

ANNEXURE –“E”
FOR CRADLE DRG.NO. 188-94-082

TECHNICAL REQUIREMENT OF CASTING Cradle Drg.No. 188-94-082 AS PER SPECIFICATION – GOST STANDARD 977-88 GRADE 32 X 06 π, casting group 1st & NCTC No.127-A TO SUPPLIED DULY HEAT TREATED AND RADIOGRAPHY QUALITY ASTM E446 LEVEL-2.

1. METHOD OF MANUFACTURE

The castings shall be manufactured from electric arc furnace/ induction furnace aluminum killed steel through LOST FOAM casting Process only.

2. MATERIAL

2.1 Steel Grade: Specification GOST STANDARD 977-88 GRADE 32 X 06 π, casting group 1st

2.2 Chemical Composition -

C%	0.25%-0.35%
Si%	0.20%-0.40%
Mn%	0.40%-0.90%
S%	0.050% Max
P%	0.050% Max
Cr%	0.50%-0.80%
Ti%	0.030%-Max

2.3 Castings shall be free from any kind of casting defects such as blow holes, cracks, sand inclusion, shrinkage, Strains, pin holes, Flash, fins, scabs, Rat-tails etc that will adversely affect the machining or utility of castings.

2.4 Permanent marking for Drg no, heat number, serial number. RG OK, should be punched on each casting at specified location in item drawing.

2.5 Iron oxide coating (except at the place of permanent marking).

3. HEAT TREATMENT

3.1 The castings are to be harden as per Heat treatment schedule no. OFM / TDS/ HTS Of item as per H-1 Hardening- heating to 650 °c (Soaking -2 hours) and raised to 880-920°c (Soaking -2 hours + 1 hrs /inch) followed by Oil quenching

3.2 The castings are to be Tempering as per Heat treatment schedule no. OFM / TDS/ HTS Of item as per T-19 Tempering- heating to 620 – 650°c (Soaking -4hours) and followed by Air cooling

3.3 HT should be carried out after clear the casting with Radiography Test Level-II .

3.4 Heat Treatment & SR graph will be required along with castings.

3.5 All castings should be suitably heat treated to attain the specified mechanical properties.

4. Mechanical properties:

4.1 Hardness : 217 -285 HB

4.2 Yield Stress: 441 MPa (min)

4.3 Ultimate strength : -638 MPa (min)

4.4 Elongation :-10 % (Min)

4.5 Reduction of Area :-20% (Min)

4.6 Impact Strength: 491 KJ/m² (Min)

Body hardness of each and every casting is to be checked to ensure that prescribed hardness value is achieved.

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5. FETTLING

5.1 Castings are to be fettled / well dressed.

5.2 During fettling, minor harmful defects are to be weld repaired if required & welding electrode used for minor weld repair shall be - SUPERTHERM -NI (SPL) OF M/S D & H SECHERON ELETECH LTD. Indore OR O.K. 73.08 OF M/s ESAB OR TENACITO 55 OF ADVANI OERLIKON LTD. MUMBAI OR SUPER-LH (Ni) SPL OF D&H (I) LTD.

6. DIMENSIONAL & RADIOGRAPHY EXAMINATIONS.

6.1 100% dimension checking required as per Drg.No. 188-94-082.

6.2 After dimension checking 100% casting to be subjected to radiographic test (Gamma rays) as per relevant RG standard ASTM-E 446-15 & and test method IS:2595 .Acceptance criteria is RG level-2

6.3 After dimensional checking / radiography test, Die Penetrate (DP) test is required and if minor defects are observed on the surface, same can be weld repaired with specified welding electrode i.e. SUPERTHERM -NI (SPL) OF M/S D & H SECHERON ELETECH LTD. Indore OR O.K. 73.08 OF M/s ESAB OR TENACITO 55 OF ADVANI OERLIKON LTD. MUMBAI OR SUPER-LH (Ni) SPL OF D&H (I) LTD.

7. DOCUMENTS & TEST CERTIFICATES:

The supplier shall furnish following Test certificates /Reports along-with each supply

7.1 Hardness test report in the as supplied condition. (From NABL approved Lab.).

7.2 Chemical analysis report. (From NABL approved Lab.).

7.3 Radiography test report for 100% casting along with R.G film (From NABL approved Lab.).

7.4 100 % dimension report.

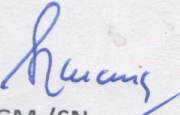
7.5 All instruments and gauges for test & measurement should be calibrated.


7.6 Die penetrate test report 100% casting.

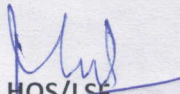
7.7 Challan Number.

7.8 HT & SR graph.

8. Inspection Authority : GENERAL MANAGER (OFM) or his authorized representative .


J.GM /SN


WM/AK


HOS/LSF