



An ISO 9001  
Company

## Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

<b>ENQUIRY</b>	Phone: +91 431 257 79 38 Fax : +91 431 252 07 19 Email : <a href="mailto:tvenkat@bheltry.co.in">tvenkat@bheltry.co.in</a> Web : <a href="http://www.bhel.com">www.bhel.com</a>
<b>NOTICE INVITING TENDER</b>	

<b>TWO PART BID</b>	<b>Enquiry Number:</b>	<b>Enquiry Date:</b>	<b>Due date for submission of quotation:</b>
Tender to be submitted in two Parts	<b>2620900185</b>	<b>11.09.2009</b>	<b>24.10.2009</b>

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	<b>Radial Drilling Machine – 80 mm</b> as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	<b>5 Nos.</b>

### Important points to be taken care during submission of offer

1. Delivery required 8 months from the date of purchase order.
2. Grace period of 2 months beyond the above delivery period will be considered.
3. 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 "2620900185".

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**  
**RADIAL DRILLING MACHINE**

**SECTION – I: QUALIFYING CRITERIA**

The BIDDER has to compulsorily meet the following requirements to get qualified for considering the technical offer:

S. No.	REQUIREMENTS	Vendor's Response
1	<p>Only those vendors (<b>OEMs</b>), who have supplied and commissioned at least one <b>RADIAL DRILLING MACHINE</b> with</p> <p><b>1. Spindle power of 10 KW or more,</b></p> <p><b>2. Drilling capacity of minimum 75 mm on steel and</b></p> <p><b>3. Drilling radius from column center 2000 mm or more</b></p> <p>in the past ten years and such machine should be working satisfactorily for a minimum period of one year after commissioning, as on the date of opening of this Tender are eligible to quote.</p> <p><i>(However, if such machine is already supplied to BHEL, then that machine should be working satisfactorily for a minimum period of six months after commissioning, as on the date of opening of this Tender.)</i></p>	
	<b>The vendor should submit following information where similar machine has been supplied for qualification of their offer.</b>	
1.1	Name and postal address of the customer or company where similar machine 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 of the machine.	
1.5	Parameters of machine supplied, viz. Spindle power, Drilling capacity and the application for which the machine is supplied.	
1.6	Along with the Technical offer, the Vendor should submit one Performance certificate from the customer for the satisfactory performance of the machine supplied to them. For obtaining the Performance certificate, a suggestive format is provided in <b>SECTION – IV</b> .	
1.7	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.	
2.0	<b>DELIVERY</b> - The bidder shall quote the best possible delivery. However the delivery shall not exceed 8 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 date of purchase order to despatch from the vendor works.	

**SECTION – I I**

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

<b>S. No.</b>	<b>REQUIREMENTS</b>	<b>Vendor's Response</b>
3.0	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where RADIAL DRILLING MACHINES have been supplied in the past.	
4.0	Details of RADIAL DRILLING MACHINES supplied to other BHEL units, if any. (Year of commissioning, Spindle power and Drilling capacity).	
5.0	Details on SERVICE-AFTER-SALES Set-Up in India including the Address 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	<p>The BIDDER / VENDOR shall submit the offer in TWO PARTS.</p> <ol style="list-style-type: none"> <li>1. Technical Offer [with PART A &amp; PART B] and Commercial offer.</li> <li>2. Price Bid.</li> </ol>	
8.0	<p>The Technical Offer shall contain a comparative statement of Technical <b>Specifications demanded by BHEL</b> and <b>Offer Details submitted by the Bidder</b>, against each clause.</p> <p>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.</p>	
9.0	The Technical Offer shall be supported by product Catalogues & Data Sheets and also technical details of Bought-Out-Items with copies of Product Catalogue to the extent possible.	
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.	

**SECTION – IV**

The performance certificate should be produced **on Customer's Letter Head.**

**PERFORMANCE CERTIFICATE**

1. Supplier of the machine		
2. Make & Model of the M/C		
3. Month & Year of Commissioning		
4. Application for which M/C is used		
5	a) Spindle Power (cont. rating) b) Drilling Capacity on steel c) Max Drilling radius d) Spindle Taper	
6. Performance of the Equipment (Tick whichever is applicable)		<b>Satisfactory</b>
		<b>Good</b>
		<b>Average</b>
		<b>Not Satisfactory</b>
7. Service after sales		<b>Satisfactory</b>
		<b>Good</b>
		<b>Average</b>
		<b>Not Satisfactory</b>
<div style="text-align: right;"> Signature &amp; Seal of the Authority  Issuing the Performance Certificate </div>		
Date:		

