



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY	Phone: +91 431 257 79 38 Fax : +91 431 252 07 19 Email : tvenkat@bheltry.co.in Web : www.bhel.com
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	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
	2620800061	18.07.2008	19.08.2008

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order

Item	Description	Quantity	Delivery (Item required at BHEL on)
10	Centreless Grinding Machine as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	1 No.	30.10.2009

BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats along with technical specifications can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference “2620800061”.

Tenders should reach us before 14:00 hours on the due date
Tenders will be opened at 14:30 hours on the due date
Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

Manager / Capital Equipment / MM

PART A**CENTERLESS GRINDING MACHINE****SECTION – I : QUALIFYING CRITERIA**

The BIDDER has to compulsorily meet the following requirements to get qualified for considering the technical offer for the CENTERLESS GRINDING MACHINE.

S. No.	REQUIREMENTS	Vendor's Response
1	<p>Only those vendors (OEMs), who have supplied and commissioned at least one CENTERLESS GRINDING MACHINE with</p> <p>1. Grinding Spindle power of 20KW or more and</p> <p>2. Grinding diameter range not less than 80 mm in the past ten years and such machine should be working satisfactorily for a minimum period of one year after commissioning, as on the date of opening of this Tender are eligible to quote.</p> <p><i>(However, if such machine is already supplied to BHEL, then that machine should be working satisfactorily for a minimum period of six months after commissioning, as on the date of opening of this Tender.)</i></p>	
The vendor should submit the following information where similar machine has been supplied, for qualification of this offer.		
1.1	Name and postal address of the customer or company where similar machine is installed.	
1.2	Name and designation of the contact person of the customer.	
1.3	Phone, FAX no and email address of the contact person of the customer.	
1.4	Month and Year of commissioning of the machine.	
1.5	Parameters of machine supplied, viz. Wheel size, Grinding diameter range, Spindle power and the application for which the machine is supplied.	

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1.6	Along with the Technical offer, the Vendor should submit one Performance certificate from the customer for the satisfactory performance of the machine supplied to them. For obtaining the Performance certificate, a suggestive format is provided in SECTION – IV .	
2.0	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	

SECTION – II

The BIDDER / VENDOR is requested to provide the following information:

S. No.	REQUIREMENTS	Vendor's Response
3.0	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where CENTERLESS GRINDING MACHINES have been supplied in the past.	
4.0	Details of CENTERLESS GRINDING MACHINES supplied to other BHEL units, if any. (Year of commissioning, Wheel size, Grinding diameter range, Spindle power).	
5.0	Details on SERVICE-AFTER-SALES Set-Up in India including the Address of Agents / Service Centers in South India.	
6.0	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

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SECTION – III

The BIDDER to note:

S. No.	PARTICULARS	Vendor's Response
7.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS. 1. Technical Offer [with PART A & PART B] and Commercial offer. 2. Price Bid.	
8.0	The Technical Offer shall contain a comparative statement of Technical Specifications demanded by BHEL and Offer Details submitted by the Bidder , against each clause. A just 'CONFIRMED' or 'COMPLIED' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	
9.0	The Technical Offer shall be supported by product Catalogues & Data Sheets and also technical details of Bought-Out-Items with copies of Product Catalogue to the extent possible.	
10.0	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation.	

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SECTION – IV

The performance certificate should be produced **on Customer's Letter Head.**

PERFORMANCE CERTIFICATE

1. Supplier of the machine			
2. Make & Model of the M/C			
3. Month & Year of Commissioning			
4. Application for which M/C is used			
5	a) Wheel Size b) Grinding diameter range c) Spindle Power		
6. Performance of the Equipment (Tick whichever is applicable)		Best in the market	
		Satisfactory	
		Good	
		Average	
		Not Satisfactory	
7. Any Other remarks			
<div style="text-align: right;"> Signature & Seal of the Authority Issuing the Performance Certificate </div> <div>Date:</div>			

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Clause	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
2.0	SPECIFICATION OF MACHINE:	
2.1	<p>CONFIGURATION:</p> <p>1. The machine shall have a grinding wheel head and a regulating wheel head with all necessary adjustments and controls meant for center-less grinding operation.</p> <p>2. The protection covers of both wheel heads shall be of hinged type and preferably top opening type in order to facilitate easy mounting and dismantling of wheels from top by using overhead crane.</p> <p>3. The machine shall also have stands with rollers on both inlet and exit sides of grinding wheel to axially guide and feed the long tube of max length 13 meters. The Height of guide rollers must be adjustable to bring central axis of various size tubes (Dia range 30 to 80 mm) at the same level as that of Grinding wheel center. The material of the guide rollers shall be of suitable nonmetallic material to avoid scratches on the tube surface.</p> <p>4. The inlet stand shall have traveling type Motorized arrangement which will uniformly push the long tube from the rear end of the tube at designed feed rate for through feed grinding. The arrangement shall also have rapid reverse travel to take back the motor unit to entrance point of the inlet stand. The arrangement shall simultaneously rotate the tube while through feed grinding is on. The selection of motor power should be sufficient to handle long feed tube weighing about 150 Kg. The controls for forward, stop and reverse feeds shall be provided.</p> <p>5. The machine shall also have all standard accessories like wheel dressing units, hydraulic system, coolant system, lubrication system, splash guard, etc and other controls meant for center less grinding machine.</p>	Vendor to confirm

