


REQUEST FOR QUOTATION

	BHARAT HEAVY ELECTRICALS LIMITED Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: KMVM900361 RFQ DATE : 03.OCT.2009	Due Date 11.NOV.2009 Time: 13:00 HRS VENUE : NEW ENGG. BLDG
MMI:PU:RF:003			
		(for all correspondence) Purchase Executive : RITESH C Phone : 080-26998886 Fax : 00918026989217 E-mail: ritesh@bheledn.co.in	

Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. The quotation must be enclosed in a sealed envelope / Fax superscribed with RFQ no.and due date, should reach us on or before the due date by **13.00** hours IST and will be opened on the same day at **13.30** hours at the venue mentioned above. **PLEASE DROP THE OFFER IN THE BOX PROVIDED AT RECEPTION.**

SPECIAL TERMS AND CONDITIONS:

1. TENDER/OFFER MUST BE SUBMITTED IN TWO PARTS: (1).TECHNO- COMMERCIAL BID (2).PRICE BID.
2. QUOTATIONS MAY BE SUBMITTED BY ORIGINAL EQUIPMENT MANUFACTURER'S (OEM'S) OR THEIR AUTHORISED DEALERS.
3. VENDOR HAS TO CONFORM TO THE CLAUSES IN THE PURCHASE SPECIFICATIONS (EDN/CEFAB/CNCPP/01 Rev 00). DEVIATIONS, IF ANY, TO BE BROUGHT OUT CLEARLY IN THE TECHNICAL BID.
4. VENDOR IS ADVISED TO GO THROUGH THE GENERAL TERMS AND CONDITIONS, DOCUMENT CPD-20000 ENCLOSED WITH THIS RFQ.
5. VENDOR HAS TO CONFORM TO ALL THE CLAUSES LISTED IN THE COMMERCIAL TERMS (ANNEXURE A/B). DEVIATIONS, IF ANY, TO BE HIGHLIGHTED AND BROUGHT OUT CLEARLY IN THE TECHNICAL BID.
6. DELIVERY REQUIRED: 24 WEEKS FROM THE DATE OF PO.
7. TERMS OF PAYMENT: 80% BY SIGHT DRAFT / WITH 30 DAYS CREDIT AFTER RECEIPT OF MATERIAL, 10% AFTER INSTALLATION & COMMISSIONING AND 10% AGAINST SUBMISSION OF PERFORMANCE BANK GURANTEE(PBG) OR AFTER WARRANTY PERIOD.
8. QUOTATION SHOULD BE VALID FOR 90 DAYS FROM DUE DATE.
9. BHEL RESERVES THE RIGHT TO RESORT TO REVERSE AUCTION BEFORE THE PRICE BID OPENING.

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	CNC Punch Press as per spec EDN/CEFAB/CNCPP/01 Rev 00	1	No	1	30.JUN.2010

Total Number of Items - 1

Please note that the tender will be opened in the presence of the bidders or his authorised representatives (maximum two per organisation) who choose to be present with authorisation letters. Refer annexure for the terms and conditions.
Preference will be given to vendors who accepts our standard payment terms i.e.100% payment - 30 days after receipt of material at our works subject to acceptance.
Please specify Terms of delivery, Excise duty, sales tax, Ex-BHEL, Ex-works surcharge, Insurance,P&F, Freight and other taxes very clearly .

- i). This is only RFQ not an order.
- ii). In all correspondence quote RFQ No. & due date.
- iii). In Quotation BHEL material code / RFQ Sl. No. should be mentioned clearly.
- iv). Quotation Envelope / Fax not superscribed with RFQ No.and due date is liable for rejection.
- v). Quotation should remain valid for a minimum peiod of 90 days from due date.
- vi). In case of non-receipt of Quotation or regret letter for 3 consecutive RFQs you are liable to be removed from our vendors list.
- vii). All Prices should be written in words and numbers.
- viii). Excise Chapter Heading should be mentioned for all items where VAT is applicable .

For and On behalf of BHEL.



**BHARAT HEAVY ELECTRICAL LIMITED,
ELECTRONICS DIVISION,
MYSORE ROAD, BANGALORE 560026**

SPECIFICATION CUM COMPLIANCE CERTIFICATION

FOR

CNC PUNCH PRESS

NOTE:-

1. Vendor must submit complete information against clause no. 23.0 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.

SCOPE: SUPPLY, ERECTION & COMMISSIONING OF CNC PUNCH PRESS AS SPECIFIED BELOW

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
1.0	PURPOSE & WORKPIECE MATERIAL				
1.1	Purpose: Punching & Forming of sheets	Vendor to confirm			
1.2	Work Piece Material: Mild Steel, Aluminium, Copper, FRP, Stainless Steel	Vendor to confirm			
2.0	MACHINE SPECIFICATION				
2.1	MACHINE CONFIGURATION CNC controlled Punch Press , Hydraulic / Servo motor Power Pack, AC Servo driven axes, with Indexable tools / Multi tools , and capable of Tapping and forming. Both Turret type tool magazine and linear tool magazine are acceptable.	Vendor to confirm			
2.2	Machine Capacity	180 KN (Minimum)			
2.3	Job data				
2.3.1	Maximum Job length	2600 mm			
2.3.2	Maximum Job width	1250 mm			
2.3.3	Maximum Job Thickness 6.0 mm in Mild Steel , 5.0 mm in Copper, 3.0 mm in Stainless steel	Vendor to confirm			
2.3.4	Max. Weight of Work-piece	80 Kg			
2.3.5	Maximum Punch Dia	≥ 75 mm			
2.3.6	Tapping	M3 & M4			
2.3.7	Hit rate (at 1 mm increment) - Minimum value	800 HPM			
2.3.8	Hit rate (at 25 mm increment) Minimum value	320 HPM			
2.3.9	Nibbling hit Rate	Vendor to specify			
2.3.10	Tapping mechanism	Vendor to specify			
2.3.11	Forming height (both maximum and minimum based on material)	Vendor to specify			

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2.3.12	Capability to punch holes of size less than the material thickness	Vendor to specify			
2.4	Work Table details				
2.4.1	Table traverse X axis (without repositioning) - minimum value	2500 mm			
2.4.2	Table traverse Y axis (minimum)	1250 mm			
2.4.3	X axis traverse with repositioning (minimum)	5000 mm			
2.4.4	Sheet holding clamps (3 clamps with part pullout sensors) Pneumatic activated through foot switch.	Vendor to confirm			
2.4.5	Clamping Force	Vendor to Specify			
2.4.6	Clamping Air pressure	Vendor to Specify			
2.4.7	Ball & Brush Table	Vendor to Confirm			
2.4.8	Scrap Chute size	Vendor to Specify			
2.5	Main Drive (Both Hydraulic and Servo motor drives are acceptable)				
2.5.1	Main Motor Power (AC Continuous Duty S1)	Vendor to specify			
2.5.2	Main Motor Make, Model etc.(Should comply with IEC / IS specifications). Fanuc / Siemens make Servomotor in case of servo motor drives	Vendor to specify			
2.5.3	In case of servo motor drive, complete details of transmission of power from servo motor to ram / striker to be submitted with the offer	Vendor to specify			
2.5.4	Failure Indicator of Power Pack / Drive	Vendor to Confirm			
2.6	FEEDS AND DRIVE SYSTEM:				
2.6.1	Rapid Traverse X Axis (Minimum Value)	80 m / min			
2.6.2	Rapid Traverse Y Axis (Minimum Value)	60 m / min			

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2.6.3	Simultaneous (X & Y) (Minimum Value)	95 m / min			
2.6.4	Feed Rate in X Axis 0 - maximum (Stepless)	Vendor to confirm			
2.6.5	Feed Rate in Y-Axis 0 - maximum (Stepless)	Vendor to confirm			
2.6.6	Feed drives/motors [AC servo motors] All axes shall be equipped with digital AC Servo Drives of either FANUC / SIEMENS / BOSCH and driven by AC Servo motors of either FANUC / SIEMENS / BOSCH	Vendor to confirm			
2.6.7	Feed back system for axes. Heidenhain Rotary encoders or equivalent (Details to be submitted)	Vendor to confirm			
2.6.8	Complete details of transmission of feeds of individual axis are to be submitted with the offer	Vendor to Specify			
2.6.9	Details of System to ensure zero backlash for the axes	Vendor to Specify			
2.6.10	Mechanism for locking / clamping the axes	Vendor to Specify			
2.6.11	Detail of axes feed mechanism (Details should include specification of Ball Screws / Rack & Pinion of each axis)	Vendor to Specify			
2.6.12	All linear traversing axes shall be provided with Steel Telescopic covers of rust resistant material with wipers. Joints of telescopic covers should be so sealed to avoid mixing of coolant and other lubricating oil.	Vendor to confirm			
2.7	CONSTRUCTION:				
2.7.1	Vendor to furnish material, hardness of guideways & constructional details , including explanatory drawings, of various components/ assemblies like Gear Box, Guideways/ slides, Telescopic covers, Accessories, Table, feed transmission system, hydraulic and lubrication system, feed back system, Servo drives, Punching Mechanism etc. of the machine.	Vendor to Specify			
2.7.2	Video images on CD including hard copy explaining the technical features / Literature with photographs, drawings explaining the technical features should be enclosed with the offer	Vendor to Confirm			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
2.8	Tool Magazine / Turret				
2.8.1	Type (Either Turret or Linear Magazine are acceptable)	Vendor to specify			
2.8.2	Location of tool magazine	On the machine			
2.8.3	Tool selection method	Random & Shortest Path			
2.8.4	In case of turret, details of indexing mechanism to be provided along with the technical offer	Vendor to Confirm			
2.8.5	Number of Tools 44 (minimum) including Multi tools	Vendor to confirm			
2.8.6	Number and Details of Indexable stations (Minimum 3 stations required)	Vendor to specify			
2.8.7	Index Tool Rotation Speed (if applicable)	Vendor to specify			
2.8.8	Angular Accuracy of Index Stations	$\pm 0.15^\circ$			
2.8.9	Angular accuracy of turret (applicable only for turret machines)	$\pm 0.15^\circ$			
2.8.10	Maximum Diameter of Tool:	Vendor to specify			
2.8.11	Max Length of Tool	Vendor to specify			
2.8.12	Max Weight of Tool	Vendor to specify			
2.8.13	Limitation regarding length / size & weight of tool / tool holder held in different tool stations for trouble free operation	Vendor to specify for each station			
2.8.14	Tool Change Time	4 seconds (Maximum)			
2.8.15	Details of Tool Loading and Unloading in the Magazine/Turret and Safety interlocks provided. Vendor to provide data along with technical offer.	Vendor to Confirm			
2.8.16	Too magazine must be capable of holding all the tools included in the annexure.	Vendor to confirm			
2.8.17	Tool layout when all tools as per annexure - 1 Part A are loaded (Tool Magazine / Turret layout with all tools in position to be provided along with the offer)	Vendor to specify			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
2.9	OPERATION AND CONTROL SYSTEM:				
2.9.1	OPERATOR'S PANEL:				
2.9.1.1	Fixed / Swiveling type operator's panel having complete CNC and machine control system with Colour LCD / TFT Panel shall be provided on the operators platform. All switches with suitable interlock with table traverse should be within reach of operator of average height (Indian) for easy & safe operation. All displays/indications should also be conveniently placed accordingly. Layout showing complete details should be submitted.	Vendor to Confirm			
2.10	CNC SYSTEM & FEATURES :				
2.10.1	Make : Fanuc / Siemens / Bosch	Vendor to Confirm			
2.10.2	Platform :	Vendor to Specify			
2.10.3	Model (Latest version, as available at the time of ordering should be supplied)	Vendor to Confirm			
2.10.4	Details of Standard features (List to be Submitted)	Vendor to Confirm			
2.10.5	Details of optional features, recommended by vendor. (Including features required for Prove-Out Components)	Vendor to Specify			
2.10.6	Details of other optional features:	Vendor			
2.10.7	The system should have full alphanumeric keyboard, LCD / TFT colour display(10.4" or more), additional draw-out type Querty Key Board and mouse in suitable enclosure, RS232C serial interfaces, parallel interface for printer, COM port for telediagnostics, network ready with ethernet port, USB port unit for data input/output, hard disk of sufficient capacity (Largest size available at the time of order shall be supplied), graphic simulation and preinstalled system software & other required softwares etc.(Details should be submitted by Vendor)	Vendor to Confirm			

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2.10.8	Provision for automatic safe shut down of CNC Control in case of Power Failure	Vendor to Confirm			
2.11	MANUAL CONTROL:				
2.11.1	Complete manual control of machine with required switches/ keys should be provided on operator's panel for selection of required axis, axis direction, feed / speed, punching on/off, clamping on / off, display of axis position values etc. for manual operation without using CNC program. Diagrams/ sketches for switches/ keys provided on operator's Panel / pendent (panel layout) should be submitted.	Vendor to Confirm			
2.12	UPS FOR CNC SYSTEM:				
2.12.1	UPS of 30 minutes for CNC system with in-built cooling and charge status display. (Battery charging /discharging time should be specified by vendor).	Vendor to Confirm			
2.13	MACHINE LIGHTS:				
2.13.1	Machine Lights for sufficient illumination of complete working area should be provided for clear visibility.	Vendor to Confirm			
2.13.2	All light fittings, consumables, adapters/receptacles should have compatibility with Indian equivalents	Required			
2.13.3	Flashing / rotary type End of Operation and Program Stop Light.	Required			
2.14	AIRCONDITIONERS:				
2.14.1	Air Conditioners with Dehumidifiers of suitable / sufficient capacity should be provided for all Electrical / Electronic Panels / Cabinets including Operator's Panel considering specified ambient conditions. Detailed specifications of the same to be submitted.	Vendor to Confirm			
2.15	HYDRAULIC SYSTEM : Details should be submitted by the vendor.				