# CAS-3- 24N-Technical specification for Radial Drilling Machine – Part-B

## PART- B

### TECHNICAL SPECIFICATION FOR RADIAL DRILLING MACHINE – Dia. 80mm

Clause No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical Details
1.0.0	<p><b>PURPOSE:</b></p> <p>This machine is intended for the following operations in the manufacture of components like HV Module, Headers, EWLI Hole drilling &amp; Tapping, De-super heater shell, Fuel line End Pieces , Adopter Thermo well , Pipes, Flanges, Lugs in Power and utility Boilers.</p> <ol style="list-style-type: none"> <li>1. Drilling</li> <li>2. Tapping</li> <li>3. Spot facing (Internal &amp; External) and</li> <li>4. Reaming</li> </ol> <p>The work piece material is Steel <b>Casting</b> / <b>Steel Forging</b> / <b>Pipes</b>.</p>	
1.0.1	<b>WORK-PIECE MATERIAL SPECIFICATION AND SIZE:</b>	
1.0.1 A	<b>Maximum Job envelope Length x Breadth x Height : 3500 mm x1400 mm x 900 mm</b>	
1.0.1 B	<b>Maximum Job Weight : 2000 Kg</b>	

CAS-3- 24N-Technical specification for Radial Drilling Machine – Part-B

Clause No	PARTICULARS AND BHEL SPECIFICATION				BIDDER'S OFFER With Technical Details
1.0.1 C					
	Material	Description	ASTM Specification	Hardness	
	Steel Casting	Carbon Steel	A216 WCB, WCC	185 BHN	
			A352 LCB, LCC	225 BHN	
		Alloy Steel	A 217 WC5, WC6, WC9, C12A	210 BHN	
		Stainless Steel	A351 CF3M, CF8, CF8C and CF8M	230 BHN	
	Steel Forging	Carbon Steel	SA105	185 BHN	
		Alloy Steel	SA 182 F22 Class 3	210 BHN	
			SA 182 F91	225 BHN	
	Steel Pipes	Carbon Steel	SA 106 Gr A,B,C	185 BHN	
		Alloy Steel	SA 335 P91,11,12,22,92	225 BHN	
2.0.0	MACHINE CONFIGURATION:			Vendor to confirm	
	The machine shall have a vertical column mounted on the base plate. The horizontal arm shall move up and down the column and can be rotated / locked at any position. The drilling head shall move towards or away from the column and can be locked at any position. The spindle shall be housed in the drilling head and can be moved up and down.				

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Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
<b>2.1</b>	<b>CAPACITY</b>		
2.1.1	Drilling capacity in steel	80 mm	
2.1.2	Drilling capacity in solid cast iron	Vendor to specify	
2.1.3	Tapping capacity in steel	M 60 x 4	
<b>2.2</b>	<b>SPINDLE</b>		
2.2.1	Spindle stroke	Minimum 325 mm	
2.2.2	Taper in spindle	MT 6	
2.2.3	Power of spindle motor 10 KW or more	Vendor to specify make and rating	
2.2.4	Quill diameter	Vendor to specify	
2.2.5	Braking System to slow down and stop the main spindle	Vendor to provide	
<b>2.3</b>	<b>SPINDLE SPEEDS AND FEEDS</b>		
2.3.1	Spindle speed range 11 to 1200 rpm	Vendor to specify	
2.3.2	Spindle speed-Endlessly variable	Vendor to confirm	
2.3.3	Spindle feed range Min - 0.04 mm/rev Max - 2.8 mm/rev	Vendor to specify	
2.3.4	No of feeds	Vendor to specify	
2.3.5	Mode of pre selection of feed and speed	Vendor to specify	
2.3.6	Powered Feeding	Vendor to confirm	



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Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
<b>2.4</b>	<b>ARM</b>		
2.4.1	Traverse length of Drill head along the arm	1800 mm	
2.4.2	Maximum distance from the spindle axis to column surface	Vendor to specify	
2.4.3	Minimum distance from the spindle axis to column surface	Vendor to specify	
2.4.4	Maximum distance from Spindle nose to Base Plate (Spindle fully retracted condition)	1645 mm or more	
2.4.5	Minimum distance from Spindle nose to Base Plate (Spindle fully extended condition)	550 mm or less	
2.4.6	Swing of the arm around the column in degrees	Vendor to specify	
2.4.7	Centralized and independent clamping mechanism of arm on column. Vendor to submit details	Vendor to specify	
2.4.8	Power of Arm Locking motor, if any	Vendor to specify	
2.4.9	Power locking of sleeve on column	Vendor to specify	
2.4.10	Powered Drill head traverse on Arm	Vendor to confirm	
2.4.11	Power of Arm Elevating motor 3 KW or more	Vendor to specify make and rating	
<b>2.5</b>	<b>COLUMN</b>		
2.5.1	Column dimensions	Vendor to specify	
2.5.2	Column sleeve diameter	Vendor to specify	
<b>2.6</b>	<b>MACHINE GUIDE WAYS</b>		
2.6.1	Width of Arm guide ways	Vendor to specify	
2.6.2	Hardness of guide ways	Vendor to specify	