Clause	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
2.2	CONSTRUCTION:	
2.2.1	Machine should be Metric execution.	Vendor to confirm
2.3	GRINDING WHEEL HEAD:	
2.3.1	Grinding wheel size in mm: (Dia x Bore x Width)= 500 x305 x 200	Vendor to specify
2.3.2	Regulating wheel size in mm: (Dia x Bore x Width) = 300 x127 x 200	Vendor to specify
2.3.3	Grinding wheel head adjustment:	95mm
2.3.4	Grinding wheel Spindle drive power: (AC Continuous Rating-S1): Around 22 KW	Vendor to specify
2.3.5	Regulating wheel Spindle drive power: (AC Continuous Rating-S1):	Vendor to specify
2.4	MAIN PARAMETERS:	
2.4.1	Grinding diameter range of O.D	6 mm to100 mm
2.4.2	Max. Grinding length in infeed grinding	195 mm
2.4.3	Max. Grinding length in through feed (With Bar/ Tube feeding arrangement. Arrangement elaborated in point No.3 & 4 of clause No 2.1	13000 mm
2.5	FUNCTIONAL DATA:	
2.5.1	Spindle Speed of grinding wheel: Min 1250 rpm (Shall be adjustable upward to maintain constant surface speed of minimum 30 Meters/sec to compensate for wheel wear)	Vendor to specify
2.5.2	Spindle Speed of regulating wheel: 20 to 200 rpm (Infinitely variable)	Vendor to specify
2.5.3	Regulating Wheel Dressing speed:	Vendor to specify
2.5.4	Rapid traverse of Grinding wheel (by inching) = 4 mm/ sec Rapid traverse of Regulating wheel (by inching)	Vendor to specify Vendor to specify

Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
2.5.5	Minimum adjustment of Grinding wheel head (By push button)	0.001 mm	
2.5.6	Cutting feed stroke adjustable for infeed cycle: 0.1 to 2 mm	Vendor to specify	
2.5.7	Cutting feed rate adjustable for infeed cycle: 0.01 to 0.08 mm/sec	Vendor to specify	
2.5.8	Sparking out period adjustable for infeed cycle: 0.6 to 30 sec	Vendor to specify	
2.5.9	Regulating wheel head adjustment Towards Work-rest blade	Vendor to specify	
2.5.10	Regulating wheel head adjustment Along work rest blade.	Vendor to specify	
2.5.11	Swivel of regulating wheel for through feed grinding	+ 6° to –2°	
2.5.12	Swivel of regulating wheel for taper grinding	+ 4° to –2°	
2.5.13	Vertical adjustment of work rest blade: (The work rest blade holder shall preferably be covered to protect the moving elements from grinding dust+ coolant paste).	Vendor to specify Vendor to confirm	
2.5.14	Floor to Spindle center height	Vendor to specify	
2.6	STANDARD ACCESSORIES:		
2.6.1	Grinding wheel: A 60L5V or equivalent	2 Nos	
2.6.2	Regulating wheel: A120R1R or equivalent	2 Nos	
2.6.3	Balancing mandrel for Grinding wheel	1 No	
2.6.4	Pull-off screw for Grinding wheel	1 No	
2.6.5	Pull-off screw for Regulating wheel	1 No	
2.6.6	Flange for grinding wheel with balancing weights	1 No	
2.6.7	Flange for Regulating wheel with balancing weights	1 No	
2.6.8	Replacement pulley for worn out Grinding wheel	1 No	
2.6.9	Height setting gauge for work rest blade	1 No	
2.6.10	Dial gauge (0.001 mm least count)	1 No	
2.6.11	Dial gauge (0.010 mm least count)	1 No	
2.6.12	Hook for lifting grinding wheel	1 No	
2.6.13	Work-rest blade for in feed grinding 6 to 63 mm	1 set	

Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
2.6.14	Work rest blade for through feed grinding 6 to 63 mm.	1 set	
2.6.15	Wheel dressing unit (Grinding wheel)	1 No	
2.6.16	Wheel dressing unit (Regulating wheel)	1 No	
2.7	SPECIAL ACCESSORIES		
2.7.1	Device (complete) for Wheel Balancing	1 No	
2.7.2	Lifting equipment for grinding wheel	1 No	
2.7.3	Motorized long bar / Tube feeder: for job diameter range of 30 to 80 mm and job length of 13000 mm as explained in point No. 3 & 4 of clause No. 2.1	1 No	
2.7.4	Work rest blade for in feed grinding For dia 6 to 12 mm For dia 12 to 63 mm	Each 1 No	
2.7.5	Work rest blade for through feed grinding For dia 6 to 12 mm For dia 12 to 63 mm	Each 1 No	
2.7.6	Carbide tipped work rest blade for in feed grinding For dia 6 to 12 mm For dia 12 to 63 mm	Each 1 No	
2.7.7	Carbide tipped work rest blade for through feed grinding For dia 6 to 12 mm For dia 12 to 63 mm	Each 1 No	
2.8	Collection tray: A collection tray shall be supplied to collect about 25 small ground pins of Dia20 mm and length less than 200 mm. This tray shall be placed at a suitable location so that it does not disturb the flow of feed pipes while through feed grinding or it shall be detachable.	1 No.	

