

# **SPECIFICATIONS FOR GUNMETAL FERRULES**

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# SPECIFICATIONS FOR GUNMETAL FERRULES

## 1. 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.

The Bidder shall provide ISO 9001 : 2015 Quality Management System requirement certificate for Quality Assurance for the goods manufacturing factory from an accredited agency for Gunmetal Ferrule and relevant components. Accredited Agency shall be a member of International Accredited Forum (IAF) and shall have the authority for the accreditation of mentioned goods in their scope of accreditation. Scope of the production shall be clearly specified in the certificate. Manufacturer shall maintain the validity of this certificate during the contract Period. If the supply is made from several factories, ISO 9001 : 2015 certificates for quality management system requirement shall be submitted for each factory.

## 2. 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. Open / Close of the ferrule 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). Inner Plug Square Recess

Dimensions shall be according to annex, page No. 6v – 8 & 6v - 9

(g). 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.

Dimensions shall be according to annex, page No 6v – 8 & 6v – 9

(h). Operational features

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

(i). Testing

All fittings shall be tested according to the same scope as in clause (n) 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.

**Pressure Test**

(i) **Seat Test**

Every Gunmetal Ferrule, in the closed position of the inner plug shall show no leakage when subjected to an internal Hydraulic pressure of 20 bars.

(ii) **Body Test**

In the open position of the inner plug and with the outlet sealed by a plug, shall be capable of withstanding without leakage an internally applied Hydraulic pressure of 20 bars.

(j). 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.

(k). Operation

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

(l). Suitability for potable water

All non-metallic materials to be provided shall be as 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.

(m). Evaluation

1. Sample Testing

Samples from each size will be tested for,

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

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

(n). Independent Inspection

The supplier/ 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 the whole sample size mentioned under testing clause (i) for the each size of gunmetal ferrules for quality by the Pre-shipment inspection Authority for each delivery lot.

- I. Material test ( Body, washers)
- II. Hydrostatic pressures
- III. Tests for the parameters described in clauses (d), (e), (f) and (g) under Specifications for Gunmetal Ferrules.

(o) Submittals with the offer

Bidder / contractor shall submit all the documents/ samples under the cl.2 & cl.3 of ITB relevant to goods to be supplied.

- (p) Notwithstanding the testing at the manufacturer's work, Manufacturer's certificate and certificates from the independent inspection agency, testing of the delivered lot shall be carried out on the similar basis before acceptance of the delivery lot requirement for subsequent payment already specified elsewhere.

(q) Markings on the body

Gunmetal ferrules shall be legibly marked with following by embossing integrally during casting

1. Trade mark of the product (make)
2. The nominal size of the ferrule.

### 3. Inspection of delivery lots.

The sample size to be used for each delivery lot is as follows:

- 05 Nos of 15mm (1/2") Gunmetal Ferrules.
- 05 Nos of 20mm (3/4") Gunmetal Ferrules.
- 05 Nos of 25mm (1") Gunmetal Ferrules.
- 03 Nos of 40mm (1 1/2") Gunmetal Ferrules
- 03 Nos of 50mm (2") Gunmetal Ferrules

Each ferrule in the sample shall be subjected to the following tests

- I. Material test (Body, washers)
- II. Hydrostatic pressures
- III. Tests for the parameters described in clauses (d), (e), (f) and (g) under Specifications for Gunmetal Ferrules.

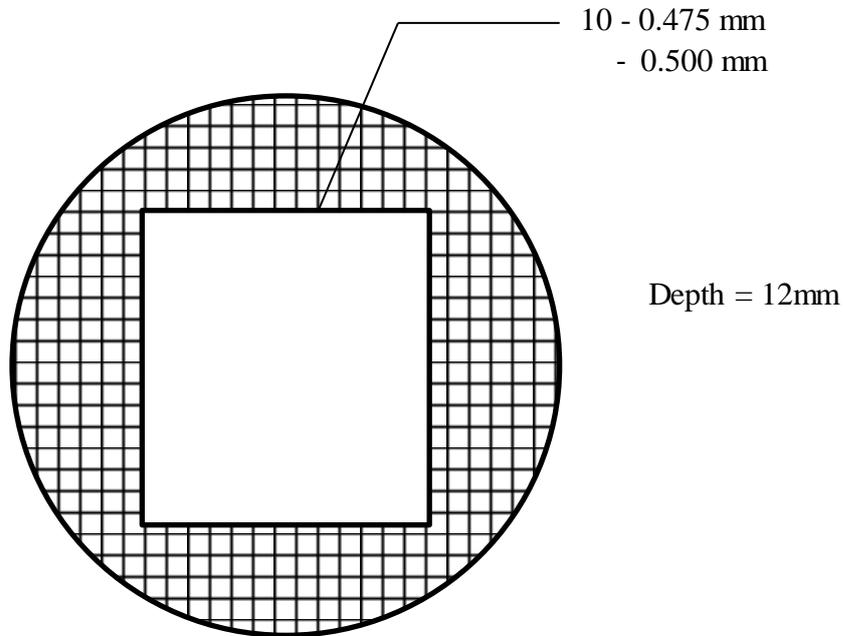
Any Ferrule failing in any of the above tests shall be considered as reason for rejection of the entire lot.



