



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY	Phone: +91 431 257 76 53 Fax : +91 431 252 07 19 Email : skaruna@bheltry.co.in Web : www.bhel.com
NOTICE INVITING TENDER	

THREE PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
Tender to be submitted in three Parts	2851200009	06.08.2012	17.09.2012

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	Portable Universal Drilling Machine - 50 mm as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	5 Nos

Important points to be taken care during submission of offer

1. Material shall be delivered to
Indigenous Vendors:
FOR, BHEL, Stores
Power Equipment Fabrication Plant
(On NH 6) Sakoli Taluka
Bhandara District
Maharashtra.
2. The rate of EMD for this Tender will be (INR) : 2,00,000.00
3. Delivery required 11 months from the date of purchase order.
4. Checklist to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
5. All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media.

BHEL's General guidelines / instructions (refer MM/CE/GENL/001-EMD) 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 above Enquiry reference.

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 / Capital Equipment / MM

S. KARUNANIDHY
Senior Manager
MM / Capital Equipment
BHEL, TRICHY - 620 014

PART - B: Technical Specification

Note:-

1. The Column “**Vendor’s offer with Technical details**” in this specification shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous or unsustainable information against any of the clauses of the specifications / requirements shall be treated as non-compliance.
2. The offer and all documents enclosed with offer should be in **English language** only.

Name & Address of the Supplier:	Name & Address of the Indian agent(if any)
Telephone no.:	Telephone no.:
Fax no.:	Fax no.:
e-mail:	e-mail:

Scope: - Supply, Erection & Commissioning of **PORTABLE UNIVERSAL DRILLING MACHINE** for BHEL complying with the specification as below.

S no	Technical Specification	Vendor’s offer with Technical details
1.0	Purpose & Work Piece Material	
1.1	Purpose: This machine is required to do all the drilling machine operations like Drilling, Reaming, Tapping etc. on large and heavy assemblies / fabricated structures in all positions (Horizontal, vertical, inclined etc.)	Vendor to confirm
1.2	Work Piece Material: Carbon Steel, Alloy Steel. Stainless steel & Cast Iron Hardness 20 - 30 HRC	Vendor to confirm

S no	Technical Specification	Vendor's offer with Technical details	
2.0	Specification		
2.1	<p>MACHINE CONFIGURATION: The Drilling Head shall be mounted on the Arm and rotate 360° about the arm axis. The drilling head shall also swing Upwards and Downwards by ± 90°. The arm shall move horizontally & vertically on the column and also swivel 360° about the Column. The Column shall also move on the bed horizontally to reach the required position.</p>	Vendor to confirm	
2.2	<p>CONSTRUCTION: Vendor to furnish details of material, hardness & constructional details including explanatory drawings of various components/assemblies like Bed, Slide, Column, Arm and Drilling Head, guide ways/slides, feed transmission system. Spindle, Hydraulic and lubrication system etc of the machine. Necessary lifting hook shall be provided for easy and safe transportation of machine from place to place within the shop floor.</p>	Vendor to confirm	
2.3	CAPACITY AND SIZE		
2.3.1	Drilling Capacity in Steel with Tensile strength of 60 Kgs/sq cm	50 mm	
2.3.2	Drilling Capacity in Cast Iron with Tensile strength of 25 Kgs/sq cm	65 mm	
2.3.3	Tapping Capacity in Steel	M 48 x 3	
2.3.4	Tapping Capacity in Cast Iron	Vendor to specify	
2.4	DRILL HEAD		
2.4.1	Spindle Taper	Morse Taper 5	
2.4.2	Spindle Diameter	Vendor to specify	
2.4.3	Spindle Travel minimum	340 mm	
2.4.4	Spindle Speed range	16 to 800 RPM	

S no	Technical Specification	Vendor's offer with Technical details
2.4.5	Number of Speed steps	Vendor to specify
2.4.6	Spindle Feed range (Required= 0.05 to 0.5 mm/rev)	Vendor to specify
2.4.7	Number of feed steps	Vendor to specify
2.4.8	Main Motor Power	3.5 kW or more
2.4.9	Maximum Torque on spindle	Vendor to specify
2.5	WORKING RANGE	
2.5.1	Vertical travel of Arm minimum along column axis	1250 mm
2.5.2	Horizontal travel of Arm minimum (perpendicular to column axis)	850 mm
2.5.3	Column traverse along bed minimum	1200 mm
2.5.4	Angle of Drill head rotation about arm axis	360°
2.5.5	Angle of Arm rotation about column axis	360°
2.5.6	Angle of Drill head swivel with respect to horizontal (upwards & downwards)	± 90°
2.5.7	Distance of spindle axis from column surface with Spindle is vertical position—max/min	2070/1220 mm
2.5.8	Drilling radius with spindle in vertical position---max/min	2270/1420
2.5.9	Distance between spindle face and floor level with Spindle in vertical position and retracted fully inside—max/min	1555/305 mm
2.5.10	Speed of arm elevation	Vendor to specify
2.5.11	Elevating motor power	Vendor to specify
2.5.12	Mechanical end stoppers shall be provided for column and arm movements.	Vendor to specify
2.6	Bearings: Make of all bearings shall be SKF/FAG only	Vendor to specify
3.0	Operation and Control System: Swivelling type operator's panel having complete machine control systems.	Vendor to specify
4.0	First filling of all required Oils & Greases etc. to be supplied by vendor. Indigenous (Indian) source or Indian equivalent and specifications of oils/ greases are also to be provided by the vendor.	Vendor to confirm

