Annexure- A Important Note to MSE Vendors

1. 20% of the tendered quantity is earmarked for MSE suppliers in this tender.
2. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC / ST entrepreneurs.
3. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.
4. MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (Five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM IIIs over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.

Certificate by Chartered Accountant

This is to Certify that M/S ……., (hereinafter referred to as 'company') having its registered office at……. ..... is registered under MSMED Act 2006, (EntrepreneurMeMemorandum No (Part—II)……..dtd:……, Category:. ..... (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as on date ..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises: Investment in plant and machinery** (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.5.0.1722(E) dated October 5, 2006: **Rs. ..... Lacs**

2. **For Service Enterprises: Investment in equipment** (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006: **Rs. ..... Lacs**

The above investment of Rs .... Lacs is within permissible limit of Rs ..... Lacs for ..... Micro / Small **(Strike off which is not applicable) Category under MSMED Act 2006.**

Date:
(Signature)
Name -
Membership number -
Seal of Chartered Accountant

Annexure-B - Important Note to New Vendors (Who have not enrolled at SSTP)

The new vendors who had the Digital signature certificate (DSC), PLEASE CLICK THIS LINK TO TAKE YOU TO THE PROCUREMENT SITE - URL **https://bhel.abcprocure.com**

And also the following will be required to furnish the documentary proof/ information along with their offers:

1. Certificate of registration to supply of similar Item (copy of certificate given by the govt. to be submitted).
2. Banker's information (copy of bank pass book first page to be submitted).
3. MSME vendor certificate (if applicable).
4. Address of your organization (complete postal address with PINCODE).
5. Contact person's Phone No. /Mobile No. / FAX No. /E-mail ID.
6. Statutory documents – GST REGN / SERVICE etc. (copy to be furnished)
7. NSIC/SSI Certificate (if applicable)
8. ISO Certificate (if applicable)
9. Experience certificate as proof of supply of similar items to any Govt. agencies / PSU / Organisations (copy of PO's to be furnished).
10. Audit Report/ IT Return (if applicable)
11. Agency agreement with manufacturer (if applicable)
12. Partnership Deed (if applicable).

If the new vendors fail to submit the above documentary proof/information, their offers will not be considered for this enquiry.

Document No.	Revision No.	Effective Date	Page No.
TDC/TE/MFG- 05	09	17.08.2012	1 of 3

Record of revision	07 – Clause 3.1,3.2 & 3.3 modified w.r.t Forging, UT and TC for raw material Clause 7.0 Forging acceptance details added Clause 7.1.1 & 7.1.2 Tensile & hardness test details added Clause 7.2.1 Liquid penetrant test & acceptance details added Clause 9.0 report requirement details added In Table A, tensile test piece details added 08 – Clause 3.1- 3.3 modified as 3.1 – 3.5; Clause 4.0 modified 09 – Drawing No. 20.St.192.02.238 added in clause 1.0 for higher dia. roll.

1.0 PRODUCT:

Sl.No.	Equipment / Product	Drg. No.	Drg. Rev. No.
1.	Push Bench Fixed Rolls	20.ST.192.01.158	AS PER LATEST ENQUIRY / PURCHASE ORDER
2.	Push Bench Adjustable Rolls	20.ST.192.02.159 20.ST.192.02.238	

2.0 APPLICATION:

Used in Push Bench Stands for hot rolling of tubes in Temperature 1100-1200 Deg.C. and subjected withstand 60T - 120 T force (impact load), with cyclic heating and cooling.

3.0 MATERIAL:

DIN 1.2365 - X32CrMoV33

3.1 Raw material is to be forged to ensure uniformity of structure & strength with reduction ratio in cross section area of 4:1 from ingot to final forging, close to final shape and size. The forging shall be made as disk / ring forging so that the flow lines are oriented parallel to the circumference. The forging supplier shall furnish TC clearly indicating the size of ingot (cross section X length) used and the forging reduction ratio achieved. Forging shall undergo post forge **Stress Relieving at 650 degree C for 24 Hrs**. with furnace cooling and further **Spherodizing Annealing at 800 degree C for 20 – 30 Hrs**. and cooled in furnace.

3.2 The ingot for the above forging shall be made with any one of the following:
Melting process : Electric Arc Furnace / Induction Furnace **and**
Refining : Vacuum De-gassing / Electro Slag Refining.

