

RADIAL DRILLING MACHINE - 60 MM

PART- A		
RADIAL DRILLING MACHINE : CAPACITY - ϕ 60 mm		
SECTION - I : QUALIFYING CRITERIA		
<p>The BIDDER has to compulsorily meet the following requirements to get qualified for considering the technical offer for the RADIAL DRILLING MACHINE : CAPACITY - ϕ60 mm</p>		
SL NO	REQUIREMENTS	VENDOR'S RESPONSE
1.0	<p>Only those vendors, who have supplied and commissioned atleast one Radial Drilling Machine of same (Drilling Capacity,Head Travel & Arm 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>	
<p>The vendor should submit following information where similar machine has been supplied for qualification of their offer.</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.	
SECTION- II		
<p>The BIDDER / VENDOR is requested to provide the following information:</p>		
SL NO	REQUIREMENTS	VENDOR'S RESPONSE
2.0	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.	
3.0	Specify details of RADIAL DRILLING MACHINES supplied to other units of BHEL,if any. (Year of commissioning, Drilling Capacity,Head Travel & Arm travel etc.)	

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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.	
SECTION-III		
The BIDDER to note:		
SL NO	REQUIREMENTS	VENDOR'S RESPONSE
6.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS. 1. Technical Offer [with PART A & PART B] 2. Commercial Offer.	
7.0	The Technical Offer shall contain a comparative statement of Technical Specifications demanded by BHEL and Offer Details submitted by the Bidder , 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 SECTION-IV	
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 Machine	
3	Month & Year of Commissioning	
4	Application for which M/C is used	
5	Machine Details:	
5.1	Drilling Capacity	
5.2	Head Travel	
5.3	Arm 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			
Heavy Power Equipment Plant, Bharat Heavy Electricals Limited, Ramachandrapuram - 502032, Andhra Pradesh, INDIA.		Enquiry No. :	
		Due Date :	
		Supplier's Ref.:	
		Date :	
Specification cum Compliance Certificate for RADIAL DRILLING MACHINE - 60 mm			
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.			
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 RADIAL DRILLING MACHINE - 60 mm complying with specification as below.			
SNO	BHEL TECHNICAL SPECIFICATION		VENDOR'S OFFER WITH TECHNICAL DETAILS & REMARKS
1.0	PURPOSE & WORK PIECE MATERIAL		
1.1	PURPOSE/APPLICATION: All Drilling Machine Operations like Drilling, Counter Boring, Reaming, Tapping etc.	Vendor to confirm	
1.2	WORK PIECE MATERIAL: Carbon Steel, Alloy Steel, Cast Iron & Stainless Steel. Hardness 20 - 40 HRC	Vendor to confirm	
2.0	SPECIFICATION:		
2.1	MACHINE CONFIGURATION: The Drilling Head shall move horizontally on the Arm. The Arm shall move vertically up & down on the Column. The Arm shall swivel about the Column manually or automatically.	Vendor to confirm	
2.1.1	MACHINE FRAME : The machine frame shall be made from high quality gray cast iron. The base should have a large surface for mounting work pieces, tables or fixtures. All housing and radial arm guides shall be hardened and ground.	Vendor to confirm	

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2.1.2	HEAD STOCK AND DRIVE: The headstock shall be made from gray cast iron and is equipped with an adjustable quill. The spindle should run in lifetime lubricated precision antifriction bearings. Suitable motorized / hydraulic locking system shall be provided to lock the headstock on the radial arm at desired position. The gear steps, spindle speeds and feeds shall be selected on the control panel by means of the spindle start lever.	Vendor to confirm	
2.1.3	MOVEMENT OF DRILLING HEAD ALONG THE ARM: The movement of drilling head over the arm shall be mechanised. The desired travel direction to be selected by means of a direction control lever.	Vendor to confirm and furnish details	
2.2 CAPACITY			
2.2.1	Drilling Capacity in Steel of 60 Kg/mm ² Tensile Strength	60 mm or more	
2.2.2	Drilling Capacity in Grey Cast Iron	Vendor to specify	
2.2.3	Tapping Capacity in Steel of 60 Kg/mm ² Tensile Strength	M 56 x 5.5 or more	
2.2.4	Tapping Capacity in Grey Cast Iron	Vendor to specify	
2.3 SPINDLE			
2.3.1	Spindle Stroke	325 mm or more	
2.3.2	Spindle Taper	Morse Taper 5	
2.3.3	Main Motor Power	5 KW or more	
2.3.4	Braking system to slows down and stop the main spindle.	Vendor to provide	
2.4 SPINDLE SPEEDS & FEEDS			
2.4.1	Spindle Speeds (Range)	40 or less to 1800 RPM or more	
2.4.2	Number of Speed steps	Vendor to specify	
2.4.3	Feed range	Vendor to specify	
2.4.4	Number of feed steps	Vendor to specify	
2.5 TRAVERSES			
2.5.1	Vertical Travel of Arm along column axis	725 mm or more	
2.5.2	Traverse of Drilling Head along the Arm	1500 mm or more	
2.5.3	Swing of Arm about column axis	360 Deg.	
2.6 DISTANCES			
2.6.1	Maximum distance of spindle axis to the guide-ways of the column	2000 mm or more	
2.6.2	Minimum distance of spindle axis to the guide-ways of the column	Vendor to specify	

