

	<b>BHARAT HEAVY ELECTRICAL LIMITED</b>				<b>Enquiry No. :</b>	
	<b>UNIT'S ADDRESS:</b>				<b>Due Date :</b>	
	<b>UNIT'S PHONE NO.:</b>				<b>Supplier Qtn. No.:</b>	
	<b><u>CONTACT PERSON'S NAME/DESGN./PHONE NO./E-MAIL</u></b> <b><u>(FROM PURCHASE DEPT.)</u></b>					
<b><u>SPECIFICATION CUM COMPLIANCE CERTIFICATION FOR</u></b> <b><u>TRAVELLING TYPE RADIAL DRILLING MACHINE</u></b>						
<b>NOTE:-</b>						
<b>1. Vendor must submit complete information against clause no. 26 (Qualifying Conditions). The offer meeting this clause would only be processed.</b>						
<b>2. The "Offered" Column and where applicable, the "Deviations" &amp; "Remarks" Column 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.</b>						
<b>3. The offer and all documents enclosed with offer should be in English language only.</b>						
<b>4. All dimensions are in mm unless otherwise stated.</b>						
<b>ADDRESS OF THE SUPPLIER :</b>				<b>ADDRESS OF THE INDIAN AGENTS :</b>		
<b>TELEPHONE NOS.:</b>				<b>TELEPHONE NOS.:</b>		
<b>FAX NOS.:</b>				<b>FAX NOS.:</b>		
<b>E-MAIL ADDRESS :</b>				<b>E-MAIL ADDRESS :</b>		

<b>SCOPE: SUPPLY, ERECTION &amp; COMMISSIONING OF TRAVELLING TUPE RADIAL DRILLING MACHINE AS SPECIFIED BELOW</b>						
SL.NO.	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATIONS	REMARKS	
<b>1.0</b>	<b>PURPOSE &amp; WORKPIECE</b>					
<b>1.0.1</b>	<b>Purpose:</b> Travelling Type Radial Drilling Machine should be suitable for drilling and tapping of holes/thread sizes dia 80 mm(max)and M75(max.) having accuracy upto suface finish up to 6.3 microns in steel of T.S.60kg/mm.sq.	Vendor to offer				
<b>1.0.2</b>	<b>Work Piece Material:</b> Carbon Steel of T.S.60kg/mm.sq.					
<b>1.1</b>	<b>JOB REQUIREMENT:</b>	Vendor to confirm				
1.1.1	Drilling Capacity-Hole Dia 80mm in steel of T.S. 60kg/mm.sq.					
1.1.2	Tapping Capacity-M75 Steel of T.S.60kg/mm.aq.					
1.1.3	Maximum Drilling Radius -4200mm or better From Column Centre line					
1.1.4	Maximum travel of Drilling Head along the Arm - 3000 mm (or more)					
1.1.5	Minimum Drilling Radius -1000mm or less From column Centre line					
1.1.6	Drilling Capacity in Steel of -Hole dia 60mm(min.) T.S 60kg/mm.sq at maximum Drilling radius					
1.1.7	Drilling Thickness - 120 mm (or more)					
1.1.8	Traverse of Saddle on Bed Guide Ways - 8000mm(max.)					
1.1.9	Vertical movement of Drilling Head -1500mm(min)					
1.1.10	Drilling area required -4500mm(W)x7000mm(L) to be covered (max.)					
<b>1.3</b>	<b>GEOMETRICAL ACCURACY OF HOLES AND PITCH:</b>					
	Accuracy of Holes	upto H7				
	Surface finish of hole	6.3 microns (Ra)				
	Hole straightness	0.03 mm per 100 mm depth or better				