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2.15.1	System should be centralised. Hydraulic Tank shall preferably be located at floor level (Capacity 4 times the pump flow, minimum)	Vendor to Confirm			
2.15.2	Make Rexroth / Vickers Sperry or equivalent from a reputed manufacturer. (Details to be submitted)	Vendor to Confirm			
2.15.3	Filtration System	Required			
2.15.4	Failure indication	Required			
2.15.5	Automatic shut off provision (Details to be submitted)	Vendor to Confirm			
2.15.6	Refrigerated type cooling and electric heating (Electric heating only if required) system of sufficient capacity to maintain complete Hydraulic System, including lubrication oil, hydrostatic oil and gearbox oil, etc. at a temperature not exceeding 40 deg C irrespective of the ambient conditions. Complete details should be submitted.	Vendor to Confirm			
2.15.7	Hydraulic pump capacity (flow / pressure)	Vendor to Specify			
2.15.8	Each pump should have an independent motor. Tandem pumps should not be used	Required			
2.15.9	Machine must conform to ANSI B 11.1 , 11.2 & 11.3 (or equivalent) requirements for Hydraulic and Mechanical Presses	Vendor to Confirm			
2.15.10	<u>First filling of all required oil & grease etc.</u> should be supplied by vendor. Indigenous (Indian) source, or Indian Equivalent, and specifications of oils/ greases also should be provided by the vendor.	Vendor to Confirm			

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2.16	ELECTRICAL:				
2.16.1	415V \pm 10%, 50HZ, \pm 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			
2.16.2	Tropicalisation: All electrical / electronic equipment shall be tropicalized	Vendor to confirm			
2.16.3	All electrical & electronic control cabinets & panels should be dust and rodent proof	Vendor to confirm			
2.16.4	All electrical components should be mounted on DIN Rail	Vendor to confirm			
2.16.5	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			
2.16.6	Motors shall conform to IEC or Indian Standards	Vendor to confirm			
2.16.7	All cables moving with traversing axes should be installed in caterpillar / Drag chain. Additionally, all the cable trays required for laying of cables should be included in the offer.	Required			
2.16.8	Vendor should ensure the proper earthing for the machine and its peripherals.	Required			
2.16.9	In-cycle hour counter with reset facility.	Required			
2.16.10	Electromagnetic Compatibility as per 89/336/CEE (or equivalent)	Required			
2.16.11	Machine should comply with CE Low Voltage Directive 72/23/CEE (or equivalent)	Required			

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2.16.12	Total Power consumption of the machine at the isolation transformer input (including main drive, axes motors, tool magazine, control panel and all other peripherals and supporting systems) under no load condition. The main drive running with both axes moving at max feedrate and max traverse simultaneously.	Vendor to Specify			
2.16.13	Total Power consumption of the machine at the isolation transformer input (including main drive, axes motors, tool magazine, control panel and all other peripherals and supporting systems) while punching grid of holes 12.5 mm dia on 2.0 mm CRCS (1250 x 2500 mm size) at 300 hits per minute, centre distance 25 mm, maximum feed rate with both axes moving simultaneously.	Vendor to Specify			
2.16.14	Total Power consumption of the machine at the isolation transformer input (including main drive, axes motors, tool magazine, control panel and all other peripherals and supporting systems) while punching grid of holes 40 mm dia on 2.0 mm CRCS (1250 x 2500 mm size) at 300 hits per minute, centre distance 50 mm, maximum feed rate with both axes moving simultaneously.	Vendor to Specify			
2.16.15	Specify if the machine has a economy mode of operation while working with a lower tonnage to reduce overall power consumption of machine.	Vendor to Specify			
2.17	SAFETY ARRANGEMENTS:				
	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. Machine functions should be continuously monitored and alarm / warning indications through lights/ alarm number with messages (on CNC display and panels) should be available.				
	2. A detailed list of all alarms / indications provided on machine should be submitted by the supplier.				

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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. All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations.				
	5. Emergency Switches at suitable locations as per International Norms are to be provided.				
	6. Oil & water pipe lines should not run with electrical cable in the same tray / trench.				
	7. Machine must conform to NFPA 79 / IEC (or equivalent) Electrical standards				
	8. The machine must also comply with CE Machine Directive 98/37/CE (or equivalent) safety requirements				
2.18	ENVIRONMENTAL PERFORMANCE OF THE MACHINE :	Vendor to Confirm			
	The Machine shall conform to following factors related to environment :				
	<p>(a) Maximum noise level shall be 90 dB(A). All measurement points as per DIN 45635, with correction factor for back ground noise. This will be measured as per DIN 45635-16 . Supplier to demonstrate compliance to noise level. Test certificate to be submitted. The Load Conditions for the test will be as follows :</p> <p>i) Punching, no metal in work clamps 25 mm dia punch Move Distance 25 mm</p> <p>ii) Punching, no metal in work clamps 75 mm dia punch Move Distance 75 mm</p> <p>iii) Punching 2 mm mild steel, 75 mm dia punch Move Distance 100 mm</p> <p>iv) Punching 3 mm mild steel, 25 mm dia punch Move Distance 25 mm</p> <p>v) Punching 3 mm mild steel, 75 mm dia punch Move Distance 100 mm</p> <p>Punches to have 20% die clearance and have a flat roof. Sheet punched at feed rate 100 m/min (X & Y) moving simultaneous. 10 holes to be punched along a diagonal line.</p>				

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	(b) The machine should have the following noise reduction features				
	Proportional/optimal punching force technology				
	Brush Table				
	Acoustically treated chutes, bins and conveyors, with minimised component drop heights				
	Damped/isolated machine panels to reduce radiated noise				
	Anti-vibration mountings				
	(c) There shall not be any emissions from the machine except fumes of cutting fluid (if any) during operation.				
	(d) There should not be any effluent from the machine. In case there are any effluents from the machine, requisite effluent treatment plant or pollution control device should be built into the machine by the supplier.				
	(e) No hazardous chemicals shall be required to be used in the machine.				
	(f) If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.				
	(g) Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.				
2.19	SERVO STABILIZER:				
2.19.1	Indian make Oil / Air Cooled Servo Controlled Voltage Stabilizer suitable for complete machine, its drives, controls, PLC etc. with no undesirable Harmonics in the stabiliser output.	Vendor to Confirm			
2.19.2	Make of a reputed manufacturer	Vendor to Specify			
2.19.3	Model & Rating	Vendor to Specify			
2.19.4	Spares Package for the Voltage Stabiliser for 2 years working should also be offered.	Vendor to Specify			

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2.19.5	Catalogue of the Voltage Stabiliser shall be submitted with the offer.	Vendor to Specify			
2.20	ULTRA ISOLATION TRANSFORMER				
2.20.1	Indian make Ultra Isolation Transformer suitable for complete machine, its drives, controls, PLC etc.	Required			
2.20.2	Make of a reputed manufacturer	Vendor to Specify			
2.20.3	Model & Rating	Vendor to Specify			
2.20.4	Spares Package for the Ultra Isolation Transformer for 2 years working should also be offered.	Vendor to Specify			
2.20.5	Catalogue of the Ultra Isolation Transformer shall be submitted with the offer.	Vendor to Specify			
2.21	PNEUMATIC SYSTEM:				
2.21.1	AIR COMPRESSOR:				
2.21.1.1	Compressed air will be made available at one point near the machine by BHEL. Vendor to indicate the position of air point, air pressure and flow rate. Vendor must supply Filter, Regulator & Lubricator (FRL) unit.	Vendor to Confirm			
3.0	TOOLINGS:				
3.1	Machine to be supplied with all punches indicated in the annexure-I. Any additional punches needed for proveout components should also be covered in the offer.	Vendor to Confirm			
3.2	All types of tool holders, adapters, sleeves, pull studs, Centering Devices etc. required for the machine.	Vendor to Confirm			
3.3	All Punching / Forming tools, adaptors,sleeves & tool holders recommended for the machine as per tool list enclosed and also for punching of proveout components. (List of proveout components is available in Clause 17.0)	Vendor to Confirm			

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3.4	Tapping Attachment / Tool (as per tool list)	Required			
4.0	DIAGNOSTIC SYSTEM				
4.1	TELE-DIAGNOSTIC SERVICE :				
4.1.1	Tele-diagnostic service should be provided through telephone lines / Internet along with required Hardware / Software package for the supplied CNC system for remote diagnosis and correction of the problems in both CNC System and PLC of the machine. This should be provided free of charge for the guarantee period. Terms and conditions for the service after guarantee period should be informed by vendor.	Vendor to confirm			
4.2	DIAGNOSTIC SYSTEM:				
4.2.1	Supplier's own diagnostic system with required hardware and software should be supplied and installed on the CNC system. This should include standard auto-diagnostic system with supporting hardware and software which shows detailed cause and remedy for the fault on the display and supplier's smart diagnostic system for full video diagnostic help for faults related to mechanical and electrical maintenance	Vendor to confirm			
4.3	Help guide should be provided to use both diagnostic systems				
5.0	LEVELING & ANCHORING SYSTEM				
5.1	Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc should be supplied	Vendor to confirm			
6.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE :				
6.1	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 included with offer	Vendor to Confirm			

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6.2	Test mandrel (if needed) for checking run-out/taper & alignment should be supplied	Vendor to Confirm			
7.0	ACCESSORIES:				
7.1	CAM Software Package with (3D /2D drafting module, Capability to accept AutoCAD Inventor 3D sheet metal models, and Autocad 2D drawings, multiple nesting, Punch Path simulation, Process time optimisation, Clamp zone detection, Post processingr and Transfer of CNC part programmes to the machine. Offline programming. The offer to include necessary hardware (PC, LCD Monitor etc.)	Vendor to Specify			
7.2	Two Brush & Ball Table of size 1 x 1 meter and height to suit the of the machine table. The tables should have lockable castor wheels.	Vendor to Confirm			
8.0	PORTABLE DRIVE.				
8.1	Portable Flash drive unit or its' equivalent, for bi-directional program & data and machine paramater transfer between the unit & supplied CNC system and as well as with standard PC.	Vendor to Confirm			
9.0	SPARES:				
9.1	Itemised 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)	Vendor to Confirm			
	a) Mechanical & Hydraulic Spares: All types of Pumps, Valves, Pressure Switches, Transducers, Flow Switches, Filters, Seals, O-rings, Hydraulic Hoses etc.	Vendor to Specify			

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	b) Electrical /Electronic / CNC Spares: All types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch, Encoders, Scanning Heads for Linear Scales, MMC module, NCU module, Operator's panel with Display Unit, Floppy Disk Unit, I/O Cards for PLC, Servo Motors for Feed Drives, Power Module & Control Cards for Main Drive as well as Feed Drives etc.	Vendor to Specify			
9.2	All types of spares for total machine and accessories should be available for atleast 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			
9.3	Recommended set of spares for all attachments are to be offered with details.	Vendor to Confirm			
9.4	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			
9.5	Supplier to provide AMC details and value for post warrantee period.	Required			
10.0	DOCUMENTATION : Five sets of following documents (Hard copies) in English language should be supplied along with the machine				
10.1	Operating manuals of Machine & CNC system				
10.2	Programming Manuals of Machine & CNC system.				
10.3	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				

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
10.4	Maintenance, Interface & commissioning manuals for CNC system, spindle & feed drives.	Vendor to Confirm			
10.5	Manufacturing drawings for all supplied tool holders, coolant / lubrication connections, adapters, sleeves, fixtures etc.				
10.6	Catalogues, O&M Manuals, Test certificates, warranty of all bought out items including drawings, wherever applicable.				
10.7	Detailed specification of all rubber items and hydraulic/lube fittings				
10.8	Operating Manuals, Maintenance Manuals & Catalogues for supplied Automatic Tool Offset & Job Measuring Systems, Voltage Stabilizer, Isolation Transformer, Air-Compressor and all supplied Accessories.				
10.9	PLC program print-outs with comments in English.				
10.10	PLC program on CD, NC data & PLC data on floppy.				
10.11	Complete back-up of hard disk on CD and clear written Instructions (3 copies) to take back-up and reloading of a new hard disk.				
10.12	Complete Master List of parts used in the machine shall be submitted by the vendor.				
10.13	One additional set of all the above documentation on CD ROM, wherever possible.				
11.0	SERVICE CENTER / OFFICE IN BANGALORE				
11.1	Vendor should have an established office in Bangalore City, with trained personnel, for providing prompt service backup. Necessary Documents for establishing the same to be submitted along with the offer.	Vendor to confirm			
11.2	Offers of those suppliers not having an established service center in Bangalore will be rejected.	Vendor to note			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
12.0	TRAINING				
12.1	BHEL Persons should be trained at supplier's Works for mutually agreed period in the area of (a) CNC Part Programming / Technology, Use of all CNC Features, Programming for Measuring Systems & supplied accessories etc. (b) Electrical, Electronic & CNC 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			
12.2	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel.	Vendor to Confirm			
13.0	FOUNDATION : (Indentor to Suitably modify this clause based on size of the machine)				
13.1	Vendor shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of Letter of Intent (LOI) / P.O. whichever is earlier. Soil condition data will be furnished by BHEL along with the approval. Complete Foundation Design including details viz. static / dynamic load details etc. and Final Layout drawings shall be submitted by the supplier within three months after getting BHEL's approval. The layout should consist of all requirements pertaining to complete machine including space requirement for Voltage Stabilizer, Isolation Transformer, Air compressor, Chip Bin & any other accessories. BHEL shall construct complete foundation for the machine under supervision of supplier and at supplier's responsibility. Vendor should arrange equipments required for the testing of foundation, if required by the vendor. The vendor shall also indicate detailed specifications of grouting compound and Grouting procedure etc. for foundation bolts of the machine.	Vendor to Note			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
14	ERECTION & COMMISSIONING				
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 will also have to be arranged by the vendor. Details of these requirements should be informed by vendor in advance.	Vendor			
14.2	Erection & Commissioning of Voltage stabilizer, Isolation Transformer shall also be responsibility of the vendor.	Vendor to Confirm			
14.3	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned at Clause 18 (Machine Acceptance) shall form part of the commissioning activity.	Vendor to Confirm			
14.4	Test mandrel for checking run-out/taper & alignment should be supplied	Vendor to confirm			
14.5	Tools, Tackels, Test Mandrels, instruments and other necessary equipment including Laser equipment required to carry out all above activities should be brought by the supplier.	Vendor to Confirm			
14.6	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to Confirm			
14.7	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			
14.8	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.	Required			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
14.9	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to Specify			
14.10	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	Vendor to Confirm			
15.0	ACCURACY TESTS:				
15.1	MACHINE POSITIONING ACCURACIES & REPEATABILITY: Should be measured as per VDI/DGQ 3441 (Latest Revision) using LASER INTERFEROMETER.				
15.1.1	Positioning accuracy in X axis per 1000 mm	$\leq \pm 0.1 \text{ mm}$			
15.1.2	Positioning accuracy in Y axis per 1000 mm	$\leq \pm 0.1 \text{ mm}$			
15.1.3	Repeatability in X axis [Approx =1/2 the positional accuracy]	$\leq \pm 0.05 \text{ mm}$			
15.1.4	Repeatability in Y axis [Approx =1/2 the positional accuracy]	$\leq \pm 0.05 \text{ mm}$			
15.1.5	Positioning accuracy over entire traverse in X axis	Vendor to specify			
15.1.6	Positioning accuracy over entire traverse in Y axis	Vendor to specify			
15.1.7	Turret Indexing Accuracy (Supplier to specify the standard used)	$\leq \pm 0.15^\circ$			
15.1.8	Index Tool Indexing Accuracy (Supplier to specify the standard used)	$\leq \pm 0.15^\circ$			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
16.0	AMBIENT CONDITIONS & THERMAL STABILITY :				
16.1	<p>Total machine including controls and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies.</p> <p style="text-align: right;">Power Supply:</p> <p>Voltage: 415 V $\pm 10\%$</p> <p>Frequency: 50 Hz $\pm 3\%$</p> <p>No. of phases = 3</p> <p>Ambient Conditions: Temperature = 5 to 45 degree celsius</p> <p>Relative Humidity = 95% max.</p> <p>(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 Confirm			
16.2	<p>Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. Machine shall be kept in the normal shop floor condition.</p> <p>Max. temperature variation is up to 25 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 Confirm			
16.3	<p>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.</p> <p>(Confirm that machine is suitable for above and details of provisions on the machine for the same should be furnished)</p>	Vendor to Confirm			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
17.0	PROVEOUT OF BHEL COMPONENTS :				
17.1	<p>Drawings of prove out components are enclosed. Vendor to submit preliminary process, time study & tool list recommended by them along with the offer. Change in process/tools may be mutually discussed and agreed (if necessary). Complete processing of prove out components shall be done by Vendor at BHEL works to the specified design accuracy , using Punching / Forming and CNC programs to be provided by the vendor to prove the machine after complete erection, Tests & Test piece processing etc. Material for the prove out components shall be provided by BHEL. Vendor should submit the CNC programs, setting schemes, process sheets, tooling layouts, time studies etc. in advance for the prove out components. Vendor shall be fully responsible for processing of prove out components as per drawing and other requirements specified by BHEL to the full satisfaction of BHEL. Clarifications, if any required by vendor, regarding accuracy requirements of prove out components, whether specified or not, should be discussed and cleared by vendor during initial technical discussions. The following are the Drawing Numbers (Annexeure II):-</p> <p>1) 325212/00.2469_r02 - Bottom Plate for traction drives 3 mm</p> <p>2) 3-694-52-00050 - Front Panel Modification (Gauge Panel) 3.15 mm</p> <p>3) 3-653-21-11535 IT 01 & 3-653-21-11779 VA 04 (Door 2mm Mild Steel)</p>				
17.2	<p>During proveout, all required tools shall be loaded to the tool magazine / turret by the vendor.</p> <p>Vendor shall be responsible for any deviation/rejection in proveout component due to wrong operation or malfunctioning of the machine during proveout machining and also for the delay in machining due to improper recommended tooling etc. The cost of such deviation / rejection, if any, shall be refunded by the vendor to BHEL.</p>				
18.0	MACHINE ACCEPTANCE: (Tests/Activities should be Performed by Vendor) (Should be accepted & confirmed)	Vendor to confirm			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
18.1	Tests/Activities to be carried out at supplier's works on the machine before dispatch in the presence of BHEL representatives. Test / Compliance certificate to be furnished.				
18.1.1	Positioning accuracies as per VDI-DGQ/3441 (Ref Clause 15.1.1, to 15.1.4)				
18.1.2	Indexing Accuracies of Turret and Index tools (Ref Clause 15.1.7 & 15.1.8)				
18.1.3	Punching of Test Piece as per Annexure III				
18.1.4	Punching of proveout component at vendor's works. The required tooling shall be supplied by Vendor.				
18.1.5	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.				
18.1.6	Demonstration of all features of the machine, control system & accessories				
18.2	Tests/Activities should be carried out at BHEL works while commissioning the machine :				
18.2.1	Positioning accuracies as per VDI-DGQ/3441 (Ref Clause 15.1.1, to 15.1.4)				
18.2.2	Indexing Accuracies of Turret and Index tools (Ref Clause 15.1.7 & 15.1.8)				
18.2.3	Punching of proveout component. The required tooling shall be supplied by Vendor.				
18.2.4	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.				
18.2.5	Demonstration of all features of the machine, control system & accessories				