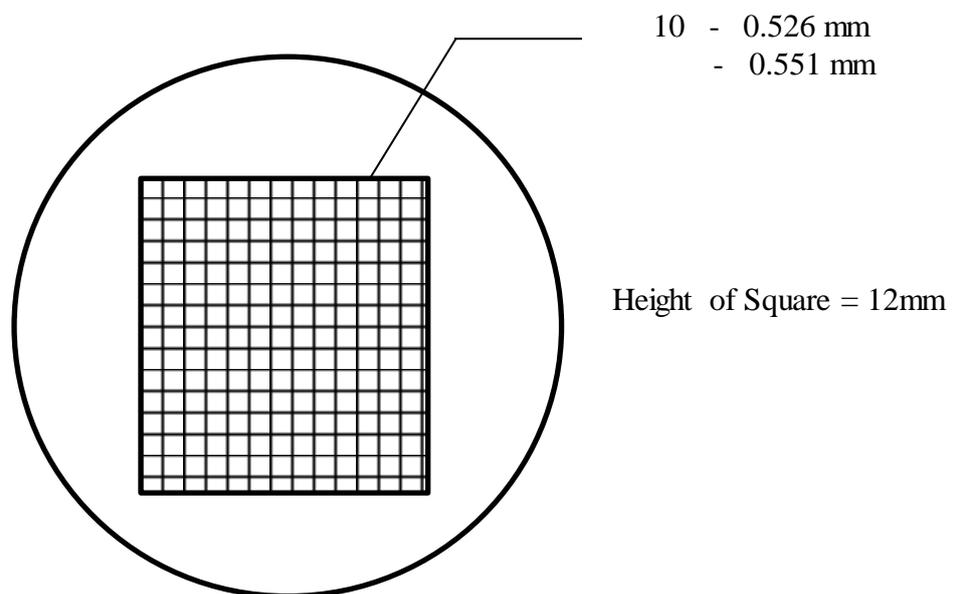
#### 4 Dimensions

FOR 1/2", 3/4", 1" FERRULES

Dimensions of the Square Female Recess (Hole) – Inner Plug

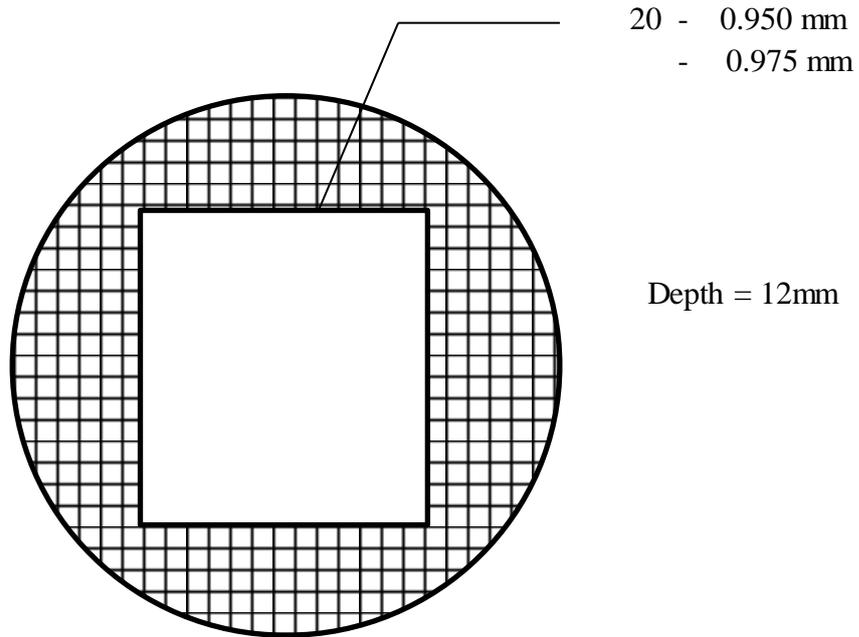


Dimensions of the Square Male Part (Key & Others)



FOR 1½” AND 2” FERRULES

Dimensions of the Square Female Recess (Hole) – Inner Plug



Dimensions of the Square Male Part (Key & Others)

