

BHEL, Tiruchirapalli-620014		SSTP / Tool Engineering	Technical Delivery Conditions
Product : Gripper Jaws for Cold Mill Draw Bench			
Document No.	Revision No.	Effective Date	Page No.
TDC/TE/MFG-25	04	16.08.2011	1 of 2
Revision Record	Rev. No. 03 - NDT certification requirement added in clause 3.3 & 7.1 Raw material test certificate requirement modified in clause 3.4 Test report requirement details added in clause 8.0 Heat treatment details added in clause 5.0 Rev. No. 04 – Drawing No. 20.ST.221.02.213 added in Clause 1.0		

1.0 **PRODUCT:**

Gripper Jaw for Draw Benches as per Drawings furnished below:

Sl.No.	Equipment	Drg. No.	Drg. Rev. No.
1.	50 KN Draw Bench	20.ST.032.01.138	AS PER LATEST ENQUIRY / PURCHASE ORDER
2.	60 KN Draw Bench	20.ST.032.01.137	
3.	315 KN Draw Bench	30.ST.222.02.405	
4.	800 KN Draw Bench	20.ST.221.02.099	
5.	800 KN Draw Bench	20.ST.221.02.213	

2.0 **APPLICATION:**

Used in the Draw Benches for tube drawing operation in Cold Mill.

3.0 **MATERIAL:**

1. IS 3748 – 1990 T90Mn6WCr2

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. Test report Shall be certified by NDT Level II qualified personnel as per **SNT-TC-1A (Society for Non destructive Testing)**

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:**

Heat treatment shall be done as per the parameters given below before finish grinding.

Sl.No.	Process	Detail
1.	Stress Relieving	To be charged in furnace at temp 250°C 650–660° C – Soaking @ 1Hour / 25mm thickness Furnace cool to 400°C; and then Air Cooling
2.	Pre Heating	To be charged in furnace at temp 250°C Pre heat to 450°C – Hold for 1hr. Pre heat to 650°C – Hold for 1hr. Rate of heating - 110°C per hour
3.	Hardening	790-815 ° C – Soaking @ 1Hour / 25mm thickness
4.	Quenching Medium	Quenching Oil. After temperature equalization – Cool in air
5.	Tempering	After quenching , temper immediately when it reaches 50 ° C To be charged in furnace at temp 250°C 175-260° C – Soaking @ 1Hour / 25mm thickness
6.	Hardness to be achieved	As per drawing

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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.

6.2 MECHANICAL TESTING :

Hardness Test on the job shall be done as per **IS 1586 : 2000** - Acceptance as per Drawing.

7.0 Non Destructive Test :

7.1 Liquid Penetrant 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 / REPORTS:

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.

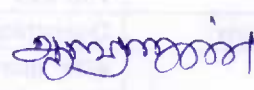
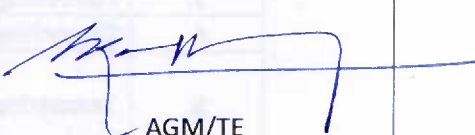
1. Raw Material Chemistry (**Clause 3.4**)
2. Hardness (**Clause 6.2**)
3. Temperature-Time-Recorder Graph for the Heat Treatment Cycle followed
4. Ultrasonic Test Report for Raw Material (**Clause 3.2 & 3.3**)
5. Liquid Penetrant Test (**Clause 7.1**)
6. Dimension Report (**Clause 6.1**)

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	 SM/QA & C	 AGM/TE