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
18.2.6	Two weeks supervision of independent operation of machine by BHEL after job proveout				
18.2.7	Training of BHEL machine operators in operation of complete machine & accessories etc by the supplier's experts / engineers during their stay at BHEL works				
18.2.8	Demostration by actual use of all supplied attachments and accessories to their full capacity.				
19.0	PACKING:				
19.1	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 Confirm			
20.0	GUARANTEE :				
20.1	24 months from the date of acceptance of the machine.	Vendor to Confirm			
21.0	GENERAL :				
21.1	Machine Model	Vendor to Specify			
21.2	Total connected load (KVA):	Vendor to Specify			
21.3	Floor area required (Length, Width, Height) for complete machine & accessories	Vendor to Specify			
21.4	Painting of Machine / Electrical Panels : Polyurethane Paint	Vendor to confirm			
21.5	Total weight of the machine	Vendor to Specify			
21.6	Weight of heaviest part of machine	Vendor to Specify			
21.7	Weight of the heaviest assembly / sub-assembly of the Machine	Vendor to Specify			
21.8	Dimensions of largest part/ sub-assembly/ assembly of the machine	Vendor to Specify			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
21.9	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, Pallet size, Spindle power, Load Capacity, Max job Envelope, CNC System etc	Required			
21.10	Detailed catalogues , sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Required			
21.11	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 Confirm			
22.0	OTHER FEATURES :				
22.1	NETWORKING:				
22.1.1	Machine control should have necessary hardware and software for interfacing with gigabit Ethernet Local Area Network with 100 MB/sec through UTP cables for NC program and other related data transfer. This network to be connected to wide area network/Internet. The networking should have following capabilities:-	Required			
	a) The machine shall appear as a node in the Entire Network. (Network Neighborhood)				
	b) The program transfer shall be by simple copy and paste method provided sharing access is allowed between any PC and the machine across the network.				
	c) The program transfer between CNC system and network should also be possible in CNC Mode.				

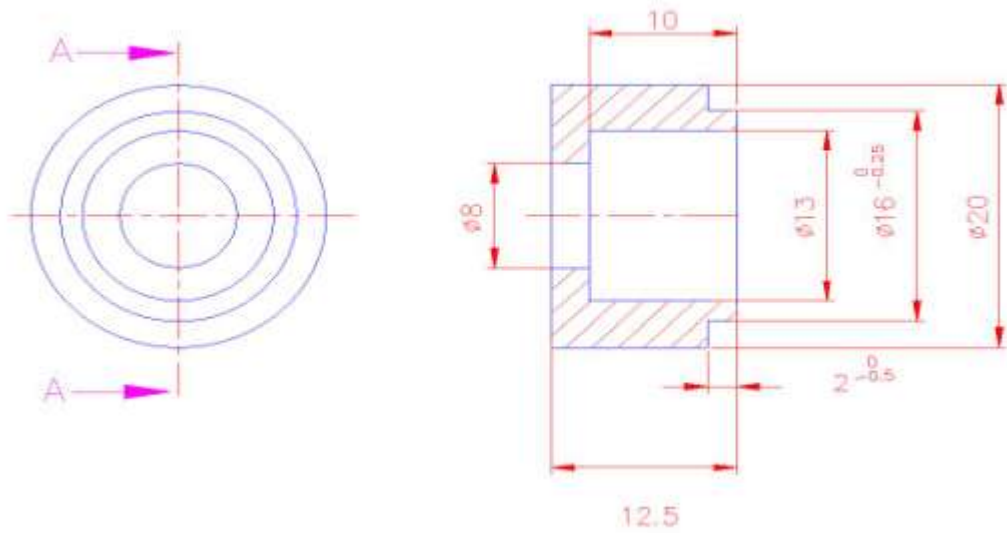
SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
23.0	REFERENCE LIST / QUALIFYING CONDITIONS :				
23.1	01. Only those vendors, who have supplied and commissioned at least three CNC Punch Presses of same or higher sizes (Power, Load Capacity, Axes Traverse & Max Job Envelop) for similar applications in the past Five years in India and such machine is presently working satisfactorily for more than three years after commissioning should quote.	Vendor to confirm			
	02. 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 in BHEL should quote.	Vendor to confirm			
	03. The vendor shall be an Original Equipment Manufacturer (OEM). Only the OEM or their authorized dealers in India along with an authorization letter can submit offers. An authorized Representative/Dealer in India, cannot quote for the same equipment from more than one OEM.	Vendor to confirm			
	04. Offer shall be for a new equipment and not for any refurbished / used equipment. All the parts used in the equipment shall also be new and not used / refurbished ones. A declaration to the above effect has to be furnished.	Vendor to confirm			
	05. Foreign OEM shall have Authorized Indian dealer(s) / representative(s) for After- sales service and support. The authorization letter for the dealer/ representative shall be provided with confirmation that after sales service support shall be provided by them.	Vendor to confirm			
	06. The vendor or their authorized service representatives shall have trained engineers in India for commissioning & service for the offered equipment and shall be in a position to provide prompt after sales service and spares support for our installations.	Vendor to confirm			
	07. The vendor shall be in a position to undertake AMC or provide service support for the equipment supplied, after the expiry of the warranty/ guarantee period either directly or through a service representative.	Vendor to confirm			

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	Deviations	Remarks
	08. If required by BHEL, the vendor shall arrange for a demonstration of the equipment or similar equipment operating in India. Pre-qualification will be carried out based on the details furnished by the vendor / feedback from their customers / inspection of the company / product if required by BHEL and at its sole discretion.	Vendor to confirm			
	09. Vendors Should be an ISO 9000 & ISO 14000 Certification.	Vendor to confirm			
	The Pre-qualification criteria are mandatory requirements and the technical bids will be evaluated only when the Pre-Qualification criteria are met.	Vendor to confirm			
	Vendor should already have an established office in Bangalore City with trained personnel for providing prompt service backup. Necessary Documents for establishing the same to be submitted with the offer. This is required from all the vendors for qualification of their offer.	Vendor to confirm			
	The following information should be submitted by the vendor about the companies where similar machines have been supplied.	Vendor to confirm			
	1. Name of the customer / company where similar machine is installed.	Vendor to Specify			
	2. Complete postal address of the customer.	Vendor to Specify			
	3. Year of commissioning.	Vendor to Specify			
	4. Application for which the machine is supplied	Vendor to Specify			
	5. Name and designation of the contact person of the customer.	Vendor to Specify			
	6. Phone, FAX no. and email address of the contact person of the customer.	Vendor to Specify			
	7. Performance certificate from the customers regarding satisfactory performance of machine supplied to them	Vendor to Specify			

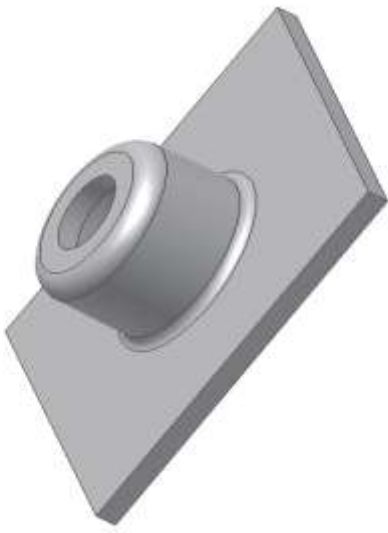
List of Punches, Dies and Forming tools for CNC Punch Press									
Sl No.	Type	X	Y	Indexable	Sheet Thickness	Items Required	Nos/Set	Unit Rate	Remarks
Part A Std. Tools Loaded on the M/C									
1	R	3.4 φ		-	2 & 3.15	Punch, Die & Body	1		Punch for M4 Tap
2	R	4.2 φ		-	2 & 3.15	Punch, Die & Body	1		Punch for M5 Tap
3	R	5.1 φ		-	2 & 3.15	Punch, Die & Body	1		Punch for M6 Tap
4	R	6.0 φ		-	2 & 3.15	Punch, Die & Body	1		
5	R	7.0 φ		-	2 & 3.15	Punch, Die & Body	1		
6	R	8.0 φ		-	2 & 3.15	Punch, Die & Body	1		
7	R	9.0 φ		-	2 & 3.15	Punch, Die & Body	1		
8	R	10.0 φ		-	2 & 3.15	Punch, Die & Body	1		
9	R	12.7 φ		-	2 & 3.15	Punch, Die & Body	1		
10	R	15.0 φ		-	2 & 3.15	Punch, Die & Body	1		
11	R	16.0 φ		-	2 & 3.15	Punch, Die & Body	1		
12	R	20.0 φ		-	2 & 3.15	Punch, Die & Body	1		
13	R	23.0 φ		-	2 & 3.15	Punch, Die & Body	1		
14	R	25.0 φ		-	2 & 3.15	Punch, Die & Body	1		
15	R	40.0 φ		-	2 & 3.15	Punch, Die & Body	1		
16	SQ	5.0		Y	2 & 3.15	Punch, Die & Body	1		
17	SQ	9		Y	2 & 3.15	Punch, Die & Body	1		
18	SQ	10		Y	2 & 3.15	Punch, Die & Body	1		
19	SQ	12		Y	2 & 3.15	Punch, Die & Body	1		
20	SQ	25.0		Y	2 & 3.15	Punch, Die & Body	1		
21	SQ	45.0		Y	2 & 3.15	Punch, Die & Body	1		Notching
22	RECT	5.0	23.0	Y	2 & 3.15	Punch, Die & Body	1		Perforation
23	RECT	5.0	75.0	Y	2 & 3.15	Punch, Die & Body	1		Shearing
24	RECT	27.0	6.0	Y	2 & 3.15	Punch, Die & Body	1		Shearing
25	RECT	50.0	5.0	Y	2 & 3.15	Punch, Die & Body	1		Shearing
26	Oblong	9	14	Y	3 & 3.15	Punch, Die & Body	1		
27	Oblong	7	12	Y	4 & 3.15	Punch, Die & Body	1		
28	Special	30	5	Y	2 & 3.15	Punch, Die & Body	1		Micro Jointing Dovetail
29	Special	50	5	Y	2 & 3.15	Punch, Die & Body	1		Micro Jointing Dovetail
30	Special	Center			2	Punch, Die & Body	1		Center Punch Top
31	Special	Center			2	Punch, Die & Body	1		Center Punch Bottom
32	Special	Center			3	Punch, Die & Body	1		Center Punch Top

List of Punches, Dies and Forming tools for CNC Punch Press									
Sl No.	Type	X	Y	Indexable	Sheet Thickness	Items Required	Nos/Set	Unit Rate	Remarks
Part B - Tools Loaded as per Job Requirement									
33	R	2.0 φ		-	2	Punch, Die & Body	1		
34	R	2.5 φ		-	2	Punch, Die & Body	1		Punch for M3 Tap
35	R	4.5 φ			2 & 3.15	Punch, Die & Body	1		
36	R	5.5 φ		-	2 & 3.15	Punch, Die & Body	1		Pole Sheet
37	R	6.5 φ		-	2 & 3.15	Punch, Die & Body	1		Pole Sheet
38	R	8.5 φ			2 & 3.15	Punch, Die & Body	1		
39	R	11.0 φ		-	2 & 3.15	Punch, Die & Body	1		
40	R	13.0 φ		-	2 & 3.15	Punch, Die & Body	1		
41	R	17.0 φ		-	2 & 3.15	Punch, Die & Body	1		
42	R	30.5 φ		-	2 & 3.15	Punch, Die & Body	1		
43	R	44.0 φ			2 & 3.15	Punch, Die & Body	1		Pole Sheet
44	R	50.0 φ		-	2 & 3.15	Punch, Die & Body	1		
45	R	57.0 φ		-	3 & 3.15	Punch, Die & Body	1		
46.1	R	90.0 φ		Y	2 & 3.15	Punch, Die & Body	1		Banana / Multi Cut Radius
46.2	R	110.0 φ		Y	2 & 3.15	Punch, Die & Body	1		Banana / Multi Cut Radius
46.3	R	100.0 φ		Y	2 & 3.15	Punch, Die & Body	1		Banana / Multi Cut Radius
46.4	R	128.0 φ		Y	2 & 3.15	Punch, Die & Body	1		Banana / Multi Cut Radius
47.1	R	136 φ		Y	2 & 3.15	Punch, Die & Body	1		Banana / Multi Cut Radius
47.2	R	160.0 φ		Y	2 & 3.15	Punch, Die & Body	1		Banana / Multi Cut Radius
47.3	R	165.0 φ		Y	2 & 3.15	Punch, Die & Body	1		Banana / Multi Cut Radius
47.4	R	180.0 φ		Y	2 & 3.15	Punch, Die & Body	1		Banana / Multi Cut Radius
48	RECT	10.0	3.0	Y	2 & 3.15	Punch, Die & Body	1		
49	RECT	4.0	10.0	Y	2 & 3.15	Punch, Die & Body	1		
50	RECT	7.0	5.0	Y	2 & 3.15	Punch, Die & Body	1		
51	RECT	5.0	7.0		2 & 3.15	Punch, Die & Body	1		
52	RECT	15.0	7.0	Y	2 & 3.15	Punch, Die & Body	1		Shearing
53	RECT	7.0	15.0		2 & 3.15	Punch, Die & Body	1		Shearing
54	RECT	20.0	10.0	Y	2 & 3.15	Punch, Die & Body	1		Shearing
55	RECT	10.0	20.0		2 & 3.15	Punch, Die & Body	1		Shearing
56	RECT	23.0	5.0	Y	2 & 3.15	Punch, Die & Body	1		Perforation
57	RECT	6.0	27.0		2 & 3.15	Punch, Die & Body	1		Shearing
58	Oblong	3.5	13	Y	2 & 3.15	Punch, Die & Body	1		
59	Oblong	4.3	12	Y	2 & 3.15	Punch, Die & Body	1		
60	Oblong	4.5	16.5	Y	2 & 3.15	Punch, Die & Body	1		
61	Forming	5 φ			2 & 3.15	Punch, Die & Body	1		Shear Button
62	Emboss	8 φ	25		2	Punch, Die & Body	1		Continious Beading