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2.6.3	Maximum distance from the spindle nose to the base plate	1500 mm or more	
2.6.4	Minimum distance from the spindle nose to the base plate	Vendor to specify	
2.7	BEARINGS		
2.7.1	Make of all bearings shall be SKF/FAG only	Vendor to confirm.	
2.8	COOLANT FACILITY		
2.8.1	Flood coolant system of minimum 20 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 power, discharge & pressure.	
3.0	OPERATION AND CONTROL SYSTEM:		
3.1	ELECTRICAL EQUIPMENT:		
3.1.1	A clearly laid out operator panel with required switches/pushbuttons, emergency stop switch and locking device switch shall be provided.	Vendor to offer	
4.0	HYDRAULIC SYSTEM		Vendor to submit details
5.0	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	
6.0	LUBRICATION:		
6.1	Lubrication shall be of life time lubricated wherever possible. Other lubrication points shall be of automatic type. Details shall be submitted along with Lubrication chart.	Vendor to confirm	
6.2	Centralized auto lubrication shall be offered with metering cartridges and necessary electrical interlock.	Vendor to confirm	
7.0	ELECTRICAL:		
7.1	415V + 10% / -10%, 50HZ +/-3 HZ, 3 Phase AC (3 wire system with out neutral) Power Supply Voltage 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. Requirement of grounding/earthing with required material details is to be informed by vendor well in advance so that same could be incorporated during construction of foundation.	Vendor to confirm	

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7.2	All electrical & electronic control cabinets & panels should be dust and vermin proof.	Vendor to confirm	
7.3	All electrical components in the cabinets should be mounted on DIN Rail.	Vendor to confirm	
7.4	All electrical and electronic panels including operator's panel should be provided with CFL for sufficient illumination. All adapters/receptacles should have compatibility with Indian equivalents.	Vendor to confirm	
7.5	Motors shall conform to IEC or Indian Standards	Vendor to confirm	
7.6	All cables and cable trays required for the machine should be included in the offer.	Vendor to confirm	
7.7	Vendor should ensure proper earthing for the machine and its peripherals.	Vendor to confirm	
7.8	The electrical components used shall be from reputed international makes such as Siemens / Telemechanique / Merlin Gerin / GE/ ABB and shall be in accordance with DIN/IEC Standards.	Vendor to confirm	
8.0	SAFETY ARRANGEMENTS:		
	Following safety features in addition to other standard safety features should be provided on the machine:		
	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 note confirm	
	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.		
9.0	ENVIRONMENTAL PERFORMANCE OF THE MACHINE :		
	The Machine shall conform to following factors related to environment		
	(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.	Vendor to confirm	

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	(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.		
10.0	LEVELING & ANCHORING SYSTEM		
10.1	Complete anchoring system including foundation bolts, anchoring materials, leveling shoes etc should be supplied.	Vendor to confirm	
11.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE :		
11.1	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	
12.0	ESSENTIAL ACCESSORIES:		
12.1	BOX TABLE:		
12.1.1	Cast Iron Box Table 1000 mm x 700 mm x 500 mm with M24 T-Slots	Vendor to offer	
12.2	TOOLING:		
12.2.1	Reduction Sleeves MT5 to MT3, MT5 to MT4, MT3 to MT1, MT3 to MT2 Each 2 Nos.	Vendor to offer	
12.2.2	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	
12.2.3	Tapping Attachment with collets- M6 to M24 - 2 Sets	Vendor to offer	
12.2.4	Tapping Attachment with collets- M24 to M48 - 2 Sets	Vendor to offer	
12.2.5	Tapping Attachment with collets- M48 to M64 - 2 Sets	Vendor to offer	
13.0	SPARES:		
13.1	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 in the price bid)	Vendor to specify	

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13.2	MECHANICAL & HYDRAULIC SPARES: All types Valves, Pressure Switches, Transducers, Flow Switches, Filters, Seals, O-rings, Hydraulic Hoses etc.	Vendor to specify	
13.3	ELECTRICAL & ELECTRONIC SPARES : All types of Relays, Contactors, Proximity Switches, Limit switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, etc.	Vendor to specify	
13.4	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	
13.5	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	
13.6	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 offer	
14.0	DOCUMENTATION : Three sets of following documents (Hard copies) in English language should be supplied along with the machine	Vendor to confirm	
14.1	Operating manuals of Machine		
14.2	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.		
14.3	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.		
14.4	Detailed specification of all rubber items and hydraulic/lube fittings		
14.5	Complete Master List of parts used in the machine shall be submitted by the vendor.		
14.6	One additional set of all the above documentation on CD ROM.		

