		
1.4	Edge Preparation Styles Edge Preparation Profile Styles (Style'D'& 'P') to be machined As per ANNEXURE .I				
2.0	MACHINE DETAILS:				
2.1	HEADSTOCK:				
2.1.1	Geared Head stock unit shall be of fully enclosed type with Integral facing unit mounted on the spindle nose			Vendor to Confirm	
2.1.2	Minimum & Maximum Facing diameter			60mm to 220mm	
2.1.3	Maximum turning diameter			220mm	
2.1.4	Maximum weight of the job			1,000 kgs.	
2.1.5	Maximum boring & turning length			100 mm	
2.1.6	Headstock longitudinal travel (Min 500mm)			Vendor to Specify	
2.1.7	Feed rate of Headstock longitudinal travel			0.5mm /min – 1500mm/min	

S.No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER (With complete Technical Details)
2.1.8	Torque of the AC motor for Headstock traverse.	Vendor to Specify	
2.1.9	Spindle speed	10 to 800 rpm	
2.1.10	No. of speed ranges & speeds in each range	Vendor to Specify	
2.1.11	KW rating of AC spindle motor (S1 duty) , min. 15 KW (Vendor to furnish complete technical details along with offer) Also variable frequency drive may be quoted as optional item	Vendor to Specify	
2.1.12	Torque-Power-Speed characteristics of the spindle system to be submitted by the vendor along with offer	Vendor to specify	
2.1.13	Sliding type Chip guard on the headstock for the safety of the operator, operator's panel and to avoid spillage of chips on shop floor (Details should be furnished in offer)	Vendor to confirm	
2.2	FACING UNIT:		
2.2.1	Heavy steel casting fitted on the nose of main spindle, incorporating three T-slots for three tool holders with tool.	Vendor to Confirm	
2.2.2	Maximum diameter of the face plate	Vendor to specify	
2.2.3	Min. distance between the faceplate and the clamping vice	Vendor to specify	
2.3	MACHINE BED:		
2.3.1	No. Of Guide ways	Vendor to specify	
2.3.2	Bed width across ways	Vendor to specify	
2.3.3	Type of guide ways: (Details should be furnished in the offer)	Vendor to specify	
2.3.4	Hardness of guide ways	Vendor to specify	

S.No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER (With complete Technical Details)
2.3.5	<u>Metallic Telescopic Covers</u> of rust resistant material shall	Vendor to specify	

	be provided with wipers for guide ways. Joints of telescopic covers should be so sealed to avoid ingress of dust.		
2.4	FEED DRIVE SYSTEM:		
2.4.1	Feed motor details of model, make, and type, power rating to be furnished. Only A.C drive required	Vendor to specify	
2.4.2	Maximum feed force	Vendor to specify	
2.5	STRAIGHT PIPE AND PIPE BEND CLAMPING SYSTEM:		
2.5.1	The clamping system shall be suitable for centering and clamping straight pipes as well as pipes with multi plane bends (Complete details should be furnished in the offer)	Vendor to Confirm	
2.5.2	The clamping system shall be equipped with a horizontally moving electric / hydraulically operated self-centering vice. The Vice shall incorporate "V" type jaws which can be moved up & down for job centering.	Vendor to Confirm	
2.5.3	Diameter range	60mm to 220mm	
2.5.4	Bed width	Vendor to specify	
2.5.5	Bed length	Vendor to specify	
2.5.6	Clamping force / pressure	Vendor to specify	
2.5.7	Min straight length of the job available for clamping	150 mm for both straight pipes and pipes with bends.	

