

BHEL, Tiruchirapalli-620014	SSTP / Tool Engineering	Technical Delivery Conditions	
Product : BEVEL GEAR & HOUSING			
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Revision Record	03 - TDC reviewed and revised		

1.0 PRODUCT :

Sl.No.	Equipment / Product	Drg. No.	Drg. Rev. No.
1.	Bevel Gear SRM 300	20.ST.115.02.188	AS PER LATEST ENQUIRY / PURCHASE ORDER
2.	Bevel gear SRM 380	10.ST.115.01.045	
3.	Bevel Gear Housing SRM 300	10.ST.115.02.039	
4.	Bevel Gear Housing SRM 380	10.ST.115.01.044	

2.0 APPLICATION:

The Bevel gear is used for transmitting the power to the rolls of Stretch Reducing Mill Stand.

3.0 MATERIAL : 17CrNiMo6 of DIN 1.6587

3.1 Conduct Ultrasonic Test on Raw Material 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 result shall be certified by **NDT Level II** qualified personnel as per **SNT-TC-1A (Society for Non destructive Testing)**

3.2 Raw Material Chemistry :

The firm shall submit the Original Mill Test Certificate (or)

Copy of Original Mill Test Certificate and NABL accredited Lab test certificate for the material chemistry in original

4.0 CONDITION OF SUPPLY:

Each bevel gear & housing shall be individually forged, hardened and tempered & case hardened as given below in clause 6.0.

5.0 DIMENSION AND TOLERANCES:

Shall be as given in the drawing.

6.0 HEAT TREATMENT:

Carburizing :

Temperature	:	920 Degree C
Activation Time	:	4 – 5 Hr
Diffusion Temperature	:	910 Degree C
Diffusion Time	:	2 – 3Hr

Hardening :

Temperature	:	820 -830 degree C
Soaking Time	:	1 Hr
Quenching Media & Temperature	:	Oil, 60 – 90 Degree C

Tempering :

Temperature	:	150 -180 Degree C
Time	:	2 Hr
Cooling Media	:	Air cool

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7.0 DIMENSIONAL INSPECTION

Dimensional inspection shall be carried out by the supplier and report for the same shall be sent along with the supplies.

8.0 NON DESTRUCTIVE TESTING:

8.1 LIQUID PENETRANT INSPECTION

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 standard : 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.

9.0 MECHANICAL TEST :

9.1 Tensile Test on test coupon as per **DIN 50145**

- Acceptance as per Drawing

9.3 Hardness Test on job & test coupon as per **DIN EN ISO 6508-1**

- Acceptance as per Drawing

9.3 Case depth shall be checked on specimen of suitable size in the same heat treated condition of the gears

- Acceptance as per Drawing

10.0 MARKING:

Shall be done as given in the drawing .

11.0 INSPECTION AT SUPPLIER'S WORKS:

The gears and housing shall be offered for final inspection by BHEL inspector for which advance intimation shall be given by the firm after making ready all the inspection and test records. **Go & No Go Gauges** for checking the internal splines of the gear shall be made/procured by the firm immediately upon receipt of our order and get the same duly approved by BHEL/SSTP. The same shall be used for checking the splines of the gear during final inspection by our inspector. The threads are to be checked using relevant **thread gauges**. The same is to be **collected by the firm upon receipt of our order** and shall be used at the time of final inspection by BHEL inspector. All the gauges shall be returned to BHEL along with the final supply.

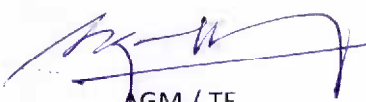
12.0 TEST CERTIFICATE:

Following test certificates shall be sent with Materials..

1. Raw Material Chemistry (**Clause 3.2**)
2. Hardness, Tensile Test & Case Depth (**Clause 9.1 to 9.3**)
3. Temperature-Time-Recorder Graph for the Heat Treatment Cycle followed
4. Ultrasonic Test Report for Raw Material (**Clause 3.1**)
5. Liquid Penetrant Test (**Clause 8.1**)
6. Dimension Report (**Clause 7.0**)

13.0 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