3.3 Inclusion rating shall be as per **ASTM E45**
1. Thick series 0.5 allowed. 2. Thin series 2 max.
3. Grain size shall be 6 or finer.

3.4 Ultrasonic testing shall be done on the forging after proof machining in accordance with **SA 388**. Acceptance Standard in accordance with Clause **3.3.4.2 of ASME Sec VIII Div.2**. Test shall be certified by **NDT Level II** qualified personnel as per **SNT-TC-1A** (Society for Non destructive Testing)

3.5 The ingot & forging supplier shall provide
Original mill Test Certificate (TC) for the Material Chemistry **(or)**
Copy of mill TC and NABL accredited Lab Test Report for Material Chemistry in original.

4.0 HEAT TREATMENT:

As per Table-A furnished in page 3. The temperatures shown are indicative which can be modified as necessary to achieve the specified mechanical properties.

5.0 DIMENSIONS AND TOLERANCE:

As given in the Drawing

6.0 DIMENSIONAL INSPECTION:

Dimensional inspection shall be carried out by the supplier - Acceptance as per drawing

7.0 INSPECTION & TESTING:

Forging details (refer clause 3.1 - 3.5) is to be submitted to BHEL and got approved before the start of proof machining.

7.1 MECHANICAL TESTING :

7.1.1 Tensile Test is to be done on test piece as per **DIN 50145.** Acceptance as per Drawing

7.1.2 Hardness Test is to be done on job & test piece as per **DIN EN ISO 6508-1**. Acceptance as per Drawing.

7.2 NON-DESTRUCTIVE TEST :

7.2.1 Liquid Penetrat Test :

To be done after finish machining as per **ASTM E165** and shall be certified by **NDT Level II qualified personnel as per SNT-TC-1A.**

Acceptance standards : All surfaces to be examined shall be free of,

1. Relevant linear indications,
2. Relevant rounded indications greater than 3/16 inch (5 mm)
3. Four or more relevant rounded indications in a line separated by 1/16 inch (1.5 mm) or less, edge to edge.

8.0 MARKING:

Shall be done as given in the drawing

9.0 TEST CERTIFICATE/REPORT:

Following test certificates /reports shall be sent with materials. In all the TCs & reports BHEL PO No., Component Name, TDC NO. and Drawing No., Material Identification No (heat/melt no), Job Sl. No. shall be mentioned where ever applicable:

1. Raw Material Chemistry – Clause 3.5
2. Ultrasonic Test Report for Raw Material – Clause 3.4
3. Hardness & Tensile Test - Clause 7.1.1 & 7.1.2
4. Temperature-Time-Recorder Graph for the Heat Treatment Cycle followed (Table A)
5. Liquid Penetrant Test – Clause 7.2.1
6. Dimension Report – Clause 5.0

10.0 PRESERVATION & PACKING :

1. Supply with rust preventive coating which shall be dry after application and removable by common solvents.
2. Pack suitably to avoid transit & handling damages

TABLE – A

Rolls shall be heat-treated as per the following procedure.

Sl.No.	Process	Detail
1.	Stress Relieving	650–675 Deg. C . Hold for 1 Hour / 25mm of thickness Cool in Furnace upto 400 Deg. C and then Air-cool.
2.	Hardening – I Preheat	Charge during Furnace Temp. at 250 Deg.C. Raise Temp. to 540 – 650 Deg.C Rate of heating – 110 Deg.C per hour Hold for 1 Hour / 25mm of thickness of material.
3.	Hardening – II Preheat	845 – 870 Deg.C. Rate of heating – 110 Deg.C per hour Hold for 1 Hour / 25mm of thickness of material
4.	Austenising	1010 – 1040 Deg.C Soaking 15 – 40 min. in Salt Bath
5.	Quenching	596 – 650 Deg.C. Salt Bath Hold for 30 minutes After Temp. equalization – cool in Air.
6.	Alternate Quenching	After soaking – quench in Air
7.	Quenched Hardness	56 – 59 HRC
8.	First Tempering	Immediately after reaching 50 Deg.C – Temper to 525 – 550 Deg.C. Hold for 1 Hour / 25mm thick of materials Air Cool.
9.	Second Tempering	Temper to 600 – 620 Deg.C. Hold for 1 Hour / 25mm thick of materials Air Cool.
10.	Third Tempering	Temper to 580 – 600 Deg.C. Hold for 1 Hour / 25mm thick of materials Air Cool.