S.No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER (With complete Technical Details)
2.5.8	Pipe clamping operation	Through Electric / Hydraulic.	
2.5.9	Pipe clamping jaws type	"V" type horizontal	

CABS-2-17N- End Preparation Machine for Pipes

2.5.10	Safety system to prevent the rotation of the cutting tool unless the horizontal vice is properly clamped. (Details should be furnished in the offer)	Vendor to confirm.	
2.5.11	Motorized longitudinal and vertical movement of the clamping jaws for job centering. Motor to be provided with chip guard Also head stock and pipe clamping should have system to match center line (head stock & clamping device (Vendor to furnish details of the system, motor capacity etc in the offer)	Vendor to confirm	
2.6	PIPE SUPPORTING STEADY:		
2.6.1	Electrically operated Vertically adjustable “V” type supports for supporting the free end of pipes and bends. The supports shall have facility to be moved to accommodate different lengths of pipes & bends and should have horizontal movement for center shift adjustment. In case of pipes with multi plane bends, the free end of the pipe will be held by over-head crane. (Vendor to submit complete details with drawings of the supports in the offer)	Vendor to confirm	
2.7	CONSTRUCTION:		
2.7.1	Vendor to furnish details of material, hardness & constructional details including explanatory drawings of various components/assemblies like Headstock, Facing Unit, Tool Holder , Machine Bed, Feed Transmission System, Pipe & Pipe Bend Clamping System	Vendor to Confirm	
S.No	PARTICULARS AND BHEL SPECIFICATION		BIDDER’S OFFER (With complete Technical Details)
2.7.2	Soft copy of literature with photographs, drawings explaining the technical features should be enclosed with the offer	Vendor to Confirm	
2.8	OPERATION AND CONTROL SYSTEM:		
2.8.1	OPERATOR'S PANEL:		

CABS-2-17N- End Preparation Machine for Pipes

2.8.1.1	Operator's panel of required configuration shall be provided for convenient and efficient operation. All switches should be within reach of operator. All displays/indications should also be conveniently placed (Layout showing complete details should be submitted with the offer)	Vendor to Confirm	
2.9	MACHINE LIGHTS:		
2.9.1	Machine Lights for sufficient illumination of complete working area should be provided for clear visibility. (Details should be furnished in the offer)	Vendor to Confirm	
2.9.2	A spot light with sufficiently long cable should also be provided.	Vendor to Confirm	
2.9.3	All light fittings, consumables, adapters/receptacles should have compatibility with Indian equivalents	Vendor to Confirm	
2.10	HYDRAULICS		
2.10.1	Hydraulic system should be centralized. Hydraulic Tank shall preferably be located at floor level All hydraulic pipelines to be neatly laid out (Details should be furnished in the offer)	Vendor to Confirm	
2.10.2	Make Rexroth / Vickers Sperry or equivalent from a reputed manufacturer. (Details to be submitted)	Vendor to specify	
S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
2.10.3	Hydraulic hose end fittings shall be of suitable material with female swivel nut and 24 ⁰ cone angle and o ring.	Vendor to specify	

CABS-2-17N- End Preparation Machine for Pipes

2.10.4	Hydraulic circuits shall be designed with minimum number of control valves and to suit oil of ISO VG 46 or 68 only. Also minimum number of check-points to be provided wherever pressure is required to be read for setting and trouble shooting. MINIMESS Pressure Gauge - 1 No with Connecting Hose to be provided. Also hydraulic system should have power saving device during operation	Vendor to confirm	
2.10.5	The control voltage for all solenoid operated valves	24 V DC	
2.10.6	Filtration System, Details should be submitted.	Vendor to specify	
2.10.7	Failure indication	Vendor to specify	
2.10.8	Automatic shut off provision, Details should be submitted.	Vendor to specify	
2.10.9	Hydraulic pump capacity (flow / pressure)	Vendor to specify	
2.10.10	Each pump should have an independent motor. Tandem pumps should not be used	Vendor to specify	
2.10.11	First filling of all required Oils & Grease etc. should 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 specify	
2.11	ELECTRICAL:		
S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
2.11.1	415V + 10% / -10%, 50HZ +/-3 Hz, 3 Phase AC (3 wire system without neutral) power supply 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 during construction of foundation to be delivered before start of foundation work.	Vendor to confirm	

