PT/470/0920 September 2020

Assessment Schedule for Encapsulating Repair Muffler manufactured by UTS Engineering Ltd.

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1. SCOPE

This schedule specifies characteristics for the manufacture and installation of Encapsulating Repair Muffler manufactured by UTS Engineering Ltd. for cast iron, ductile iron, steel, PVC, clay and concrete potable and waste water pipes, when installed by UTS Engineering Ltd.

It is applicable to fittings for pipe diameters of between 300mm and 700mm nominal bore, up to a pressure of 16 bar.

The Encapsulating Repair Muffler does not provide end restraint.

2. PRODUCT DESCRIPTION

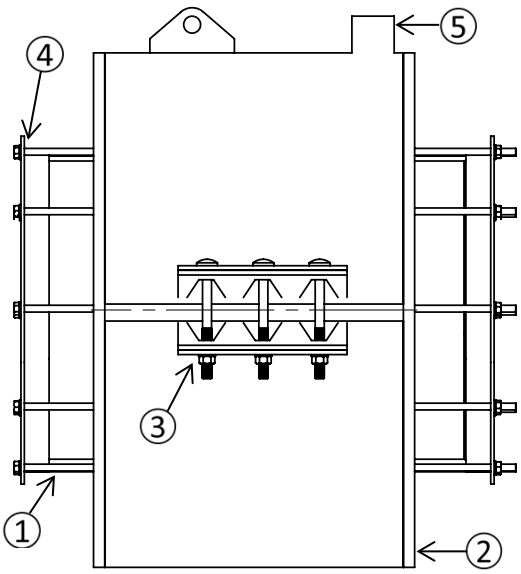
2.1 Introduction

The Encapsulating Repair Muffler consists of two mechanical couplings at either end of a steel muffler for repairing a pipe joint.

The steel muffler consists of an outer tube axially split into 2 parts with end caps to encapsulate the defective joint. The two halves are joined by a linear flange joint which is bolted together.

The mechanical couplings each comprise a T-section ring connected to the muffler end caps by studs which allow the T-section ring to be tightened, compressing an elastomeric seal between the inside of the steel tube and the outside of the pipe creating a leak tight joint between the muffler and the host pipe. The T-section rings are supplied in two halves which are welded together on site to create a complete T-section ring around the host pipe either side of the joint.

The Muffler contains two tappings (only one can be seen in the drawing), one in either half. During installation, the taps are left open so that any leaking fluid can drain away via the tap at the invert. Once installed the lower tap is closed, the annulus between the pipe and Muffler fills with fluid and once all the air has been displaced the upper tap is closed.



1. Mechanical Coupling
2. Steel Muffler + End Cap
3. Linear flange joint
4. Two piece T-section ring
5. Tapping

Where end restraint is required a thrust block should be used in combination with the Encapsulating Repair Muffler.

2.2 Applicable standards

The following standards are applicable to this product:

WIS 4-21-02:1994 (1)

2.3 Approval History

The Encapsulating Repair Muffler was originally awarded WRc Approved™ certification in September 2010 (Certificate reference PT/309/0910).

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3. TESTING & REQUIREMENTS

3.1 Materials and Components

Material requirements

The T-section ring, muffler and flanges shall be made from grade 275 steel in accordance with BS EN 10025-2:2004[2].

Engineering Studs shall be to BS EN ISO 898-1:2013[3] grade 8.8.

Nuts shall be to BS 4190:2014[4] grade 4.

Washers shall be in accordance with BS 4320:1968[5] and shall be made from grade A2 steel in accordance with BS EN ISO 3506[6].

Elastomeric seals shall comply with the requirements of BS EN 681-3:2000[7].

Adhesives for elastomeric seals shall comply with the manufacturer's specification.

Coatings

The T-sections and central sleeves shall be coated in accordance with the requirements of WIS 4-52-01 Part 1[8]. Where the coating has been damaged by welding, an in-situ weld repair kit shall be applied in accordance with the coating manufacturer's recommendations.

Fixings not made from stainless steel shall be coated in accordance with the requirements of WIS 4-52-03[9].