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Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
<b>2.7</b>	<b>BED OR BASE PLATE</b>		
2.7.1	Dimensions of the base plate	Vendor to specify	
2.7.2	Size of T-slots M24	Vendor to confirm	
2.7.3	T-slots pitch (as per DIN standard)	Vendor to specify	
<b>2.8</b>	<b>COOLANT FACILITY</b> Flood coolant system of minimum 30 lpm with suitable pump, motor & filtration system shall be offered. Proper collection and retrieval shall be ensured. Coolant selection shall be through control panel	Vendor to confirm and offer details of motor make, power, discharge & pressure.	
<b>2.9</b>	<b>LUBRICATION SYSTEM</b> Centralized auto lubrication shall be offered with metering cartridges and necessary electrical interlock	Vendor to Confirm	
<b>2.10</b>	<b>CONSTRUCTION</b> Vendor has to furnish constructional details of the machine including explanatory drawings, of various components/ assemblies like Column, Bed, Base plate, Arm, Drilling unit, Spindle etc.	Vendor to furnish	
<b>2.11</b>	<b>OPERATION CONTROL PANEL</b> Operator's panel mounted on the drill head shall be provided. All switches on the Operator's panel should be within reach of operator for convenient, efficient & safe operation. All indications should also be conveniently placed accordingly. No separate switch box is needed. Joy Stick arrangement should be provided for head & arm movement	Vendor to confirm	

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Clause No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical Details
<b>3.0</b>	<b>MACHINE LIGHTS:</b>	
3.1	Machine Lights of 24V to be provided as built in with Headstock for sufficient illumination of complete working area for clear visibility.	Vendor to confirm
3.2	All light fittings, consumables, adapters / receptacles should have compatibility with Indian equivalents	Vendor to confirm
<b>4.0</b>	<b>HYDRAULIC SYSTEM</b> Details of the Hydraulic system to be provided, if any	Vendor to provide
<b>5.0</b>	<b>ELECTRICAL SYSTEM:</b>	
5.1	AC Power Supply of 415V $\pm 10\%$ , 50HZ $\pm 1.5$ HZ, (3 Phase 3 wire system) will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor. All types of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine / control cabinets, shall be the responsibility of vendor.	Vendor to confirm
5.2	Tropicalization: All electrical equipment shall be tropicalized	Vendor to confirm
5.3	All electrical controls & systems should be dust and vermin proof	Vendor to confirm
5.4	All electrical components in the cabinets should be mounted on DIN Rail	Vendor to confirm
5.5	All electrical panels 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

CAS-3- 24N-Technical specification for Radial Drilling Machine – Part-B

Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
5.6	All cables moving with traversing axes should be installed in Caterpillar/ Drag chain. Additionally, all the cable trays required for laying cables should be included in the offer.	Vendor to confirm	
5.7	Vendor should ensure the proper earthing for the machine and its accessories.	Vendor to confirm	
5.8	All motors shall be from M/s Siemens/KEC/ ABB. Or any other makes acceptable to BHEL and confirming to IEC standard.	Vendor to confirm	
5.9	All electrical devices like contactors, relays and limit switches, push buttons etc. shall be from Siemens / L&T/ Alstom/ Cuttler Hammer / Telemecanique.	Vendor to confirm	
5.10	All components/devices/terminals are to be incorporated with ferrules. (Numbered)	Vendor to confirm	
6.0	<b>SAFETY ARRANGEMENTS:</b> Following safety features in addition to other standard safety features should be provided on the machine:	Vendor to confirm	
6.1	Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, work piece and the operator due to the malfunctioning or mistakes.	Vendor to confirm	
6.2	All the pipes, cables etc. on the machine should be well supported and protected.	Vendor to confirm	
6.3	All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations.	Vendor to confirm	
6.4	Emergency Switches at suitable locations as per International norms are to be provided.	Vendor to confirm	