Tensile Test piece as per **DIN 50125 - A10 X 50** (Refer Page 3, Clause 4.2, Table 2 of DIN 50125) made from a test coupon heat treated in the same heat treatment batch of the P B Rolls shall be prepared to carry out the tensile test as given in **Clause 7.1.1**

Prepared By	Reviewed By	Approved By
SR. ADDL ENGR / TE	SM / QA&C	MANAGER / TE

Revision Record	04 – Clause 3.4 : modified Clause 7.1 : liquid penetrant test details added Clauses 6.0 – 11.0 rearranged & renumbered to 6.0 – 10.0 Clause 8.0 : modified

1.0 PRODUCT:

Sl.No.	Equipment / Product	Drg. No.	Drg. Rev. No.
1.	Steel Roll SRM 300	20.ST.115.02.160	AS PER LATEST ENQUIRY / PURCHASE ORDER
2.	Steel Roll SRM 380	20.ST.115.01.157	

2.0 APPLICATION:

Used in Stretch Reducing Mill Stands - for Hot Rolling of Seamless Steel Tubes in Temperature 850 - 900 Deg.C

3.0 MATERIAL:

1. **DIN 1.2201 – X165Cr.V12** (OR) **SAE J438(70) D2** (OR) **IS:3748-1990 XT160Cr12**
2. Conduct Ultrasonic Test on Raw Material after proof machining in accordance with SA 388.
3. Acceptance Standard in accordance with AM 203.2(c), ASME Sec VIII Div.2.
4. Chemistry : As per drawing
   Original mill test certificate shall be provided. Otherwise copy of original mill test certificate and test report from **NABL accredited lab** for chemical check on sample from the procured material shall be provided.

4.0 DIMENSIONS AND TOLERANCE:

Shall be as per Drawing

5.0 HEAT TREATMENT:

Sl.No.	Process	Detail
1.	Stress Relieving	650-705 Deg.C 2 Hours / 25mm Soaking Slow cooling to 500 Deg.C Air Cool
2.	Hardening	980-1025 Deg.C 1 Hour / 25mm Soaking
3.	Oil Quenching	80 Deg.C (Servo Quench 11)
4.	Tempering – I	470-580 Deg.C 3-4 Hrs. Soaking Air Cool to Hand-warm Temperature (about 50 Deg.C)
5.	Tempering – II	530-550 Deg.C 1 Hour / 25mm Soaking

6.0 INSPECTION & TESTING:

6.1 DIMENSIONAL INSPECTION :

Dimensional inspection shall be carried out by the supplier and report for the same shall be sent along with the supplies – Acceptance as per drawing.

Air gap to be checked using template and the same shall be given by SSTP/BHEL on placement of order

6.2 MECHANICAL TESTING:

1.Hardness Test as per **DIN EN ISO 6508-1** FOR X165CrV12 - Acceptance as per Drawing.
2.Hardness Test as per **SAE J438(70)** for D2 - Acceptance as per Drawing.
3.Hardness Test as per **IS:3748-1990** for XT160Cr12 - Acceptance as per Drawing.

7.0 NON-DESTRUCTIVE TEST :

7.1. Liquid Penetrat Test :

To be conducted on entire surface after finish machining as per **ASTM E165** and shall be certified by **NDT Level II qualified personnel as per SNT-TC-1A.**

Acceptance standards : All surfaces to be examined shall be free of,

1. Relevant linear indications,
2. Relevant rounded indications greater than 3/16 inch (5 mm)
3. Four or more relevant rounded indications in a line separated by 1/16 inch (1.5 mm) or less, edge to edge.

8.0 TEST CERTIFICATE/REPORT :

Following test certificates shall be sent with Materials.
PO No., component name, TDC NO. and drawing no. shall be mentioned where ever applicable.
Traceability data like Heat / Melt No. & job Sl. No. shall be provided in all the reports.

