



Guideline No.M-09(201510)

M-09

MARINE FUEL SUPPLY UNIT

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Foreword

CCS Product Inspection and Testing Guideline (hereinafter referred to as this Guideline) contains the technical requirements, inspection and testing criteria related to classification and statutory survey of marine products to be applied for CCS approval/inspection.

This Guideline frees the users to adopt other test methods and requirements which are equivalent to or are stricter than this Guideline.

This Guideline is published and updated by CCS, and is released at <http://www.ccs.org.cn>. Your comments or suggestions are welcomed and may be sent to our email addressed mp@ccs.org.cn.

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MARINE FUEL SUPPLY UNIT

1 Application

This Guideline applies to the product inspection of marine fuel supply unit.

2 Basis for approval and inspection

The following standards are the bases for approval and inspection in this Guideline:

- (1) *CCS Rules for Classification of Sea-Going Steel Ships;*
- (2) *CCS Rules for Materials and Welding*

3 Definitions

3.1 For the purpose of this Guideline, the relevant definitions in the *CCS Rules for Classification of Sea-going Steel Ships* apply.

3.2 Fuel supply unit: also known as fuel oil supply unit, is a functional module constituted by pump, heating unit, filtering unit and control system and installed between the daily service fuel tank and the diesel engine, mainly used for fuel supply to the marine diesel engine. Generally, the fuel supply unit is to achieve LSFO (Low Sulfur Fuel Oil)/MDO/HFO switchover; heating, filtering, viscosity control and supply and metering control of fuel; and monitoring and alarm of temperature, pressure and viscosity of fuel supply circuit.

4 Plans and documents

4.1 When applying for inspection, the applicant is to submit the following plans and documents to CCS for approval:

- (1) Main product performance specification table (the highest heating temperature, outlet viscosity, the maximum flow, etc.);
- (2) General assembly plan;
- (3) System flow chart (The materials, dimensions, types, design pressures and design temperatures of pipes, valves and fittings and the set pressure of the safety valve are to be indicated on the plans.);
- (4) Details of main parts;
- (5) Pipe wall thickness calculation book;

4.2 The following plans and technical documents are to be submitted to CCS for information:

- (1) Product Operation Instructions;

(2) Templates of product nameplate, certificate of inspection, etc.

5 Materials and components

5.1 Materials and components of the product are to be controlled according to relevant requirements of CCS Rules currently in effect.

6 Design and technical requirements

6.1 The fuel supply unit is to be designed in accordance with the *CCS Rules for Classification of Sea-going Steel Ships and Rules for Materials and Welding*, and the overpressure prevention measures such as safety valve are to be provided for pressure vessels.

7 Unit/batch inspection

7.1 The unit/batch inspection items are to be inclusive of:

- (1) Visual inspection
- (2) Hydraulic test of pipeline
- (3) Tightness test of unit system
- (4) Measurement of insulation resistance
- (5) Operation test of unit system

7.2 Test method

The test is to be conducted on each product applying for inspection.

7.2.1 Visual inspection

The unit is to be checked against the requirements of approved plans.

7.2.2 Hydraulic test of pipeline

After the completion of manufacturing but before the wrapping of thermal insulation materials or the application of coatings, the steam pipe and the fuel pipeline along with the fittings are to be subjected to the hydraulic (or equivalent pneumatic) test. The test pressure P_s of hydraulic (pneumatic) test is to be not less than the value calculated by the following formula (the test medium is water, diesel, lubricating oil, nitrogen, etc.);

$$P_s = 1.5p \text{ MPa}$$

Where: p — design pressure, in MPa.

The hydraulic test may not be required for pipes with an inside diameter of less than 15 mm. For heaters with the CCS certificate, the hydraulic test of steam pipe may be exempted.

7.2.3 Tightness test of unit system

After the completion of system installation, the tightness test is to be conducted. The test pressure is to be the design pressure and the test medium is to be compressed air.

7.2.4 Measurement of insulation resistance

Before the operation test, the insulation resistance is to be measured at a test voltage of 500 V. The insulation resistance value is to be not less than 100 M Ω .

7.2.5 Operation test of unit system

After the completion of system installation, the operation test is to be conducted. The test medium may be light diesel oil. The system is to run smoothly without abnormal noise or dribbling; the circulating pumps and the supply pump are to achieve manual and automatic switchover and run simultaneously; if the factory cannot provide the test conditions, upon the application from the factory, the light diesel oil operation test may be conducted on board after the completion of installation with associated systems; and all preset alarm functions are to act (the simulation test may be conducted).