McKenzie Valve & Machining LLC

MCKENZIE 3/4” SAMPLE VALVE FOR PRESSURE CARS

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McKenzie Valve and Machining, LLC provides this document for use by personnel involved with the transportation of commodities in railroad tank cars and the maintenance and repair of tank car valves. The information contained in this document is intended to aid in the use of this product in a manner that promotes personal safety and environmentally friendly loading and unloading tank cars.

This document is intended to be used ONLY by personnel trained in the mechanical requirements to operate valves and the procedures for loading and unloading tank cars as required by the American Association of Railroad (AAR), U.S. Department of Transportation Federal Railroad Administration, Transport Canada, Canadian Transportation Agency, Ministry of Communications and Transport (Mexico) and Railway Transportation Regulatory Agency (Mexico) or other jurisdictional agencies.

McKenzie Valve and Machining, LLC provides warnings for potential hazards known to McKenzie Valve and Machining, LLC. These warnings are not intended to override practices and protocols required by the tank car owner or the shipper of the tank car commodity or jurisdictional agencies.

This document provides detailed instruction regarding the disassembly, inspection and reassembly of the McKenzie 3/4” Sample Valve. No deviations to these instructions are recommended by McKenzie Valve and Machining, LLC.

For product warranty, please see:

https://www.mckenzievalve.com/wp-content/uploads/2020/11/MVM-10-Year-Warranty.pdf

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1. PURPOSE

1.1. This document provides generic instructions for the installation, operation, maintenance, assembly and testing of the McKenzie 3/4” Sample Valve for pressure cars.

2. SCOPE

2.1. This document applies to McKenzie 3/4” Sample Valve.

3. WARNINGS

3.1. This document contains images indicating potential hazards to be avoided using ANSI Z535 requirements.

3.2. The Danger hazard is indicated by this symbol and indicates a hazard situation, that if not avoided will result in death or serious injury.

3.3. The Warning hazard is indicated by this symbol and indicates a hazard situation, that if not avoided could result in death or serious injury.

3.4. The Caution hazard is indicated by this symbol and indicates a hazard situation, that if not avoided could result in minor or moderate injury.

4. THE MCKENZIE 3/4” SAMPLE VALVE

4.1. The McKenzie 3/4” SAMPLE VALVES are shown in Figure 1 and the components are listed in Table 1. The two configurations and internal components are shown in Figure 1.

