



An ISO 9001  
Company

## Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

MATERIALS MANAGEMENT / CAPITAL EQUIPMENT

### ENQUIRY

Phone: +91 431 257 79 38

Fax : +91 431 252 07 19

Email : [tvenkat@bheltry.co.in](mailto:tvenkat@bheltry.co.in)

Web : [www.bhel.com](http://www.bhel.com)

	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
	2620800101	23.10.2008	26.11.2008

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	Cabin Rollers as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	40 Nos.	31.01.2009

**BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats 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 “2620800101”.**

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 / MM / Capital Equipment

## SPECIFICATION FOR CABIN ROLLERS

Drg.No. 2M- 18b 1004708

**Application:** To support the boiler tubular coil and to convey the coil from infeed to discharge. Temperature of the furnace 1200 degree Celsius

**Number of rollers Required : 40 nos**

**Material:**

Sleeves :IS4522 GR-11/ASTM A297 GR-HN having the following chemical composition.

%C	%Cr	%Ni	%Si
0.2~0.5	19.0~23.0	23.0~27.0	2.0Max
%Mn	%Mo	%S	%P
1.00Max	0.50Max	0.050Max	0.050Max
Shafts:IS-7283 GR-45 C8			
Plates: IS-2062 GR-FE419WB			

**Scope of supply:**

The manufacturing includes casting of roller and forging of shaft, welding the shaft, machining and fabrication as per drawing and the entire assembled rollers will be inspected for performance.

**Sequence of manufacturing and assembly:**

The drive roller as per the material specification shall be manufactured by melting of virgin charge with low sulphur and phosphorous content in induction melting furnace to achieve desired chemical composition. Ladle deoxidation with argon purging.

The casting will be done by centrifugal casting furnace process /equivalent process where the molten metal will be introduced into the mold which will be rotated during solidification of the casting. The centrifugal force produced by rotation will be large compared with normal hydrostatic force and during pouring, the force will be used to distribute liquid metal over the outer surface of the mould, further, there will be a development of high pressure in the casting during freezing. This is in conjunction with directional solidification, will assist feeding and will accelerate the separation of non-metallic inculcation and precipitated gases.

Casting would be duly fettled and visually inspected for surface defects prior to machining. Machining will be done in Precision machines and all burs and sharp edges

will be removed. Deviations if any for untoleranced dimensions and mass shall be governed by IS: 4897-76

Heat treatment shall be carried out as per the required cycle to attain the desired **mechanical properties and HT graph** chart as to be submitted during inspection to BHEL engineer and submitted along with supply.

The drive roller shall be manufactured by making ingots of above grade and subsequent forging of rounds of desired dimensions after proper normalizing treatment and with at least 50% reduction. Care would be taken that the flow of grains for the rounds is unidirectional along the entire length during forging operation.

Normalizing of the rounds will be done in electrically operated Heat Treatment furnace with proper homogenization to ensure refined grain structure and to remove forge stresses. This would be followed by surface conditioning and rough machining.

After HT the roller will be checked by UST using 4MHz probe to detect all longitudinal and transverse defects, such as cracks, pipes etc, which are harmful. Complete loss of back wall echo and defect echo of height exceeding 20% of the original back wall echo will be considered unacceptable. After ensuring that the material is perfect the rollers will be machined as per drawing.

After the vendors checks from your end the components shall be offered to BHEL for inspection along with your internal inspection reports prior to welding of end supports. Fabrication of end supports will be carried out with the help of jigs and fixtures after cutting the V groove to ensure perfect alignment and trueness.

Welding will be carried out with quality electrodes. During welding the beads will be weaved for uniform deposition and slag will be thoroughly cleaned between passes.

**Quality Assurance:** The input material for the foundry will be checked for chemical composition and verified. After the necessary checks material will be fettled and finished prior to further processing. The weld area will be checked for cracks by dye penetration examination. In case of any raw material from outside if used for manufacturing will also be subjected to checks for chemical composition and for fractures and grain structures. The material after forging will once again be checked for fractures and will be stress relieved prior to machining.

Periodical stage inspection may be carried out by our authorized personnel with prior intimation.

**Sub-Assembly Inspection:** Individual components shall be inspected after machining to ensure that the material finished is within specified tolerance and will not face any problem during assembly stage.

**Test certificate:** Necessary test certificate from Govt. approved Test Laboratory shall be provided for material specification UT, LPI, HT etc as applicable to substantiate the quality of material for trouble free operation.

**Guarantee Certificate:** The materials supplied by us will be guarantee for satisfactory performance against any mfg defects, raw material defects, bad workmanship etc, for a period of 18 months from the date of dispatch or 12 months from the date of commissioning whichever is earlier. The guarantee certificate to the above will accompany the dispatch documents.

**Inspection:** Stage wise individual components inspection before assembly and pre-dispatch inspection after assembly may be done from our end works.