Dimensions

Encapsulating Repair Mufflers shall be made to a tolerance of ± 1 mm.

Materials in contact with drinking water

All components of the Encapsulating Repair Muffler that are intended to be in contact with drinking water shall comply with Water Supply (Water Quality) Regulations 2016 (SI 2016/618) Regulation 31[10] or the equivalent regulations in Wales, Scotland or Northern Ireland.

3.2 Type Testing

Mechanical resistance

Short term hydrostatic pressure: when tested in accordance with WIS 4-21-02[1] Appendix A the Encapsulating Repair Muffler shall meet the requirements of WIS 4-21-02[1] Clause 17.2.

Short term vacuum: when tested in accordance with WIS 4-21-02[1] Appendix B the Encapsulating Repair Muffler shall meet the requirements of clause 17.3.

Bolt-load relaxation: when tested in accordance with WIS 4-21-02[1] Appendix C the Encapsulating Repair Muffler shall meet the requirements of clause 17.4.

Leak tightness: when tested in accordance with WIS 4-21-02[1] Appendix D and H the Encapsulating Repair Muffler shall meet the requirements of clause 17.5 and clause 17.8 at the manufacturer's maximum recommended angular deflection of 3 degrees at each end of the unit.

3.3 Manufacture

To ensure the quality and performance of the Encapsulating Repair Mufflers, the manufacturing process shall include appropriate systems for the:

- Specification of component materials;
- Verification of component materials received are to specification;
- Handling and storage of all component materials; and

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- Fabrication and quality of workmanship.

The production of the Encapsulating Repair Mufflers and related quality control procedures shall comply with requirements of WIS 4-21-02[1]: clause 18.1 and 18.2 to ensure the stated performance of the product is reliably achieved.

The coatings shall be applied in accordance with WIS 4-52-01 Part 2[11].

Welding shall be carried out by a welder qualified in accordance with BS EN ISO 9606-1[12].

Fabrication shall be carried out in accordance with BS EN 10224:2002[13].

3.4 Installation

When installed by UTS Engineering LTD in accordance with the installation documentation, the Encapsulating Repair Muffler shall be reasonably expected to perform as described.

4. APPROVAL

The UTS Engineering Ltd's Encapsulating Repair Muffler has been audited and has successfully met all of the requirements stated within this assessment schedule.

Signed:

Valid until 15th September 2025

5. REFERENCES

1) WIS 4-21-02:1994 Mechanical couplings and repair clamps for iron pipes for the conveyance of cold potable water (underground use) for the size range 40 to 1600 mm.

2) BS EN 10025-2:2004 - Hot rolled products of structural steels.

3) BS EN ISO 898-1:2013 Mechanical properties of fasteners made of carbon steel and alloy steel. Bolts, screws and studs with specified property classes. Coarse thread and fine pitch thread.

4) BS 4190:2014 ISO metric black hexagon bolts, screws and nuts. Specification.

5) BS 4320:1968 Specification for metal washers for general engineering purposes. Metric series.

6) BS EN ISO 3506-1:2020 Fasteners. Mechanical properties of corrosion-resistant stainless steel fasteners. Bolts, screws and studs with specified grades and property classes.

7) BS EN 681-3:2000 Elastomeric seals. Material requirements for pipe joint seals used in water and drainage applications. Vulcanized rubber.

8) WIS 4-52-01:1994 Polymeric anti-corrosion (Barrier) coatings: Part 1 - Requirements of the coating system material.

9) WIS 4-52-03:1994 Anti-corrosion coatings on threaded fasteners.

10) Water Supply (Water Quality) Regulations 2016 (SI 2016/618) Regulation 31

11) WIS 4-52-01:1994 Polymeric anti-corrosion (Barrier) coatings: Part 2 – Requirements of the factory applied.

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12) BS EN ISO 9606-1:2017 Qualification testing of welders. Fusion welding. Steels.

13) BS EN 10224:2002 Non-alloy steel tubes and fittings for the conveyance of water and other aqueous liquids. Technical delivery conditions.

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