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5.0	Lubrication	
5.1	Lubrication shall be of life-time-lubricated type wherever possible. Other lubrication points shall be of automatic type. Details shall be submitted along with Lubrication chart.	Vendor to confirm
5.2	Centralized auto lubrication shall be offered with metering cartridges and necessary electrical interlock.	Vendor to confirm
6.0	Electrical	
6.1	The power supply available in BHEL is 415 V ± 10%, 50 Hz ± 3 Hz, 3 Phase AC (3 wire system without neutral) . The supplier shall provide Power Cable of 15 m length with suitable plug top and flexible cable protection cover and properly earthed.	Vendor to confirm
6.2	All electrical & electronic control cabinets & panels should be dust and vermin proof	Vendor to confirm
6.3	All electrical components in the cabinets should be mounted on DIN Rail	Vendor to confirm
6.4	All electrical / electronic components should have compatibility with Indian equivalents	Vendor to confirm
6.5	Motors shall conform to IEC or Indian Standards	Vendor to confirm
6.6	All cables and cable trays required for the machine should be included in the offer.	Vendor to confirm
6.7	Vendor should ensure that the machine and its peripherals are properly earthed.	Vendor to onfirm
6.8	The electrical components used shall be from reputed international make such as Siemens / Telemecanique / Merlin Genn / GE/ ABB and shall be in accordance with DIN/IEC Standards .	Vendor to confirm

S no	Technical Specification	Vendor's offer with Technical details	
7.0	Safety Arrangements: Following safety features in addition to other standard safety features should be provided on the machine:		
7.1	Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, work piece and the operator due to malfunctioning or mistakes.	Vendor to confirm	
7.2	A detailed list of safety alarms / indications provided on machine should be submitted by the supplier.	Vendor to confirm	
7.3	Emergency Switches at suitable locations as per International Norms should be provided.	Vendor to confirm	
8.0	Environmental Performance of the Machine: The Machine shall conform to following factors related to environment safety:		
8.1	Maximum noise level shall be 85 dB (A) at normal load condition, 1 m away from the machine with correction factor for back ground noise, if necessary. This will be measured as per international standards like DIN 45635-16 . Supplier to demonstrate compliance to noise level, if so required.	Vendor to confirm	
8.2	If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.	Vendor to confirm	
8.3	Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.	Vendor to confirm	
9.0	Tools for Erection, Operation & Maintenance		
9.1	Special tools and equipment required for erection of the machine shall be brought by the vendor. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the machine should be supplied by the vendor. List of such tools should be submitted with the offer.	Vendor to confirm	

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10.0	Essential Accessories: Tooling		
10.1	Reduction Sleeves MT5 to MT3, MT5 to MT4, MT3 to MT1, MT3 to MT2 (Each 2 nos.)	Vendor to offer	
10.2	Extension Sockets MT5 to MT3, MT5 to MT4, MT5 to MT5. MT3 to MT1, MT3 to MT2, MT2 to MT1 (Each 2 Nos.)	Vendor to offer	
10.3	Tapping Attachment with collets- M6 to M24 - 2 Sets	Vendor to offer	
10.4	Tapping Attachment with collets- M24 to M48 - 2 Sets	Vendor to offer	
11.0	Spares		
11.1	Itemized breakup list of mechanical, hydraulic, electrical and electronic spares used in 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, in addition to other recommended spares (Unit Price of each item of spare should be offered in the price bid)	Vendor to specify	
11.2	Mechanical & Hydraulic Spares: All types of Valves, Pressure Switches, Transducers, Flow Switches, Filters, Seals, O-rings, Hydraulic Hoses etc.	Vendor to specify	
11.3	Electrical & Electronic Spares: All types of Relays, Contactors, Proximity Switches, Limit switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch etc.	Vendor to specify	
11.4	All types of spares for total machine and accessories should be available for at least 10 years after supply of the machine. If the machine or control is likely to become obsolete in this period, the vendor should inform BHEL sufficiently in advance and provide drawings of parts / details of spares & suppliers to enable BHEL to procure these in advance, if required.	Vendor to specify	

