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|  | <u>BHARAT HEAVY ELECTRICAL LIMITED</u> Heavy Electricals Plant, Piplani, Bhopal-462022, Madhya Pradesh, India | | Enquiry No. : | |
| | | | Due Date : | |
| | | | Supplier Qtn. No.: | |
| | | | Date : | |
| <u>SPECIFICATION CUM COMPLIANCE CERTIFICATE OF "TRAVELLING COLUMN RADIAL DRILLING MACHINE"</u> | | | | |
| | NOTE:- | | | |
| 1. Vendor must submit complete information against clause no. 18(I.e. Qualifying Conditions). The offer meeting this clause would only be processed. | | | | |
| 2. The "Offered" Column and where applicable, the "Deviations" & "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. | | | | |
| 3. The offer and all documents enclosed with offer should be in English language only. | | | | |
| NAME & ADDRESS OF THE SUPPLIER : | | | | |
| TELEPHONE NOS.: | | | | |
| FAX NOS.: | | | | |
| E-MAIL ADDRESS : | | | | |
| SCOPE: SUPPLY, ERECTION & COMMISSIONING OF "RADIAL ARM DRILLING MACHINE" COMPLYING WITH SPECIFICATIONS AS BELOW | | | | |

| SNO | DESCRIPTION FOR BHEL REQUIREMENT | SPECIFIED / TO BE CONFIRMED BY | OFFERED | DEVIATIONS | REMARKS |
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| 1 | PURPOSE & WORKPIECE MATERIAL: | | | | |
| 1.1 | Purpose: Travelling Type Radial Drilling Machine should be suitable for drilling and tapping of holes/thread size dia. 80mm and M75 having accuracy upto surface finish up to 6.3 microns in steel of T.S.60kg/mm.sq. | Vendor to confirm | | | |
| 1.2 | Work Piece Material: (1)Manganese steel forgings, Normalised , complying generally to IS 4367 - 1991 & UTS upto 640 N/mm2, Hardness 200 BHN. (2) Carbon Steel Forgings, Normalised class 4 (45C8) complying to IS 2004 - 1981, UTS 530 N/mm2 & 200 BHN. (3) Alloy Steel Forging, hardened and tempered, with UTS upto 740 N/mm2. | Vendor to confirm | | | |
| 2.1 | MACHINE SPECIFICATION | | | | |
| 2.1.1 | Drilling Capacity - Hole dia. 80 mm in steel of kg/mm .sq. | Vendor to confirm | | | |
| 2.1.2 | Tapping Capacity - M75 Steel of T.S.60kg/mm.sq. | Vendor to confirm | | | |
| 2.1.3 | Maximum Drilling Radius From Column Centre line - 4470mm or better | Vendor to confirm | | | |
| 2.1.4 | Travel of headstock on arm - 1000 mm or more | Vendor to confirm | | | |

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| 2.1.5 | Drilling Capacity in Steel of T.S. 60 kg/mm .sq.at maximum Drilling radius | - Hole dia. 80 mm | Vendor to confirm | | |
| 2.1.6 | Traverse of Saddle on Base Tracelling Column type | - Up to 8000mm (min.) | Vendor to confirm | | |
| 2.1.7 | Vertical movement of Spindle - 450 mm (min) | | Vendor to confirm | | |
| 2.1.8 | Drilling area required to be covered (max.) | - 4500mm (w) x 7000 mm (L) | Vendor to confirm | | |
| 2.2 | BASIC MACHINE | | | | |
| 2.2.1 | Machine Table (Bed Plate/Floor Plate) | | | | |
| 2.2.1.1 | Material : special Cast Iron or Steel Fabrication | | Vendor to specify | | |
| 2.2.1.2 | Number of Machine Table i.e. Bed Plate/Floor Plate. | | Vendor to specify | | |
| 2.2.1.3 | Length of plate base. | | Vendor to specify | | |
| 2.2.1.4 | Width of plate base. | | Vendor to specify | | |
| 2.2.1.6 | Number of T-slots | | Vendor to specify | | |
| 2.2.1.7 | Size of T-slots | | Vendor to specify | | |
| 2.2.1.8 | Distance of T-slots | | Vendor to specify | | |
| 2.2.1.9 | Loading capacity of bed plate - 30 ton (max) | | Vendor to specify | | |