4.2. Valve components are listed in this manual with their symbol number in parentheses. Example: Body (1).

4.3. All references to clockwise or counterclockwise are as view from the top of the valve.

4.4. Features and Benefits

- Easy Operation
- Safe sampling of tank car commodity

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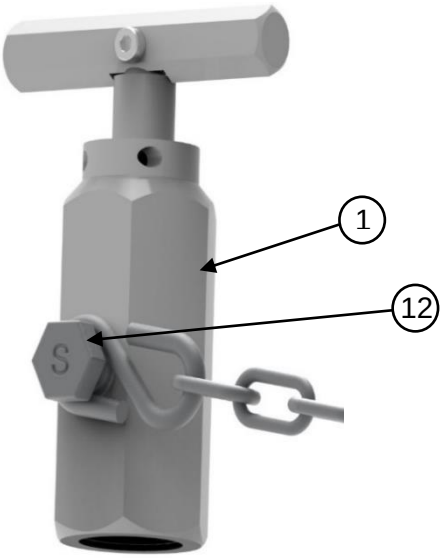
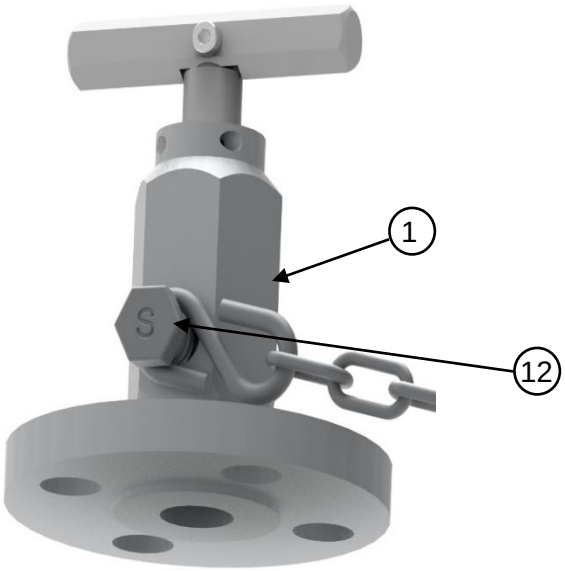
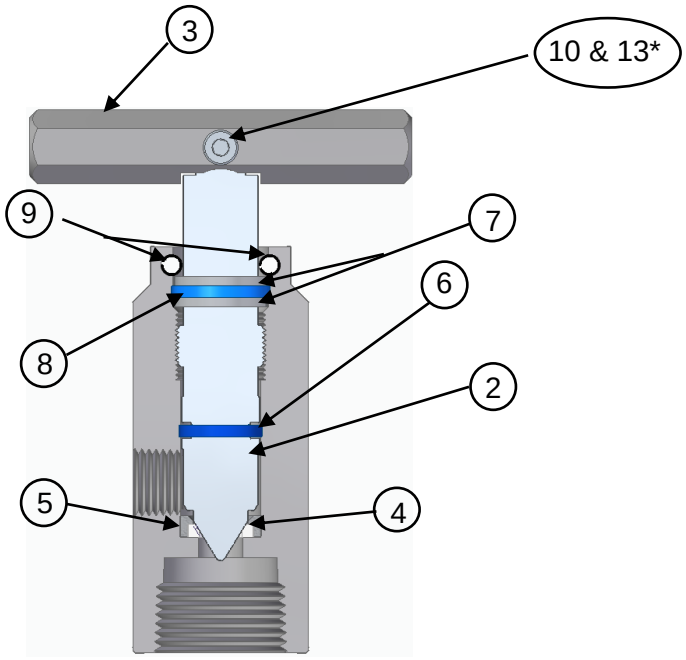


SNV-T-3636



SNV-F-3636



* SYMBOL 13 NOT SHOWN

FIGURE 1
SYMBOL 11 NOT SHOWN

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TABLE 1 - BILL OF MATERIAL					
PART NO.	DESCRIPTION	MATERIAL	QTY	SYMBOL	WT. (LBS)
516203-XX	SNV-T-3636 - ¾" FNPT INLET - VALVE ASEMBLY				1.7
111023-01	BODY	316L	1	1	1.01
516207-XX	SNV-F-3636 - FLANGED INLET - VALVE ASSEMBLY				2.9
111491-01	FLANGED BODY	316L	1	1	2.21
COMMON COMPONENTS					
PART NO.	DESCRIPTION	MATERIAL	QTY	SYMBOL	WT. (LBS)
114498-01	STEM	316L	1	2	0.23
111025-01	HANDLE	316L	1	3	0.18
111037-01	SEAT*	TEFLON	1	4	0.005
111038-01	RETAINER*	316L	1	5	0.02
TABLED	GASKET RING, 0.0935 THK X 0.460 ID X 0.647 OD	TABLED	1	6	0.005
114032-01	RETAINER RING, 0.070 THK X 0.610 ID X 0.740 OD	316L	2	7	0.02
TABLED	GASKET RING, 0.0935 THK X 0.581 ID X 0.768 OD	TABLED	1	8	0.005
305-0092	SPRING PIN, SLOTTED, M4 DIA X 14 MM LG	18-8 SST	1	9	0.01
304-20293	SOCKET HEAD CAP SCREW. M4 X 0.7, 18 MM LG	18-8 SST	1	10	0.01
113923-XX	METAL PLATE	304 SS	1	11	0.01
509934-01	PLUG AND CHAIN ASSEMBLY	416/316 SS	1	12	0.2
304-20294	LOCKNUT,M4 x 0.7	18-8 SST	1	13	0.01

- Permanently installed in the body (1)

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5. INSTALLATION TOOLING

A. Wrench for tightening SNV-F-3636 Inlet flange bolting – 7/8 Hex.

B. Wrench for tightening the Outlet pipe plug – 5/8 Hex.

5.1. Installing the valve

5.1.1. If replacing an existing valve, this procedure is contingent that the valve to be replaced has been removed from the tank car.