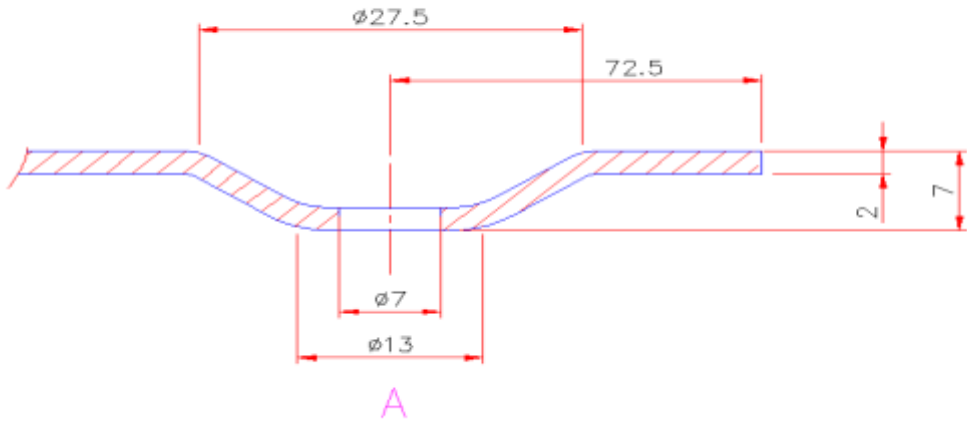
List of Punches, Dies and Forming tools for CNC Punch Press									
Sl No.	Type	X	Y	Indexable	Sheet Thickness	Items Required	Nos/Set	Unit Rate	Remarks
63	Forming	15	40		2	Punch, Die & Body	1		Lancing (L bend)
64	Forming	150	30		2	Punch, Die & Body	1		Louivering Contunious
65	Forming	15	6	Y	2 & 3.15	Punch, Die & Body	1		Clinching (LH & RH)
66	Emboss	27.7	5		2	Punch, Die & Body	1		Round Emboss with Round Top
67	Emboss	ID 13 ϕ	H 10.5		2	Punch, Die & Body	1		Round Emboss with Flat Top
68	Tapping	M3			2	Punch, Die & Body	1		Tapping Station
69	Tapping	M4			2	Punch, Die & Body	1		Tapping Station
70	Extrusion	M3			2	Punch, Die & Body	1		Extrusion for Tapping
71	Extrusion	M4			2 & 3.15	Punch, Die & Body	1		Extrusion for Tapping
72	Sicssoring				2	Punch, Die & Body	1		Sicssoring Tool L = 75
73	R	13.0 ϕ			5	Die Only	1		Copper
74	R	6.0 ϕ			5	Die Only	1		Copper
75	R	11.0 ϕ			5	Die Only	1		Copper
76	R	12.7 ϕ			5	Die Only	1		Copper
77	R	8.5 ϕ			5	Die Only	1		Copper
78	RECT	50	5	Y	5	Die Only	1		Copper
79	RECT	23	5	Y	5	Die Only	1		Copper
80	Punches required for proveout components as required to be added by supplier to this list.								



Existing Weld Bush details



Embossing Tool (ID 13 & Height Top to Top 10.5)



Embossing Tool 65 Round Emboss with Round top

List of Punches, Dies and Forming tools for CNC Punch Press									
Sl No.	Type	X	Y	Indexable	Sheet Thickness	Items Required	Nos/Set	Unit Rate	Remarks
Part C Spare Punches / Dies Required.									
1	R	2.0 ϕ		-	2	Punch	2		
2	R	2.5 ϕ		-	2	Punch	2		Punch for M3 Tap
3	R	3.4 ϕ		-	2 & 3.15	Punch	2		Punch for M4 Tap
4	R	4.2 ϕ		-	2 & 3.15	Punch	2		Punch for M5 Tap
5	R	4.5 ϕ			2 & 3.15	Punch	2		
6	R	5.1 ϕ		-	2 & 3.15	Punch	2		Punch for M6 Tap
7	R	5.5 ϕ		-	2 & 3.15	Punch	1		Pole Sheet
8	R	6.0 ϕ		-	2 & 3.15	Punch	2		
9	R	6.5 ϕ		-	2 & 3.15	Punch	1		Pole Sheet
10	R	7.0 ϕ		-	2 & 3.15	Punch	2		
11	R	8.0 ϕ		-	2 & 3.15	Punch	2		
12	R	8.5 ϕ			2 & 3.15	Punch	2		
13	R	9.0 ϕ		-	2 & 3.15	Punch	2		
14	R	10.0 ϕ		-	2 & 3.15	Punch	2		
15	R	11.0 ϕ		-	2 & 3.15	Punch	2		
16	R	12.7 ϕ		-	2 & 3.15	Punch	2		
17	SQ	5.0		Y	2 & 3.15	Punch	2		
18	SQ	9		Y	2 & 3.15	Punch	2		
19	SQ	10		Y	2 & 3.15	Punch	2		
20	SQ	12		Y	2 & 3.15	Punch	2		
21	Oblong	4.3	12	Y	2 & 3.15	Punch	2		
22	Oblong	7	12	Y	4 & 3.15	Punch	2		
23	RECT	5.0	23.0	Y	2 & 3.15	Punch & Die	2		Perforation
24	RECT	23.0	5.0	Y	2 & 3.15	Punch & Die	2		Perforation
25	One Spare TOOL BODY for each Size of Station				Tool Body	1 Each Sz			

List of Components for Prove out.

1. 325212_00.2469_Bottom Plate_r2.0 - Bottom Plate for Traction Drives.
2. 3 699 21 00819 VA 02 Notching Detail & 3 694 52 00050 IT 01 Modification Drawing.
3. 3 653 21 11511 IT 05 Notching Details for Door & 36532111779 VA 04 Slots for Door

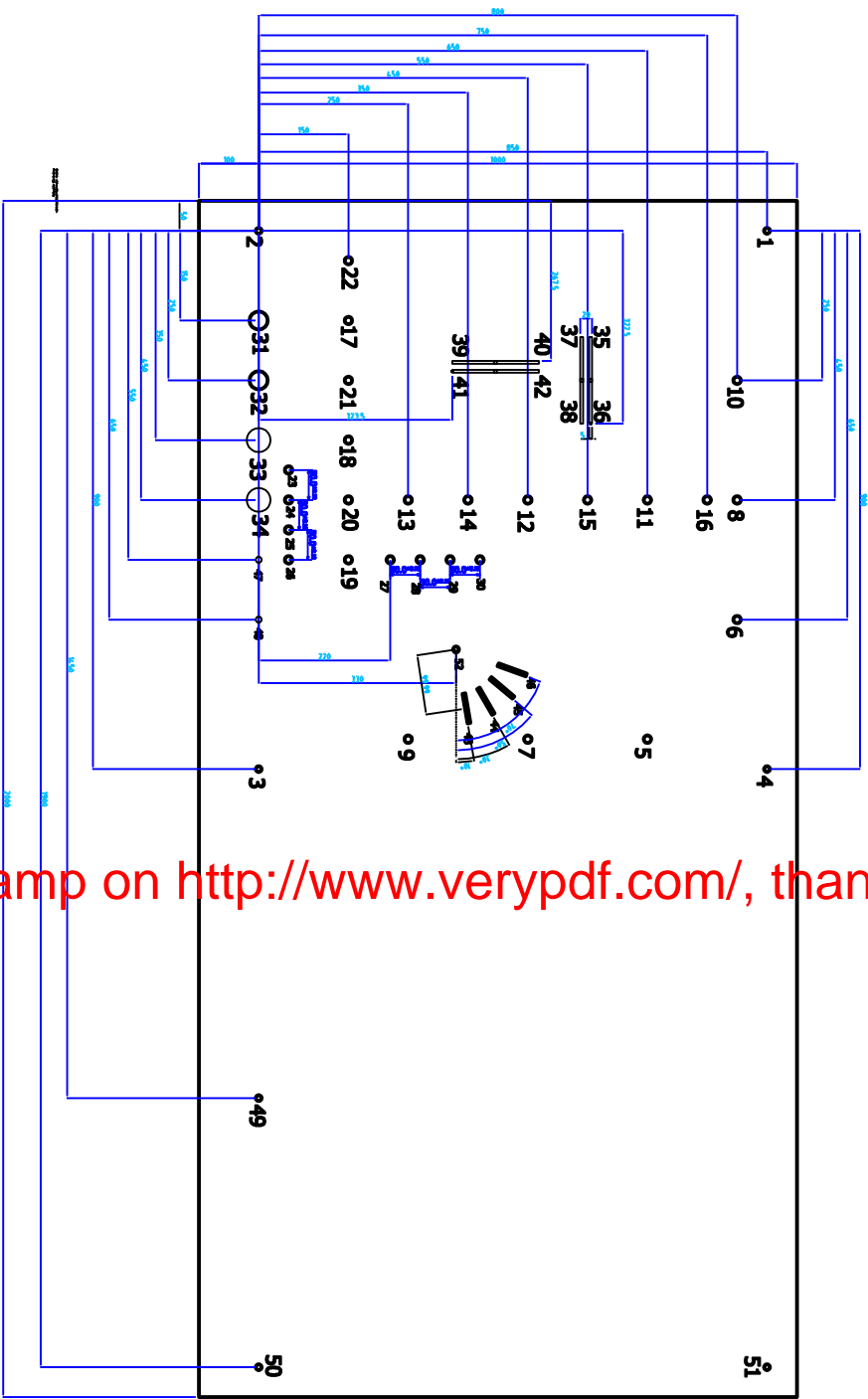
The Drawings for Item 1, 2 & 3 are available in Autocad. The Sheet metal IPT (Unfolded model) is also available in Autocad Inventor.

DRAWING NO.

Test Piece

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INVENTORY NO.	SIGN & DATE	REF. DRG.NO.
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REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHECKED			CHECKED			CHECKED
		APPROVED			APPROVED			APPROVED

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		DEPT. FAB		FOR UNSPECIFIED-TOLERANCES		SCALE		WEIGHT(Kg)		REF. TO ASSY. DRG.		ITEM NO.		No. OF VAR	
BHARAT HEAVY ELECTRICALS LIMITED. ELECTRONICS DIVISION, BANGALORE		200		REFER ED 0230499		NTS		-		-		20.09-09		-	
TITLE		TEST PIECE		CNC PUNCH PRESS		DRAWING NO.		Test Piece		SHEET NO. 01		NO. OF SHEETS 01		REV. 00	

Test Specimen for CNC Punch Press

1.0 Purpose

1. Geometric and dynamic accuracy of X & Y axes
2. Squareness of X & Y axes
3. Accuracy of hole to hole distance
4. Positioning accuracy of Turret Tool Stations
5. Parallel accuracy of CNC Index Tool Station
6. Angular accuracy of CNC Index Tool Station
7. Accuracy of repositioning

1.1 Test Specimen

Cold Rolled Steel Sheet 2000 x 1000 mm size, 2.0 mm thick

2.0 Measurement

Using CNC Coordinate Measuring Machine

3.0 Punches

Round - 10mm, 12.7 mm 30.5 mm and 40.0 mm

Rectangular - 5 x 50 and 5 x 75 mm

3.1 Punching Sequence

- | | |
|---|---|
| 1. Punches 1 – 4 | Use 10 mm Ø Punch |
| 2. Punches 5 – 10 | } Use 12.7 mm Ø Punch |
| 3. Punches 11 – 16 | |
| 4. Punches 17 – 22 | |
| 5. Punches 23 – 26 | |
| 6. Punches 27 – 30 | } Use 30.5 mm Ø Punch |
| 7. Punches 31 – 32 | |
| 8. Punches 33 – 34 | Use 40.0 mm Ø Punch |
| 9. Punches 35 – 36 | } Use 5 x 75 Punch in Index Station. Index at 0° & 90°. Punch with 5 mm overlap 35, 36, 37 & 38 are at 0° and 39, 40, 41 & 42 are at 90°. |
| 10. Punches 37 – 38 | |
| 11. Punches 39 – 40 | |
| 12. Punches 41 – 42 | |
| 13. Use 5 x 50 punch at Index Station for Punches 43 - 46 | |

14. Position at 0°
15. Index and Punch 43 & 44 (Counter clockwise index)
16. Position at 90°
17. Index and Punch 45 & 46 (Clockwise index)
18. Reposition the sheet by 500 mm
19. Punch 47 – 52 with 10 mm Ø Punch

3.2 Holes from 1 – 46 are punched with the same clamp positioning. The repositioning is carried out after hit no. 46 and holes from 47 – 52 are punched after repositioning. A clearance of 1mm must be given between the clamp and sheet edge while repositioning to prevent loss of accuracy after repositioning due to inaccuracy of sheet.

3.3 Axis speed at 100 % and acceleration at 100 % for X, Y and Index tool.

3.4 Punches 1 – 4 and 49 – 52 are planned with a dwell of 200 ms between positioning and punching.

Punches 5 – 48 are done in normal punching mode – Machine punches immediately after the axes have reached the programmed position.

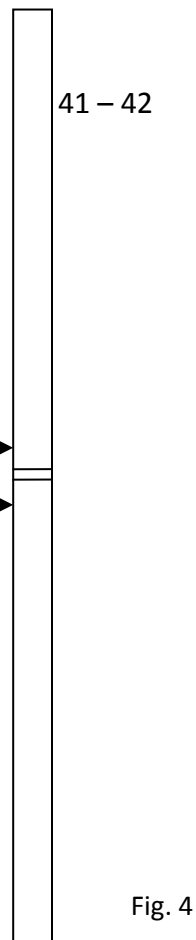
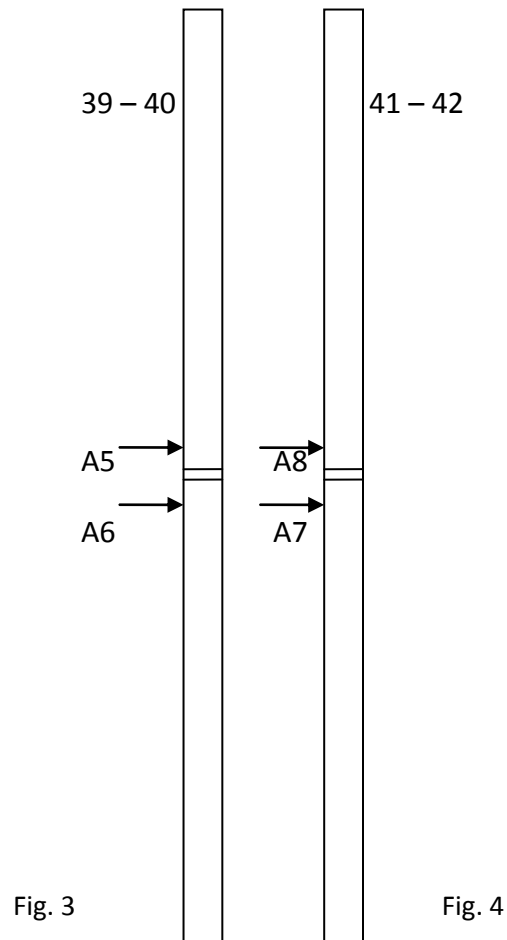
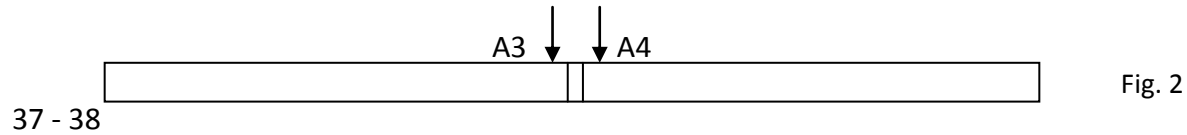
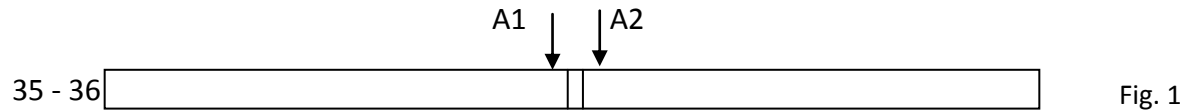
4.0 The zero point of the measuring programme is the centre point of hole no. 2. The X axis goes through the centre points of hole no. 2 & 3. The Y axis is perpendicular to it and goes through the centre of hole no. 1 from 2.