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| 2.2.2 | Machine X-axis Bed in guide rail design | | | | | |
| | 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 | Vendor to confirm | | | | |
| 2.3 | SPINDLE: | | | | | |
| 2.3.1 | Drilling spindles in slide design | | | | | |
| 2.3.1.1 | wide,infinately variable speed range 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 lubrication | Vendor to confirm | | | | |
| | Vertical Capacity:- -Drill hole dia. -80mm or higher Tapping hole dia. -M75 or higher | Vendor to specify | | | | |
| 2.3.1.2 | Tool system: Specify suitable tool holding system for straight/taper shank drill and taps. | Vendor to specify | | | | |
| 2.3.1.3 | Tapping attachment for M42 and M48 are to be offered with machine. | Vendor to confirm | | | | |

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| 2.3.2 | Drilling spindles | | | | | |
| 2.3.2.1 | Diameter of spindle nose | | Vendor to Specify | | | |
| 2.3.2.2 | Taper in spindle : MT6 | | Vendor to Confirm | | | |
| 2.3.2.3 | A/C Motor drive for the drilling spindles | | Vendor to Specify | | | |
| 2.3.2.5 | Drilling Depth of spindles | | Vendor to specify | | | |
| 2.3.2.5 | Drilling/Tapping capacity at maximum drilling radius | | Vendor to specify | | | |
| 2.3.2.6 | Speed range of the work spindle. | | Vendor to specify | | | |
| 2.3.2.7 | Range of spindle feeds per revolution | | Vendor to specify | | | |
| 2.3.2.8 | Torque of work spindle | | Vendor to specify | | | |
| 2.3.2.9 | Work spindle with outside coolant supply | | Vendor to Specify | | | |
| 2.3.2.10 | Spindle Motor Make,Model etc., (Should comply with IEC/IS specifications). It should be of reputed make like Siemens, ABB,Crompton,GE,Bharat Bijali etc. | | Vendor to Specify | | | |
| 2.3.2.11 | Range of spindle speed at constant power. | | Vendor to Specify | | | |
| 2.3.2.12 | Max spindle Torque | | Vendor to Specify | | | |
| 2.3.2.13 | RPM at which max permissible torque is available. | | Vendor to Specify | | | |
| 2.3.2.14 | Torque/Power/Speed diagram of spindle motor is to be submitted with the offer. | | Vendor to Specify | | | |
| 2.3.2.15 | Range of swing of arm | | Vendor to Specify | | | |

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| 2.4 CONSTRUCTION: | | | | | |
| 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 | | | |
| 2.5 OPERATION AND CONTROL SYSTEM: | | | | | |
| 2.5.1 OPERATION'S PANEL: | | | | | |
| | Fixed/Swiveling type operator's panel having complete machine control system shall be provided. | Vendor to confirm | | | |
| 2.5.2 MANUAL CONTROL | | | | | |
| | Complete manual control of machine with required switches/key 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 movement of drilling spindles to be provided. | Vendor to confirm | | | |
| 2.6 MACHINE LIGHTS: | | | | | |
| 2.6.1 | Machine Lights for sufficient illumination of complete working area should be provide for clear visibility. | Vendor to confirm | | | |

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| 2.7 | COOLANT SYSTEM: | | | | | |
| 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. | Vendor to specify | | | | |
| 2.7.2 | Coolant Tank Capacity and details of the system including requisite sump,pump,location of tank etc.should be clearly indicated. | Vendor to specify | | | | |
| 2.7.3 | Coolant pump and motor details for Coolant System | Vendor to specify | | | | |
| 2.8 | ELECTRICAL: | | | | | |
| 2.8.1 | 415 V $\pm 15\%$, 50 HZ ± 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 type of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine/control cabins, 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 | Tropicalisation: 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 | | | |
| 2.9 | SAFETY ARRANGMENTS: | | | | |
| | 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 confirm | | | |
| | 2.A details list of all All alarms / indications provided on machine should be submitted by the supplier. | Vendor to confirm | | | |

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| | 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 location 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 | | | |
| | 2.10 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, 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. | Vendor to confirm | | | |