CAS-3- 24N-Technical specification for Radial Drilling Machine – Part-B

Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
6.5	Oil & water pipe lines should not run with electrical cable.	Vendor to confirm	
6.6	A detailed list of safety alarms / indications provided on machine should be submitted by the supplier.		
<b>7.0</b>	<b>ENVIRONMENTAL PERFORMANCE OF THE MACHINE: The Machine shall conform to following factors related to environment</b>	Vendor to confirm	
7.1	Noise level shall not exceed 85 dB (A) at normal load condition, 1 metre away from the machine with correction factor for back ground noise, if necessary.	Vendor to confirm	
7.2	If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.	Vendor to confirm	
7.3	Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.	Vendor to confirm	
<b>8.0</b>	<b>LEVELING &amp; ANCHORING SYSTEM</b>		
8.1	Complete anchoring system including foundation bolts; anchoring materials, fixators, leveling shoes etc shall be supplied by the vendor. BHEL shall construct complete foundation for the machine. Vendor shall furnish the foundation details in advance.	Vendor to confirm	
<b>9.0</b>	<b>TOOLS FOR OPERATION &amp; MAINTENANCE</b>		
9.1	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	
9.2	Test mandrel for checking spindle run-out & alignment should be supplied	Vendor to confirm	
9.3	Utility tools like drifts , cotter pins of all sizes (2 sets)	Vendor to confirm	

CAS-3- 24N-Technical specification for Radial Drilling Machine – Part-B

Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
9.4	Reduction Sleeves MT6 to MT5, MT6 to MT4, MT5 to MT4, MT4 to MT3, MT3 to MT2 Each 2 Nos.	Vendor to offer	
9.5	Tapping Attachment with collets- M6 to M24 - 2 Sets	Vendor to offer	
9.6	Tapping Attachment with collets- M24 to M48 - 2 Sets	Vendor to offer	
9.7	Tapping Attachment with collets- M48 to M60 - 2 Sets	Vendor to offer	
<b>10.0</b>	<b>ACCESSORIES</b>		
10.1	Cast iron Box Table - 1 No 1000mm (L) x 750mm (B) x 500mm (H) with three T-Slots M 24	Vendor to offer	
10.2	Tilting Table - 1 No 725mm (L) x 500mm (B) x 600mm (H) with T-Slots M24	Vendor to offer	
10.3	Safety interlocks for feed mechanism to prevent overloading.	Vendor to specify	
10.4	Auto depth control mechanism for spindle stroke (optional)	Vendor to specify	
<b>11.0</b>	<b>SPARES:</b>		
11.1	The Vendor shall recommend and submit list of spares required for the machine for two years of trouble free operation on three shifts /day basis under two headings as <b>a) Mechanical spares:</b> The list may generally include all types of pumps, Valves, pressure switches / transducers, filters, seals 'O'rings, Hyd.Hoses, bearings, Clutch, gears etc. <b>b) Electrical &amp; electronic spares:</b> The list may generally include all types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch, joy stick etc.	Vendor to furnish	

CAS-3- 24N-Technical specification for Radial Drilling Machine – Part-B

Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
11.2	<b>c) Un-priced list</b> of spares with quantities, specified in <b>a &amp; b</b> above, should be submitted with this technical offer. <b>d) Unit Price</b> of each item figuring in <b>c</b> shall be submitted in a sealed cover with the commercial bid.	Vendor to furnish	
11.3	All types of spares should be available for at least ten years after supply of the machine. In case the machine is likely to become obsolete within ten years period, the vendor should inform BHEL to procure the spares in advance.	Vendor to confirm	
11.4	Vendor to confirm that complete list of spares for machine and accessories, along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the machine.	Vendor to furnish	
<b>12.0</b>	<b>DOCUMENTATION:</b>		
12.1	Three sets of following documents (Hard copies) in English language should be supplied along with the machine	Vendor to confirm	
12.2	Detailed Operation and Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Coolant circuit diagrams.	Vendor to confirm	
12.3	Catalogues, O&M Manuals and drawings of all bought out items, bearings wherever applicable.	Vendor to confirm	
12.4	Electronic and electrical interconnecting drawings (i.e. Between machine, control panel and drives). <b>Hard copy: 3 Nos</b>	Vendor to confirm	
12.5	Electrical circuits and Hydraulic circuits, if any with BOM	Vendor to confirm	
12.6	Detailed specification of all rubber items and hydraulic / lubrication fittings	Vendor to confirm	