4.1 The order of measurement of circular holes is as follows : (Table 1)

Sl No	Hole No	Sl No	Hole No	Sl No	Hole No	Sl No	Hole No
1.	1	11.	11	21.	22	31.	32
2.	3	12.	15	22.	23	32.	33
3.	4	13.	12	23.	24	33.	34
4.	9	14.	14	24.	25	34.	47
5.	7	15.	13	25.	26	35.	48
6.	5	16.	19	26.	27	36.	49
7.	6	17.	20	27.	28	37.	50
8.	8	18.	18	28.	29	38.	51
9.	10	19.	21	29.	30	39.	52
10.	16	20.	17	30.	31		

4.2 Rectangular holes punched by nibbling in CNC Index station are measured next.

A dimension is measured 5 mm from the end of first punch and 5 mm from the beginning of the second punch (Fig 1, 2, 3, 4)



4.3 The accuracy of Z axis angle is measured from the rectangular holes (43 – 46) punched in the CNC Index Tool Station and positioned from different directions. The angles are measured by taking a contact with a measuring stylus from both heads and from both sides of each rectangular hole. The angle of the hole's straight line is calculated by the measurement program.

5.0 Punching Accuracy

Punching accuracy covers the following

- Hole location deviation
- Hole to hole distance deviation
- Parallel deviation
- Angular Deviation

5.1 Hole Location deviation

This is measured from the holes No. 1 – 22, 31 – 34, 47 and 48 on the test sheet.
(Fig 5)

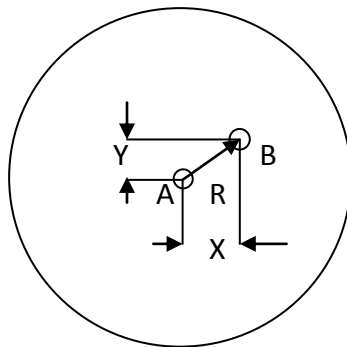


Fig. 5

A - Nominal centre point of punched hole (as per drawing)

B - Measured centre point

R – positional deviation = $\sqrt{X^2 + Y^2}$

The Maximum deviation allowed is ± 0.1 mm

5.2 Hole to hole distance Deviation

This is measured on holes no. 23 – 26 and 27 – 30 as deviation from nominal value of 50 mm. The maximum deviation allowed (X_{\max} and Y_{\max}) is ± 0.1 mm.

5.3 Parallel deviation in nibbling

This is measured on punches 35 – 36, 37 – 38, 39 – 40, 41 – 42 punched with CNC Index Tool Station on the test sheet.

Deviation along Y Axis – in Punches 35 – 36 and 37 – 38

Deviation along X Axis – in Punches 39 – 40 and 41 – 42

Maximum Parallel deviation in nibbling allowed = ± 0.1 mm

5.4 Angular Deviation

This is measured from punches 43 – 46 punched with CNC Index Tool Station on the test sheet.

The deviation is calculated as difference between the measured angle and the nominal value.

Maximum angular deviation allowed = $\pm 0.1^\circ$

5.5 Accuracy after Repositioning

The punching accuracy after repositioning is obtained by measuring the punch holes No. 47 – 52.

6.0 Reporting Format

All circular holes are to be measured in the order given in Table 1 and tabulated in the following format for each hole. Tolerance values cannot exceed 0.1 mm. (+ Tol \leq 0.1 mm, - Tol \leq 0.1 mm). (Fig 5)

Hole No	Axis	Measured	Nominal	+Tol (\leq 0.1 mm)	- Tol (\leq 0.1 mm)	Out Tol
	X					
	Y					
$R = \sqrt{X^2 + Y^2}$						

Distance between holes in X direction (Holes 23 – 26)

Holes	Measured	Nominal	Deviation	+Tol (\leq 0.1 mm)	- Tol (\leq 0.1 mm)	Out Tol
23 - 24		50.00				
24 - 25		50.00				
25 - 26		50.00				

Distance between holes in Y direction (Holes 27 – 30)

Holes	Measured	Nominal	Deviation	+Tol (\leq 0.1 mm)	- Tol (\leq 0.1 mm)	Out Tol
27 - 28		50.00				
28 - 29		50.00				
29 - 30		50.00				

Index Tool Parallel Deviation (Fig 1, 2 3 4)

Holes 35 & 36 (A1 – A2)

Axis	Measured	Nominal	Deviation	+Tol (\leq 0.1 mm)	- Tol (\leq 0.1 mm)	Out Tol
Y						

Holes 37 & 38 (A3 – A4)

Axis	Measured	Nominal	Deviation	+Tol (≤ 0.1 mm)	- Tol (≤ 0.1 mm)	Out Tol
Y						

Holes 39 & 40 (A5 – A6)

Axis	Measured	Nominal	Deviation	+Tol (≤ 0.1 mm)	- Tol (≤ 0.1 mm)	Out Tol
X						

Holes 40 & 41 (A7 – A8)

Axis	Measured	Nominal	Deviation	+Tol (≤ 0.1 mm)	- Tol (≤ 0.1 mm)	Out Tol
X						

Index Tool Angular Deviation

Hole 43 (Angle 10°)

	Measured	Nominal	Deviation	+Tol ($\leq 0.1^\circ$)	- Tol ($\leq 0.1^\circ$)	Out Tol
Angle		10°				

Hole 46 (Angle 30°)

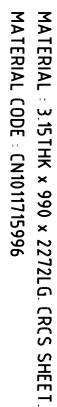
	Measured	Nominal	Deviation	+Tol ($\leq 0.1^\circ$)	- Tol ($\leq 0.1^\circ$)	Out Tol
Angle		30°				

Hole 44 (Angle 50°)

	Measured	Nominal	Deviation	+Tol ($\leq 0.1^\circ$)	- Tol ($\leq 0.1^\circ$)	Out Tol
Angle		50°				

Hole 45 (Angle 70°)

	Measured	Nominal	Deviation	+Tol ($\leq 0.1^\circ$)	- Tol ($\leq 0.1^\circ$)	Out Tol
Angle		70°				



TITLE		DRAWING NO.	REV.
FRONT PANEL MODIFICATION		3 694 52 00050	00
(GAUGE PANEL)			
SHEET NO. 01	NO. OF SHEETS 01		

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FIRST ANGLE PROJECTION

DRAWING NO. 3 653 21 1179

3

4

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A

B

C

D

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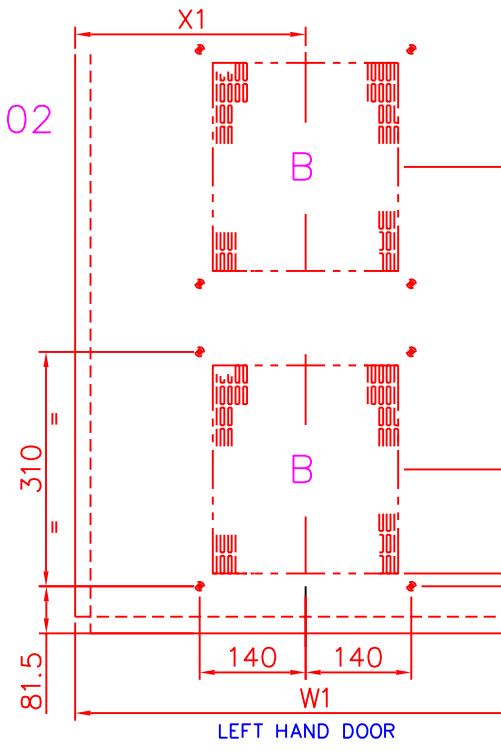
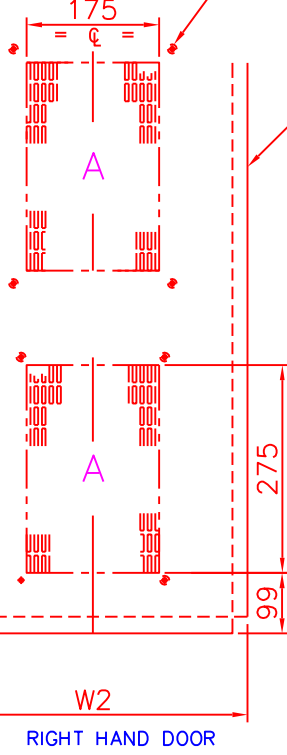
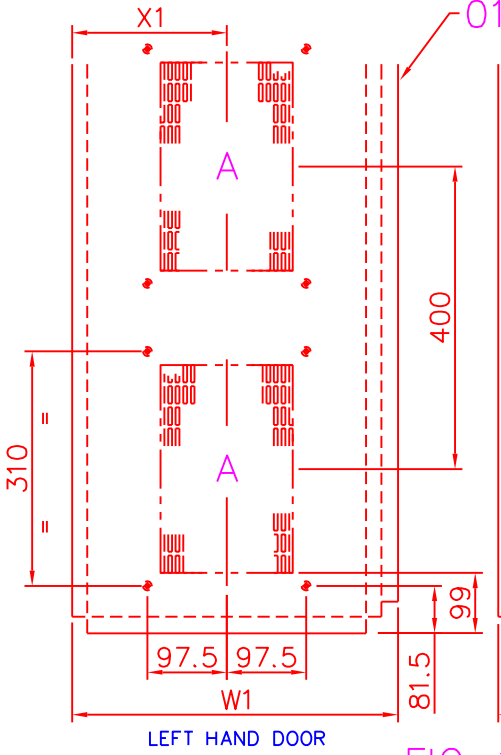


FIG-1

VIEW FROM THE FRONT

VI

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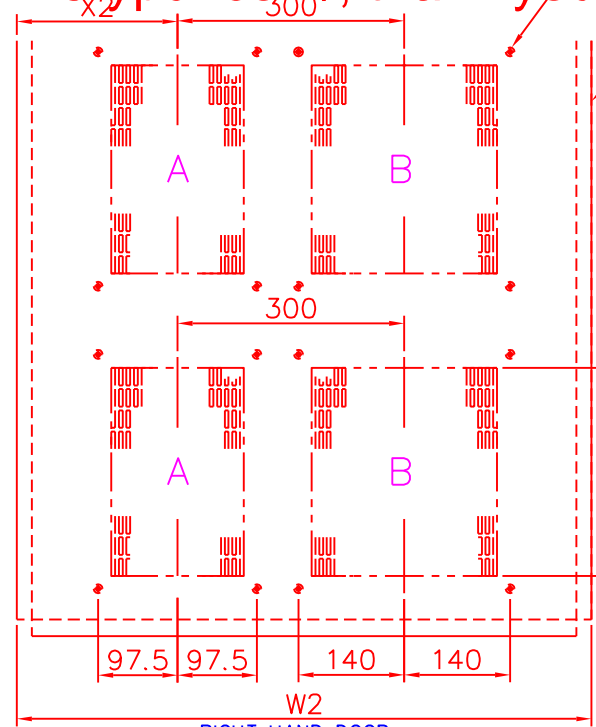
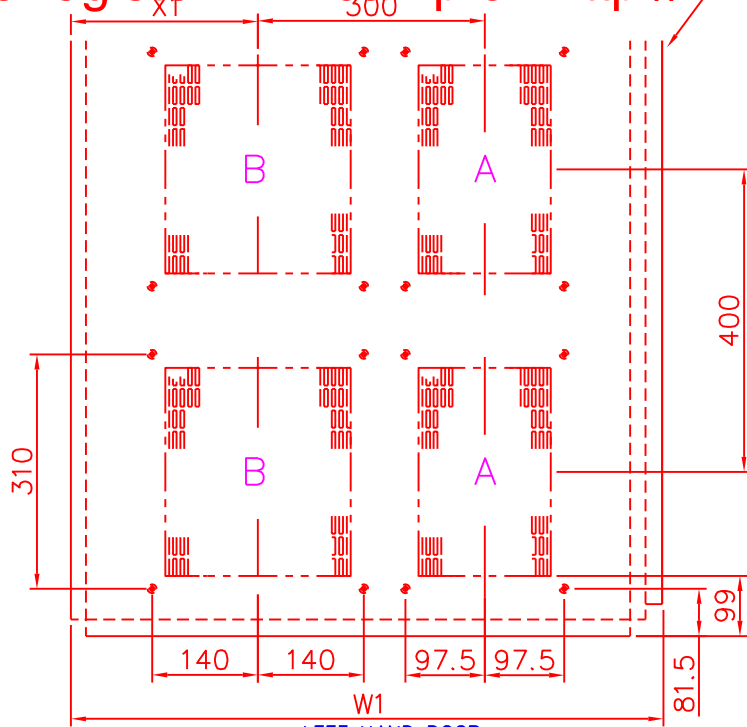


FIG-3

VIEW FROM THE FRONT

VIEW FROM THE FRONT

REV.	DATE	ALTERED
		CHECKED
		APPROVED

REV.	DATE	ALTERED
		CHECKED
		APPROVED

REV.	DATE	ALTERED
		CHECKED
		APPROVED

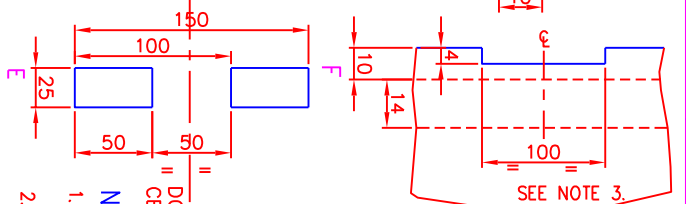
1

2

3

4

Z





IT NO	W	H	FRAME SIZE		WEIGHT (IN KGS)	FORMING AND	
			WIDTH	HEIGHT		SLOT/LOUVER	REF
01	381	2272	680	2230	13.66	01	01
02	416	2272	750	2230	14.91	02	02
03	516	2272	950	2230	18.46	03	03
04	616	2272	1150	2230	22.01	06	04
05	791	2272	1500	2230	28.22	10	05
06	381	2272	680	2230	13.66	01	01
07	416	2272	750	2230	14.91	02	02
08	516	2272	950	2230	18.46	03	03
09	616	2272	1150	2230	22.01	06	04
10	791	2272	1500	2230	28.22	10	05
11	441	2272	800	2230	15.81	14	06
12	441	2272	800	2230	15.81	14	06

FINISH: – NATURAL

1. NOTCHED HIT MUST BE NDIMENSIONS, AND FREE FROM TWISTING AND BOWING.
2. THIS CUTOUT TO BE PROVIDED FIVE NOS. FOR DOOR HI. GREATER THAN 2000 mm
3. THIS CUTOUT TO BE PROVIDED FIVE NOS. FOR DOOR
4. FOR FORMING DETAILFOR RH DBL DOOR REFER DRG.NO.3 699 21 00647
5. REFER DRG.NO.3 653 21 11779 VA05 FOR SLOT DETAILS FOR VAR.11 & REFER DRG.NO.3 653 21 11781 VA05 FOR LOUVER DETAILS FOR VAR.12.