CABS-2-17N- End Preparation Machine for Pipes

2.11.2	Tropicalization: All electrical / electronic equipment shall be tropicalized.	Vendor to confirm	
2.11.3	All electrical & electronic control cabinets & panels should be dust and vermin proof	Vendor to confirm	
2.11.4	All electrical components in the cabinets should be mounted on DIN Rail	Vendor to confirm	
2.11.5	All electrical and electronic panels including operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters /receptacles should have compatibility with Indian equivalents.	Vendor to confirm	
2.11.6	Motors & other electrical components shall conform to IEC or Indian Standards . Motors shall be of SIEMENS/ABB / CROMPTON or such reputed make. All switches and control elements shall be of Seimens / L&T / GEC / Alstom /telemecanique or such reputed make..	Vendor to confirm	
S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
2.11.7	All cables moving with traversing axes should be installed in caterpillar / Drag chain. Additionally, all the cable trays required for laying of cables should be included in the offer.	Vendor to confirm	
2.11.8	Vendor should ensure the proper earthing for the machine and its peripherals.	Vendor to confirm	
2.11.9	All Electric enclosures shall have IP 54 protection	Vendor to confirm	
2.12	SAFETY ARRANGEMENTS:		
2.12.1	Following safety features in addition to other standard safety features should be provided on the machine:	Vendor to confirm	

CABS-2-17N- End Preparation Machine for Pipes

2.12.2	Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, work piece and the operator due to the malfunctioning or mistakes.	Vendor to specify	
2.12.3	A detailed list of all alarms / indications provided on machine should be submitted by the Vendor.	Vendor to specify	
2.12.4	All the pipes, cables etc. on the machine should be well supported and protected. These should not create any hindrance to machine operator's movement for effective use of machine.	Vendor to Confirm	
2.12.5	All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations and suitably guarded.	Vendor to Confirm	
2.12.6	Emergency Switches at suitable locations as per International Norms should be provided.	Vendor to Confirm	
S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
2.12.7	All lubricated parts like Bed, guide ways shall have provision for collecting the used Lubrication oil from machine guide ways and preventing them from spilling over on to the ground.	Vendor to Confirm	
2.13	ENVIRONMENTAL PERFORMANCE OF THE MACHINE:		
2.13.1	The Machine should confirm to following factors related to environment:	Vendor to Confirm	
2.13.2	Maximum noise level shall be 85 dB(A) at normal load condition, 1meter away from the machine with correction factor for back ground noise.	Vendor to demonstrate compliance to noise level, if required.	
2.13.3	If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.	Vendor to confirm	

2.13.4	Paint of the machine should be oil resistant and should not peel off.	Vendor to confirm	
3.0	TOOLING:		
S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
3.1	Tooling system should consist of 1) 3 base tool holders mounted on the faceplate slide. One tool holder each for OD turning, chamfering and boring, respectively. 2) Standard ISO cutting tools / special form tools with indexable carbide inserts / brazed carbide capable of generating all the edge preparation styles indicated. Parameters for cutting tools Cutting speed : 100-150 meters per minute. Depth of cut : 5-18 mm. Feed : 0.2- 0.6 mm per revolution.	Vendor to specify	
3.2	Details of special cuttings tools to suit the actual profiles to be machined (ref Clause No 1.4), Tool size for different tool holders	Vendor to specify	
3.3	Limitation regarding length & weight of tool / tool holder clamped in different tool holders for trouble free operation	Vendor to specify	
3.4	5 nos each of all types of cutting tools, 2 nos. of tool holders each, recommended by vendor for complete machining of prove out components should be offered.	Vendor to confirm	
4.0	LEVELING & ANCHORING SYSTEM		
4.1	Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc should be supplied	Vendor to specify	

5.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE:		
S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
5.1	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 and maintenance of the machine should be supplied. List of such tools should be submitted with offer	Vendor to confirm	
5.2	Any Test mandrel required for checking & alignment of the machine components etc. should be supplied	Vendor to confirm.	
6.0	SPARES:		
6.1	Itemized 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 on three shifts continuous running basis should be offered by vendor. The list to include following, in addition to other recommended spares: (Unit Price of each item of spare should be offered)	Vendor to confirm	
6.2	Mechanical & Hydraulic Spares: All types of Pumps, Valves, Pressure Switches, Transducers, Flow Switches, Filters, Seals, O-rings, Hydraulic Hoses etc.	Vendor to confirm	
6.3	Electrical /Electronic Spares: All types of Relays, Contactors, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch, spares for Feed Drives, Main Drive etc.	Vendor to confirm	