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	Holes pitch accuracy	± 0.1 mm			
<b>2.0</b>	<b>MACHINE SPECIFICATION:</b>				
<b>2.1</b>	<b>MACHINE CONFIGURATION</b>				
2.1.1	Spindle Orientation	Vertical			
2.1.2	<p>The machine should be rigid in design with following features: -</p> <ul style="list-style-type: none"> <li>- stable and rigid machine concept of all units</li> <li>- wide, infinitely variable speed ranges of the drilling spindles.</li> <li>- wide-dimensioned guideways on the machine beds</li> <li>- good overall view for the operator</li> <li>- machine assembly and construction easy to maintain</li> <li>- latest machine control of the electric and electronic</li> <li>- long-term geometrical accuracy</li> </ul> <p>Powered locking of Saddle on Machine -</p> <p>Powered clamping of arm on Column -</p> <p>Locking of Drill Head on Arm -</p> <p>Motorised swing of Arm on Column</p>	'Vendor to offer			
2.1.3	<p>All drive motor should comply with IEC/IS specification and it should be of reputed make like -Siemens,ABB,GE,Crompton,Bharat Bijali etc. -</p> <p>All switches,relays,contactors,Regulators etc.should be of Siemens/L&amp;T make.</p>				
<b>2.2</b>	<b>BASIC MACHINE</b>				
<b>2.2.1</b>	<b>Bed Plate</b>	Vendor to offer			
2.2.1.1	Material : special Cast Iron or Steel fabrication				
	Rigid, diagonal and steady ribbing				
	High loading capacity.				
2.2.1.2	Number of Bed Plate	Vendor to inform			
2.2.1.3	Length of plate base.	Vendor to inform for drilling area of			
2.2.1.4	Width of plate base.				
2.2.1.5	Height of plate base.				

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2.2.1.6	Number of T-slots	4500mm x 7000mm (width) x (length)			
2.2.1.7	Size of T-slots				
2.2.1.8	Distance of T-slots				
2.2.1.9	Loading capacity of bed plate. - 30 ton(max.)	Vendor to confirm			
<b>2.2.2</b>	<b>Machine X-axis Bed in guide rail design.</b>	Vendor to comfirm			
	Stable and rigid, well-ribbed design				
	Good bed support for holding the machine arm and absorption of the cutting forces				
	Long term geometrical accuracy in the guideways				
<b>2.2.3</b>	<b>Machine Arm:</b>				
2.2.3.1	Stable and rigid, well-ribbed design				
	Drilling Capacity in steel of T.S. 60kg/mm.sq. at maximum drilling radius of 4200mm is to hole dia 60mm				
	Tapping Capacity in steel of T.S. 60kg/mm.sq. at maximum drilling radius of 4200mm is to M48.				
	Long term geometrical accuracy in the guideways				
<b>2.3</b>	<b>SPINDLE:</b>				
<b>2.3.1</b>	<b>Drilling spindles in slide design</b>				
2.3.1.1	Wide, infinitely variable speed range	Vendor to confirm			
	Stable slideways				
	Hardened spindles with play-adjustable thrust bearings				
	Adjustment elements of low wear and play				
	Automatic oil/grease lubrication of the drilling spindles				
	Automatic oil/grease lubrication of the Z-axis slide				
	Automatic gear lubrication.				
	Vertical Capacity:- -Drill hole dia -80mm or higher -Tapping hole dia -M75 or higher				

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2.3.1.2	<b>Tool system:</b> Specify suitable tool holding system for straight / taper shank drills and taps.	Vendor to inform			
2.3.1.3	Tapping attachment for M42 and M48 are to be offered with Machine.	Vendor to offer			
2.2.1.4	Tool clamping.	Vendor to inform			
<b>2.3.2</b>	<b>Drilling spindle</b>	1 no.			
2.3.2.1	Diameter of spindle nose.	Vendor to inform			
2.3.2.2	Taper in Spindle	Vendor to inform			
2.3.2.3	A/C Motor drive for the drilling spindles	Vendor to confirm			
2.3.2.4	Drilling Depth of Spindles	475mm			
2.3.2.5	Drilling /Tapping capacity at maximum drilling radius	Dia 60mm/M48			
2.3.2.6	Speed range of the workspindle.	Vendor to inform			
2.3.2.7	Range of spindle feeds per revolution	Vendor to inform			
2.3.2.8	Torque of workspindles	Vendor to inform			
2.3.2.9	Workspindle with outside coolant supply	Vendor to confirm			
2.3.2.10	Spindle Motor Make, Model etc., (Should comply with IEC / IS specifications). It should be to reputed make like Siemenas ABB,Crompton,GE,Bharat Bijali etc.	Vendor to inform			
2.3.2.11	Range of spindle speed at constant power.	Vendor to inform			
2.3.2.12	Max spindle Torque	Vendor to inform			
2.3.2.13	RPM at which max.permissible torque is available.	Vendor to inform			
2.3.2.14	Torque /Power /Speed diagram od spindle motor is to be submitted with the offer.	Vendor to inform			
2.3.2.15	Range of swing of arm	0°-360°			

