

NAVSEA  
STANDARD ITEM

FY-15

ITEM NO: 009-53  
DATE: 29 JUL 2011  
CATEGORY: II

1. SCOPE:

1.1 Title: Bolted Bonnet Steam Valve; repair (shop)

2. REFERENCES:

- 2.1 S9086-CJ-STM-010/CH-075, Fasteners
- 2.2 T9074-AS-GIB-010/271, Requirements for Nondestructive Testing Methods
- 2.3 MIL-STD-2035, Nondestructive Testing Acceptance Criteria
- 2.4 S9253-AD-MMM-010, Maintenance Manual for Valves, Traps, and Orifices (Non-Nuclear), User's Guide and General Information
- 2.5 S9086-RJ-STM-010/CH-504, Pressure, Temperature and Other Mechanical and Electromechanical Measuring Instruments
- 2.6 S9086-RK-STM-010/CH-505, Piping Systems

3. REQUIREMENTS:

3.1 Matchmark valve parts.

(V) "INSPECT PARTS FOR DEFECTS"

3.2 Disassemble, clean internal and external surfaces free of foreign matter (including paint), and inspect parts for defects.

3.2.1 The removal of body-bound studs only to determine the condition of threads is not required.

3.2.1.1 Exposed portion of body-bound studs shall be inspected in accordance with Section 075-8.3 of 2.1.

(I) or (V) "TORQUE TEST" (See 4.3)

3.2.2 Torque test each body-bound stud in accordance with Section 075-8.6.3.2(d) of 2.1.

(I) "LIQUID PENETRANT INSPECT"

3.2.3 Accomplish liquid penetrant inspection of seats (including back seat), discs, or gate in accordance with 2.2.

3.2.3.1 Acceptance criteria shall be in accordance with Paragraph 7 of 2.3, except hairline cracks in hard-faced areas of seats and discs or gate are acceptable provided the valve does not show evidence of leakage.

3.3 Repair valve as follows:

3.3.1 Straighten stem to within 0.002-inch total indicator reading. Polish stem to a 32 Root-Mean-Square finish in way of packing surface and remove raised edges and foreign matter.

3.3.2 Chase and tap exposed threaded areas.

3.3.3 Dress and true gasket mating surfaces.

3.3.4 Machine, grind, or lap and spot-in gate or discs to seats (including back seat) to obtain a 360-degree continuous contact.

(I) or (V) "INSPECT CONTACT" (See 4.3)

3.3.4.1 Inspect contact using blueing method.

3.3.4.2 Transfer line for gate valve shall not exceed 3/16 inch in width and shall appear within the lower 75 percent of the gate seating surface.

3.3.4.3 Transfer line for globe valve shall not exceed 1/16 inch in width.

(I)(G) "VERIFY LEVEL I PARTS AND CLEANLINESS"

3.4 Assemble valve, installing new gaskets in accordance with the manufacturer's specifications, installing new fasteners for those removed in 3.2, in accordance with Attachment A.

3.4.1 Install new valve stem packing conforming to MIL-P-24503/24583 combination in accordance with Chapter 6 of 2.4.

3.5 Hydrostatically test valve as follows:

3.5.1 Hydrostatic test equipment shall have the following capabilities:

3.5.1.1 Manual overpressure protection release valve.

3.5.1.2 Self-actuated and resetting relief valve with a set point no greater than 100 PSIG above the test pressure or 10 percent above the test pressure, whichever is less.

(V) "GAGE CHECK"

3.5.1.3 Master and backup test gages with gage range and graduation in accordance with Table 504-6-1 of 2.5. The backup gage shall be cross-checked to the master hydrostatic test gage up to the maximum test pressure just prior to start of testing. Master and backup gages shall track within 2 percent of each other.

3.5.1.4 Protection equipment shall be accessible and test gages shall be located where clearly visible and readable to pump operator and inspector.

(V)(G) or (I)(G) "SEAT TIGHTNESS" (See 4.4)

3.5.2 Test for seat tightness alternately on each side of gate for double seated valves, and on outboard side only on single seated valves, with the opposite side open for inspection.