1. Raw Material Chemistry **(Clause 3.4)**
2. Hardness **(Clause 6.2)**
3. Temperature-Time-Recorder Graph for the Heat Treatment Cycle followed
4. Ultrasonic Test Report for Raw Material **(Clause 3.2 & 3.3)**
5. Liquid Penetrant Test **(Clause 7.1)**
6. Dimension Report **(Clause 6.1)**

9.0 MARKING:

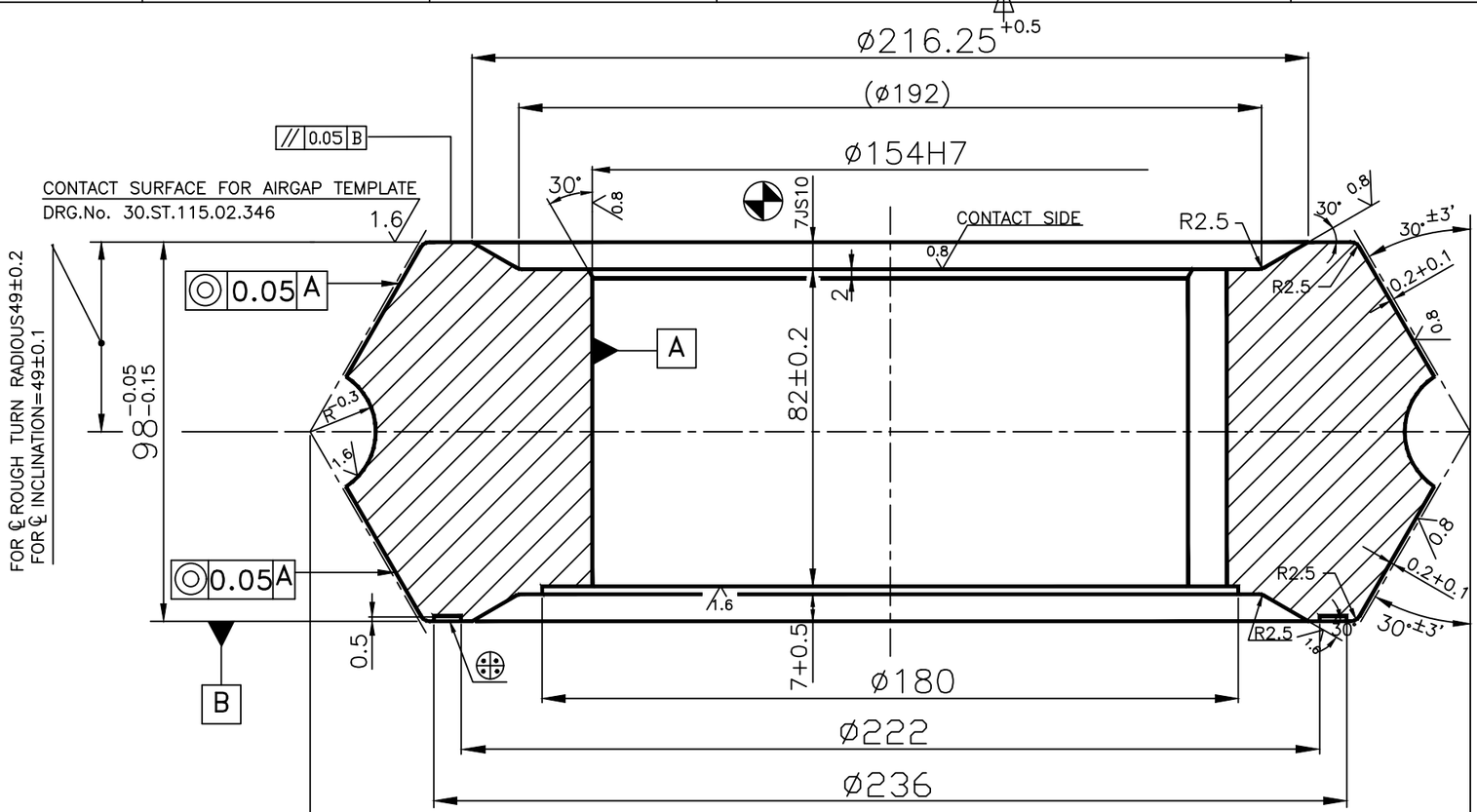
The marking shall be done on the job as shown in the Drawing.

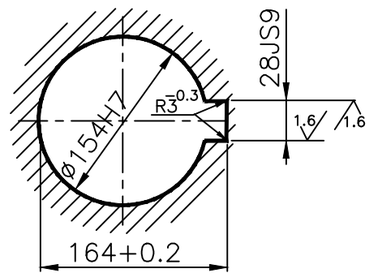
10.0 PRESERVATION & PACKING :

1. Supply with rust preventive coating which shall be dry after application and removable by common solvents.
2. Pack suitably to avoid transit & handling damages

Prepared By	Reviewed By	Approved By
DM / TE	DGM / QA&C	AGM / TE

ALL DIMENSIONS ARE IN MILLIMETERS





3.2 / 1.6 / 0.8

154	H7	+0.040 / 0
28	JS9	±0.026
7	JS10	±0.029

TOLEARANCE SHOULD BE STRICTLY MAINTAINED.

