

**PORTABLE UNIVERSAL DRILLING MACHINE - 50 MM**

<b>PART- A</b>		
<b>PORTABLE UNIVERSAL DRILLING MACHINE : CAPACITY - <math>\phi</math>50mm</b>		
<b>SECTION - I : QUALIFYING CRITERIA</b>		
<p><b>The BIDDER has to compulsorily meet the following requirements to get qualified for considering the technical offer for the PORTABLE UNIVERSAL DRILLING MACHINE :<math>\phi</math>50mm</b></p>		
<b>SL NO</b>	<b>REQUIREMENTS</b>	<b>VENDOR'S RESPONSE</b>
1.0	Only those vendors, who have supplied and commissioned atleast one Portable Drilling Machine of same ( Drilling Capacity, Arm Travel & Column travel) or higher sizes for similar applications in the past ten years (On the Date of Opening of tender) and such machine is working satisfactorily for more than one year, after commissioning (On the Date of Opening of tender) should quote. However, if such machine(s) has/had been supplied to BHEL, then such machine should be presently working satisfactorily for more than six months after its commissioning and acceptance (On the Date of Opening of tender) in BHEL, should quote. The following information should be submitted by the vendor about the companies where similar machines have been supplied.	
<p><b>The vendor should submit following information where similar machine has been supplied for qualification of their offer.</b></p>		
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	Application for which the machine is supplied.	
1.6	Performance certificate from the customers regarding satisfactory performance of machine supplied to them (Original Certificate or Through e-mail directly from the customer. Refer Clause 10.0 below).	
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.	
<b>SECTION- II</b>		
<p><b>The BIDDER / VENDOR is requested to provide the following information:</b></p>		
<b>SL NO</b>	<b>REQUIREMENTS</b>	<b>VENDOR'S RESPONSE</b>
2.0	The BIDDER / VENDOR to furnish Reference List of Customers, with full address, details of contact person, where PORTABLE UNIVERSAL DRILLING MACHINES have been supplied in the past.	
3.0	Specify details of PORTABLE UNIVERSAL DRILLING MACHINES supplied to other units of BHEL,if any. (Year of commissioning, Drilling Capacity, Arm Travel & Column travel etc.)	

**PORTABLE UNIVERSAL DRILLING MACHINE - 50 MM**

SL NO	REQUIREMENTS	VENDOR'S RESPONSE
4.0	Details on SERVICE-AFTER-SALES Set-up in India Including the Address of Agents / Service Centers in South India.	
5.0	Any Additional data to supplement the manufacturing capability of the BIDDER for the subject equipment.	
<b>SECTION-III</b>		
<b>The BIDDER to note:</b>		
SL NO	REQUIREMENTS	VENDOR'S RESPONSE
6.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS. 1. Technical Offer [ <b>with PART A &amp; PART B</b> ] 2. Commercial Offer.	
7.0	The Technical Offer shall contain a comparative statement of <b>Technical Specifications demanded by BHEL and Offer Details submitted by the Bidder</b> , against each clause.	
8.0	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.	
9.0	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.	
10.0	For obtaining the performance certificate from the customer, a suggestive format is provided in <b>SECTION-IV</b>	
<b>SECTION -IV</b>		
The Performance certificate should be produced on <b>Customer's Letter Head</b> .		
<b>PERFORMANCE CERTIFICATE</b>		
1	Supplier of the Machine	
2	Make & Model of the Machine	
3	Month & Year of Commissioning	
4	Application for which M/C is used	
5	Machine Details:	
5.1	Drilling Capacity	
5.2	Arm Travel	
5.3	Column Travel	
6	Performance of the Machine (Satisfactory/ Un-satisfactory)	
7	Any Other remarks	
	Date:	Signature & Seal of the Authority Issuing the performance Certificate