S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
6.4	All types of spares for total machine and accessories should be available for at least ten years after supply of the machine.	Vendor to confirm	
6.5	Vendor to confirm that complete list of spares for machine and accessories, along with item part no / specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the machine	Vendor to confirm	
7.0	DOCUMENTATION:		
7.1	Three sets of following documents (3 Hard copies,) in English language should be supplied along with the machine	Vendor to confirm	
7.2	Operating manuals of Machine	Vendor to confirm	
7.3	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	Vendor to confirm	
7.4	Manufacturing drawings for all supplied tool holders, cutting tools, adapters, sleeves, pipe clamp jaws, etc.	Vendor to confirm	
7.5	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.	Vendor to confirm	
7.6	Detailed specification of all rubber items and hydraulic/lube fittings	Vendor to confirm	

S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
7.7	Operating Manuals, Maintenance Manuals & Catalogues for all supplied Accessories.	Vendor to confirm	
7.8	The vendor shall submit complete Master List of parts used in the machine.	Vendor to confirm	
7.9	One additional set of all the above documentation on CD	Vendor to confirm	
8.0	TRAINING:		
8.1	The Vendor shall train two BHEL's Engineers in Operation and Maintenance (Mechanical, Electrical/ Electronics) of the Machine at Vendor's works	Vendor to confirm	
8.2	The Vendor shall impart training to BHEL's Machine Operators and Maintenance crew in Operation and Maintenance after the commissioning of the Machine at BHEL works for not less than 5 working days	Vendor to confirm	
8.3	Airfare, boarding & lodging for the trainees shall be borne by BHEL.	Vendor o Confirm	
8.4	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel	Vendor to Confirm	
8.5	Vendor to quote for training on per man per week basis for training at vendor's work	Vendor to confirm	
9.0	FOUNDATION:		

S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
9.1	Vendor shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of Letter of Intent (LOI). Complete Foundation / dynamic load details shall be submitted by the Vendor within one month after getting BHEL's approval. BHEL shall construct complete foundation for the machine as per the Vendor's recommendation and drawing.	Vendor to submit	
10.0	ERECTION & COMMISSIONING		
10.1	Vendor to take full responsibility for supervision of the erection. Vendor shall start up, test the machine, it's control & all types of other supplied equipment, and carry out machining of test pieces. 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. Other requirements like crane and helping personnel shall also be provided by BHEL. Details of these requirements should be informed by Vendor in advance		
10.2	Successful proving of BHEL components by the Vendor shall be considered as part of commissioning. All tests, as mentioned in (clause 14.0) shall form part of the commissioning activity.	Vendor to confirm	
10.3	Tools, Test Mandrels, instruments and other necessary equipment required to carry out all above activities should be brought by the Vendor.	Vendor to confirm	

S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
10.4	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the Vendor on returnable basis.	Vendor to confirm	
10.5	Portion, if any, of the machine, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the Vendor should supply sufficient quantity of touch-up paint of various colours of paint used.	Vendor to confirm	
10.6	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to confirm	
10.7	Charges, duration, terms & conditions for E&C should be furnished in detail separately by Vendor along with offer.	Vendor to confirm	
11.0	ACCURACY TESTS:		
11.1	GEOMETRICAL ACCURACY		
11.1.1	Geometrical Accuracy Tests shall be in accordance with applicable standard recommended by the Vendor. Detailed Test Charts for the same, clearly showing the accuracies to be achieved on the machine, shall be submitted with the offer.	Vendor to confirm	
11.1.2	All the above accuracies should be demonstrated to BHEL engineers during pre-acceptance tests at Vendors works and during Erection & Commissioning at BHEL Works.	Vendor to confirm	
12.0	AMBIENT CONDITIONS & THERMAL STABILITY:		