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| | (d) No hazardous chemicals shall be required to be used in the machine. | Vendor to confirm | | | |
| | (e) If any safety / environmental protection enclosure is required it should be built in the machine by the vendor. | Vendor to confirm | | | |
| | (f) Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant. | Vendor to confirm | | | |
| 3.0 | LEVELING & ANCHORING SYSTEM | | | | |
| | Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc to supplied with the machine. Machine bed and bed plate (s). | Vendor to confirm | | | |
| 4.0 | TOOL FOR ERECTION, OPERATION & MAINTENANCE: | | | | |
| 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 | | | |

| 5.0 | SPARES: | | | | | |
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| 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 offer with proper identification number by Vendor. (Unit Price of each item of spare should be offered) | Vendor to submit | | | | |
| 5.1.1 | Mechanical & Hydraulic Spares: 1.Coolant pump - 01 No, 2.Hydraulic pump -01 No, 3. Lubricating pump - 01 No, 4. Valves - 01 Set,5. Pressure regulators -01 set, 6.Pressure switches -01 Set, 7.Transducers - 01 set, 8. Flow switches - 01 set,9. Filters -01 set ,10. O-rings - 01 set ,11.Oil seals - 01 set,12. Belts - 01 set,13.Bearings (SKF/FAG/TIMKEN make only) - 01 set,14.Hose pipes -01 set,15.Clutches -01 set,15.Gears - 01 set,16 Roller set - 01 set | Vendor to submit | | | | |
| 5.1.2 | Electrical: Motors (Siemens, ABB, Crompton,GE,Bharat Bijali make only)1. Hydraulic motor - 01 No, 2.Lubricating motor - 01 No,3. Coolant motor - 01 No,4. Relays - 01 set each, 5. Contactors - 01 set each,6.Proximity Switches - 01 set each, 7.Push buttons - 01 set each,8.Indicating lamps - 01 set each,9.Limit Switches- 01 set each type, 10.Semiconductor Fuses- 01 set each type,11.Special Fuses -01 set each type, 12.MCBs- 01 set each type | | | | | |

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| 5.2 | All type 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 submit | | |
| 5.3 | Recommended and mandatory set of spares for all attachments for two years of operation are to be offer with details. | Vendor to submit | | |
| 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 submit | | |
| 5.5 | Commissioning Spares: Vendor shall arrange all necessary commissioning spares. | Vendor to confirm | | |
| 6.0 | DOCUMENTATION: 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 submit | | |
| 6.1 | Operation manual of Machine system | Vendor to submit | | |
| 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. | Vendor to submit | | |

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| 6.3 | Manufacturing drawing for all supplied tool holders, coolant connections, adapters, sleeves, Fixtures etc. | Vendor to submit | | | |
| 6.4 | Catalogues, O&M manual of all bought out items including drawings , wherever applicable. | Vendor to submit | | | |
| 6.5 | Complete Master List of parts used in the machine shall be submitted by the vendor. | Vendor to submit | | | |
| 6.7. | Sets of Operation & Maintenance Manuals consisting of following : | Vendor to submit | | | |
| 6.7.1 | Erection & Commissioning Instructions. | Vendor to submit | | | |
| 6.7.2 | Electrical and electronic circuit diagram with identification, Electrical - wiring diagrams with number, Circuit details / drawings. | Vendor to submit | | | |
| 6.7.3 | functioning of major components of the machine. | Vendor to submit | | | |
| 6.7.4 | Trouble shooting and Remedial measures | Vendor to submit | | | |
| 6.7.5 | DOs and DON'TS | Vendor to submit | | | |
| 6.7.6 | List of replaceable parts and complete list of Mechanical ,Electrical and Electronic spares with identification numbers. | Vendor to submit | | | |
| 6.7.7 | Drawings/details of Tooling with identification number and functioning details. | Vendor to submit | | | |
| 6.7.8 | Manufacturing drawing of all supplied tool holders, coolant connections, adapters, sleeves, Fixtures etc. | Vendor to submit | | | |

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| 6.7.9 | List of all bought out items with technical specification, model & make. | Vendor to submit | | | |
| 6.7.10 | Identification number on all Hydraulic and Lubrication hose, pipes, etc. | Vendor to submit | | | |
| 7.0 | TRAINING | | | | |
| 7.1 | BHEL Persons should be trained free of cost at BHEL Works in the area of (a) Electrical, Electronic maintenance for machine & other supplied equipments (b) Mechanical & Hydraulic maintenance of the machine & other supplied equipments (c) 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 attachment and accessories to their full capacity. | Vendor to confirm | | | |
| 8.0. | FOUNDATION: | | | | |
| 8.1 | Supplier shall submit the layout drawing of foundation with loading data at various points with 4 weeks from the date of LOI/PO whichever is earlier. The layout should consist of all requirements pertaining to complete machine & bad plate for work piece Chip Bin, Coolant tank & any other accessories. | Vendor to submit | | | |
| 8.2 | Foundation design shall be carried out by BHEL and vetting of foundation drawing shall be done by the supplier. | Vendor to confirm | | | |