Clause	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
2.9	OPERATION AND CONTROL SYSTEM:	
2.9.1	OPERATOR'S PANEL: Preferably Swiveling type operator's panel having complete machine control knobs/buttons/keys shall be provided at a suitable location, ergonomically. All switches on the Operator's panel shall be convenient for safe operation. All displays/indications should also be conveniently placed accordingly.	Vendor to confirm
2.10	MACHINE LIGHTS:	
2.10.1	Machine Lights for sufficient illumination of complete working area should be provided for clear visibility.	Vendor to confirm
2.10.2	A magnetic base portable spotlight with sufficiently long cable should also be provided.	Vendor to confirm
2.10.3	All light fittings, consumables, adapters/receptacles should have compatibility with Indian equivalents	Vendor to confirm
2.10.4	Voltage shall be 24V for the hand lamp	Vendor to confirm
2.11	HYDRAULIC SYSTEM:	
2.11.1	Make: Rexroth / Vickers Sperry or any other reputed make acceptable to BHEL.	Vendor to confirm
2.11.2	Hydraulic system should be centralized. Hydraulic Tank shall preferably be located at floor level All hydraulic pipelines to be neatly laid out. (Details should be furnished at contract stage)	Vendor to confirm
2.11.3	Hydraulic circuits shall be designed with minimum number of control valves and to suit oil of ISO VG 46 or 68 only. Also minimum number of check- points to be provided wherever pressure is required to be measured for setting and trouble shooting. MINIMESS Pressure Gauge - 1 No with Connecting Hose to be provided.	Vendor to confirm

Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
2.11.4	The control voltage for all solenoid operated valves shall be 24V DC	Vendor to confirm	
2.11.5	Filtration System:	Vendor to specify	
2.11.6	Failure indication:	Vendor to specify	
2.11.7	Automatic shut off provision.	Vendor to specify	
2.11.8	Refrigerated type cooling system of sufficient capacity to maintain complete Hydraulic System, including lubrication oil, hydraulic oil and gearbox oil, etc. at a temperature not exceeding 50 °C irrespective of the ambient conditions. Vendor should submit complete details.	Vendor to specify	
2.11.9	Hydraulic pump capacity (flow / pressure):	Vendor to specify	
2.11.10	Each pump should have an independent motor.	Vendor to confirm	
2.11.11	First filling of all required Oils & Grease etc. Should be supplied by vendor. Oil grade: ISO VG46 or 68 Grease: Servo gem grade 2 (preferred.) Indigenous (Indian) source or Indian equivalent and specifications of oils/ greases are also to be provided by the vendor.	Vendor to specify	
2.12	COOLANT SYSTEM:		
2.12.1	Type: Re-circulating type Flood Coolant System with all accessories.	Vendor to confirm	
2.12.2	Coolant Pressure to be furnished	Vendor to specify	
2.12.3	Coolant flow rate to be furnished	Vendor to specify	
2.12.4	Coolant collection and re-circulation system should be leak proof to avoid spillage on shop floor.	Vendor to confirm	
2.12.5	Coolant Filtration System: Re-circulating type with suitable magnetic filtration system. Vendor shall give details of offered filtration unit.	Vendor to furnish	

Clause	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
2.12.6	Coolant flow diagram showing filters, pumps, valves, tanks etc. to be submitted with the offer.	Vendor to submit
2.12.7	Coolant Tank Capacity:	Vendor to specify
2.12.8	Coolant pump & motor details:	Vendor to specify
2.12.9	The coolant tank should be fitted with skimmer for regular cleaning of coolant from contamination with tramp oil.	Vendor to Confirm
2.12.10	Splash Guard with transparent windows should be provided to view progress of grinding and to avoid splash of Coolant.	Vendor to specify
2.13	ELECTRICAL:	
2.13.1	415V \pm 10%, 50 HZ \pm 3 HZ, 3 Phase AC (3 wire system with out neutral) Power Supply 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 the same could be incorporated during construction of foundation	Vendor to Confirm
2.14	Tropicalisation: All electrical / electronic equipment shall be tropicalized.	Vendor to Confirm
2.14.1	All electrical & electronic control cabinets & panels should be dust and vermin proof and shall have IP 54 protection.	Vendor to Confirm
2.14.2	All electrical components in the cabinets should be mounted on DIN Rail	Vendor to Confirm

Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
2.14.3	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	
2.14.4	Motors shall conform to IEC or Indian Standards	Vendor to Confirm	
2.14.5	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.	Vendor to Confirm	
2.14.6	Vendor should ensure proper earthing for the machine and its peripherals.	Vendor to Confirm	
2.15	SAFETY ARRANGEMENTS:		
2.15.1	Machine should have adequate and reliable safety interlocks or devices to avoid damage to the machine, work piece and the operator due to the malfunctioning or mistakes.	Vendor to Confirm	
2.15.2	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.		
2.15.3	All rotating parts of the machine should be statically & dynamically balanced to avoid undue vibrations.	Vendor to Confirm	
2.15.4	Emergency Switches at suitable locations as per International Norms should be provided.	Vendor to Confirm	
2.15.5	Oil & water lines should not run with electrical cable in the same tray / trench.	Vendor to Confirm	
2.16	ENVIRONMENTAL PERFORMANCE OF THE MACHINE:		
2.16.1	Maximum noise level shall not exceed 85 dB(A) at normal load condition, 1 meter away from the machine.	Vendor to Confirm	