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Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
12.7	The vendor shall submit complete Master List of parts used in the machine.	Vendor to confirm	
12.8	One additional set of all the above documentation on CD ROM.	Vendor to confirm	
<b>13.0</b>	<b>ERECTION &amp; COMMISSIONING</b>		
13.1	<ol style="list-style-type: none"> <li>1. Vendor to supervise erection &amp; commissioning including start up, testing of machine, it's control system &amp; all other supplied equipment, machining of test pieces etc.</li> <li>2. The vendor shall bring special tools and equipment required for erection of the machine</li> <li>3. Service requirement like power, air &amp; water shall be provided by BHEL at only one point to be indicated by Vendor in their foundation/layout drawings.</li> <li>4. Material handling facility will be provided by BHEL free of cost.</li> </ol>	Vendor to confirm	
13.2	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.	Vendor to confirm	
13.3	Duration, terms & conditions for E&C should be furnished with this technical offer in detail.	Vendor to specify	



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Clause No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical Details
<b>14.0</b>	<b>ACCURACY TESTS</b>	
14.1	<b>GEOMETRICAL ACCURACIES</b>	
14.2	Geometrical Accuracy Tests shall be in accordance with IS: 2199, ISO 2423 standard or equivalent applicable standard. Detailed Test Charts for the same, clearly showing the accuracies to be achieved on the machine, shall also be submitted with the offer.	Vendor to confirm
14.3	All the above accuracies to be demonstrated to BHEL engineers during pre-acceptance tests at Suppliers works and during Commissioning at BHEL Works.	Vendor to confirm
<b>15.0</b>	<b>AMBIENT CONDITIONS &amp; THERMAL STABILITY</b>	
15.1	Ambient Temperature: max. 50 deg C (in a year) Relative Humidity - 85%	Vendor to note
15.2	Weather conditions are tropical. Atmosphere may be dust laden during some part of the year. Machine will be installed in the normal shop floor condition.	Vendor to confirm
15.3	Thermal Stability of the machine shall be good enough to withstand the specified ambient conditions in order to meet the accuracy requirements of BHEL components.	Vendor to confirm
15.4	The machine, including attachments and accessories, should be suitable for 3 shifts, continuous operation. Vendor to ensure the same.	Vendor to confirm

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Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
16.0	<b>MACHINE ACCEPTANCE: (Tests/Activities to be Performed by Vendor)</b>	Should be accepted & confirmed by Vendor	
16.1	<b>Tests/Activities should be carried out at supplier's works on the machine before dispatch:</b>	Vendor to confirm	
16.1.1	Geometrical Accuracy Tests as per test chart.	Vendor to confirm	
16.1.2	<b>Full load test to demonstrate the maximum power &amp; drilling capacity:</b> The capacity and capability of the machine is to be demonstrated on a test piece (vendor's supply) on which drilling (min depth of 100mm and tapping shall be proved with vendor tools.	Vendor to confirm	
16.2	<b>Test to be carried out at BHEL works while commissioning the machine:</b>	Vendor to confirm	
16.2.1	Geometrical Accuracy Tests as per test chart.	Vendor to confirm	
16.2.2	<b>Full load test to demonstrate the maximum power &amp; drilling capacity:</b> The capacity and capability of the machine is to be demonstrated on actual Job provided by BHEL with tools supplied by BHEL Prove out component as per drawing 10-T-46-17897-0-0 for tapping enclosed. 10 Nos of prove out components for drilling will be provided by BHEL	Vendor to confirm	
17.0	<b>TRAINING</b>		
17.1	Training of BHEL machine operators in operation and maintenance of complete machine at BHEL works during commissioning.	Vendor to confirm	

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Clause No	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical Details
<b>18.0</b>	<b>FOUNDATION</b>	
18.1	Vendor shall submit the preliminary General Arrangement Drawing and Layout Drawing for getting BHEL's approval within 6 weeks from the date of Letter of Intent (LOI) / P.O. All controls and operating systems shall be located in a centralized convenient place for easy operation. Complete Foundation details viz. static / dynamic load details etc. and final Layout drawings shall be submitted by the supplier within 2 weeks after getting BHEL's approval. BHEL shall design & construct complete foundation for the machine as per layout & details provided by vendor. The vendor shall also indicate detailed specifications of grouting compound and grouting procedure etc. if any specifically desired for foundation bolts of the machine.	Vendor to confirm
18.2	Foundation bolts, leveling plates etc. to be supplied with the machine	Vendor to confirm
<b>19.0</b>	<b>PAINTING</b> Painting of Machine / Electrical Panels: RAL 6011 Apple Green (Polyurethane Paint)	Vendor to confirm
<b>20.0</b>	<b>PACKING</b>	
20.1	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

