

## **6. SPECIFICATIONS FOR GUNMETAL FERRULES**

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### General Description

Ferrule provides quick, permanent, leak - free service connections for provision of water to the consumers.

It comprises a stem with an inner plug for isolation and the outlet shall be a 360° swivel positioned at 90° to the stem.

The outlet shall provide a direct connection to the service line through an integrated threaded joint in the ferrule banjo.

### SPECIFICATIONS

#### (a). Design features

1. shall be able to be installed with drilling and tapping machines which are available at NWSDB.
2. shall be able to be used for dry & under pressure drilling.
3. shall be able to be installed directly in Cast Iron, Ductile Iron, Steel Pipe mains.
4. shall be able to be installed on UPVC or AC mains through PVC clamp saddles, flat brass straps.
5. shall have an inlet male taper thread for mounting on the pipe saddle.
6. shall have an outlet female parallel thread for jointing of the service line
7. isolation/control of water shall be handled by the inner plug

#### (b). List of components

1. Top plug
2. Top cap
3. Top cap washer
4. Banjo washers
5. Banjo
6. Inner plug
7. Stem

#### (c). Material data

Item	Material
Top plug	Gunmetal (BS 1400 LG2)
Top cap	Gunmetal (BS 1400/ BSEN1982:1999 LG2)

Top cap washer	EPDM rubber (BS 2494) – for 1 ¼” to 2”
Top cap washer	Nitrile rubber – for ½” to 1” sizes
Banjo washers	EPDM rubber (BS 2494)
Banjo	Gunmetal (BS 1400/ BSEN1982:1999 LG2)
Inner plug	Gunmetal (BS 1400 / BSEN1982:1999 LG2)
Stem	Gunmetal (BS 1400/ BSEN1982:1999 LG2)

(d). Inlet

Inlet shall be a male taper thread complying with BS 21 / ISO 7/1.

(e). Outlet

Outlet shall be a female parallel thread complying with BS 21.

Outlet shall be a 360° swivel at 90° with the stem.

(f). Stem

Stem shall have inlet taper thread, female thread for inner plug, female thread for top cap, holes for water outlet.

Banjo, inner plug, top cap and the associated washers are mounted on the stem.

(g). Operational features

- |    |                  |   |               |
|----|------------------|---|---------------|
| 1. | medium handled   | - | potable water |
| 2. | temperature      | - | upto 45°C     |
| 3. | working pressure | - | upto 20 bar   |

(h). Testing

All fittings shall be tested to the ratings and specifications at the manufacturer’s works and shall be supported by manufacturer’s test certificates.

All Gunmetal fittings shall comply with the relevant BS standards and shall be capable of withstanding the test pressure specified.

Sample test is sufficient according to ISO Standards,

ISO 2859 – 1:1999 (E)

And

ISO 3951 : 1989 (E)

Sample size to be used, should be 200 Nos.

(i). Quality of Casting

The castings shall be close grained, sound, smooth, and symmetrical and carefully cleaned.

All castings shall be free of blow holes and other defects.

(j). Operation

All fittings shall be suitable for frequent operation and for infrequent operation after long periods in the open or closed positions.

(k). Suitability for potable water

All non- metallic materials to be provided shall be listed in the current “Water Fittings and Materials Directory” published by the Water Research Centre, UK or approved equivalent publication as having passed full tests of effect on water quality under the requirements for the testing of non – metallic materials for use in contact with potable water.

(l). Evaluation

1. Sample Testing

Samples will be tested for,

- i. Compliance with the requirements described in clause Nos. (c.), (d.), (e.) and (f.)
- ii. Compliance with the test pressure

<b>Test</b>	<b>Acceptance Criteria</b>
Material Data as specified in clause (c)	Only one random selected sample will be tested. If the sample shall comply, only then offers will qualify for further evaluation.
Dimension check as specified in clauses (d) & (e)	One randomly selected sample from the balance two will be checked and it shall comply with specifications.
Stem construction as specified in clause (f)	
Pressure Tests	

2. General Description and Deviations.

In Addition to the test results TEC will consider substantial compliance with the general details and descriptions given elsewhere in the specifications and any deviations from the contents in the specification, which are deemed to be substantial.

(m). Independent Inspection

The tenderer/manufacturer shall obtain a pre-shipment certificate for compliance of quality, quantity and loading from one of the following agencies at his own cost and submit with the delivery of the consignment.

1. M/s Lloyds Register
2. M/s Crown Agents
3. M/s Societe Generale de Surveillance S.A.
4. Bureau of Veritas

Following parameters should be tested for quality by the pre shipment inspection authority.

1. Material test ( Body, washers)
2. Working Pressure
3. Tests for the parameters described in clauses (d), (e) and (f) under Specifications for Brass Ferrules.

(n). Submittals with the offer

The following shall be submitted with the offer.

1. Original printed literature giving all technical details substantiating the specifications and other details given in this document.
2. ISO 9001:2008 certificate (Quality Management System) for manufacturing facility valid for the current year.
3. 3 Nos. of specimen sample for each type.