S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
12.1	Total machine and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies. Power Supply: Voltage: 415 V \pm 10% Frequency: 50 Hz \pm 3%, 3 Phase The machine shall be suitable for an ambient temperature of +45 ° C and relative humidity of 85 % respectively, but both do not occur simultaneously	Vendor to confirm	
12.2	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. Vendor to confirm that machine is suitable for above.	Vendor to confirm	
12.3	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 Confirm	
13.0	PROVEOUT OF BHEL COMPONENTS:		
13.1	The prove-out trials of the edge preparation shall be for the straight and bend pipes for sizes given by BHEL during the technical discussions / at the time of releasing the Purchase Order. The pipe ends subjected to facing and edge preparation will be either flame cut or saw cut. 5 jobs in the size range & edge preparation style specification should be proved out.	Vendor to confirm	

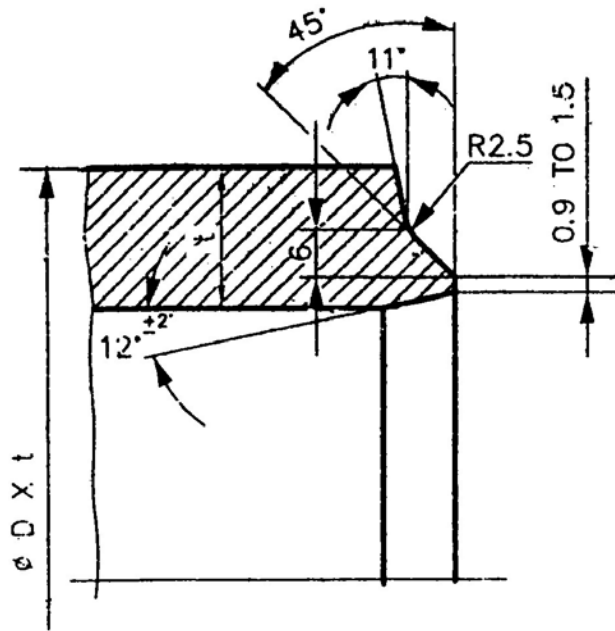
S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
14.0	MACHINE ACCEPTANCE: (Tests/Activities to be Performed by Vendor)		
14.1	Tests/Activities to be carried out at Vendor's works on the machine before dispatch:		
14.1.1	Geometrical accuracies as per applicable standard test chart recommended by the Vendor	Vendor to confirm	
14.1.2	Full load test to demonstrate the maximum power & cutting capacity of the machine.	Vendor to confirm	
14.1.3	Demonstration of all features of the machine, control system & accessories	Vendor to confirm	
14.2	Tests / Activities to be carried out at BHEL works while commissioning the machine:	Vendor to confirm	
14.2.1	Geometrical accuracies as per applicable standard test chart recommended by the Vendor	Vendor to confirm	
14.2.2	Full load test to demonstrate the maximum power & cutting capacity of the machine.	Vendor to confirm	
14.2.3	Demonstration of all features of the machine, control system & accessories to the satisfaction of BHEL for efficient and effective use of the machine	Vendor to confirm	
14.2.4	The prove-out trials as per Clause 13.0	Vendor to confirm	
14.2.5	Supervision by vendors of independent operation of machine by BHEL after job prove out during the training period of 5 working days	Vendor to confirm	
15.0	PACKING:		

S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
15.1	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	Vendor to confirm	
16.0	GUARANTEE:		
16.1	12 months from the date of acceptance of the machine.	Vendor to confirm	
17.0	GENERAL:		
17.1	Machine Model No.	Vendor to specify	
17.2	Total connected load (KVA):	Vendor to specify	
17.3	Floor area required (Length, Width, Height) for complete machine & accessories	Vendor to specify	
17.4	Machine lubrication	Automatic centralized lubrication system.	
17.5	Painting of machine / electrical panel	RAL6011 Apple Green (Polyurethane paint)	
17.6	All gears are to be hardened and ground	Vendor to specify.	
17.7	Total weight of the machine	Vendor to specify	
17.8	Weight of heaviest part of machine	Vendor to specify	
17.9	Vendor to submit, along with offer, reference list of customers where similar machines have been supplied mentioning broad specifications of the supplied machine i.e. Model, Load Carrying Capacity, Main Drive Rating,	Vendor to confirm	