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Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details
<b>21.0</b>	<b>GUARANTEE</b>		
21.1	12 months from the date of acceptance of the machine or 18 months from the date of supply whichever is earlier.	Vendor to confirm	
<b>22.0</b>	<b>SPECIAL POINTS:</b>		
22.1	Machine configuration shall be such that drilling head; arm, column and base shall be sturdy enough to withstand all types of reactionary forces developed.	Vendor to specify	
22.2	For drill head movement in the arm, hardened guide-ways with linear motion bearings preferred. screw rod should be covered with suitable bellows.	Vendor to specify	
22.3	Dial collar on headstock having good quality of chromium plating.	Vendor to confirm	
22.4	All locking mechanisms shall be smooth and trouble free to operate.	Vendor to confirm	
22.5	Flexible metal hose for coolant is preferable at headstock.	Vendor to specify	
22.6	Efficient lubrication system is to be introduced to avoid oil leakage from spindle during higher strokes.	Vendor to confirm	
22.7	First fill of lubrication oil & grease is in supplier's scope.	Vendor to confirm	
<b>23.0</b>	<b>GENERAL POINTS</b>		
23.1	Machine Model	Vendor to specify	
23.2	Total connected load (KVA):	Vendor to specify	
23.3	Floor area required (Length, Width, Height) for complete machine & accessories	Vendor to specify	
23.4	Total weight of the machine	Vendor to specify	