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| 8.3 | BHEL shall construct complete foundation for the machine under supervision of supplier. The vendor shall indicate detailed specification of grouting | Vendor to confirm | | | |
| 9.0. ERECTION & COMMISSIONING | | | | | |
| 9.1 | 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 to be indicated by supplier in their foundation/layout drawings. Other requirement like crane and helping personnel shall also be provided by BHEL. Details of these requirements should be informed by vendor in advance. | Vendor to confirm | | | |
| 9.2 | Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned at clause 13 (Machine Acceptance) shall form part of the commissioning activity. | Vendor to confirm | | | |
| 9.3 | 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 | | | |
| 9.4 | Commissioning Spares: required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable basis. | Vendor to confirm | | | |
| 9.5 | All Cover Plates required for the machine and its peripherals including pits, if any, shall be supplied and installed by the vendor. | Vendor to confirm | | | |

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| 9.6 | TOUCH -UP PAINTS: Portion,if any, of the machine, accessories and other supplied items where paint has rubbed off 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 | | | |
| 9.7 | Schedule of Erection and Commissioning shall be submitted with the offer. | Vendor to submit | | | |
| 9.8 | Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer. | Vendor to submit | | | |
| 10.0 | ACCURACY TESTS: | | | | |
| 10.1.1 | Submit test chart for all accuracies as per applicable standard. | Vendor to confirm | | | |
| 10.1.2 | All the above accuracies should be demonstrated to BHEL engineers during per-acceptance at supplier's works and during erection & commissioning at BHEL works. | Vendor to confirm | | | |
| 10.2 | MACHINE POSITIONING ACCEPTANCES & REPEATABILITY: Should be measured using LASER INTERFEROMETER. | Vendor to confirm | | | |
| 10.2.1 | Positioning accuracy in X/Y axis per 1000 mm | Vendor to specify | | | |
| 10.2.2 | Positioning accuracy in Z axis per 1000 mm | Vendor to specify | | | |
| 10.2.3 | Repeatability in X/Y axis | Vendor to specify | | | |
| 10.2.4 | Repeatability in Z axis | Vendor to specify | | | |
| 10.2.5 | Positioning accuracy over entire traverse in : X/Y | Vendor to specify | | | |

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| 10.2.6 | Positioning accuracy over entire traverse in : Z | Vendor to specify | | | |
| 11.0 | AMBIENT CONDITIONS & THERMAL STABILITY: | | | | |
| 11.1 | <p>Total machine including system and all supplied items should work trouble free and efficiently under following operation conditions and should give specified accuracies.</p> <p>Power Supply: 415 V+/- 15 %</p> <p>Voltage :</p> <p>Frequency: 50Hz+/- 3%</p> <p>No. of phases = 3 phase, 3 wire system</p> <p>Ambient Condition : Temperature = 5 to 50 degree Celsius</p> <p>relative Humidity = 95% max.</p> <p>Compressed Air supply at pressure = 4 to 6 kg / cm2 gauge</p> <p>Weather condition to be furnished by Vendor</p> | Vendor to note | | | |
| 11.2 | <p>Weather condition are tropical. Atmosphere may be dusty 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)</p> | Vendor to note | | | |
| 11.3 | <p>Thermal Stability of the complete machine keeping in view specified Ambient Conditions and accuracy requirements of ensured by vendor. (Confirm that machine is suitable for above and details of provisions on the machine for the same should be furnished)</p> | Vendor to confirm | | | |
| 12 | MACHINE ACCEPTANCE: (Tests/Activities to be Performed by Vendor) | | | | |
| 12.1 | Tests/Activities should be carried out at supplier's works on the machine before dispatch: | Vendor to confirm | | | |
| 12.1.1 | Geometrical accuracies as per test chart ISO 1986-1 standard or equivalent | Vendor to specify | | | |