SL. No.	R	MATERIAL CODE No.	WT.Kg
01	20	69 12 51 009 4	27.5
02	24	69 12 51 054 1	26.1
03	35	69 12 51 055 9	21.1
04	15	69 12 51 110 8	28.3
05	28	69 12 51 111 6	24.8
06	12	69 12 51 110 2	29.1

SL No.	MATERIAL	CHEMICALCOMPOSITION C	Si	Mn	Cr	Mo	V	W	S	P	Co
01	X165CrV12 (DIN 1.2201)	1.55 1.75	0.25 0.40	0.20 0.40	11.00 12.00	–	0.07 0.12	–	0.035Max.	0.035Max.	–
02	XT160Cr12 (IS:3748–1990)	1.50 1.70	0.10 0.35	0.25 0.55	11.00 13.00	0.80Max.	0.80Max.	0.60Max.	0.035Max.	0.035Max.	–
03	D2 (AISI/SAE)	1.40 1.60	0.30 0.50	0.30 0.50	11.00 13.00	0.70 1.20	0.80Max.	–	–	–	0.60Max.

ANY ONE OF THE MATERIALS LISTED ABOVE SHALL BE USED

HARDENESS 50–54 HRC

MARK R VALUE &MATERIAL CODE No,PO/RO No,ROLL SL No & FIRMS NAME

SUPPLY TO BE ASPER TDC/TE/MFG–06

REV	DATE	ALTERED / CHECKED / APPROVED	ZONE	
11	09/10/13	N A Nainar / M Marudhavanan		Sl.No.:06 R12 ADDED PARALLELISM 0.05 ADDED
10	15/12/08	P Ganesan		MATERIAL XT160Cr12&D2 ADDED

Bharat Heavy Electricals Ltd
SEAMLESS STEEL TUBE PLANT
TIRUCHIRAPALLI – 620014

	NAME	SIGNATURE	DATE
DRN	R.KUMAR	R.Kumar	09/10/13
CHD	N ARUMUGANAINAR	N A Nainar	
APPD	M MARUDHAVANAN	M Marudhavanan	09/10/13

DEPT / CODE | GRADE OF UNTOL. DIM C/M/F | SCALE 1:1 | WEIGHT (Kg)