PART - B : TECHNICAL SPECIFICATION			
<b>Heavy Power Equipment Plant,</b> <b>Bharat Heavy Electricals Limited,</b> <b>Ramachandrapuram - 502032, Andhra Pradesh, INDIA.</b>		Enquiry No. :	
		Due Date :	
		Supplier's Ref.:	
		Date :	
Specification cum Compliance Certificate for <b>PORTABLE UNIVERSAL DRILLING MACHINE - 50 mm (QTY- 3 Nos)</b>			
Note:-			
1. The Column " VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS" of this format 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.			
3. TOTAL NO. OF MACHINES = <b>3</b>			
4. MACHINE NO. 1 ( <b>Qty - 2 Nos.</b> 1 EACH FOR GAS TURBINES & ELECTRICAL MACHINES DIVISIONS OF BHEL, HYDERABAD)			
5. MACHINE NO. 2 ( <b>Qty - 1 No.</b> FOR BHEL, TIRUCHIRAPALLI)			
6. Vendor to note that the THREE machines are to be supplied to different units of BHEL and accordingly, the three machines shall be erected & commissioned separately i.e. <b>TWO Nos.</b> at BHEL, Hyderabad (Machine No. 1) and <b>ONE No.</b> at BHEL, Tiruchirapalli (Machine No. 2) respectively. All Features & Requirements specified below are for ONE machine and shall be applicable independently for each machine			
Name & Address of the supplier:		Name & Address of the Indian Agent:	
Telephone No.		Telephone No.	
Fax No.		Fax No.	
e-mail :		e-mail :	
Scope: Supply, Erection & Commissioning of <b>PORTABLE UNIVERSAL DRILLING MACHINE</b> complying with specification as below.			
SNO	BHEL TECHNICAL SPECIFICATION	VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS	
1.0	<b>PURPOSE &amp; WORK PIECE MATERIAL</b>		
1.1	<b>PURPOSE:</b> This machine is required to do all 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	<b>WORK PIECE MATERIAL :</b> Carbon Steel, Alloy Steel, Stainless steel & Cast Iron. Hardness 20 - 30 HRC	Vendor to confirm	
2.0	<b>SPECIFICATION:</b>		

SNO	BHEL TECHNICAL SPECIFICATION		VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS
2.1	<b>MACHINE CONFIGURATION:</b> The Drilling Head shall be mounted on the Arm and swivel to 360° radially & +/-90 ° Up & Down horizontally over the arm. The arm shall move horizontally & vertically on the column and also rotate about the Column to 360°. The Column shall also move on the bed horizontally to reach the required position.	Vendor to confirm	
2.2	<b>CONSTRUCTION :</b> The Bed, Slide, Column & Arm, Drilling Head shall be made of Cast Iron. Necessary lifting hook shall be provided for easy and safe movement. Suitable locking arrangement shall be provided on the base.	Vendor to confirm	
2.3	<b>CAPACITY</b>		
2.3.1	Drilling Capacity in Steel	50 mm or more	
2.3.2	Drilling Capacity in Grey Cast Iron	Vendor to specify	
2.3.3	Tapping Capacity in Steel	M 48 x 3 or more	
2.4	<b>SPINDLE</b>		
2.4.1	Spindle Diameter	Vendor to specify	
2.4.2	Spindle Stroke	340 mm or more	
2.4.3	Spindle Taper	Morse Taper 5	
2.4.4	Main Motor Power	3.5 KW or more	
2.5	<b>SPEED AND FEEDS</b>		
2.5.1	Spindle Speeds	16 or less to 800 RPM or more	
2.5.2	Number of Speed steps.	Vendor to specify	
2.5.3	Feed range	Vendor to specify	
2.5.4	Number of feed steps.	Vendor to specify	
2.6	<b>TRAVERSES</b>		
2.6.1	Vertical displacement of Arm along column axis	1250 mm or more	
2.6.2	Horizontal displacement of Arm perpendicular to column axis	850 mm or more	
2.6.3	Column displacement along bed	1200 mm or more	
2.6.3	Drill head rotation (Radial)	360 °	
2.6.4	Arm rotation about column axis	360 °	
2.6.5	Drill head rotation (Horizontal upwards & downwards)	+/-90 °	
2.7	<b>DISTANCES</b>		
2.7.1	Max distance of spindle axis to column surface (Spindle vertical)	2000 mm or more	
2.7.2	Min distance of spindle axis to column surface (Spindle vertical)	Vendor to specify	
2.7.3	Max distance of spindle face to floor level (Spindle vertical)	1500 mm or more	
2.7.4	Min distance of spindle face to floor level (Spindle vertical)	Vendor to specify	