5.1.2. The technician(s) installing the valve are using PPE appropriate for the site conditions.

5.1.3. The McKenzie 3/4” SAMPLE VALVE has two inlet configurations:

5.1.3.1. 3/4” FNPT

5.1.3.2. 3-7/8” OD Flange with (4) 1/2” bolting on a 2-3/4” bolt circle.

5.1.4. For the 3/4” FNPT valve:

5.1.4.1. Inspect the threads on the mating pipe.

5.1.4.2. Replace the pipe if the threads are damaged.

5.1.4.3. Apply lubricant, Teflon® tape or other substances required by the tank car owner, shipper or jurisdictional authority to the threads of the mating pipe.

5.1.4.4. Thread the valve onto the pipe approximately nine total turns.

5.1.5. For the 3-7/8” OD Flange with (4) 1/2” bolting on a 2-3/4” bolt circle:

5.1.5.1. Inspect the mating flange and bolting for damage.

5.1.5.2. Repair or replace the mating flange if the flange facing has damage.

5.1.5.3. Inspect the bolting components for damage.

5.1.5.4. Replace all bolting components that have damage.

5.1.5.5. Install the gasket into the groove. The gasket must not bind when inserted into the groove.

5.1.5.6. Determine the proper orientation of the valve outlet.

5.1.5.7. With the valve in the proper orientation, align the bolt holes on the inlet flange of the valve with the studs or tapped holes (if bolts are used) and lower the valve onto the flange.

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5.1.5.8. Install the stud nuts or bolts.

5.1.5.9. Torque the nuts or bolts to the requirement of the gasket manufacturer.

5.1.6. Remove the outlet pipe plug (12).

5.1.7. Apply lubricant, Teflon® tape or other substances required by the tank car owner, shipper or jurisdictional authority to the threads of the pipe plug.

5.1.8. Thread the pipe plug into the body (1) hand tight and then tighten wrench tight.

5.1.9. Open the valve by turning the handle counterclockwise.

5.1.10. TO PREVENT DAMAGE TO THE RETAINERS (7) AND GASKET (8), THE VALVE SHOULD NOT BE TURNED IN THE OPENING DIRECTION MORE THAN THREE TURNS FROM THE CLOSED POSITION.

5.1.11. Close the valve by turning the handle clockwise. When the valve is seated (Stem (2) is contacting seat (4)) turning the handle will require more force. At this point turn the handle an additional 1/8 turn clockwise. NOTE: The handle is to only be turned by hand. No wrenches or other tools are to be used to turn the handle.

5.1.12. This completes the installation of the valve.

5.1.13. Prior to loading the tank car, the inlet connection should be checked for leakage per the requirements of the tank car owner, shipper or jurisdictional authority.

6. TROUBLE SHOOTING

Always use the proper PPE for the site and potential hazards of the tank car commodity. Review the tank car stencils for any DANGER or WARNING information.

6.1. Inlet pipe thread leakage.

6.1.1. Vent the tank car of all pressure.

6.1.2. Tighten the valve to the pipe if possible.

6.1.2.1. If the valve cannot be tightened, remove the valve.

6.1.3. If valve can be tightened, re-pressurize the tank car and check for leakage.

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6.1.4. If the leakage persists:

