



1.0 SCOPE

- 1.1 The fittings shall conform to IS 1239 (Part 2) and also meet the following requirements.
- 1.2 Sizes includes i) NB 15 to NB150 for ISI 1239 – Galvanised with screwed ends.
ii) NB 65 to NB 150 for IS 1239 – Black with butt weld ends..

2.0 PROCESS

- 2.1 Fittings shall be of forged or formed construction only. However Tees can also be supplied as welded. Elbows machined from forged pieces shall have smooth flow passage. Fabricated Elbows from pipes with miter joints are not acceptable.
- 2.2 The outside diameter and thickness shall be as per Table 1. Other dimensions shall be in accordance with IS 1239
- 2.3 Black fittings shall be edge prepared as per figure 1 and Table 1.
- 2.4 Galvanising shall be done by hot dip method as per IS 4736 and threading shall be done after galvanising.
- 2.5 Galvanized bends, union and plugs shall have external taper thread and other galvanized fittings shall have internal parallel thread to IS:554.
- 2.6 Galvanized bends shall be supplied with sockets at both the ends.

3.0 TESTS AND INSPECTION.

- 3.1 Manufacturer shall carry out the following tests and reports shall be submitted.
- 3.1.1 Hydro Test or internal air pressure test as per IS 1239.
- 3.1.2 Drift expanding test or Taper screw plug test as per IS 1239 for sockets.
- 3.1.3 100% LPI for weldments of Tees manufactured by welding.
- 3.1.4 Dimension test for 10 % of fittings per size per product.
- 3.2 Inspection by BHEL / BHEL authorized inspecting agency (if applicable as per PO) shall be done for 10% at random.

4.0 PAINTING , MARKING, PACKING & END PROTECTION

- 4.1 **PAINTING** : All IS 1239 Black fittings shall be **painted** on the external surface as given below (Galvanised fittings shall not be painted)

- a) surface preparation : Power tool cleaning or Blast cleaning
b) Primer coat : 50 microns of Red oxide zinc phosphate conforming to IS 12744

S. Jayakumar, Engg

G.Panneer Selvam QA

Approved by

K. Vedaprasad, QC

K. Ganeshan, MPL



c) Final coat : 70 microns of Synthetic enamel paint conforming to IS 2934 .

d) Shade : smoke grey – shade no 692 of IS5.

The internal surface shall be protected with rust preventive coating or rust inhibitor.

4.2 MARKING :

4.2.1 The fittings dispatched to **BHEL Stores** shall be engraved / etched with Material code, size, material specification, maker's emblem, Inspectors seal. In addition, the above details shall also be paint stencilled on the fittings.

Fittings of sizes less than or equal to 2" (50mm) shall be tied together and the above details shall be punched / etched in a separate tag and tied to it.

4.2.2 The fittings dispatched directly to project site as **DTS** shall be engraved and paint stencilled with **DU code** (14 digit work order du detail) as given by purchase department in addition to marking done as per para 4.2.1.

4.3 **PACKING AND END PROTECTION :** The machined / threaded surfaces shall be applied with rust preventive fluids. (Bonita CN – 9 / CN – 24 or equivalent) and further protected using end caps. The fittings shall be suitably packed in box / crate to avoid transit & other damages.

5.0 CERTIFICATION.

The manufacturer shall give a guarantee certificate that the fittings are as per IS : 1239 (Part 2) and also to furnish the test certificates incorporating the results of the entire test done as per clause 3.0.

6.0 RECORDS OF REVISION .

Revised in full for better clarity. (in specific paras 1.2, 2.4, 2.5, 4.0 are revised)

Figure – 1

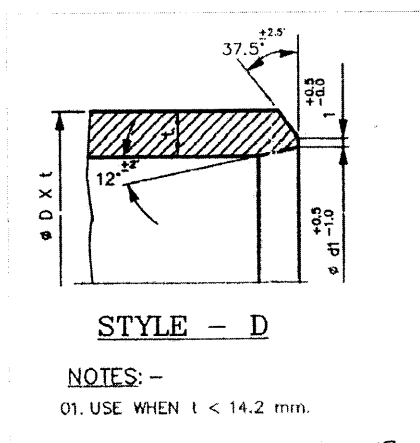


Table – 1

NB	Pipe OD mm		Thick- ness mm	d1 (Fig.1) mm
	Min	Max		
15	21.0	21.8	3.2	
25	33.3	34.2	4.0	
40	47.9	48.8	4.0	
50	59.7	60.8	4.5	
65	75.3	76.6	4.5	68.5
80	88.0	89.5	4.8	80.8
100	113.1	115.0	5.4	105.3
150	163.9	166.5	5.4	156.8

S. Jayakumar, Engg

G.Panneer Selvam QA

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K. Ganeshan, MPL