Clause	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
2.16.2	There shall not be any emissions from the machine except fumes of cutting fluid during machining.	Vendor to Confirm
2.16.3	If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.	Vendor to Confirm
2.16.4	Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.	Vendor to Confirm
3.0	COMPRESSED AIR POINTS:	
3.1	Compressed air at 60 to 70 psi will be made available at one point. The vendor shall indicate the inlet point for compressed air in the layout drawing of the machine.	Vendor to Confirm
4.0	LEVELING & ANCHORING SYSTEM	
4.1	Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc should be supplied.	Vendor to confirm
5.0	TOOLS FOR OPERATION & MAINTENANCE	
5.1	Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc for operation and maintenance of the machine should be supplied. List of such tools should be submitted with offer.	Vendor to confirm Vendor to submit
6	SPARES:	
6.1	<p>1) The Vendor shall recommend and submit list of spares required for the machine for two years of trouble free operation on three shifts /day basis under two headings as</p> <p style="padding-left: 40px;">a) Mechanical & hydraulic spares and</p> <p style="padding-left: 40px;">b) Electrical & electronic spares.</p> <p>The list shall generally include the following items.</p> <p>a) Mechanical & Hydraulic Spares: All types of pumps, All types of Valves, All types of pressure switches / transducers, All types of filters, All types of seals</p> <p>b) Electrical & Electronic Spares: All types of Relays,</p>	Vendor to Submit

	<p>Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch, I/O Cards for PLC, & Control Cards for Main Drive as well as Feed Drives etc.</p> <p>c) Un-priced list of spares with quantities, specified at a&b above, should be submitted with this technical offer.</p> <p>d) Unit Price of each item figuring in c shall be submitted with the price bid.</p>		
Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
6.2	All types of spares for the total machine and its accessories should be available for minimum ten years, after supply of the machine. If any spares or controls are likely to become obsolete within this period, the vendor should inform BHEL and provide details of it's suppliers to enable BHEL to procure them in advance.	Vendor to Confirm	
6.3	In case of ordering, a complete list of spares for the machine and its accessories along with spares specification / type / model, and name & address of the spare supplier shall be submitted along with documentation while supplying the machine.	Vendor to confirm	
7.0	DOCUMENTATION:		
7.1	3 sets of following documents (3 Hard copies) in English language should be supplied along with the machine	Vendor to confirm	
7.2	Operating manuals of Machine	Vendor to confirm	
7.3	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Pneumatic/ Coolant / Hydraulic circuit diagrams.	Vendor to confirm	
7.4	Commissioning manuals for spindle & feed drives.	Vendor to confirm	
7.5	Catalogues / O&M Manuals of all bought out items.	Vendor to confirm	

Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
7.6	Detailed specification of all rubber items and hydraulic/lube fittings	Vendor to confirm	
7.7	Bearings: Make& Specification of all bearings in the machine.	Vendor to Specify	
7.8	PLC hardware, software manual	Vendor to confirm	
7.9	PLC I ,/O, flag details	Vendor to confirm	
7.10	PLC Ladder diagram & Statement list with comments in English.	Vendor to confirm	
7.11	PLC data on CD	Vendor to confirm	
7.12	The vendor shall submit complete Master List of parts used in the machine.	Vendor to Submit	
7.13	One additional set of all the above documentation on CD ROM, wherever possible.	Vendor to confirm	
8.0	TRAINING:		
8.1	The Vendor shall train Two BHEL Engineers in Operation and Maintenance (Mechanical, Electrical/ Electronics) of the Machine at Vendor's works for a period not exceeding 5 working days.	Vendor to confirm	
8.2	Airfare, boarding & lodging for the BHEL Engineers shall be borne by BHEL		
8.3	The Vendor shall impart training to BHEL's Machine Operators and Maintenance crew in Operation and Maintenance after the commissioning of the Machine at BHEL works for not less than 6 working days	Vendor to confirm	
8.4	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel	Vendor to confirm	
8.5	Vendor to quote on the basis of per man per day for the training at vendor's works.	Vendor to specify	

Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
9.0	FOUNDATION:		
9.1	Vendor shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of Letter of Intent (LOI). Vendor shall submit complete foundation details including static and dynamic loads within three months after getting BHEL's approval. The layout should consist of all requirements pertaining to complete machine including space requirement & other accessories. BHEL shall construct complete foundation for the machine.	Vendor to confirm	
9.2	The Vendor shall indicate detailed specifications of grouting compound and Grouting procedure etc. for foundation bolts of the machine.	Vendor to Specify	
10.0	ERECTION & COMMISSIONING		
10.1	<p>1. Supplier to take full responsibility for supervision of the erection. Start up, testing of machine, it's control system & all types of other supplied equipment, machining of test pieces etc. are the responsibility of the supplier.</p> <p>2. 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.</p> <p>3. Other requirements like crane and helping personnel shall also be provided by BHEL, free of cost.</p>	Vendor to confirm	
10.2	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, mentioned under clause (Machine Acceptance) shall form part of the commissioning activity.	Vendor to confirm	
10.3	Tools, Tackles, instruments and other necessary equipments should be brought by the supplier to carry out erection and commissioning.	Vendor to confirm	