CAUTION:

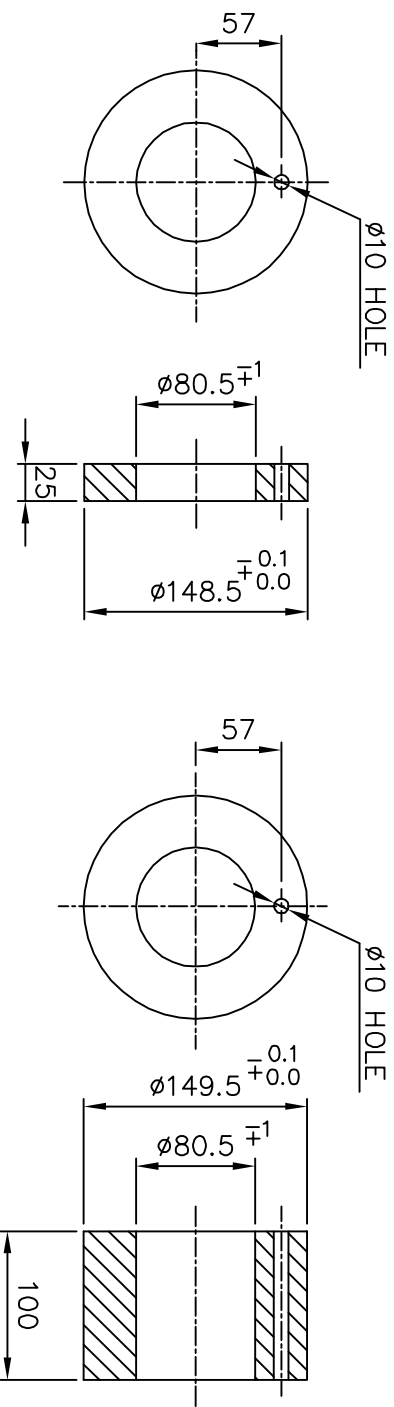
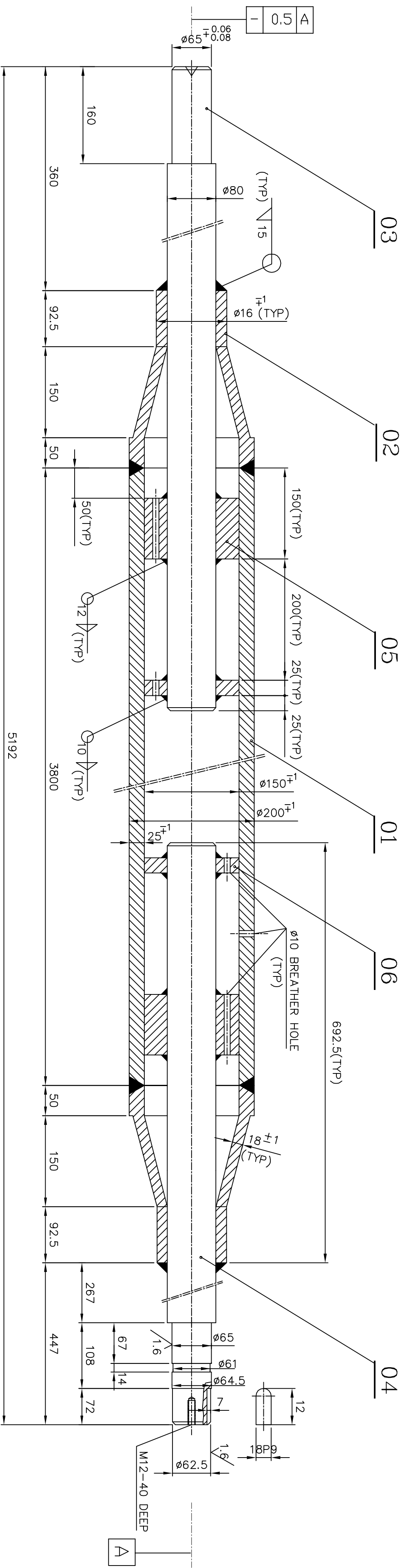
THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM OR FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED, TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM

✓/1.6/✓

\*WELDING PROJECTION SHALL BE GROUND FLUSH TO MAINTAIN EQUAL TO PIPE OD

GROOVE SHALL BE MADE TO SUIT THE GRUB SCREW OF UCF-213 ON THIS SIDE ONLY.



\*\*\*MATERIAL

IS:4522-Gr.11

CHEMICAL COMPOSITION:-

\*\* DD SHALL BE MACHINED AFTER CHECKING THE ID OF ROLLER.

C - 0.20-0.60%  
Cr. - 18-22%  
Ni. - 23-27%  
Mo. - 0.5% MAX.

NOTE: --

FOLLOWING TESTS WILL BE CARRIED OUT

- 1.CHEMICAL ANALYSIS.
- 2.PNEUMATIC PRESSURE TEST @5kg/cm2(g).
- 3.D.P TEST FOR ALL WELD JOINTS.

02	PL.25txID.80.5xOD.149.5	Fe.410 WB	IS: 2062				06
02	PL.100txID.80.5xOD.149.5	Fe.410 WB	IS: 2062				05
01	SHAFT Ø80x1128L	45 C8	IS: 7283				04
01	SHAFT Ø80x1053L	45 C8	IS: 7283				03
02	TAPER SLEEVE						02
01	ROLLER—Ø200x3800Lx25TH						01
DESCRIPTION		MATERIAL	STANDARD	NET.WT IN KGS.	DRAWING No.	ITEM No.	
REFERENCE: 4793/03/03			ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
SCALE DRAWN		P.A.ROSS					
CHECKED							
N.T.S							
APPROVED							
DATE		08-07-08					
MACHINE/ CONTINUOUS DISCHARGE FURNACE							
TITLE: FURNACE ROLLERS (CDF FURNACE)							
DRAWING No.							
2M18B1							
004708							
Sheet No.							
No of Sheets							
REV.							