SNO	BHEL TECHNICAL SPECIFICATION		VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS
2.7.5	Max distance of spindle axis to floor level (Spindle Horizontall)	2700 mm or more	
2.7.6	Min distance of spindle axis to floor level (Spindle Horizontall)	Vendor to specify	
<b>2.8 BEARINGS</b>			
2.8.1	Make of all bearings shall be SKF/FAG only	Vendor to confirm.	
<b>3.0 OPERATION AND CONTROL SYSTEM:</b>			
3.1	The machine shall be operated through pendant push buttons. All switches (on, off, direction selection, emergency switch etc) shall be made available in the pendent.	Vendor to offer	
4.0	First filling of all required Oils & Grease 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	
<b>5.0 LUBRICATION:</b>			
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	
<b>6.0 ELECTRICAL:</b>			
6.1	The power supply available in BHEL is 415V + 10% / -10%, 50HZ +/-3 HZ, 3 Phase AC (3 wire system without neutral). The supplier shall provide 15 metres of Power Cable with suitable plug top and flexible cable protection cover with proper earthing.	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 the proper earthing for the machine and its peripherals.	Vendor to confirm	
6.8	The electrical components used shall be from reputed international makes such as Siemens / Telemecanique / Merlin Gerin / GE/ ABB and shall be in accordance with DIN/IEC Standards.	Vendor to confirm	
<b>SAFETY ARRANGEMENTS:</b>			

SNO	BHEL TECHNICAL SPECIFICATION		VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS
7.0	Following safety features in addition to other standard safety features should be provided on the machine:	Vendor to note and confirm	
	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.		
	2. A detailed list of safety alarms / indications provided on machine should be submitted by the supplier.		
	3. Emergency Switches at suitable locations as per International Norms should be provided.		
8.0	ENVIRONMENTAL PERFORMANCE OF THE MACHINE :		
	The Machine shall conform to following factors related to environment	Vendor to confirm	
	(a) Maximum noise level shall be 85 dB(A) at normal load condition, 1 meter 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.		
	(b) If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.		
	(c) Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.		
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. List of such tools should be submitted with offer	Vendor to confirm	
10.0 ESSENTIAL ACCESSORIES:			
10.1 TOOLING:			
10.1.1	Reduction Sleeves MT5 to MT3, MT5 to MT4, MT3 to MT1, MT3 to MT2 Each 2 Nos.	Vendor to offer	
10.1.2	Extension Sockets MT5 to MT3 to MT5 to MT4, MT5 to MT5, MT3 to MT1, MT3 to MT2, MT2 to MT1 Each 2 Nos.	Vendor to offer	
10.1.3	Tapping Attachment with collets- M6 to M24 - 2 Sets	Vendor to offer	
10.1.4	Tapping Attachment with collets- M24 to M48 - 2 Sets	Vendor to offer	
11 SPARES:			