Clause	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER With Technical details
10.4	The supplier shall arrange commissioning spares required for commissioning of the machine.	Vendor to confirm
10.5	Portion, if any, of the machine, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colors of paint used.	Vendor to confirm
10.6	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to confirm
10.7	Duration, terms & conditions for E&C should be furnished with this technical offer in detail. Charges for the same shall be submitted with the price bid.	Vendor to confirm
11.0	ACCURACY TESTS:	
11.1	GEOMETRICAL ACCURACY:	
11.1.1	Geometrical Accuracy Tests shall be in accordance with ISO 3875 standard or equivalent applicable standard. Detailed Test Charts for the same, clearly showing the accuracies to be achieved on the machine, shall also be submitted with the offer.	Vendor to confirm
11.1.2	All the above accuracies to be demonstrated to BHEL engineers during pre-acceptance tests at Suppliers works and during Erection & Commissioning at BHEL Works.	Vendor to confirm
12.0	AMBIENT CONDITIONS & THERMAL STABILITY:	
12.1	Power Supply : AC 415 V \pm 10% Frequency : 50 Hz \pm 3HZ Phases : 3 phase 3 wire system Compressed air supply: 60-70 psi Ambient Temperature: max 45 °C	Vendor to confirm

	discussed by vendor during initial technical discussions.		
Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
14.0	MACHINE ACCEPTANCE: (Tests/Activities should be Performed by Vendor)		
14.1	Tests/Activities should be carried out at supplier's works on the machine before dispatch:		
14.1.1	Geometrical accuracies as per test chart.	Vendor to confirm	
14.1.2	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 restarting.	Vendor to confirm	
14.1.3	Demonstration of all features of the machine, control system & accessories.	Vendor to confirm	
14.1.4	The vendor has to arrange as test piece, 2 Tubes of suitable diameter and length not less than 2 meters each for inspection of through feed grinding at vendor works. The vendor has also to arrange 5 sizes of different diameter pins (range 10 to 50 mm) with length (range 100 to 180 mm each) for proving in feed grinding at vendor works.	Vendor to confirm	
14.2	Tests/Activities should be carried out at BHEL works while commissioning the machine:		
14.2.1	Geometrical accuracies as per test chart.	Vendor to confirm	
14.2.2	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 restarting.	Vendor to confirm	
14.2.3	Demonstration of all features of the machine, control system & accessories to the satisfaction of BHEL for efficient and effective use of the machine	Vendor to confirm	
14.2.4	Prove-out machining with BHEL components.	Vendor to confirm	

Clause	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER With Technical details
15.0	PACKING		
15.1	Sea worthy & rigid packing for all items of complete machine, all Accessories and other supplied items to avoid any damage/loss in transit. When machine is dispatched in containers, all small loose items shall be suitably packed in boxes.	Vendor to specify	
16.0	GUARANTEE		
16.1	24 months from the date of acceptance of the machine at BHEL.	Vendor to confirm	
17.0	GENERAL		
17.1	Machine Model:	Vendor to specify	
17.2	Total connected load (KVA): Vendor to specify	Vendor to specify	
17.3	Floor area required (Length, Width, Height) for complete machine & accessories: Vendor to specify.	Vendor to specify	
17.4	Painting of Machine / Electrical Panels: RAL 6011 Apple Green (Polyurethane Paint)	Vendor to specify	
17.5	Total weight of the machine: Vendor to specify	Vendor to specify	
17.6	Weight of heaviest part of machine: Vendor to specify	Vendor to specify	
17.7	Weight of the heaviest assembly / sub-assembly of the Machine: Vendor to specify	Vendor to specify	
17.8	Dimensions of largest part/ sub-assembly/ assembly of the machine: Vendor to specify	Vendor to specify	