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| 12.1.2 | Positioning accuracies as per applicable standard. | Vendor to specify | | | |
| 12.1.3 | The machine should be tested for continuous runing of 48 hrs. If any break down occurs during this test, test should be repeated for 48 hrs. from that time. | Vendor to confirm | | | |
| 12.1.4 | Demonstration of all features of the machine, & all accessories | Vendor to confirm | | | |
| 12.2 | Following Tests/Activities should be carried out at BHEL works while commissioning the machine : | | | | |
| 12.2.1 | Geometrical accuracies as per test chart ISO 1986-1 standard or equivalent | Vendor to specify | | | |
| 12.2.2 | Positioning accuracies as per applicable standard. | Vendor to specify | | | |
| 12.2.3 | Full load test to demonstrate the maximum power & cutting capacity of the machine. | Vendor to confirm | | | |
| 12.2.4 | The machine should be tested for continuous runing of 48 hrs. If any break down occurs during this test, test should be repeated for 48 hrs. from that time. | Vendor to confirm | | | |
| 12.2.5 | 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 | | | |
| 12.2.6 | Proveout machining. | Vendor to confirm | | | |
| 12.2.7 | One weeks supervision of independent operation of machine by BHEL after job proveout | Vendor to confirm | | | |
| 12.2.8 | Machining of test piece:- Vendor to arrange test pieces and tooling for its machining. | Vendor to confirm | | | |

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| 12.2.9 | Training of BHEL personnel in operation of complete machine & accessories etc by the supplier's experts / engineers during their stay at BHEL works | Vendor to confirm | | | |
| 12.2.10 | Demonstration by actual use of all supplied attachments and accessories to their full capacity. | Vendor to confirm | | | |
| 13.0 | PRE-DESPATCH INSPECTION: | | | | |
| | Pre-despatch inspection at vendor's works by BHEL personnel for the complete machine. | Vendor to confirm | | | |
| 14.0 | AFTER SALES SERVICE: | | | | |
| | 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 | | | |
| 15.0 | PACKING : | | | | |
| | 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 | | | |
| 16.0 | GUARANTEE : | | | | |
| | The machine should be guaranteed for two years smooth operation after commissioning and job proving. | Vendor to confirm | | | |
| 17.0 | GENERAL : | | | | |
| 17.1 | Machine Model | Vendor to submit | | | |
| 17.2 | Total connected load (KVA): | Vendor to submit | | | |
| 17.3 | Floor area required (Length , Width,Height) for complete machine & accessories | Vendor to submit | | | |

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| 17.4 | Painting of Machine /Electrical Panels: RAL 6011 Apple Green (Polyurethane Paint) | Vendor to submit | | | |
| 17.5 | Total weight of the machine | Vendor to submit | | | |
| 17.6 | Weight of heaviest part of machine | Vendor to submit | | | |
| 17.7 | Weight of the heaviest assembly / sub-assembly of the Machine. | Vendor to submit | | | |
| 17.8 | Dimensions of largest part / sub-assembly /assembly of the machine. | Vendor to submit | | | |
| 17.9 | Vendor to submit, along with the offer, the reference list of customers where similar machines have been supplied mentioning broad specification of the supplied machine i.e.model, Spindle power, Load Capacity, Max. JobEnvelope etc. | Vendor to submit | | | |
| 17.10 | 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 confirm | | | |
| 18 | REFERENCE LIST /QUALIFYING CONDITIONS: | | | | |
| 18.1 | Only those vendors, who have supplied and commissioned at least one no. Travelling Type Radial arm Drilling Machine similar applications in the past ten years and such machine is presently working satisfactorily for more than one year (more than six months if supplied to BHEL) after commissioning, should quote. The following information is to be submitted by the vendor about the companies where similar machines have been supplied. This is required from all the vendors for qualification of their offer. | Vendor to note | | | |

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| 18.2 | Name of the customer / company where similar machine is installed. (Copy of purchase order without price details should be furnished) | Vendor to submit | | | |
| 18.3 | Complete postal address of the customer. | Vendor to submit | | | |
| 18.4 | Year of commissioning. (Copy of commissioning report should be furnished) | Vendor to submit | | | |
| 18.5 | Application for which the machine is supplied with details of accuracies achieved on the job. | Vendor to submit | | | |
| 18.6 | Name and designation of the contact person of the customer. | Vendor to submit | | | |
| 18.7 | Phone, FAX no. and email address of the contact person of the customer. | Vendor to submit | | | |
| 18.8 | Performance certificate from any one customer, on their letter head, regarding satisfactory performance of machine supplied to them issued within one year of tender opening date. | Vendor to submit | | | |