CARD TYPE 2						CARD TYPE 1	
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	UNIT WT.(kg)	QUANTITY	
			VARI ANT	MATERIAL SPECN.			
	2THK. W x H Lg CRCS SHEET			AA 1011715112			

[illegible]

	BHARAT HEAVY ELECTRICALS LIMITED. ELECTRONICS DIVISION, BANGALORE			NAME		SIGN.	DATE	NO. OF VAR
				DRN		sd \ -	09.09.06	
				CKD		sd \ -	09.09.06	
				APPD		sd \ -	09.09.06	
DEPT. CHCE CODE 009	FOR UNSPECIFIED- TOLERANCES REFER ED 02.30499		SCALE N.T.S	WEIGHT(KG)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEM	

TITLE	DRAWING NO.			REV.
408	3 653 21 11511			01
NOTCHING DTL FOR RH				
DOUBLE DOOR (DIRAK)				
SHEET NO. 01		NO. OF SHEETS 01		

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DRAWING NO.

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INVENTORY NO.

SIGN & DATE

REF. DRG.NO.

36992100819

3

1

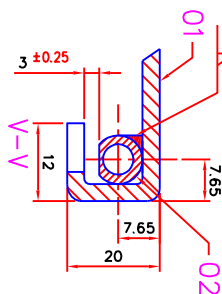
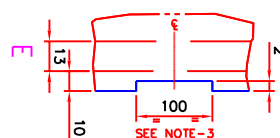
(7)

9

7

∞

VAR.	W	H	W1	H1	C	C1	N	FRAME SIZE		REMARKS
								DEPTH	HEIGHT	
00	678	2228	720	2270	-	-	8	680	2230	
01	748	2228	790	2270	-	-	8	750	2230	
02	948	2228	990	2270	-	-	8	950	2230	
03	1048	2228	1090	2270	350	370	12	1050	2230	
04	1148	2228	1190	2270	375	395	12	1150	2230	



NOTE :-

1. ALL WELDS TO BE GROUND FLUSH FROM OUTSIDE

3. FOR THESE NOTCH OPERATION ADDITIONAL 100mm EXTRA MATL IS TO BE CALLED IN B.O.M FOR THE ENTIRE LENGTH

FINISH :- AS PER M.O

REFER COMPUTERISED B.O.M

	3.15Tk x Wt x H1Lg CROS SHEET			CN 1011715996	
ITEM QTY.	DESCRIPTION	DRAWING NO.	ITEM No.	MATERIAL CODE	U.T.M. (Kgs)
			VARI ANT	MATERIAL SPECN.	QTY.

23

CARD TYPE 1

TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONICS DIVISION, BANGALORE

	NAME	SIGN.	DATE	No. of VAR
DRN	S.N.Murthy		22.10.08	
CKD	A.Louis		24.10.08	
APPD	A.Louis		24.10.08	

FOR UNSPECIFIED-
TOLERANCES
REFER ED 0230499

N.T.S

3 699 21 00820

ITEM	
01	

SECTION VIEW
AT V-V
DIM 20 WAS 18

TITLE BLTD COVER NTCG, FRMG
WELDED ASSEMBLY (3.15TK

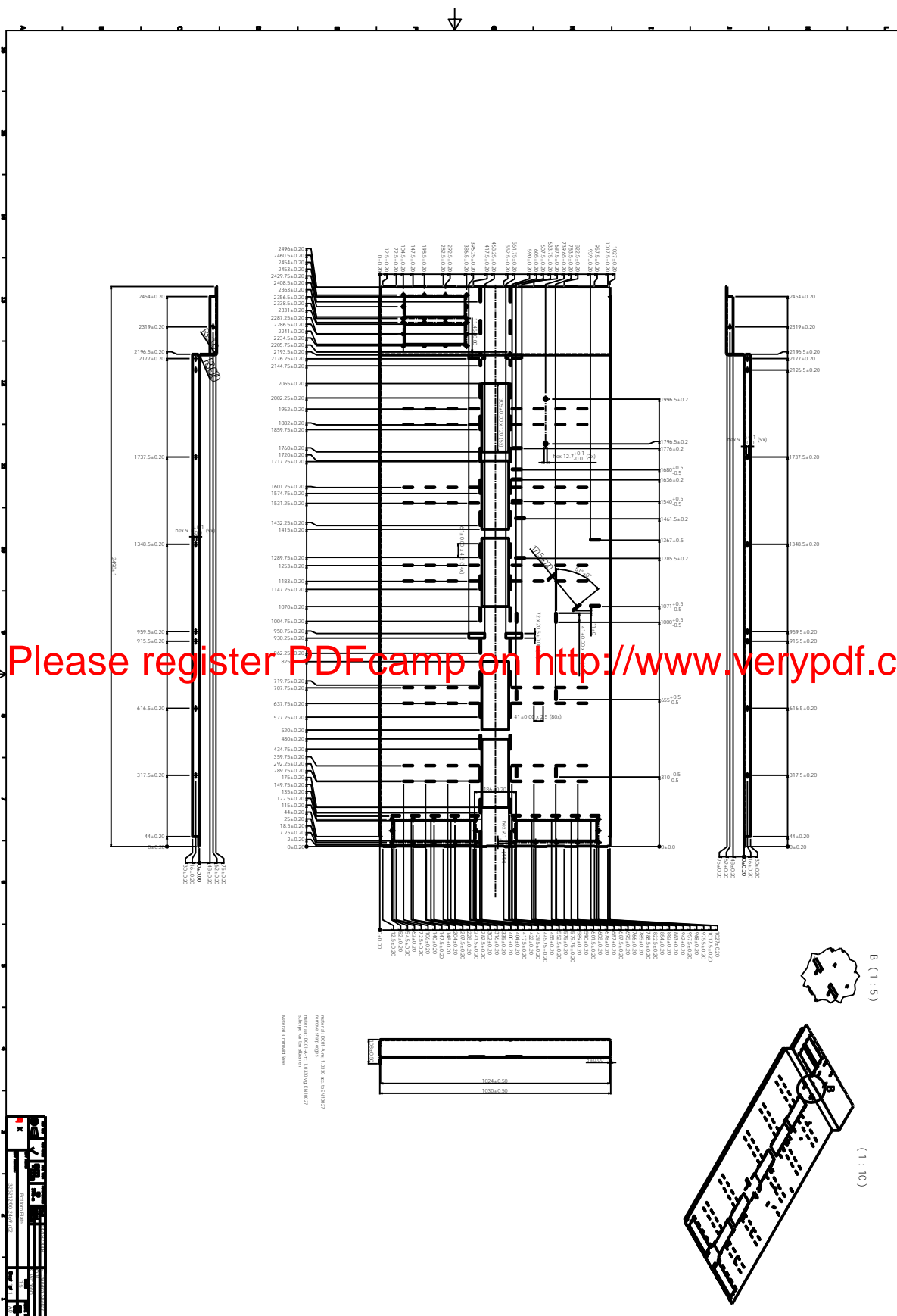
DRAWING NO.

5 699 21 00819

SHEET NO. 01 NO. OF SHEETS 0

01	1
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Bharat Heavy Electricals Ltd.,

(A Government of India undertaking)

Electronics Division

PB No.2606, Mysore Road, Bangalore-560026, India

CPD-20000

Page 1 of 19

Enquiry - General Terms & Conditions for Supply of CAPITAL ITEMS
(Imported & Indigenous) (Two parts bid),
Doc Ref: CPD-20000

I. Enquiry / Request For Quotation (RFQ):

- (a) Any Purchase Order resulting from this enquiry shall be governed by **these general terms and conditions listed below and special terms and conditions, if any, along with this enquiry** of Bharat Heavy Electricals Limited, Electronics Division, Bangalore-560026 (**hereinafter referred to as BHEL EDN**).
- (b) Any of the terms and conditions not acceptable to vendor, shall be explicitly mentioned in the quotation. Otherwise, it will be treated as that all terms and conditions of this enquiry are acceptable.
- (c) If counter terms and conditions are offered by vendor, BHEL EDN shall not be governed by such terms and conditions, unless it is agreed and incorporated in the Purchase Order of BHEL EDN.
- (d) Any deviation to the terms and conditions not mentioned in the quotation by vendor in response to this enquiry will not be considered, if put forth subsequently or after issue of order, unless clarification is sought for by BHEL EDN and agreed upon in the Purchase Order of BHEL EDN.
- (e) BHEL EDN reserves the right to adopt Reverse Auction for the enquiry sent, at its discretion.
- (f) BHEL EDN shall be at liberty to cancel the tender at any time, before ordering, without assigning any reason.

II. General Terms and conditions:

1. **TWO PARTS BID:** Quotation shall be submitted in two parts bid i.e.

(a) **Techno-commercial i.e., Un-priced Bid (in one sealed envelope):**

Techno-commercial bid shall be submitted with complete description of the equipment, specification compliances to the enquired specification and all the commercial terms & conditions indicated in the **COMMERCIAL TERMS (ANNEXURE - A / ANNEXURE - B)**. Any other enclosure, which the vendor wishes to submit like product catalogue, technical literature etc., may also be submitted in a sealed envelope super scribed clearly as **“TECHNO-COMMERCIAL BID” with RFQ No. and DUE DATE**. An un-priced copy of price bid (without price) shall also be enclosed with the techno-commercial bid for evaluation of commercial terms. The vendor shall not give the price in the technical bid.

Confirmation to BHEL specifications shall be indicated by the vendor in the respective columns provided in the purchase specification wherever applicable. Deviations to the specification /

item description, if any shall be brought out clearly indicating “DEVIATION TO BHEL SPECIFICATION” without fail as a part of technical offer.

Compliance to Pre-qualification criteria (if applicable) shall also be enclosed with the Techno-commercial bid.

Manufacturer’s name, their trade mark and brand, part number, alternate material to the one asked in enquiry, if any, should be mentioned in quotation and illustrative leaflets giving technical particulars etc. are to be attached to facilitate consideration and technical evaluation of the quotation.

BHEL EDN material code number (as in enquiry) shall be indicated for each item quoted.

(b) Price Bid (in one sealed envelope):

Price bid should contain basic unit prices, discount if any, applicable taxes & duties, packing & forwarding charges (if applicable), Freight & insurances (if applicable) FOB charge (if applicable) etc., in a sealed envelope super scribed clearly as “**PRICE BID**” with **RFQ No. and DUE DATE**. Installation, commissioning, start-up and training charges (if any) shall also be indicated in the price bid.

It is preferred to indicate the rates in both figures and words. In such case, if there is difference / discrepancy between the rates in figures and words, the **least of the two** rates will be considered.

(c) Tender Offer (above two envelopes inside another sealed envelope):

Both these sealed envelopes [(a) Techno-commercial i.e., un-priced Bid and (b) Price Bids] shall be kept in a single sealed envelope and super scribed clearly with **RFQ No. and DUE DATE**.

2. The above sealed envelope (Tender) shall reach our office on or before the due date by **13:00 hrs.** Quotations are to be dropped in the tender box marked for the OPENING ON respective days i.e., MONDAY / WEDNESDAY / FRIDAY kept at BHEL-EDN’s Reception area of our works with caption “CE, M&C, SC&PV, TSC, DEFENCE, TELECOM, CPD”. **Quotations also can be dispatched by Couriers / Registered post / FAX / e-mail to the Purchase Executive indicated in the RFQ at the risk of vendor / bidder.**

Quotation through courier / register post / fax / email when addressed to the specific fax number and email address given in the enquiry, to be sent well in advance to enable BHEL EDN purchase personnel to drop in the tender box before the scheduled opening date and time. **Vendor is fully responsible for lack of secrecy on information of such quotations.** Vendor shall confirm with the concerned purchase executive after sending the offer regarding such delivery mode to ensure participation. BHEL EDN is not responsible for any delay in receipt of quotation sent by vendor through post/fax/email.

Late Tenders i.e., Tenders received after due date will be rejected.

3. The rate quoted against each item shall be in units stated in the enquiry. Where quotation is in terms of unit other than that in enquiry, relationship between the two units must be furnished in the quotation.
4. As far as possible, the quotations shall be free from corrections / overwriting. Corrections / overwriting, if any should be signed by authorized person with the company seal. Any typographical errors, totaling mistakes, currency mistakes, multiplication mistakes, summary mistakes observed in your priced bids, BHEL may consider whichever is beneficial to BHEL for evaluation. Vendor shall doubly ensure that the quote is correct and complete. The corrections / overwriting if any shall be signed with the seal.
5. Quotations are to be duly signed. Unsigned bids / offers are liable for rejection.
6. Tenders will be opened at **13:30 hrs.** & the venue is New Engg., Bldg., 2nd floor, MM conference hall. All the tenderers or their authorized representatives (with authorization letter from their principals) may witness opening of techno-commercial bid on the due date.
7. After evaluation of techno-commercial bids, price bids of only those which are technically & commercially accepted, will be opened on a subsequent date, which will be intimated to the concerned in advance for witnessing of price bid opening.
8. The quantity in each item to be purchased may vary from quantity enquired according to the actual requirement at the time of placing the purchase order. Quantity discount, if any, should be mentioned in the quotation.
9. BIDDERS (for indigenous purchase) shall indicate clearly Excise duty, Education Cess, Sales Tax/VAT, Octroi, Exit/Entry tax, Service Tax as applicable for the quoted items. In the absence of clarity of these, any claim at a later date will not be entertained. Any changes in Taxes and duties after award of the contract will not be considered except such are those, which are imposed by Govt., notification within the contractual delivery after placement of PO. Seeking price amendments for change in Excise duty due to crossing of turnover limits will not be considered under any circumstances.

10. DUN & BRADSTREET REPORT (for Foreign purchase):

In case of foreign vendors, the vendors should obtain a report from Dun & Bradstreet or equivalent and submit a copy of the report with their Duns number mentioned along with the technical offer. Offer without this report is liable for rejection.

11. Payment of Agency Commission to Indian Agent (for Foreign purchase):

The vendor shall give a certification to the following effect:

The seller confirms and declares to the Buyer that the seller is the original manufacturer of the stores referred to in this contract and has not engaged any individual or firm, whether Indian or Foreign whatsoever, to intercede, facilitate or in any way to recommend to the Government of India or any of its functionaries, whether officially or unofficially, to the award of the contract to the seller; nor has any amount been paid, promised or intended to be paid to any such individual or firm in respect of any such intercession, facilitation or recommendation. The seller agrees that if it is any way incorrect or if at a later stage it is discovered by the Buyer that the seller has engaged any such individual/ firm, and paid or intended to pay any amount, gift,

reward, fees, commission or consideration to such person, party, firm or institution, whether before or after the signing of this contract, the seller will be liable to refund that amount to the Buyer. The seller will also be debarred from entering into any supply contract with the Government of India for a minimum period of five years. The Buyer will also have a right to consider cancellation of the contract either wholly or in part, without any entitlement or compensation to the seller who shall in such event be liable to refund all payments made by the buyer in terms of the contract along with interest at the rate of 2% per annum above the LIBOR rate. The Buyer will also have the right to recover any such amount from any contracts concluded earlier with the Govt. of India

BHEL would like to procure the above item directly from you and not to involve services of Indian Agent for the procurement. The quotation submitted by your Indian Agent is not acceptable and liable to be rejected. However, in case you would like to involve your Indian Agent for supply of the items/service therefore you may furnish the following information along with the Techno Commercial bid.