ANNEXURE - I**Prove out Job details for CENTERLESS GRINDING**

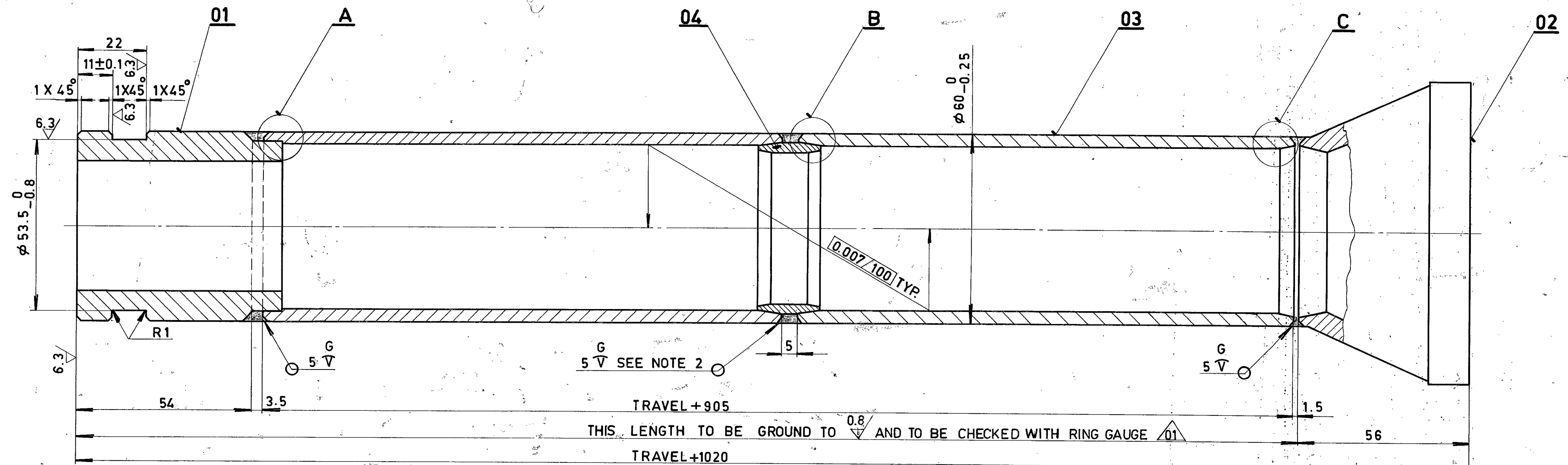
Sl. No	Drawing Title	Drawing No.	Prove out Qty	Operation
1	Feed Pipe Assy Dia 60.3 x 4 mm	2-20-051-00250 rev 01	2	Grinding Dia 60 ^{+0, -0.25} 13000 mm long
2	Feed Tube Assy	3-20-831-00489 rev 02	2	Grinding Dia 47.5 ^{+0, -0.13} 1700 mm long
3	Idler Shaft	4-20-831-00871 rev 02	5	Grinding Dia 19 g6 95 mm long
4	Roller Pin	4-20-831-00873 rev 02	5	Grinding Dia 8 d11 34 mm long

Note: The grinding allowance available for grinding will be in the order of 0.6 to 0.8 mm on diameter for the feed pipe Assy / feed tube Assy.

05Z00-150-02-Z

DRAWING NO.

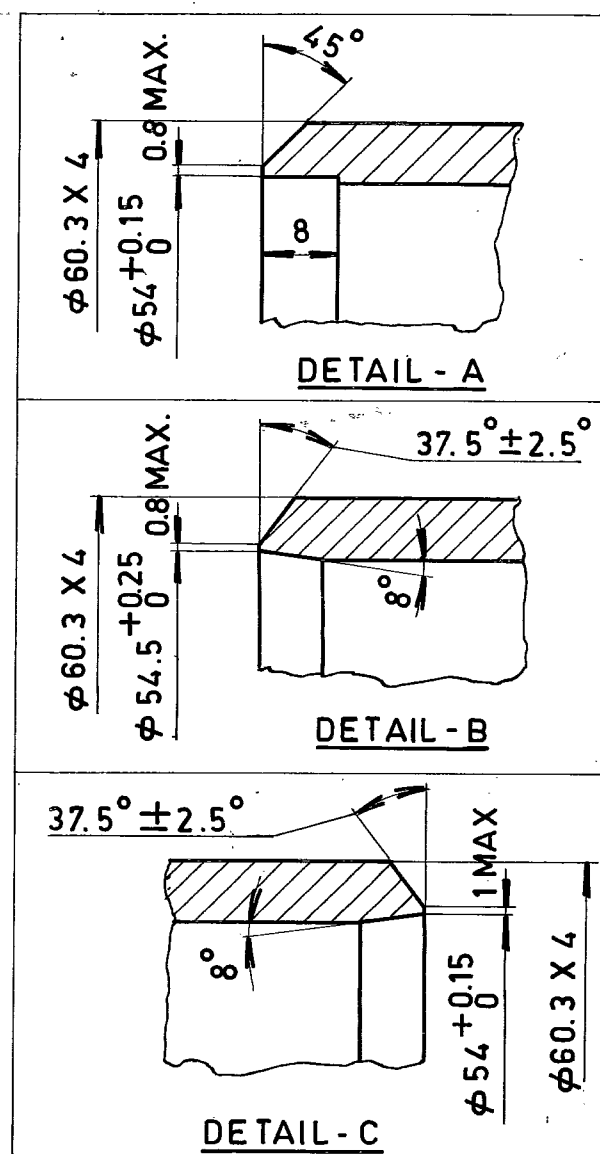
12.5/ (0.8/ 6.3/)



SL. NO.	TYPE OF WELD	TYPE OF ELECTRODE	LENGTH OF/NO OF WELD	ITEMS WELDED	REMARKS
01	G 5V	E 347	1	01 & 03	CERTIFIED
02	G 5V	E 309	1	02 & 03	CERTIFIED
03	G 5V	E 347	1	03 & 04	CERTIFIED

NOTES:-

- REFER DRAWING NO. 3-20-051-00671 FOR ITEM NO.03 BILL OF MATERIAL
- WHEN IT IS NECESSARY TO FABRICATE THE FEED PIPE FROM MORE THAN ONE PIECE THEN ONLY ITEM NO. 04 IS REQUIRED
- ALL WELDS ARE TO BE DONE BY CERTIFIED WELDERS
- ROOT WELDS ARE TO BE DONE BY TIG FOR FURTHER MANUAL ARC WELDING
- CHECK THE WELD WITH ULTRASONIC TEST IF TIG WELDING IS DONE OR RADIOGRAPHY IF MANUAL ARC WELDING IS CARRIED OUT
- 100% DYE CHECK TO BE CARRIED OUT IN THE BUTT WELDS
- FOLLOW THE INSTRUCTIONS FOR HEAT TREATMENT OF MATERIALS AND FOR WELDING W.P.S.