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15.0	TRAINING		
15.1	BHEL Persons should be trained at supplier's Works for mutually agreed period in the area of (a) Electrical and 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	
15.2	Air-fare, boarding & lodging for the trainees shall be borne by BHEL.	Vendor to note	
15.3	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel.	Vendor to agree	
15.4	Vendor to quote for training on per man day basis	Vendor to note	
16.0	FOUNDATION :		
16.1	Vendor shall submit the preliminary General Arrangement Drawing and Layout Drawing for getting BHEL's approval within two months from the date of Letter of Intent (LOI) / P.O. Complete Foundation details viz. static / dynamic load details etc. and final Layout drawings shall be submitted by the supplier within two months 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 submit	
17.0	ERECTION & COMMISSIONING		
17.1	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	

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17.2	Successful trial by supplier at BHEL on trial components shall be considered as part of commissioning. All tests, as mentioned at CLAUSE 19.0 (Machine Acceptance) shall form part of the commissioning activity.	Vendor to note	
17.3	Tools, Tackles, instruments and other necessary equipment required to carry out all above activities should be brought by the supplier.	Vendor to note	
17.4	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to note	
17.5	All Cover Plates required for the machine and its peripherals including pits, if any, shall be supplied and installed by the vendor..	Vendor to note	
17.6	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	
17.7	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to submit	
17.8	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	Vendor to submit	
18.0	GEOMETRICAL ACCURACIES :		
18.1	The machine shall be tested for Geometrical Accuracy as per ISO-2423/DIN-8625 or other equivalent International Standards.	Vendor to specify the standard and submit test chart	
18.2	All the above accuracies should be demonstrated to BHEL engineers during pre-acceptance at Suppliers works and during Erection & Commissioning at BHEL Works.	Vendor to accept	
19.0	MACHINE ACCEPTANCE (TESTS/ACTIVITIES TO BE PERFORMED & DEMONSTRATED BY THE VENDOR)	Should be accepted & confirmed by Vendor	
19.1	TESTS/ACTIVITIES TO BE CARRIED OUT AT VENDOR'S WORKS ON THE MACHINE BEFORE DISPATCH :		

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19.1.1	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	
19.1.2	Motors data sheet	Vendor to submit	
19.1.3	Internal routine test report	Vendor to submit	
19.1.4	Quality plan for final inspection at supplier works.	Vendor to submit	
19.1.5	The machine should be tested for its full capacity at supplier works as per Purchase Order. Test pieces shall be arranged by the supplier only.	Vendor to accept	
19.1.6	Demonstration of all features of the machine, control system & accessories	Vendor to demonstrate	
19.2	TESTS/ACTIVITIES TO BE CARRIED OUT AT BHEL WORKS WHILE COMMISSIONING THE MACHINE:		
19.2.1	The machine should be tested for its full capacity at BHEL works as per Purchase Order. BHEL will provide test pieces for prove out.	Vendor to accept	
19.2.2	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 accept	
19.2.3	Training of BHEL machine operators in operation of complete machine & accessories etc by the supplier's experts / engineers during their stay at BHEL works.	Vendor to accept	
20.0	PACKING:		
20.1	Sea worthy & rigid packing for all items of complete machine, CNC System, all Accessories and other supplied items 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	
21.0	GUARANTEE :		
21.1.	24 months from the date of acceptance of the machine at BHEL works..	Vendor to accept	
22.0	GENERAL :		
22.1	Machine Model	Vendor to furnish	
22.2	Total connected load (KVA):	Vendor to furnish	
22.3	Floor area required (Length, Width, Height) for complete machine & accessories	Vendor to furnish	
22.4	Painting of Machine / Electrical Panels : As per supplier's standard	Vendor to note	

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22.5	Total weight of the machine	Vendor to furnish	
22.6	Weight of heaviest part of machine	Vendor to furnish	
22.7	Weight of the heaviest assembly / sub-assembly of the Machine	Vendor to furnish	
22.8	Dimensions of largest part/ sub-assembly/ assembly of the machine	Vendor to furnish	
22.9	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	
22.10	Detailed catalogues, sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to submit	
22.11	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	