

ANNEXURE – "A"  
FOR CAST STEEL EMPTY BODY 81mm PWP  
[DRG. No. – OFM 33056]

TECHNICAL REQUIREMENT OF CAST STEEL EMPTY BODY 81 MM PWP TO DRG. No. OFM- 33056 AS PER SPECIFICATION AS UNDER – TO BE SUPPLIED COMPLYING ALL REQUIREMENTS OF O.F.M.

**1. METHOD OF MANUFACTURE**

Melting process will be done by Induction furnace only.

**2. MATERIAL**

**2.1) Steel Grade – Chemical Composition:**

C%	0.22 to 0.30
Si%	0.60 Maximum
Mn%	0.70 to 1.10 (Aimed at 0.80 to 0.90)
S%	0.06 Maximum
P%	0.06 Maximum

**2.2)** Machined Castings shall be free from any kind of casting defects such as blow holes, cracks, sand inclusion, shrinkage, pin holes, fins etc.

**2.3)** Each casting shall have a unique code No. marked by rubber stamp on the casting. Supplier shall provide the details of heat No., Sl. No. and other details in respect of this code. No other marking including brand name/logo etc. of the supplier shall be made on the casting.

**3. ACCEPTANCE/PERFORMANCE TESTS:**

**3.1) Mechanical Tests:**

**3.1.1)** Test bar shall be cast separately at the rate of four bars per heat. They shall be cast at the same time from the same melt and in moulds of the same material as the casting they represent. A standard test piece shall be machined from one of the test bar and shall be required to withstand the relevant properties as mentioned below:

- i) Yield Stress (YS): 340 MPa (minimum)
- ii) Ultimate Tensile strength (UTS): 570 to 850 MPa
- iii) Elongation after fracture (E%): 6 % minimum (GL=5.65 VA)

**3.2) Internal Pressure Test:**

The fully machined and assembled bombs will be subjected, whilst immersed in water, to an internal air pressure of 690+/- 35 KPa, maintained for 1 Minute. Any bomb body showing any sign of leakage will be rejected.

**3.3) Hydraulic Pressure Test:**

All bomb bodies which pass the air pressure test will be subjected to 60 to 65 MPa for 10 seconds using water or oil as media. There should be no sign of cracking or oozing.

**3.4) Drop Test:**

One percent all completed bomb bodies will be tested by dropping from height of 2m on concrete. If this results in no evident sign of cracking, the bomb bodies will be again subjected to above air pressure test. If any bomb body fails, dropping and air pressure tests will be repeated on 10% of the batch represented. If there be any further failure, the remainder of the batch will be tested and those bomb bodies which show leakage, will be rejected:

Firm will supply the machined body in lots. Each lot shall consists of 2005 nos. of machined body. 100 % examination shall be performed for critical defects and checking of dimensions. Tests mentioned at Sl. no.- 3.2, 3.3 and 3.4 will be carried out at OFM premises and if any machined body of 81 MM PWP found fail in these test then those machined bodies will be treated as a rejection.

#### 4. DIMENSIONAL & OTHER EXAMINATIONS.

- 4.1) All dimension will be as per DRG. NO. – OFM 33056.  
4.2) Visual and dimension inspection will be inspected by OFM representatives using OFM gauges at firm's premises.

#### 5. DOCUMENTS & TEST CERTIFICATES:

The supplier shall furnish following Test certificates /Reports/Calibration Certificates/other documents as required along-with each supply.

- 5.1) Mechanical analysis Test report (From NABL accredited Lab.)  
5.2) Chemical analysis report (From NABL accredited Lab.)  
5.3) 100 % dimension report in respect of each Lot.  
5.4) All instruments and gauges for test & measurement shall be calibrated from NABL accredited Lab.

6. **Inspection Authority:** Inspection at OFM by GENERAL MANAGER/OFM or his authorized representative.

#### 7. Pre-Qualification Criteria.

- 7.1) Firm must have induction furnace for melting operation.  
7.2) Firm must have required casting manufacturing plant and machinery.  
7.3) Firm must have CNC or DNC and all other machining facilities for machining of tendered item.  
7.4) Firm have to submit 2 nos. advance sample for approval of tendered item as per drawing and annexure " A " within 15 days from Tender Opening Date.

  
WM/AK

  
HOS/SMS  
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