VARIANT NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	ITEM NO.	MATL CODE	A	UNIT	UNIT WT	QTY	REV
	04	WELD BACKING RING ID 60.3 X 10 X Lx20		4-20-001-00371		15-151-058	C		0.60		
	03	FEED PIPE T.D 60.3 X 4xL.....		3-20-051-00671		15-151-062-60	C		1		
	02	LANCE DIFFUSER CASTING		4-20-051-01379		92-051-821	C		8.00		
	01	FEED PIPE CONNECTOR D63xL65		4-20-001-00051		15-024-160	C		1.750		
						AISI 304	C		1		
VAR NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	ITEM NO.	MATL SPEC	A	UNIT	UNIT WT	QTY	REV

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

MICROFILMED ON 28-7-83

POLI 00390 503



Bharat Heavy Electricals Ltd.,
BOILER PLANT UNIT
TIRUCHIRAPALLI-620 014

DRN NAME D.K. SIGN DATE 230880
CHD
APPD

REV 01 DATE 24-12-80
NOTE ADDED

DEPT V & SB
CODE 340

GRADE OF UNTOOL DIM C/M/F

SCALE NTS

WEIGHT (kg) 1.61 +

REF TO ASSY / OLD DRG M-59357

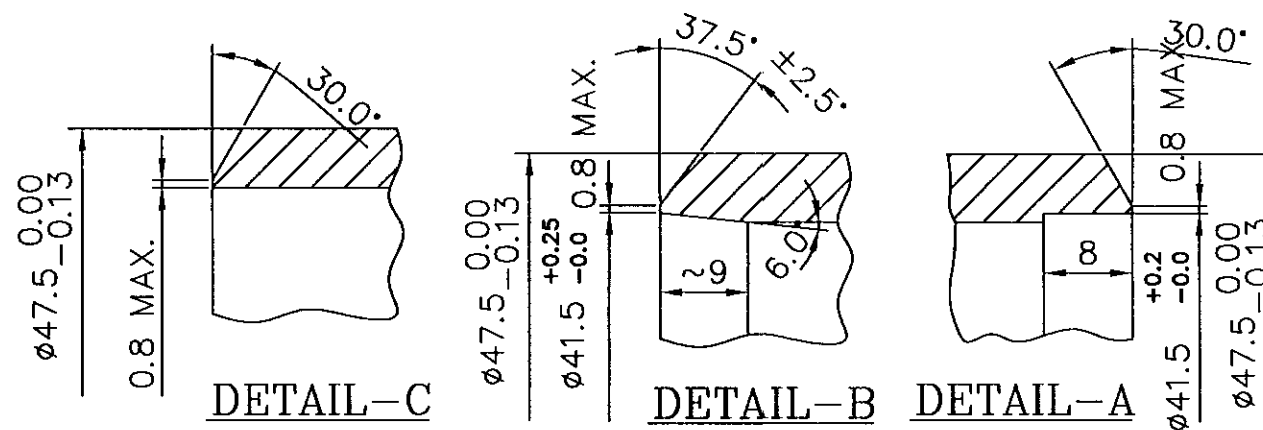
EC NO: 452

FEED PIPE ASSY.

CARD CODE U 01

DRAWING NO. 2-20-051-00250

REV 01



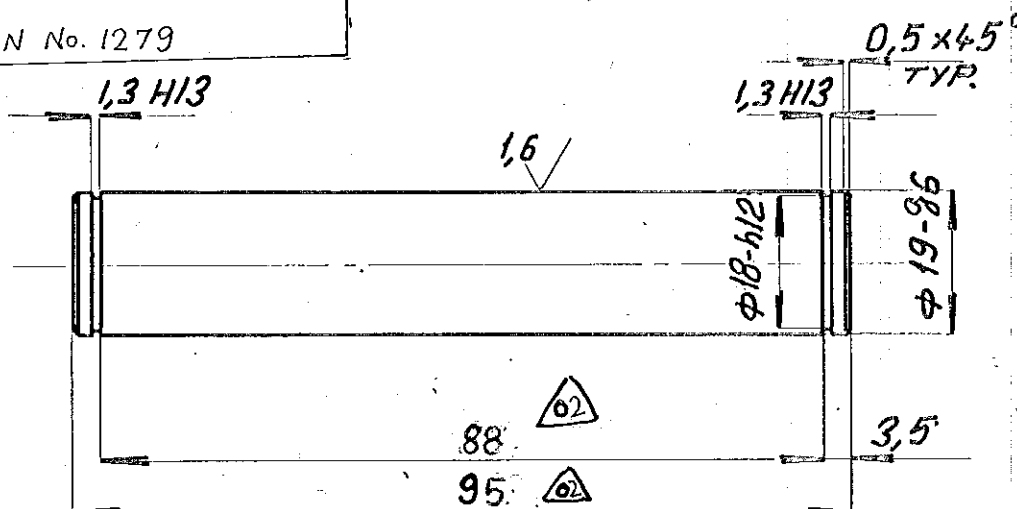
01. REFER DRG. No. 4-20-831--01044 FOR BILL OF MATERIAL FOR ITEM No.02
02. WHEN IT IS NECESSARY TO FABRICATE THE FEED PIPE FROM MORE THAN ONE PIECE, THEN ONLY ITEM No. 03 IS REQUIRED
03. FOR QUALITY REQUIREMENTS REFER LATEST APPLICABLE QUALITY PROCEDURES.