S.No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With complete Technical Details)	
17.10	Detailed catalogues, sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to confirm	
17.11	Hydraulic, Pneumatic & oil piping should be preferably metallic except places where flexible piping is essential. All the pipes required for the same shall be included in the standard scope of the machine. In case of pneumatic air requirement BHEL can supply air at 4 bar pressure only	Vendor to confirm	

Enclosures:

Annexure 1 : Edge Preparation Styles

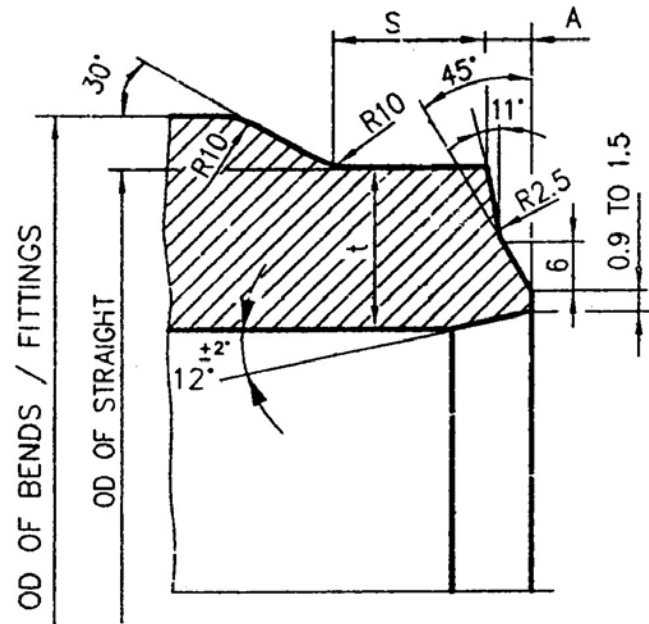


USE WHEN $t \geq 14.2$ mm.

STYLE - P

ANNEXURE - 1
Drg No. CABS-1-16 - 01
BHEL, Tiruchirappalli

02. WHEN $t < 65$ $S+A = 65$ Min. & $t > 65$, $S=65$ Min.
 WHERE t =THK OF CONN.PIPE(STRAIGHT).



STYLE - Pa

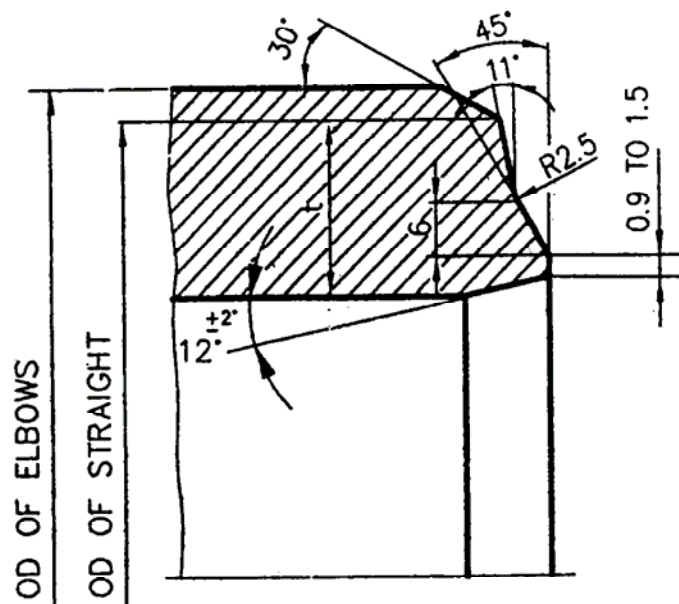
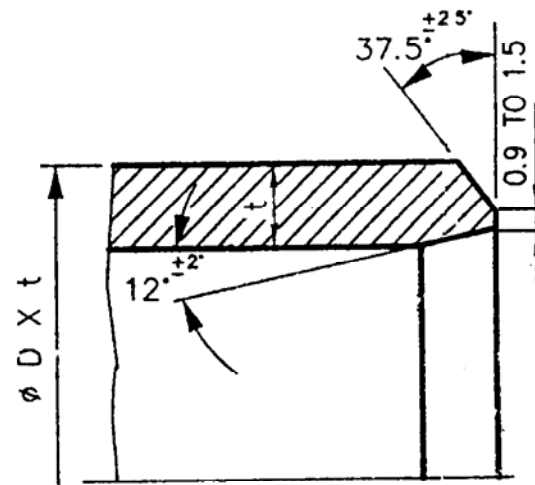