6.1.4.1. Vent the tank of all pressure.

6.1.4.2. Remove the valve.

6.1.4.3. Inspect the valve pipe threads for damage. If damaged, replace the valve.

6.1.4.4. Inspect the connecting pipe threads for damage. If damaged, repair or replace the pipe.

6.1.5. Install the replacement valve per 5.1.4.

6.2. Inlet gasket leak.

6.2.1. Vent the tank car of all pressure.

6.2.2. Check the bolting torque to the gasket manufacturer’s specification.

6.2.3. If the bolting torque is to specification, check with the gasket manufacturer for recommendations.

6.2.4. If the leakage cannot be eliminated by using the gasket manufacturer’s recommendation:

6.2.4.1. Vent the tank car of all pressure.

6.2.4.2. Remove the inlet flange bolting.

6.2.4.3. Remove the valve.

6.2.4.4. Remove and inspect the gasket per the gasket manufacturer’s recommendation.

6.2.4.5. Install the valve following steps 5.1.5 to 5.1.5.9.

6.3. Packing leakage.

6.3.1. There is no adjustment that can be made for packing leakage.

6.3.2. Vent the tank car of all pressure.

6.3.3. Remove the valve.

6.3.4. Repair the valve per Section 7 thru Section 12 of this document or replace the valve.

6.4. Pipe plug (12) to body (1) leakage

6.4.1. Make certain that the valve is closed.

6.4.2. Observe for leakage around the pipe plug threads.

6.4.3. If leakage is observed, vent the tank car of all pressure.

6.4.4. Remove the pipe plug (12) by turning counterclockwise.

6.4.5. Inspect the 1/4” NPT threads on the pipe plug (12) and body (1).

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6.4.4. Apply lubricant, Teflon® tape or other substances required by the tank car owner, shipper or jurisdictional authority to the threads of the pipe plug.

6.4.5. Replace pipe plug (12) and/or the valve if the NPT threads in the body are damaged.

6.4.6. With the valve in the open position, pressurize the valve and check for leakage.

6.4.7. If leakage is detected repeat steps 6.4.1 to 6.4.5.

6.5. Valve will not open or close.

6.5.1 Vent the tank car of all pressure.

6.5.2 Remove the valve.

6.5.3 The valve may be either replaced in kind or maintenance performed per Section 7 thru Section 12 of this document.

7. DISASSEMBLY AND ASSEMBLY TOOLING.

7.1 Fixtures

7.1.1 Body Fixture. See 9.1 and 11.5

7.2 Wrenches

7.2.1 Handle Cap Screw (10) – 7 mm hex.

7.2.2 Handle Locknut (13) – 7 mm hex.

7.2.3 Plug and chain (12) – 5/8” hex.

7.3 Other

7.3.1 4 mm Pin Punch

7.3.2 Picks (straight and angled)

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8 LUBRICANTS AND THREAD LOCKERS.

Below are listed the lubricants and thread locker used by McKenzie Valve and Machining. It is the user’s responsibility to make certain that the appropriate lubricants and thread lockers are compatible with the intended service are used.

8.1 Stem and fastener threads - Loctite LB 8150

8.2 Gaskets and O-rings – Molykote 111

9. DISASSEMBLY.

9.1. Place the valve in a fixture.

Refer to Figure 2.

9.2. Remove the plug and chain (12) from the body (1) as shown in Figure 2 by turning the pipe plug counterclockwise.

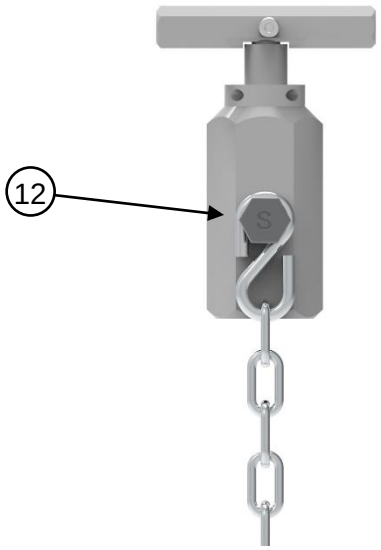

FIGURE 2

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9.3. Refer to Figure 3.