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<b>2.4</b>	<b>CONSTRUCTION:</b>				
2.4.1	Vendor to furnish material, hardness of guideways & constructional details, including explanatory drawings, of various components/ assemblies like Spindle Gear Box, Guideways/ slides, Telescopic covers, Accessories, Machine Table, feed transmission system, hydraulic and lubrication system, feed back system etc. of the machine.	Vendor to submit			
<b>2.5</b>	<b>OPERATION AND CONTROL SYSTEM:</b>				
<b>2.5.1</b>	<b>OPERATOR'S PANEL:</b>				
	Fixed / Swiveling type operator's panel having complete machine control system shall be provided.	Vendor to confirm			
<b>2.5.2</b>	<b>MANUAL CONTROL:</b>				
	Complete manual control of machine with required switches/ keys should be provided on the machine/ operator's panel for selection of required axis, axis direction, cutting feed, spindle speed, cutting feed on/off, for manual operation Manual control for up-down movements of drilling spindles to be provided.	Vendor to confirm			
<b>2.6</b>	<b>MACHINE LIGHTS:</b>				
2.6.1	Machine Lights for sufficient illumination of complete working area should be provided for clear visibility.	Vendor to confirm			
<b>2.7</b>	<b>COOLANT SYSTEM :</b>				
2.7.1	Coolant System with all accessories for following shall be provided.	Vendor to confirm			
	a) Independent Recirculating Type Coolant System with nozzles around all Drilling Spindles.				
2.7.2	Coolant Tank Capacity and details of the system including requisite sump, pump, location of coolant tank etc. should be clearly indicated.	Vendor to submit			
2.7.3	Coolant pump and motor details for Coolant System	Vendor to inform			
<b>2.8</b>	<b>ELECTRICAL:</b>				

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2.8.1	415V +/-15%, 50HZ +/-3 HZ, 3 Phase AC (3 wire system without 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			
2.8.2	<b>Tropicalisation:</b> All electrical / electronic equipment shall be tropicalized	Vendor to confirm			

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2.8.3	All electrical & electronic control cabinets & panels should be dust proof.	Vendor to confirm			
2.8.4	All electrical and electronic panels including operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters/receptacles should have compatibility with Indian equivalents.	Vendor to confirm			
2.8.5	Motors/electrical equipment shall conform to IEC or Indian Standards	Vendor to confirm			
2.8.6	All cables moving with traversing axes should be installed in steel abraided hose/ caterpillar / Drag chain suitable for industrial application.	Vendor to confirm			
2.8.7	Vendor should ensure the proper earthing for the machine and its peripherals.	Vendor to confirm			
<b>2.9.</b>	<b>SAFETY ARRANGEMENTS:</b>				
	Following safety features in addition to other standard safety features should be provided on the machine:	Vendor to confirm			
	1. Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, workpiece and the operator due to the malfunctioning or mistakes.	vendor to submit			
	2. A detailed list of all All alarms / indications provided on machine should be submitted by the supplier.	Vendor to confirm			
	3. All the pipes, cables etc. on the machine should be well supported and protected. These should not create any hindrance to machine operator's movement for effective use of machine.	Vendor to confirm			
	4. Emergency Switches at suitable locations as per International Norms are to be provided.	Vendor to confirm			
	5.Oil & water pipes line should not run with electrical cable in the same tray/trench.	Vendor to confirm			



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2.10	<b>ENVIRONMENTAL PERFORMANCE OF THE MACHINE :</b>	Vendor to confirm			
	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, one 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			
	(b) There shall not be any emissions from the machine except fumes of cutting fluid during machining.	Vendor to confirm			
	(c) There should not be any effluent from the machine.				
	(d) No hazardous chemicals shall be required to be used in the machine.				
	(e) If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.				
	(f) Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.				
3.0.	<b>LEVELING &amp; ANCHORING SYSTEM</b>				
	Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc to be supplied with the machine.machine bed and bed plate(s).				
4.0.	<b>TOOLS FOR ERECTION, OPERATION &amp; MAINTENANCE:</b>				
4.1	Special tools and equipment required for erection and 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			
4.2	Test mandrel for checking run-out/taper & alignment should be supplied	Vendor to confirm			