REF TO ASSY DWG NO | ITEM NO

REF TO OLD DWG NO 20.....160/05

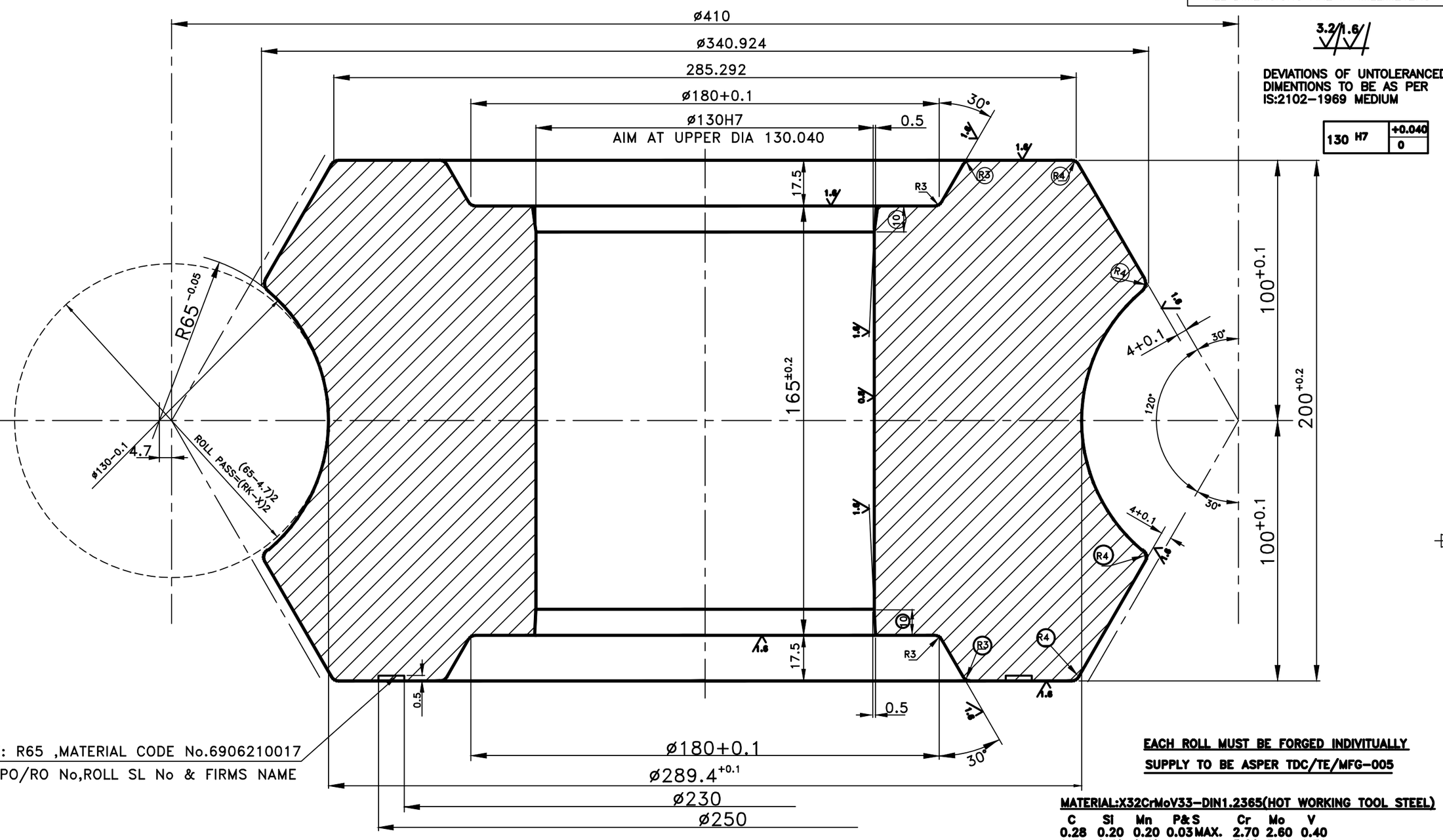
TITLE: STEEL ROLL (S R M 300)

CARD CODE: U 01

DRAWING NO : 20–ST–115–02–160

REV 11

ALL DIMENSIONS ARE IN MILLIMETERS



3.2/1.6

DEVIATIONS OF UNTOLERANCED DIMENTIONS TO BE AS PER IS:2102–1969 MEDIUM

130 H7	+0.040
	0

MARK: R65 ,MATERIAL CODE No.6906210017
PO/RO No,ROLL SL No & FIRMS NAME

EACH ROLL MUST BE FORGED INDIVITUALLY
SUPPLY TO BE ASPER TDC/TE/MFG–005

MATERIAL:X32CrMoV33–DIN1.2365(HOT WORKING TOOL STEEL)

C	Si	Mn	P&S	Cr	Mo	V
0.28	0.20	0.20	0.03MAX.	2.70	2.60	0.40
0.35	0.40	0.40		3.20	3.00	0.70

HARDNESS46–50 HRC **HEAT TREAT TO 155–170 Kg/mm²**

REV	DATE	ALTERED / CHECKED / APPROVED	ZONE	DESCRIPTION
05	08.08.08	R.KUMAR / APPROVED		BHN VALUE DELETED HARDNESS VALUE HRC ADDED
01	18.5.98	R.KUMAR / P.GANESAN		SL No.02 ADDED(MATL H11)
02	6.8.99			DIMN 0.2 IS INCREASED TO 0.5 FOR DISTINCT TAPER
03	04.11.99			INDIVITUALLY FORGING ADDED.
04	09.12.99			DIMN.ø230,ø250&0.5 SPACE ADDED FOR MARKING.

Bharat Heavy Electricals Ltd
SEAMLESS STEEL TUBE PLANT
TIRUCHIRAPALLI – 620014

	NAME	SIGNATURE	DATE
DRN	R.KUMAR		08.08.08
CHD			
APPD	S.KARUPPASAMY		

DEPT CODE	GRADE OF UNTOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY DWG NO	ITEM NO
T E	C/M/F	1:1	93.61	00.ST.192.01.002	
				REF TO OLD DWG NO 0115005–81.201–228 &10....001	

TITLE: **FIXED ROLL (PRE FINISHED)**

CARD CODE: U 01

DRAWING NO : **20.ST.192.01.158**

REV: **05**