- (a) Registration status of Indian Agent with DGS&D and BHEL.
- (b) Commission payable to Indian Agent and percentage.
- (c) Currency in which payable to Indian Agent.
- (d) If the agency commission is payable by the foreign principal/OEM, such commission shall be received by Indian Agent through inward FFE remittance through banking channels and disbursed in rupees only.
- (e) Tax at source deduction is applicable to the Agency Commission paid to the Indian Agent as per the prevailing rules.
- (f) If the respective Indian Agents are not registered with DGS&D or BHEL, are required to register their names with BHEL by providing the following information's for registration.
 - (i) Name of the foreign firm / original equipment manufacturer represented by the Indian representative / Indian Agent.
 - (ii) Agency agreement.
 - (iii) PAN No, Name, Address of Bankers in India and Abroad.
 - (iv) Nature of services to be rendered by Indian Agent / Indian representative and percentage of commission payable to Indian Agent / Indian representative by Principal / original equipment manufacturer.
- (g) All particulars relating to Agency Commission will be reported to the enforcement Directorate of Income Tax Department.
- (h) Undertaking to be submitted by Indian Representative / Agent that the agency commission would be accepted in Indian Rupees only and through inward FFG remittance through banking channel for the services rendered towards the execution of the orders.

12. TOTAL COST TO BHEL: Purchase order will be placed on the lowest quotation (L1) only among the technically & commercially accepted quotations. Lowest quotation (L1) is determined on the basis of the total cost to BHEL.

(a) FOR FOREIGN PURCHASE:

Total cost to BHEL = Total basic value (including installation, commissioning, training, spares etc.) in foreign currency + FOB charges (if any) + Packing & Forwarding charges (if any) + Cost Insurance Freight (CIF) + Basic Custom Duty (BCD) + Counter Veiling Duty (CVD) + Educational Cess + Special Additional Duty (SAD) + Entry TAX + Service TAX (if applicable) + Loading factors for deviations to commercial terms & conditions.

Note: Exchange rate ruling on the date of Tender opening (Techno-commercial / un-priced Bid) will be considered for converting foreign currency to Indian currency. Exchange rates of banking TT selling will be considered.

No import license will be given by BHEL EDN unless otherwise specifically stated.

(b) FOR INDIGENOUS PURCHASE:

Total cost to BHEL = Total basic value (including installation, commissioning, training, spares etc.) + Packing & forwarding charges + Excise duty + Education cess + sales Tax/VAT + Octroi + Exit/Entry tax + Freight & Insurance + Service Tax (if applicable) + Loading factors for deviations to commercial terms & conditions.

13. FIRM PRICE: Rates quoted should be firm from the date of P.O., to the completion of supply and no enhancement in the rates and changes in the techno-commercial terms will be allowed once the quotation is accepted and order is placed.

If Installation & Commissioning is in vendor's scope, then the price shall remain FIRM till commissioning & handing over of the complete system.

14. TERMS OF PAYMENT:

(a) FOR FOREIGN PURCHASE:

Payment will be made against “**SIGHT DRAFT**” on presentation of documents to our bankers. Payment through LC is also made subject to loading factors as per **Clause 27 (Ai)**. For LC payment bank charges within India will be borne by BHEL and outside India will be to vendor's account.

The payment terms are as follows:

- (i) 100% against complete dispatch documents i.e. AWB / BOL, Invoice, Packing list, Warranty certificate (if applicable), Nil shortage certificate, Certificate of country of origin etc., (where both commissioning & PBG are NOT applicable).
- (ii) 90% against complete dispatch documents i.e. AWB / BOL, Invoice, Packing list, Warranty certificate, Nil shortage certificate, Certificate of country of origin etc., & balance 10 % on submission of Performance Bank Guarantee (PBG) (where PBG only is applicable).
- (iii) 80% against complete dispatch documents i.e. AWB / BOL, Invoice, Packing list, Warranty certificate, Nil shortage certificate, Certificate of country of origin etc., 10% after completion of commissioning & balance 10 % on submission of Performance Bank Guarantee (PBG) (where both commissioning & PBG are applicable).

- (iv) If PBG could not be submitted, vendors can also accept for the final 10% payment, payable after the warranty period + 6 months of claim period against supplementary invoice subject to the completion of commissioning (if applicable). In such cases loading for PBG is not applicable.

(b) FOR INDIGENOUS PURCHASE:

- (i) 100% payment with 30 days credit (where both commissioning & PBG are NOT applicable).
- (ii) 90% basic payment + 100% taxes & duties with 30 days credit & balance 10% basic against submission of PBG (where PBG only is applicable).
- (iii) 80% basic payment + 100% taxes & duties with 30 days credit 10% basic after completion of commissioning & balance 10% basic against submission of PBG (where both commissioning & PBG are applicable).
- (iv) If PBG could not be submitted, vendors can also accept for the final 10% payment, payable after the warranty period + 6 months of claim period against supplementary invoice subject to the completion of commissioning (if applicable). In such cases loading for PBG is not applicable.

15. ADVANCE PAYMENT: Quotations with “Advance payment” without fully securing with equal value of BG is liable for rejection. “Inland Letter of Credit” is not encouraged.

16. PENALTY: Failure to supply within the delivery time as per purchase order will make the vendor liable to an unconditional **penalty of 0.5 % (half percent) per week at the basic price of the goods for the undelivered quantity, subject to a maximum of 10%.**

If pre-shipment inspection is involved, date of issue of pre-shipment call by the vendor along with test certificates / test reports / certificate of conformance / calibration reports as proof of completion will be treated as date of dispatch for the purpose of penalty calculation.

In the absence of reports stated above, actual date of inspection will be considered as date of dispatch for penalty calculation.

Date of receipt / Date of dispatch / Date of LR / Date of Airway bill / Date of pre-shipment inspection call with relevant documents as stated above, whichever is applicable shall be considered as delivery date for the purpose of penalty calculation. BHEL is not liable for delayed OA for opening LC or corrections/amendment to LC asked after opening of LC.

17. PBG: Performance Bank Guarantee (PBG) to be submitted on Rs.100/- non-judicial stamp paper as per the BHEL prescribed format given in **ANNEXURE - E / ANNEXURE - F** for 10% of the basic equipment value obtained from any BHEL member (consortium) banks indicated in **ANNEXURE-G.**

PBG shall be valid for 12 months from the date of commissioning or 18 months from the date of dispatch whichever is earlier. The PBG shall also have 6 months claim period from the date of dispatch / commissioning.

The Bank Guarantee shall be submitted directly to the concerned Purchase Executive by the issuing Bank with their forwarding letter. BHEL will verify independently with the bank to establish the authenticity.

18. WARRANTY: Goods dispatched shall have warranty period of 18 months from the date of dispatch or 12 months from the date of commissioning whichever is earlier or as mentioned in the RFQ.

19. TERMS OF DELIVERY:

(a) FOR IMPORTED PURCHASE:

Price offered shall be for goods packed and delivered **F.O.B.** (named international Airport / sea port) including packing, forwarding, Handling, Ancillary charges like processing of Sight Draft, Letter of credit (L/C) if applicable, negotiation of bank documents, Export declaration, Certificate of origin etc.

Packing shall be Road / Rail / Air / Sea worthy, best suitable for transshipment and to take care of transit damages. If containerized, no. of containers & size of container shall be mentioned. Packing weight (gross & nett) Packing dimensions shall be given prior to shipment to ascertain whether the consignment can be carried on standard cargo in contract or as ODC.

Wooden packing material for all the foreign consignments should be treated as per ISPM-15 & **Fumigation / Phytosanitary certificate** to be submitted to the freight forwarders / BHEL along with the invoice, AWB, packing list etc.

Vendors shall indicate the name of International Airport/ Seaport. The consignment shall be handed over to BHEL approved freight forwarded as mentioned in PO.

Note: Name of International Airport has to be selected from any one of the airports indicated in the table provided in **ANNEXURE – C**.

(b) FOR INDIGENOUS PURCHASE:

Equipment shall be delivered on EX-EDN/BHEL, Bangalore basis, inclusive of freight, packing, insurance & forwarding charges.

Packing shall be Road / Rail / Air / Sea worthy, best suitable for transshipment and to take care of transit damages.

It is preferred to dispatch the consignments through EDN/BHEL approved transporters indicated in **ANNEXURE - D** on Door Delivery basis.

Smaller consignments can be dispatched through Courier services / RPP with the prior approval of the purchasing Executive.

In case of ex-works dispatches, transit insurance shall be arranged by BHEL. Vendor shall intimate the dispatch details to BHEL immediately after effecting shipment, to arrange transit insurance accordingly.

20. DELIVERY REQUIREMENT: In the quotation, earliest firm delivery (number of days or weeks) by which material will be dispatched from the date of Purchase order must be indicated. It is recommended to avoid Quotations with delivery term such as 'ex-stock', 'subject to prior sale', or 'delivery at the earliest'. Date of BHEL PO is the reference for all purposes.

21. VALIDITY: Quotation should remain valid for a period of **90 days** from the date of technical bid opening. Offer with Non-conformance is liable for rejection.

22. POST-ORDER REQUISITES:

- (a) Vendor shall give an Order Acknowledgement indicating the delivery date within one week of receipt of PO.
- (b) Pre-shipment inspection at vendor's works, if required, will be carried out by BHEL. Required assistance will have to be provided by the vendor at the time of pre-shipment inspection.
- (c) Test certificates, Calibration certificates and warranty certificates as stipulated at the time of ordering shall be furnished.
- (d) Items shall be dispatched by Air/Road/Rail/Sea worthy packing. Any damage and later rejection, due to poor / improper packing shall be to vendor's account.
- (e) Any damage/rejection should be made good or replaced immediately without any extra cost to BHEL such as freight, duties, taxes etc. The liability is restricted to the value of the order.
- (f) Wherever commissioning is involved, it shall be carried out by the vendor's qualified engineers. Scope of work includes installation, commissioning and start-up trials till satisfactory performance level is reached as certified by BHEL.
- (g) BHEL will not be responsible for any loss, damage or injuries to vendor's personnel sustained during installation / commissioning / start-up trials. Vendor shall ensure compliance with all statutory requisites as laid down by local bodies, state & Central Government. Vendor shall indemnify BHEL for all damages/ losses to various personnel during their presence in BHEL's premises for whatever purpose.
- (h) Suitable markings & damage control indicating devices shall be provided where applicable.

23. Equipment shall comply with the standard requirements of ISO 14001 & OHSAS 18001.

24. GENERAL TERMS AND CONDTITIONS GOVERNING REVERSE AUCTION (RA):

- (a) Against this enquiry for the subject item/system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING ON INTERNET. • For the proposed RA, technically and commercially acceptable bidders only shall be eligible to participate.
- (b) In case of RA, BHEL will engage the services of a service provider for conduct of the RA who will provide all necessary training and assistance to the bidders before commencement of on line bidding on internet.

- (c) Business rules governing the RA will be communicated to the bidders through service provider for compliance.
- (d) Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of RA. Without the compliance, the vendor will not be eligible to participate in the event.
- (e) BHEL will provide a sample calculation sheet (in EXCEL format) which would help the bidders to arrive at "Net Cash outflow to BHEL" considering various price / cost elements like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) etc. for each of the bidders to enable them to arrive at "Net Cash outflow to BHEL (Total Cost to BHEL)" which is the amount the bidder would be bidding during the RA.
- (f) RA will be conducted on scheduled date & time and at the end of event, the lowest bidder value will be known on the network.
- (g) The lowest bidder has to Fax the duly signed "Price Break-up" in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.
- (h) Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct further business with BHEL, as per the prevailing procedure.

25. REGRET LETTER: In case any vendor is unable to quote, vendor shall send a regret letter without fail. In case of non-receipt of quotations or regret letters for three consecutive enquiries, such vendor is liable to be removed from our vendor list.

26. Any dispute arising out of this, shall be referred to the sole arbitration of Head of Dept. Materials Management of group concerned, BHEL EDN or any other officer nominated by him and his award shall be final and binding on the parties. The venue of the arbitration in all cases shall be Bangalore.

27. Any legal suit in respect of this enquiry lies in the court of Jurisdiction of Bangalore (India) only.

28. LOADING FACTORS:

Loading factors as detailed below will be added to the quoted price (basic) to evaluate the lowest quote for non compliance of BHEL standard commercial terms.

A(i). For non compliance of standard Terms of payment (For Foreign Purchase Orders)

Sl. No.	BHEL standard term	If you quote	Loading factor in % for non-compliance
1	100% against "SIGHT DRAFT" on presentation of dispatch documents to our Bankers (where both commissioning & PBG are not applicable).	Payment through Letter of Credit (LC) with bank charges to respective accounts	10 % x Percentage quoted through LC

2	90% against "SIGHT DRAFT" + 10% against PBG (where PBG only is applicable)	Payment through Letter of Credit (LC) with bank charges to respective accounts	10 % x Percentage quoted through LC
3	80% against "SIGHT DRAFT" + 10% after commissioning +10% against PBG (where both commissioning & PBG are applicable)	Payment through Letter of Credit (LC) with bank charges to respective accounts	10 % x Percentage quoted through LC

A(ii). For non compliance of standard Terms of payment (For Indigenous Purchase Orders)

Sl. No.	BHEL standard term	If you quote	Loading factor in % for non-compliance
1	100% payment with 30 days credit (where both commissioning & PBG are not applicable).	Payment through bank	10 % x percentage quoted through bank / proforma invoice
		Payment against proforma invoice	
2	90% basic payment + 100% taxes & duties with 30 days credit + 10% against PBG (where PBG only is applicable)	Payment through bank	10 % x percentage quoted through bank / proforma invoice
		Payment against proforma invoice	
		100% with 30 days credit & against submission of PBG	Nil
3	80% basic payment + 100% taxes & duties with 30 days credit + 10% after commissioning +10% against PBG (where both commissioning & PBG are applicable)	Payment through bank	10 % x percentage quoted through bank / proforma invoice
		Payment against proforma invoice	
		100% with 30 days credit after commissioning & submission of PBG	Nil

B. For non compliance of Penalty clause for delayed delivery:

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	Penalty of 0.5% per week subject to max. of 10% on the basic value of the items not supplied /delayed	Not agreed.	10 %
		5% max., agreed.	5%
		Other than the above.	10% - (minus) agreed max. %

C. For non compliance of Performance Bank Guarantee (PBG):

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	PBG for 10% of the basic material cost shall be furnished in the BHEL prescribed format.	Not agreed.	10 %
		5% agreed.	5 %
		Other than the above.	10% - (minus) agreed max. %

D. For non conformance to delivery requirement indicated in the RFQ:

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	Delivery requirement as indicated in the RFQ in number of weeks from the date of issue of PO	Not agreed for the stipulated delivery in the RFQ	0.5 % per week up to max., of 10% for the difference in delivery period

E. For non compliance of Warranty:

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	18 months from the date of dispatch or 12 months from the date of commissioning whichever is earlier or as indicated in the RFQ	Not agreed.	6%
		Less than 12 months or as indicated in the RFQ	0.5 % per month for the difference in period