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<b>5.0.</b>	<b>SPARES:</b>				
5.1	Itemwise 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 with proper identification number by Vendor. The list to include following, in addition to other recommended spares: <b>(Unit Price of each item of spare should be offered)</b>	Vendor to offer			
5.1.1	<b>Mechanical &amp; Hydraulic Spares:</b> All type of pumps (Coolant pump, Hydraulic & lubricating pumps etc.) and valves, all pressure regulators, pressure switches, transducers, flow switches, filters, seals, O-rings, belts, bearings, hose pipes etc.	Vendor to offer			
5.1.2	<b>Electrical /Electronic Spares:</b> All types of Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch etc.	Vendor to offer			
5.2	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 them in advance, if required.	Vendor to confirm			
5.3	Recommended and mandatory set of spares for all attachments are to be offered with details.	Vendor to offer			
5.4	Vendor to confirm the complete list of spares for machine and accessories, along with specification / type/model, identification number and name & address of the spares supplier shall be furnished along with documentation to be supplied with the machine.	Vendor to confirm			
5.5	Commissioning Spares.	Vendor to offer			
<b>6.0.</b>	<b>DOCUMENTATION :</b> Four sets of following documents (Hard copies) in English language and are soft copy wherever possible on CD should be supplied along with the machine	Vendor to confirm			
6.1	Operating manuals of Machine system				

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6.2	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Pneumatic/ Coolant / Hydraulic & Lubricating circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list, identification number, make and specification of all components.				
6.3	Manufacturing drawings for all supplied tool holders, coolant connections, adapters, sleeves, fixtures etc.				
6.4	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.				
6.5	Detailed specification of all rubber items and hydraulic/lube fittings				
6.6	Complete Master List of parts used in the machine shall be submitted by the vendor.	Vendor to confirm			
<b>6.7.</b>	<b>Sets of Operation &amp; Maintenance Manuals consisting of following:</b>	Vendor to confirm			
6.7.1	Erection & Commissioning Instructions.				
6.7.2	Electrical and electronic circuit diagram with identification, Electrical-wiring diagrams with wire number, Circuit details/drawings.				
6.7.3	functioning of major components of the machine.				
6.7.4	Trouble shooting and Remedial measures				
6.7.5	DOs and DONOTs.				
6.7.6	List of replaceable parts and complete list of Mechanical, Electrical and Electronic spares with identification numbers.				
6.7.7	Drawings/details of Tooling with identification numbers and functioning details.				
6.7.8	Manufacturing drawings of all supplied tool holders, coolant connections, adopters, sleeves, fixtures etc.				
6.7.9	List of all bought out items with technical specifications, model & make.				
6.7.10	Identification number on all Hydraulic and Lubricating hose pipes, etc.				

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<b>7.0.</b>	<b>TRAINING</b>				
7.1	BHEL Persons should be trained free of cost at BHEL Works in the area of  (b) Electrical, Electronic maintenance for machine & other supplied equipments (c) Mechanical & Hydraulic maintenance of the machine & other supplied equipments (d) Operation of the machine & other supplied equipments.	Vendor to confirm			
7.2	Demonstration of all features of the machine, all accessories to the satisfaction of BHEL for their efficient and effective use.	Vendor to confirm			
7.3	Demonstration by actual use of all supplied attachments and accessories to their full capacity.	Vendor to confirm			
7.4	One weeks supervision of independent operation of machine by BHEL after job proveout.	Vendor to confirm			
<b>8.0.</b>	<b>FOUNDATION :</b>				
<b>8.1</b>	Supplier shall submit the layout drawing of foundation with loading data at various points within 4 weeks from the date of LOI/PO whichever is earlier. The layout should consist of all requirements pertaining to complete machine & bed plate for work piece Chip Bin, Coolant tank & any other accessories.	Vendor to confirm			
<b>8.2</b>	Foundation design shall be carried out by BHEL and vetting of foundation drawing shall be done by the supplier.	Vendor to accept & confirm			
<b>8.3</b>	BHEL shall construct complete foundation for the machine under supervision of supplier. The vendor shall indicate detailed specifications of grouting compound and Grouting procedure etc. for foundation bolts of the machine.	Vendor to accept & confirm and submit			

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<b>9.0.</b>	<b>ERECTION &amp; COMMISSIONING:</b>				
9.1	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. Details of these requirements should be informed by vendor in advance.	Vendor to offer			
9.2	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned at <b>clause 13 (Machine Acceptance)</b> shall form part of the commissioning activity.	For Vendor's information			
9.3	Test mandrel for checking run-out/taper & alignment should be supplied.	Vendor to confirm			
9.4	Tools, Tackels, Test Mandrels, Instruments and other necessary equipment required to carry out all above activities should be brought by the supplier.	Vendor to confirm			
9.5	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to confirm			
9.6	All Cover Plates required for the machine and its peripherals including pits, if any, shall be supplied and installed by the vendor.	Vendor to confirm			
9.7	<b>TOUCH-UP PAINTS:</b> Portion, if any, of the machine, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colours of paint used.	Vendor to confirm			
9.8	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to submit with offer			
9.90	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.				