S no	Technical Specification	Vendor's offer with Technical details
11.5	The complete list of spares for machine and accessories, along with specification / type / model, name & address of the spares supplier along with documentation, to be supplied with the machine.	Vendor to confirm
11.6	Vendor to supply 2 Sets of Electronic cards and PCBs of each type, Modules of PLCs, Display Boards if any used in the machine as essential spares.	Vendor to specify
12.0	Documentation: Three sets of following documents (Hard copies) in English language should be supplied along with the machine	Vendor to confirm
12.1	Operating manuals of Machine	Vendor to confirm
12.2	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Pneumatic/ Coolant / Hydraulic circuit diagrams and all Assembly/ Sub Assembly Drawings shall be supplied with the parts list.	Vendor to confirm
12.3	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable should be provided by the vendor.	Vendor to confirm
12.4	Detailed specification of all rubber items and hydraulic/lube fittings	Vendor to confirm
12.5	Complete Master List of parts used in the machine shall be submitted by the vendor	Vendor to confirm
12.6	One additional set of all the above documentation on CD ROM	Vendor to confirm
13.0	Training	
13.1	BHEL Persons should be trained at supplier's works for mutually agreed period in the following areas:-	Vendor to agree
13.1.1	Electrical & Electronic maintenance for machine & other supplied equipment wherever applicable.	Vendor to agree

S no	Technical Specification	Vendor's offer with Technical details
13.1.2	Mechanical & Hydraulic maintenance of the machine & other supplied equipment.	Vendor to agree
13.1.3	Operation of the machine & other supplied equipment.	Vendor to agree
13.2	Air-fare, boarding & lodging for the trainees shall be borne by BHEL	Vendor to note
13.3	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel.	Vendor to agree
13.4	Vendor to quote for training duration on a per man day basis.	Vendor to note
14.0	Erection & Commissioning	
14.1	Supplier to take full responsibility for carrying out the erection, start up, testing of machine. Its control & all types of other supplied equipment, machining of test pieces etc. Service requirement like power, air & water shall be provided by BHEL at only one point as indicated by the supplier in their foundation / layout drawings. Other requirements like crane and helping personnel shall also be provided by BHEL subject to availability. Details of these requirements should be informed by the vendor in advance.	Vendor to note
14.2	Successful trial of the machine by supplier at BHEL on trial components shall be considered as part of commissioning All tests as mentioned in Clause 16.0 (Machine Acceptance) shall form part of the commissioning activity.	Vendor to note
14.3	Tools Tackles and other necessary equipments required to carry out above activities should be brought by the supplier.	Vendor to note
14.4	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable basis	Vendor to note

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S no	Technical Specification	Vendor's offer with Technical details
14.5	Any portion of the machine, accessories and other supplied items where if paint has rubbed or peeled off 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 paints used.	Vendor to note
14.6	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to submit
14.7	Charges, duration, terms & conditions for E&C should be furnished in detail along with the offer	Vendor to submit
15.0	Geometrical Accuracies	
15.1	The machine shall be tested for Geometrical Accuracy as per relevant ISO Standard or Equivalent Standard at supplier works	Vendor to confirm
16.0	Machine Acceptance (Tests/Activities to be Performed & Demonstrated by the Vendor)	
16.1	Tests/Activities to be carried out at Vendor's works on the machine before dispatch	
16.1.1	The vendor shall inform the various standards (testing, measurements, motors, workmanship) applicable for this machine acceptance. Standards shall be Indian / International.	Vendor to furnish
16.1.2	Motor's data sheet	Vendor to submit
16.1.3	Internal routine test report	Vendor to submit
16.1.4	Quality plan for final factory inspection to BHEL review.	Vendor to submit
16.1.5	The machine should be tested for its full capacity at supplier works. Test piece shall be arranged by the supplier only.	Vendor to accept
16.2	Tests/Activities to be carried out at BHEL works while commissioning the machine	

S no	Technical Specification	Vendor's offer with Technical details
16.2.1	The machine should be tested for its full capacity at BHEL works. BHEL will supply the trial components for testing at BHEL	Vendor to accept
16.2.2	Demonstration of all features of the machine & accessories if any to the satisfaction of BHEL for efficient and effective use of the machine.	Vendor to accept
17.0	Packing: Sea worthy & rigid packing for all items of complete machine & accessories to avoid any damage/loss in transit. When machine is despatched, all small loose items shall be suitably packed in boxes	Vendor to accept
18.0	Guarantee: 12 months from the date of acceptance of the machine or 18 months from the date of dispatch whichever is earlier.	Vendor to accept
19.0	General	
19.1	Machine Model	Vendor to furnish
19.2	Total connected load (kVA)	Vendor to furnish
19.3	Floor area required (Length x Width x Height) for complete machine & accessories.	Vendor to furnish
19.4	Painting of Machine / Electrical Panels as per supplier's standard	Vendor to note
19.5	Total weight of the machine	Vendor to furnish
19.6	Weight of heaviest part of the machine	Vendor to furnish
19.7	Weight of the heaviest assembly / sub-assembly of the Machine	Vendor to furnish
19.8	Dimensions of largest part/ sub-assembly/ assembly of the machine	Vendor to furnish
19.9	Detailed catalogues, sketch/ photographs of the m/c and accessories/attachments should be submitted with the offer.	Vendor to submit
19.10	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.	Vendor to note