9.4. Remove the two spring pins (9) from the body using a 4mm pin punch.

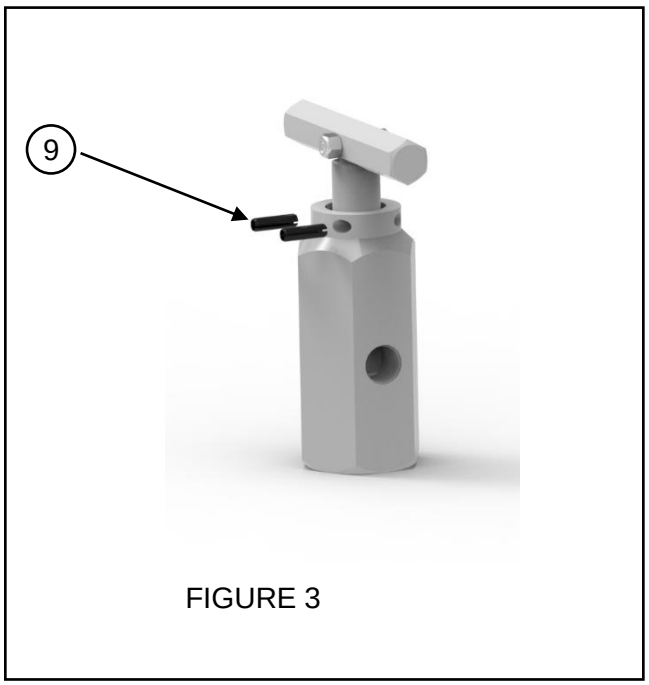

FIGURE 3

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9.5. Refer to Figure 4.

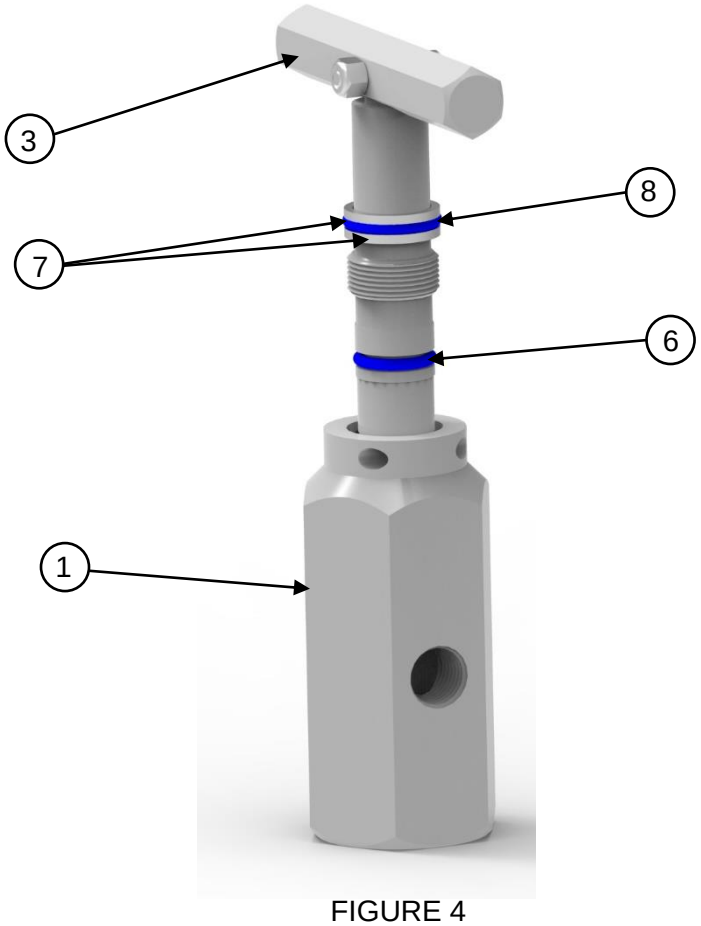

FIGURE 4

9.6. Turn the handle (3) counterclockwise until the stem threads (2) disengage from the body (1).

9.7. Pull up on the handle (3) and remove the stem (2), retainer rings (7), and gaskets (6 and 8) from the body (1).

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9.8. Refer to Figure 5.