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

Size A3

DIMENSION	TOLERANCE
1.3 H13	+0.140
	-0.000
Φ18 h12	0.000
	-0.180
Φ19 g6	-0.007
	-0.020

3,2 / 1,6 /



FOR QUALITY REQUIREMENTS REFER LATEST APPLICABLE
QUALITY PROCEDURE.

00383

131

[illegible]

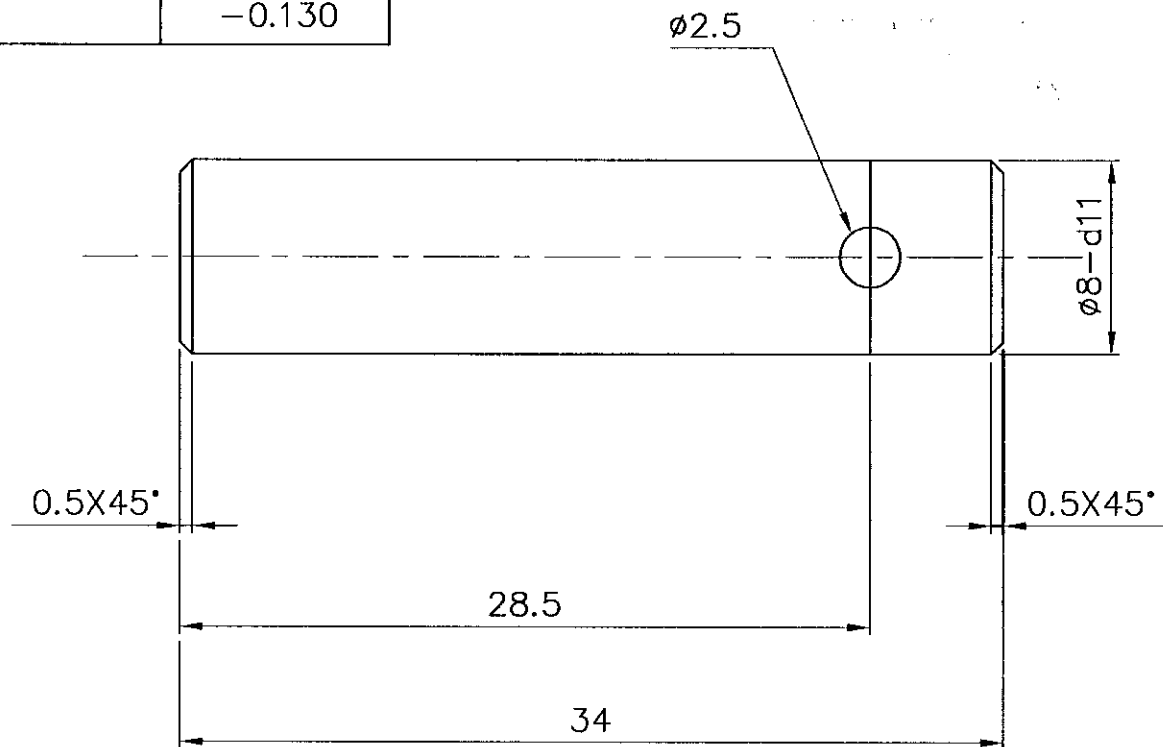
ALL DIMENSIONS ARE IN MILLIMETRES.

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/QP

REV	DATE	ALTERED
02	11.06.01	CHD & APPD
DRG.UPDATED AND REDRAWN.		
DCN: SB: 1298		

6.3


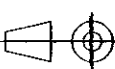
DIMENSION	TOLERANCE
ø8 d11	-0.040
	-0.130



NOTES: -

1. FOR QUALITY REQUIREMENTS REFER APPLICABLE LATEST QUALITY PROCEDURE.

PART CODE : 842083175500

01	ROD.DIA 28;L38	15 024 256	A 182 F6a Cl3			0.010			01
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
 BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.				DRN	NAME V.ARUMUGAM		SIGN	DATE	NO.OF VAR
				CHD	K.SRIDHARAN				
				APPD	S.NATARAJAN				
DEPT SB			SCALE	WEIGHT (KG).		REFERENCE INFORMATION			NO. OF ITEMS
CODE 330			NTS	0.02					
TITLE				CARD CODE	DRAWING NO.				REV
ROLLER PIN				U 01	4-20-831-00873				02

Size A4