3.5.2.1 Do not exceed handwheel closing force specified in Table 505-11-2 of 2.6.

3.5.2.2 Test shall be continued for a minimum of 3 minutes if there is no evidence of leakage, or in the event of visible leakage, until accurate determination of leakage can be made. Maximum allowable leakage: 10 cubic centimeters (cc) per hour, per inch of nominal pipe size; 10 cc maximum per hour for valve sizes less than 1-1/2 inches.

(V)(G) or (I)(G) "SEAT TIGHTNESS" (See 4.4)

3.5.3 Test globe valve in the direction tending to open valve.

3.5.3.1 Do not exceed the handwheel closing force specified in Table 505-11-2 of 2.6.

3.5.3.2 Test shall be continued for a minimum of 3 minutes if there is no evidence of leakage, or in the event of visible leakage, until accurate determination of leakage can be made. Maximum allowable leakage: 10 cubic centimeters (cc) per hour, per inch of nominal pipe size; 10 cc maximum per hour for valve sizes less than 1-1/2 inches.

(V)(G) or (I)(G) "BACK PRESSURE TEST" (See 4.4)

3.5.4 Back pressure test globe stop check valve with stem in the open position. Allowable leakage as follows:

VALVE SIZE (NOM)

LEAKAGE RATE

Up to 2 inches inclusive	25 cc/hr./in.dia.
2-1/2 inches - 10 inches inclusive	50 cc/hr./in.dia.
Over 10 inches	100 cc/hr./in.dia.

The back pressure applied shall be in accordance with the following:

VALVE PRESSURE RATING

TEST BACK PRESSURE

100 PSIG and Below	50 PSIG
Over 150 PSIG	100 PSIG

4. NOTES:

- 4.1 The test pressures of 3.5.2 and 3.5.3 will be specified in Work Item.
- 4.2 Repair of valve operating gear will be specified in Work Item.
- 4.3 The paragraph referencing this note is considered an (I) if the valve is Level I. If the valve is not Level I, the paragraph is considered a (V).
- 4.4 The paragraph referencing this note is considered an (I)(G) if the valve is Level I. If the valve is not Level I, the paragraph is considered a (V)(G).
- 4.5 Test medium will be specified in Work Item.

ATTACHMENT A

VALVE BODY MATERIAL

	<sup>1/</sup> Alloy Steel	Carbon Steel	<sup>2/</sup> Nonferrous
<sup>3/</sup> Studs and Bolts to MIL-DTL-1222	Grade B-16	Grade B-16	Phosphor Bronze - Any Grade Silicon Bronze - Any Grade Nickel Copper - Class A <sup>4/</sup>
Nuts to MIL-DTL-1222	Grade 4 or 7	Grade 4 or 7	Phosphor Bronze - Any Grade Silicon Bronze - Any Grade Nickel Copper - Class A or Class B <sup>5/</sup>
Socket Head Cap Screws	FF-S-86	FF-S-86	

<sup>1/</sup> Alloy steel is of Composition A - 2-1/4 percent Chromium, one percent Molybdenum, Composition B - 1-1/4 percent Chromium, 1/2 percent Molybdenum, and Composition C - Carbon Molybdenum.

<sup>2/</sup> Nonferrous Alloy except Aluminum.

<sup>3/</sup> Studs shall be Class 2 or 3 fit on the nut end and Class 5 fit on the stud and, except that a Class 3 fit with a thread locking compound may be used where temperatures do not exceed 250 degrees Fahrenheit. The thread locking compound shall conform to ASTM D 5363. Check Class 3 fit stud ends in accordance with SAE-J2270.

<sup>4/</sup> Fasteners of Nickel Copper Aluminum shall be the only type used on sea chest and hull valves.

<sup>5/</sup> Nuts of Nickel Copper Alloy, conforming to QQ-N-281 Class A or B, or Nickel Copper Aluminum conforming to QQ-N-286 shall be the only type used on sea chest and hull valves.