SNO	BHEL TECHNICAL SPECIFICATION		VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS
11.1	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: <b>(Unit Price of each item of spare should be offered on the price bid)</b>	Vendor to specify	
11.2	<b>MECHANICAL &amp; HYDRAULIC SPARES</b> : All types of Valves, Pressure Switches, Transducers, Flow Switches, Filters, Seals, O-rings, Hydraulic Hoses etc.	Vendor to specify	
11.3	<b>ELECTRICAL &amp; ELECTRONIC SPARES</b> : 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 ten years after supply of the machine. If machine or control is likely to become obsolete in this period, the vendor should inform BHEL sufficiently in advance and provide drawings of parts / details of spares & suppliers to enable BHEL to procure these in advance, if required	Vendor to specify	
11.5	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 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 confirm	
12.0	<b>DOCUMENTATION</b> : 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.		
12.2	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Pneumatic/ Coolant / Hydraulic circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also.		
12.3	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.		
12.4	Detailed specification of all rubber items and hydraulic/lube fittings		
12.5	Complete Master List of parts used in the machine shall be submitted by the vendor.		
12.6	One additional set of all the above documentation on CD ROM.		

SNO	BHEL TECHNICAL SPECIFICATION	VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS	
<b>13.0</b>	<b>TRAINING</b>		
13.1	BHEL Persons should be trained at supplier's Works for mutually agreed period in the area of (a) Electrical & Electronic maintenance for machine & other supplied equipments wherever applicable. (b) Mechanical & Hydraulic maintenance of the machine & other supplied equipments (c) Operation of the machine & other supplied equipments.	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 on <i>per man day</i> basis	Vendor to note	
<b>14.0</b>	<b>ERECTION &amp; COMMISSIONING</b>		
14.1	Supplier to take full responsibility for carrying out the erection, start up, testing of machine, it's 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 to be indicated by 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 vendor in advance.	Vendor to note	
14.2	Successful trial by supplier at BHEL on trial components shall be considered as part of commissioning. All tests, as mentioned at <b>CLAUSE 16.0</b> (Machine Acceptance) shall form part of the commissioning activity.	Vendor to note	
14.3	Tools, Tackles and other necessary equipment required to carry out all 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	
14.5	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 colors of paint 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 separately by vendor along with offer.	Vendor to submit	
<b>15.0</b>	<b>GEOMETRICAL ACCURACIES :</b>		



SNO	BHEL TECHNICAL SPECIFICATION		VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS
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	<b>MACHINE ACCEPTANCE (TESTS/ACTIVITIES TO BE PERFORMED &amp; DEMONSTRATED BY THE VENDOR)</b>	Should be accepted & confirmed by Vendor	
16.1	<b>TESTS/ACTIVITIES TO BE CARRIED OUT AT VENDOR'S WORKS ON THE MACHINE BEFORE DISPATCH :</b>		
16.1.1	The vendor shall inform the various standards (testing, measurements, motors, workmanship) applicable for this machine acceptance. Standards shall be of Indian / International.	Vendor to furnish	
16.1.2	Motors 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	<b>TESTS/ACTIVITIES TO BE CARRIED OUT AT BHEL WORKS WHILE COMMISSIONING THE MACHINE:</b>		
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	<b>PACKING:</b>		
17.1	Sea worthy & rigid packing for all items of complete machine & Accessories to avoid any damage/loss in transit. When machine is despatched in containers, all small loose items shall be suitably packed in boxes.	Vendor to note and accept	
18.0	<b>GUARANTEE :</b>		
18.1	24 months from the date of acceptance of the machine at BHEL works.	Vendor to accept	
19.0	<b>GENERAL :</b>		
19.1	Machine Model	Vendor to furnish	
19.2	Total connected load (KVA):	Vendor to furnish	
19.3	Floor area required (Length, Width, 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 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	

SNO	BHEL TECHNICAL SPECIFICATION	VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS
19.9	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, Capacity etc.	Vendor to furnish
19.10	Detailed catalogues, sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to submit
19.11	Hydraulic, Pneumatic & oil pipings should be preferably metallic except places where flexible pipings are essential. All the pipes required for the same shall be included in the standard scope of the machine.	Vendor to note