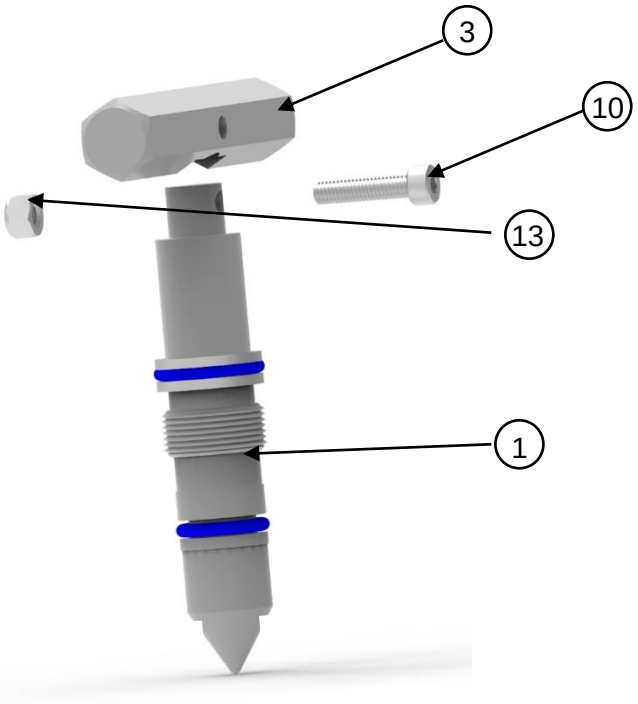

FIGURE 5

9.9. Turn locknut (13) counterclockwise and remove from cap screw (10).

9.10. Remove cap screw (10) from handle (3).

9.11. Remove handle (3) from stem (2).

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9.12. Refer to Figure 6.

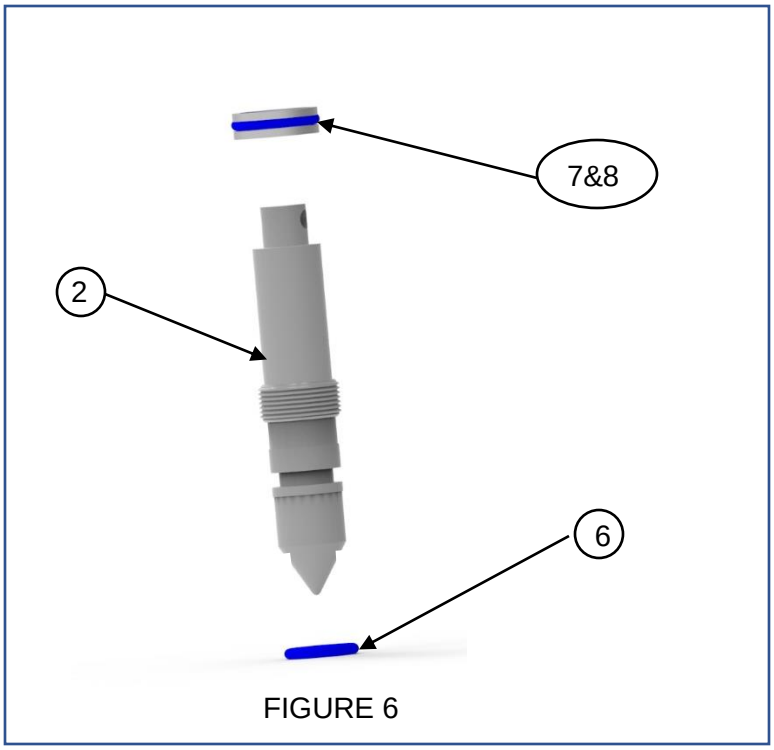

FIGURE 6

9.13. Slide retainer rings (7) and gasket (8) from stem (2).

9.14. Using a pick tool remove gasket (6) from the groove on stem (2) and then slide gasket (6) from stem (2).

9.15. This completes the disassembly of the valve.

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10. INSPECTION and MAINTENANCE

NOTE: All components listed below for inspection and maintenance must be thoroughly cleaned and safe for handling prior to commencing the inspection and maintenance. Procedures used for cleaning and if required, decontamination, must meet the standards of the tank car owner, shipper and jurisdictional authority.

10.1. Body (1)

10.1.1. Inspect the body (1) for cracks using a method listed in AAR MSRP C-III [M-1002] Appendix T. Replace the body if any cracks are detected.

10.1.2. Inspect the interior of the body for any damage. Replace the body if damage is detected.

10.1.3. For the SNV-T-3636, inspect the inlet threads. Replace the body if the threads are damaged.

10.1.4. For the SNV-F-3636 inspect the flange facing for damage. Replace the body if flange facing is damaged.

10.2. Stem (2)

10.2.1. Inspect the m8 x 1.0 threads for damage. Replace the stem (4) if damage is noted.

10.2.2. Inspect the surface of all diameters for any signs of wear or galling. Replace the stem (4) if any wear or galling exceeds 0.001”.