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<b>10.0.</b>	<b>ACCURACY TESTS:</b>				
<b>10.1</b>	<b>GEOMETRICAL ACCURACIES :</b>				
10.1.1	Submit test chart for all accuracies as per applicable standard.	Vendor to submit with offer			
10.1.2	All the above accuracies should be demonstrated to BHEL engineers during pre-acceptance at supplier's works and during erection & commissioning at BHEL works.	Vendor to confirm			
<b>10.2</b>	<b>MACHINE POSITIONING ACCURACIES &amp; REPEATABILITY: Should be measured as per VDI/DGQ 3441 (Latest Revision) using LASER INTERFEROMETER.</b>	Vendor to confirm			
10.2.1	Positioning accuracy in X / Y axis per 1000 mm	Vendor to submit			
10.2.2	Positioning accuracy in Z axis per 1000 mm	Vendor to submit			
10.2.3	Repeatability in X / Y axis	Vendor to submit			
10.2.4	Repeatability in Z axis	Vendor to submit			
10.2.5	Positioning accuracy over entire traverse in : X/Y axis	Vendor to submit			
10.2.6	Positioning accuracy over entire traverse in Z axis	Vendor to submit			
<b>11.0.</b>	<b>AMBIENT CONDITIONS &amp; THERMAL STABILITY :</b>				
11.1	Total machine including system and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies. Power Supply: Voltage: 415 V +/- 15% Frequency: 50 Hz +/- 3% No. of phases = 3 phase, 3 wire system Ambient Conditions: Temperature = 5 to 50 degree Celsius Relative Humidity = 95% max. Compressed Air supply at pressure=4 to 6 kg/cm <sup>2</sup> gauge Working Condition : Fabrication Shop floor. (Vendor to confirm that machine is suitable for above and details of provisions on the machine for the same are to be furnished by Vendor)	'Vendor to Confirm			

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11.2	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. Machine shall be kept in the normal fabrication shop floor condition. Max. temperature variation is up to 20 deg Celsius in 24 hours. (Vendor to confirm that machine is suitable for above and details of provisions on the machine for the same are to be furnished by Vendor)	'Vendor to Confirm			
11.3	Thermal Stability of the complete machine keeping in view specified Ambient Conditions and accuracy requirements of BHEL components and trouble free operation of the machine should be ensured by vendor. (Confirm that machine is suitable for above and details of provisions on the machine for the same should be furnished)	'Vendor to Confirm			
<b>12.0.</b>	<b>PROVEOUT OF BHEL COMPONENTS :</b>				
	<p>Drawings of proveout components (Front Water Box Drg.No.-01603170039) are enclosed. Vendor to submit preliminary process, time study of drilling and tapping of holes in rectangular flanges and circular flanges (item-2) with break-up details like - loading, unloading of work piece, machine set-up, total drilling time of proveout component and tool list recommended by them along with the offer. Change in process/tools may be mutually discussed and agreed. Complete drilling of prove out components shall be done by Vendor at BHEL works to the specified design accuracy and surface finish, using cutting tools to prove the machine after complete erection, tests &amp; test piece machining etc. Material for the proveout components shall be provided by BHEL. Vendor should submit the programs, setting schemes, process sheets, tooling layouts, time studies etc. in advance for the prove out components. Vendor shall be fully responsible for drilling of proveout components as per drawing and other requirements specified by BHEL to the full satisfaction of BHEL.</p> <p>Clarifications, if any required by vendor, regarding accuracy requirements of the proveout components, whether specified or not, should be discussed and cleared by vendor during initial technical discussions.</p>	<p>Drg. No. 01603170039 enclosed.</p> <p>Vendor to offer.</p>			