CAS-3- 24N-Technical specification for Radial Drilling Machine – Part-B

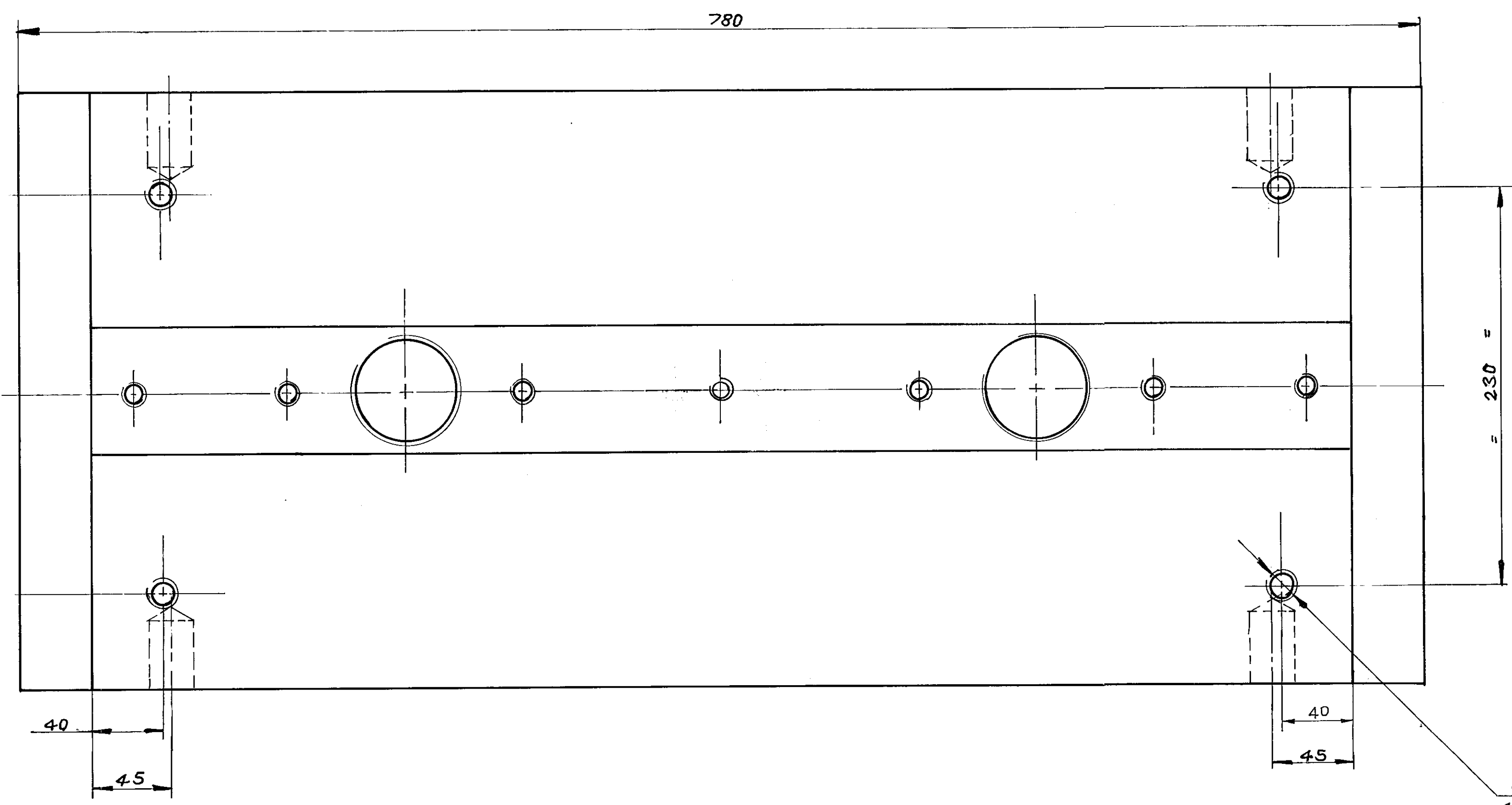
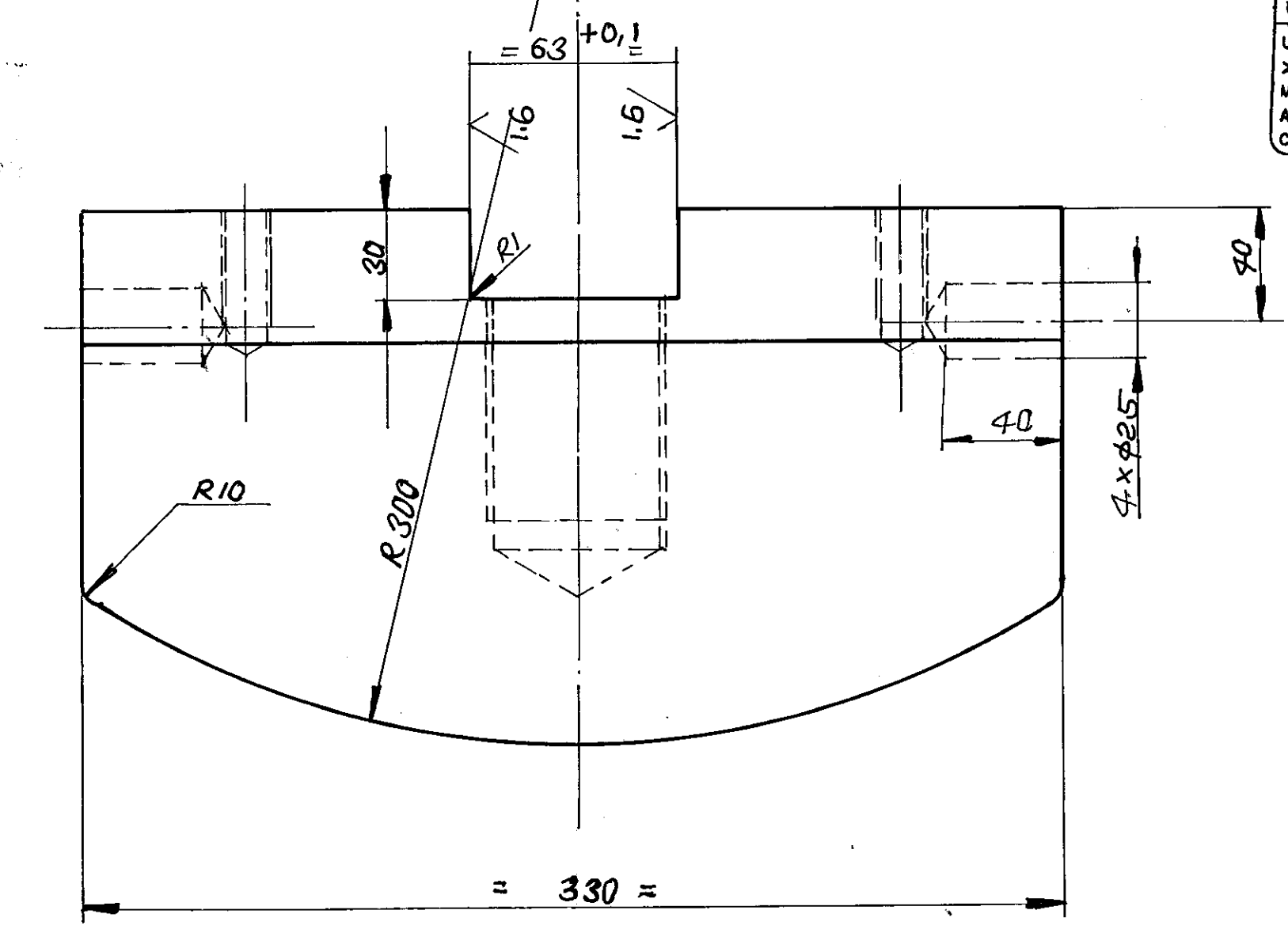
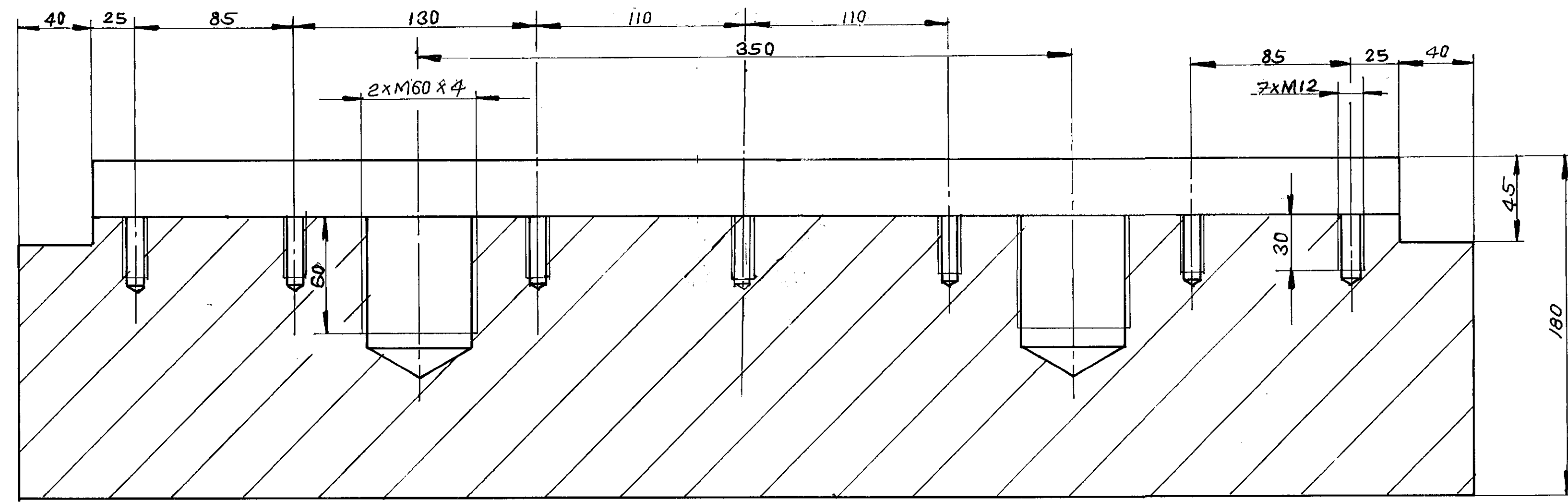
Clause No	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical Details	
23.5	The offer shall clearly indicate the list of standard accessories that will be supplied along with the machine	Vendor to confirm and enlist		
23.6	Accessories other than those specified shall be quoted separately as optional items.	Vendor to specify		
23.7	Hard copy of literature / Catalogs with photographs & drawings explaining the technical features shall be enclosed with the offer	Vendor to furnish		
23.8	Coolant tank should not be integral part of the machine. Lub.pump should be kept outside of head stock.	Vendor to confirm		