FIGURE - Z



STYLE - D

NOTES: -

01. USE WHEN $t < 14.2$ mm.

ANNEXURE - 1
Drg No CABS-1-16 - 03
BHEL, Tiruchirappalli

ANNEXURE - 1
Drg No. CABS-1-16-02
BHEL, Tiruchirappalli

NOTES: -

01. APPLICABLE FOR P91 MATERIAL
02. FOR OD MISMATCHING REF. FIGURE-Xa.
03. $\alpha = 6^\circ$ FOR WALL THICKNESS ≤ 30 mm
04. $\alpha = 10^\circ$ FOR WALL THICKNESS > 30 mm

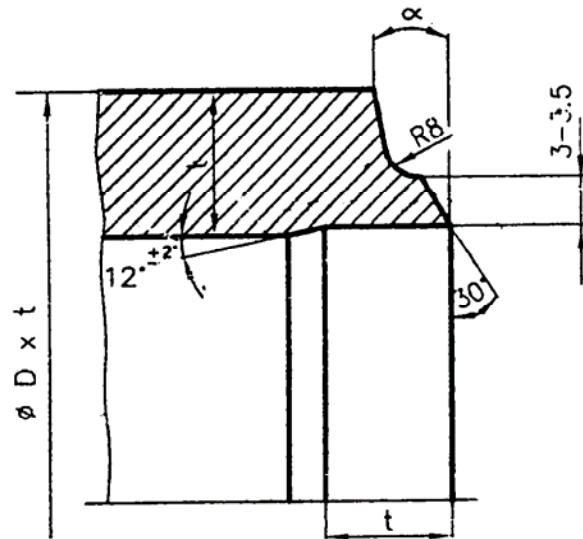


FIGURE - X

NOTES: -

01. OD OF STRAIGHT TO BE PHYSICALLY MEASURED/VERIFIED
02. $\alpha = 6^\circ$ FOR WALL THICKNESS ≤ 30 mm
03. $\alpha = 10^\circ$ FOR WALL THICKNESS > 30 mm

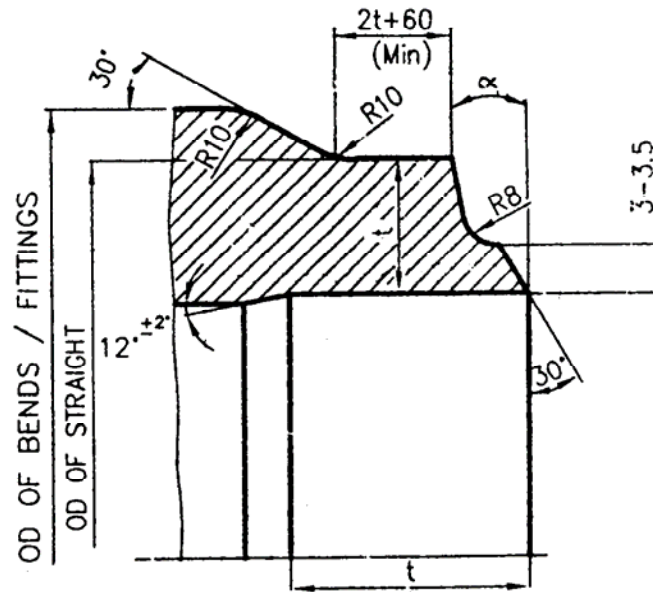


FIGURE - Xa