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<b>13.0.</b>	<b>MACHINE ACCEPTANCE: (Tests/Activities should be Performed by Vendor)</b>	Vendor to confirm			
<b>13.1</b>	<b>Tests/Activities should be carried out at supplier's works on the machine before dispatch :</b>	Vendor to confirm			
13.1.1	Geometrical accuracies as per test chart.	Vendor to submit			
13.1.2	Positioning accuracies as per applicable standard.	Vendor to submit			
13.1.3	The machine should be tested for continuous running of 48 hrs. If any break down occurs during this test, the test should be repeated for 48 hrs from that time.	Vendor to confirm			
13.1.4	Demonstration of all features of the machine, control system & accessories	Vendor to confirm			
<b>13.2</b>	<b>Tests/Activities should be carried out at BHEL works while commissioning the machine :</b>	Vendor to confirm			
13.2.1	Geometrical accuracies as per test chart.	Vendor to submit			
13.2.2	Positioning accuracies as per applicable standard.	Vendor to submit			
13.2.3	Full load test to demonstrate the maximum power & cutting capacity of the machine.	Vendor to submit			
13.2.4	The machine should be tested for continuous running of 48 hrs. If any break down occurs during this test, the test should be repeated for 48 hrs from that time.	Vendor to confirm			
13.2.5	Demonstration of all features of the machine, control system & accessories to the satisfaction of BHEL for efficient and effective use of the machine	Vendor to confirm			
13.2.6	Proveout machining.	Vendor to confirm			
13.2.7	One weeks supervision of independent operation of machine by BHEL after job proveout	Vendor to confirm			
13.2.8	Machining of test piece:-Vendor to arrange test pieces and tooling for its machining.	Vendor to confirm			

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13.2.9	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 confirm			
13.2.10	Demonstration by actual use of all supplied attachments and accessories to their full capacity.	Vendor to confirm			
<b>14.0.</b>	<b>PRE-DESPATCH INSPECTION:</b>				
	Pre-despatch inspection at vendor's works by BHEL personnel for the complete machine.	Vendor to confirm			
<b>15.0.</b>	<b>AFTER SALES SERVICE:</b>				
	Vendor should provide prompt after sales service to ensure smooth trouble free working of the machine and spares availability during and after guarantee period.	Vendor to confirm			
<b>16.0.</b>	<b>PACKING:</b>				
	The complete machine, all Accessories and other supplied items to be suitably packed to avoid any damage/loss in handling, transportation and storage.	Vendor to confirm			
<b>17.0.</b>	<b>GUARANTEE :</b>				
	The machine should be guaranteed <b>for two years</b> smooth operation after commissioning and job proving.	Vendor to confirm			
<b>18.0</b>	<b>GENERAL :</b>				
18.1	Machine Model	Vendor to submit			
18.2	Total connected load (KVA):	Vendor to submit			
18.3	Floor area required (Length, Width, Height) for complete machine & accessories	Vendor to submit			
18.4	Painting of Machine / Electrical Panels : RAL 6011 Apple Green (Polyurethane Paint)	Vendor to submit			
18.5	Total weight of the machine	Vendor to submit			
<b>18.6</b>	<b>Weight of heaviest part of machine.</b>	Vendor to submit			
<b>18.7</b>	<b>Weight of the heaviest assembly / sub-assembly of the Machine.</b>	Vendor to submit			
<b>18.8</b>	<b>Dimensions of largest part/ sub-assembly/ assembly of the machine</b>	Vendor to submit			

SL.NO.	DESCRIPTION FOR BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATIONS	REMARKS
18.9	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, Spindle power, Load Capacity, Max job Envelope etc.	Vendor to submit			
18.10	Detailed catalogues , sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to submit			
18.11	<b>Hydraulic, Pneumatic &amp; 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.</b>	Vendor to confirm			
19.0	<b>REFERENCE LIST/QUALIFYING CONDITIONS :</b>				
	Only those vendors, who have supplied and commissioned at least one Radial Drilling Machine (vertical type) of same or higher capacity in the past ten years and such machine is presently working satisfactorily for more than one year after commissioning should quote. The following information should be submitted by the vendor by the vendor about the companies where similar machines have been supplied. This is required from all the vendors for qualification of their offer. 1.Name of the customer/company where similar machine is installed. 2.Complete postal address of the customer. 3.Year of commissioning. 4.Application for which the machine is supplied. 5.Name and designation of the contact person of the customer. 6.Phone,FAX no. and email address of the contact person of the customer.	Vendor to comply with the offer			
	7. Performance certificate mentioning model, year of commissioning, broad specifications and application, from the customers regarding satisfactory performance of machine supplied to them.				
28.0	<b>POINTWISE CONFIRMATION:</b>				
	Vendor should confirm/clarify pointwise (all the points) as per specification and provide original technical leaflet, technical details, photographs, scope of supply etc. at the first instance.	Vendor to inform			