F (i) For Non- agreement on delivery at BHEL-EDN (For Foreign Purchase Orders):

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	FOB / CIF to nearest international Airport/Seaport	Not agreed for the standard term of delivery	10 %

F(ii) For Non- agreement on delivery at BHEL-EDN (For Indigenous Purchase Orders):

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	Ex-EDN/BHEL, Bangalore (Free delivery to EDN/BHEL Bangalore including freight, packing & forwarding charges)	Not agreed for the standard term of delivery	10 %

ANNEXURE - A

COMMERCIAL TERMS (to be enclosed with TECHNO-COMMERCIAL BID)
(for Foreign Purchase Orders)

Sl. No.	Particulars	Bidder's confirmation
1	Price basis: Firm i.e., from the date of PO to completion of supply [Price Variation Clause (PVC) not acceptable]	Acceptable / Not acceptable
2	Terms of Payment: Against "SIGHT DRAFT" on presentation of documents to our bankers. (a) 100% is payable on negotiation of complete set of original documents (where commissioning & PBG are not applicable) (b) 90 % is payable on negotiation of complete set of original documents & balance 10% against submission of PBG (where PBG only is applicable). (c) 80 % is payable on negotiation of complete set of original documents, 10% after commissioning & balance 10% against submission of PBG (where both Commissioning & PBG are applicable). (d) Deviation if any please specify Note: Refer clause 14 (a) above	(a) Acceptable / Not acceptable (b) Acceptable / Not acceptable (c) Acceptable / Not acceptable
3	BHEL's penalty clause: (a) Delay in delivery as per PO delivery date will result in penalty of 0.5 % per week subject to maximum of 10% on the value of the items not vendor/delayed. (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
4	Performance Bank guarantee: PBG for 10% of the basic material cost shall be furnished in the BHEL prescribed format as detailed in clause 17.	Yes / No
5	Terms of delivery: (a) F.O.B international Airport/Seaport as per clause 19 (a) (Indicate name of International Airport/Seaport) (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
6	Warranty: (a) 18 months from the date of dispatch or 12 months from the date of commissioning (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
7	Delivery period: Indicate number of weeks from the date of issue of Purchase order	_____Weeks
8	Validity: (a) Quotation should remain valid for a period of 90 days from the due date (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
9	Bank charges (If applicable): (a) Bank charges within India is to BHEL account and outside India is to Vendor's account (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
10	Weight and Dimension of consignment with packing	Furnished / To be furnished

Signature of tenderer / with seal

ANNEXURE - B
COMMERCIAL TERMS (to be enclosed with TECHNO-COMMERCIAL BID)
(For Indigenous Purchase Orders)

Sl. No.	Particulars	Bidder's confirmation
1	Price basis: Firm i.e., from the date of PO to completion of supply [Price Variation Clause (PVC) not acceptable]	Acceptable / Not acceptable
2	Excise duty: If applicable indicate %.	Applicable / Not applicable ED: _____%
3	Sale tax: If applicable indicate %	Applicable / Not applicable (a) VAT _____% (b) CST _____% against form C
4	Payment terms: (a) 100% payment with 30 days credit (where commissioning & PBG are not applicable) (b) 90 % basic payment + 100% taxes, duties & freight charges with 30 days credit & balance 10% against submission of PBG (where PBG only is applicable) (c) 80 % basic payment + 100% taxes, duties & freight charges with 30 days credit, 10% after commissioning & balance 10% against submission of PBG (where both commissioning & PBG are applicable) (d) Deviation if any please specify Note: As per clause 14 (b)	(a) Acceptable / Not acceptable (b) Acceptable / Not acceptable (c) Acceptable / Not acceptable (d)
5	BHEL's penalty clause: (a) Delay in delivery as per PO delivery date will result in penalty of 0.5 % per week subject to maximum of 10% on the basic value of the items not vendor/delayed. (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
6	Performance Bank guarantee (PBG): PBG for 10% of the basic material cost shall be furnished in the BHEL prescribed format as per clause 17.	Yes / No
7	Terms of delivery: (a) Ex EDN / BHEL, Bangalore (Free delivery to EDN/BHEL Bangalore including freight, packing & forwarding charges) (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
8	Warranty: (a) 18 months from the date of dispatch or 12 months from the date of commissioning (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
9	Delivery period: Indicate number of weeks from the date of issue of Purchase order	_____Weeks
10	Validity: (a) Quotation should remain valid for a period of 90 days from the due date (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
11	Bank charges (If applicable): (a) All Bank charges to vendor's account (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
12	Weight and Dimension of consignment with packing	Furnished / To be furnished

Signature of tenderer / with stamp

ANNEXURE - C

LIST OF INTERNATIONAL AIRPORTS

Sl. No	Country	Air Ports
1	Austria	Vienna, Linz, Graz
2	Australia	Sydney, Melbourne, Perth
3	Belgium	Antwerp, Brussels
4	Canada	Toronto, Montreal
5	China	Shangai
6	Cyprus	Lamaca
7	Czech Republic	Prague (Via Frankfurt)
8	Denmark	Copenhagen
9	Egypt	Cairo
10	Finland	Helsinki
11	France	Paris (Rossy), Lyon
12	Germany	Darmstadt, Manihem, Nurnberg, Hamburg, Stuttgart, Munich, Koln, Dusseldorf & Hannover, Frankfurt, Berlin
13	Hongkong	Hongkong
14	Italy	Rome, Milan, Turin, Bologna, Florence
15	Ireland	Dublin
16	Israel	Telaviv
17	Japan	Tokyo, Osaka
18	Malaysia	Kaulalampur, Penang
19	Netherlands	Amsterdam, Rotterdam
20	Newzealand	Auckland
21	Norway	Oslo
22	Oman	Muscat
23	Philippines	Manila
24	Romania	Bucharest
25	Russia	Moscow
26	Saudi Arabia	Riyad
27	Singapore	Singapore
28	Slovakia	Bartislawa
29	South Africa	Johannesburg, Durban
30	South Korea	Kimpo
31	Spain	Barcelona
32	Sweden	Stockholm, Gothenburg, Milano
33	Switzerland	Basle, Zurich, Geneva
34	Taiwan	Taipei
35	U.A.E.	Dubai
36	U.K.	Landon (Heathrow), Newcastle, Oxford, Cheltham, Bristol, Wellingborough, Birmingham, East Midland, Manchester, Leeds, Glasgow.
37	U.S.A.	Newyork, Chicago, Sanfrancisco, Los Angeles, Atlanta
38	Ukraine	Kiev

ANNEXURE-D

BHEL EDN APPROVED TRANSPORTERS FOR INLAND ROAD TRANSPORTATION

1. M/s Awagaman Road Carriers Ltd., Bangalore. (AWG)
2. M/s BLR India pvt., Ltd., Bangalore. (BLR)
3. M/s Delhi Assam Roadways corporation Ltd., Bangalore. (DRL)
4. M/s Indo Arya Central transport Ltd., Bangalore. (IACT)
5. M/s Prakash parcel Services, Bangalore. (PPS)
6. M/s Road Carrier of India, Bangalore. (RCI)
7. M/s Union Roadways Ltd., Bangalore. (URL)

ANNEXURE-E**PERFORMANCE BANK GUARANTEE
(FOR FOREIGN PURCHASE ORDERS)****BANK NAME AND ADDRESS**

Bharat Heavy Electricals Limited (BHEL),
Electronics Division,
PB No. 2606,
Mysore Road,
BANGALORE- 560 026
INDIA

Dear Sir,

Ref: CONTRACT PERFORMANCE GUARANTEE.

WHEREAS you have entered into a contract reference No PO NO. _____ with M/s _____ having its registered office at _____ for the supply of _____ as detailed in your purchase order No. _____ which is hereinafter referred to as "the said contract" and WHEREAS M/s _____ has undertaken to produce a Bank Guarantee for 10% (Ten Percent) of _____ the contract price amounting _____ to _____ (_____) to secure its obligations to Electronics Division, BHEL having its registered office at New Delhi for the performance of the contract including the warranty of the equipment supplied, We _____ Bank _____ hereby expressly, irrevocably and unreservedly undertake and guarantee as principal obligors on behalf of M/s _____ that in the event Bharat Heavy Electricals Ltd. (B.H.E.L.) declares to us in writing that M/s _____ has not fulfilled any obligation according to the contractual obligation of the said contract, to pay you on demand and without demur to Bharat Heavy Electricals Ltd., Electronics Division , Mysore Road, P.B.No. 2606, Bangalore-560 026, India an amount of _____ (in words _____) subject to as may be determined below:

- 1) Notwithstanding any right M/s. _____ may have directly against you or _____ any disputes raised by M/s _____, Your written demand shall be conclusive evidence to us that repayment is due under the terms of the said contract and shall be binding on us.
- 2) We shall not be discharged or released from this undertaking and Guarantee by any arrangements, variations made between you and M/s. _____ with or without our consent and Knowledge or by any alterations in the obligations of M/s. _____ by any forbearance whether as to payment, time, performance or otherwise.
- 3) This guarantee shall remain valid until the end of twenty-four weeks after the close of the warranty period or until the same is reported by BHEL to us whichever is earlier.
- 4) We agree and undertake not to revoke this guarantee during its validity unless discharged in writing by you subject to the provision of clause (7) below.

- 5) This guarantee shall be a continuing guarantee subject to the foregoing and shall not be discharged by any change in the constitution of the Bank or M/s. _____.
- 6) This guarantee shall be governed by and constructed in accordance with the Laws of India.
- 7) At any time _____ Bank may render this guarantee null and void by paying to Bharat Heavy Electricals Ltd. the full amount being _____ (in _____ words _____)

For and on behalf of Bank
by its Authorised Signatory

Note:

- (1) To be executed in INR 100 Non-Judicial stamp paper by any authorized Indian Bank.
- (2) To be submitted directly by banker to concerned executive in purchase dept., Please give BHEL address to banker.
- (3) Do not enclose with Bank document.
- (4) Any Modification & omissions to this are not permitted

ANNEXURE - F**PERFORMANCE BANK GUARANTEE
(FOR INDIGENOUS PURCHASE ORDERS)**

THIS DEED OF GUARANTEE made and executed on the _____ day of _____ (year), by the _____ (Bank), registered under the Companies Act 1956/Nationalised Bank constituted under the Banking Companies (acquisition and transfer of undertakings) Act constituted under the State Bank of India Act / Subsidiary Banks Act, having its registered / head office at _____ represented herein by its Branch Manager / authorised representative Sri. _____ & Sri. _____ (Hereinafter called 'guarantor ' which term shall mean and include its successors and assigns)

IN FAVOUR OF BHARAT HEAVY ELECTRICALS LIMITED

_____ (Buyer's Name), a company registered under the companies Act, 1956 having its registered office at BHEL House at Siri Fort , New Delhi-100 049 and its Electronics Division at Mysore road, Bangalore-26 (hereinafter referred to as the 'Company' Which term shall include its successors and assigns):

Whereas the company has placed an order on _____ (State the name of the company / firm and its address) (hereinafter referred to as the 'Supplier' which term shall mean and include its liquidators, successors and assign) for the supply of system under order / Contract No _____ Dt _____.

AND WHEREAS the supplier has agreed to supply the materials and carryout the works as detailed and in accordance with the terms set out in the said order/contract.

AND WHEREAS the company is not required to pay to the supplier a sum of Rupees _____ being the 10% of the value of the goods supplied / Works performed / Services rendered under the said order / contract between the supplier and the company, till the company is satisfied with the mechanical Warranties and the performance standards stipulated in the said order / contract between the company and the supplier has been duly fulfilled, except against a Bank Guarantee for the said sum of Rs _____ in favour of the company by reputed Bank, in which case the company has agreed to make payment to the supplier of the said sum of Rupees _____ being (...%) of the value of the goods supplied / Works performed / Services rendered under the agreement between the supplier and the company and the Guarantor has at the request of the supplier, agreed to furnish this Guarantee subject to the terms and conditions stated below:

NOW THIS DEED WITNESSES THAT IN pursuance of the above said agreement, the guarantor hereby agrees and covenants With company is as follows :-

- 1) That during the period this contract of Guarantee remains effectual, the guarantor shall be liable in respect of the amount due and owing to the company in respect of the payments to the extent of Rs _____ (in words) _____ against any loss or damage caused to or suffered by the company by reasons of any breach of the terms of the said order / contract / Agreement by the supplier.
- 2) The Guarantor hereby undertakes to pay the amounts due and payable under this guarantee without any demur, merely on demand from the company intimating that the amount claimed is due by way of loss or damage caused to or suffered or would be caused or suffered by the supplier of any terms contained in the said order / contract. Any such demand made on the guarantor shall be conclusive as regards the amount due and payable by the Guarantor irrespective of the fact whether the Contractor / supplier admits or denies.

- 3) The Guarantor further agrees that the agreement herein contained shall remain in force and effect till all the supplies to be made / Works to be performed / Services to be rendered under the said order / contract / agreement are completed to the entire satisfaction of the company or till company certifies that the terms and conditions of the said order / contract / agreement have been fully and properly carried out by the said supplier and accordingly discharges the Guarantee. Unless a demand or claim under this guarantee is made on the guarantor in writing on or before the expiry of claim period indicated in clause 6 below , the guarantor shall be discharged from all the liability under this guarantee thereafter.
- 4) The guarantor further agrees with the company that the company shall have the fullest liberty without the consent of the guarantor and without effecting in any manner the obligations of the guarantor hereunder to vary any of the terms of the said order / contract / agreement or extend the time of performance by the said supplier from time to time or refrain from exercising the power exercisable by the company against the said supplier or to forebear or omit to enforce any of the terms and conditions relating to the said order / contract / agreement, and the guarantor shall not be relieved of its liability in whole or in part , by reason of any act, commission or forbearance on the part of the company or by reason of any such variation, or extension being granted to the said supplier or by reason of any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving the guarantor.
- 5) The guarantor undertakes not to revoke this guarantee during its currency except with the previous consent of the company in writing.
- 6) Notwithstanding anything herein above contained, the liability of the guarantor under these presents is restricted to Rs_____. The guarantee shall be in force till its expiry on _____ unless a demand is made on the guarantor within SIX months from the date of expiry, all the liability of the guarantor under this guarantee shall stand fully discharged. The decision of the claimant in regard to breach of contract is final and binding on the Bank.

IN WITNESS whereof, the guarantor, acting through it authorised representative has executed this deed of Guarantee on the day, month and year first above written.

(Seal of the Bank to be affixed)

WITNESS

1.

2.

ANNEXURE - G**BHEL MEMBER BANKS (CONSORTIUM BANKS)**

PBG SHALL BE ISSUED FROM THE FOLLOWING BANKS OR THEIR BRANCH OFFICES ONLY

Sl. No.	Bank name
1	State Bank of India
2	Canara Bank
3	Punjab National Bank
4	Bank of Baroda
5	State Bank of Hyderabad
6	Corporation Bank
7	Syndicate Bank
8	State Bank of Travancore
9	ABN Amro Bank N.V.
10	Deutsche Bank AG
11	HDFC Bank Ltd.
12	CITI Bank N.A.
13	Standard Chartered Bank
14	ICICI Bank Ltd.
15	IDBI Bank Ltd.
16	HSBC Ltd.
17	Kotak Mahindra Bank Ltd.
18	Indian Bank
19	Oriental bank of Commerce
20	UCO Bank
21	Central Bank of India
22	The Federal Bank Ltd.