HARDEN & TEMPER TO 40-50 HRC

3.2/1.6

TOLERANCE FOR UNTOLENCED DIMENSIONS

UNTOLERANCED DIMENSIONS  
UP TO 6 MM = ±0.1 MM  
> 6 UP TO 120 MM = ±0.2 MM  
MORE THAN 120 MM = ±0.5 MM  
ANGULAR TOLERANCE = ±0.5 Deg  
CHAMFER = ±0.5 Deg



4xM16 (LIFTING)  
40 DEEP

180 x 330 x 780		CASTING DRG 30-T-46-37585		318	
NO. OF PIECES	DESCRIPTION	REV. PRO. SER. NO.	REV. MAT. SER. NO.	FINAL MATERIAL	SCRAP ZONE
COMP. DRG. NO.	TOOL NO: 46-14884-00				
COMP. DES.	BOILER SHELL				
GROUP	05 W.C: 3218				
BHARAT HEAVY ELECTRICALS LTD., BOILER PLANT UNIT, TIRUCHIRAPALLI-14					
FIRST ANGLE	SCALE	DRAWN	CHECKED	TOTAL NET WT (KG)	TYPE
CHECKED		APPROVED		CASTING DRG 30-T-46-37585	
ALL DIMENSIONS IN MILLIMETRES				DATE	NEW/OLD DRG. NO.
CAUTION				TITLE	
THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD., BOILER PLANT UNIT, TIRUCHY-14. AND SHALL NOT BE USED WITHOUT THEIR EXPRESS WRITTEN PERMISSION IN ANY FORM OR PART THEREOF FOR ANY OTHER PURPOSE THAN FOR WHICH IT IS SENT TO YOU.				DRAWING NO. 10-T-46-17897	
REVISION				REVISION	