10.2.3. Inspect the conical end for wear or galling. Replace the stem (4) if wear or galling is noted.

10.2.4. Inspect the gasket groove for any signs of wear or galling. Replace the stem (4) for wear or galling damage exceeding 0.005”.

10.3. Handle (3)

10.3.1. Visually inspect the handle (3) for any cracks or evidence of mechanical damage to the cross drilled hole. Replace the handle (3) if any cracks or damage is noted.

10.4. Seat (4)

10.4.1. The seat (4) is not removable. If damaged, the valve body (1) must be replaced.

10.5. Retainer (5)

10.5.1. The retainer (5) is not removable. If damaged, replace the valve body (1).

10.6. Gasket ring (6)

10.6.1. The gasket ring (6) is not reusable and must be replaced.

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10.7. Retainer ring (7)

10.7.1. Inspect the retainer rings (7) for galling. Replace all retainer rings (7) that have galling damage.

10.8. Gasket ring (8)

10.8.1. The gasket ring (8) is not reusable and must be replaced.

10.9. Spring Pins (9)

10.9.1. Inspect the spring pins (9) for any mechanical or corrosive damage. Replace all spring pins (9) that damage.

10.10. Cap screw (10)

10.10.1. Inspect the cap screw (10) threads for damage. Replace the cap screw if damage is noted.

10.10.2. Inspect the cap screw (10) for mechanical damage. Replace the cap screw if damage is noted.

10.11. Plug and Chain assembly (12)

10.11.1. Inspect the ¼ NPT threads on the pipe plug.

Replace the pipe plug if damage is noted.

10.11.2. Inspect the hex on the pipe plug. Replace the pipe plug if damage is noted.

10.11.3. Inspect the chain for any mechanical damage. Replace the chain if damage is noted.

10.12. Locknut (13)

10.12.1. Inspect the locknut threads for damage. Replace the locknut if damage is noted.

10.12.2. Inspect the hex of the locknut. Replace the locknut if damage is noted.

10.13. This completes the inspection of the valve components.

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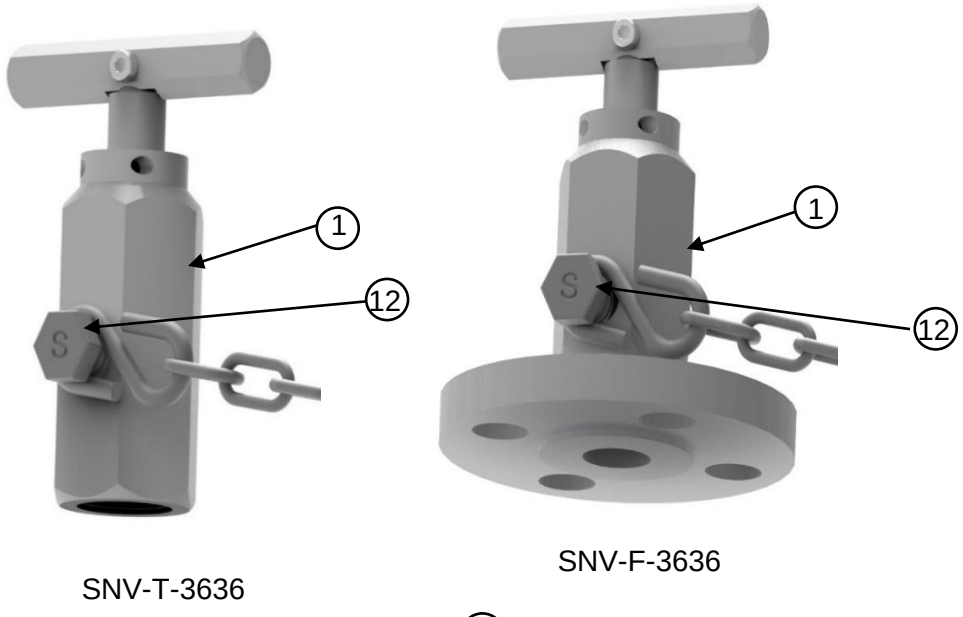
11. ASSEMBLY

11.1. The McKenzie Sample Valve is manufactured in two configurations as shown in Figure 7. Except for the body (1), the components for the two configurations are the same.



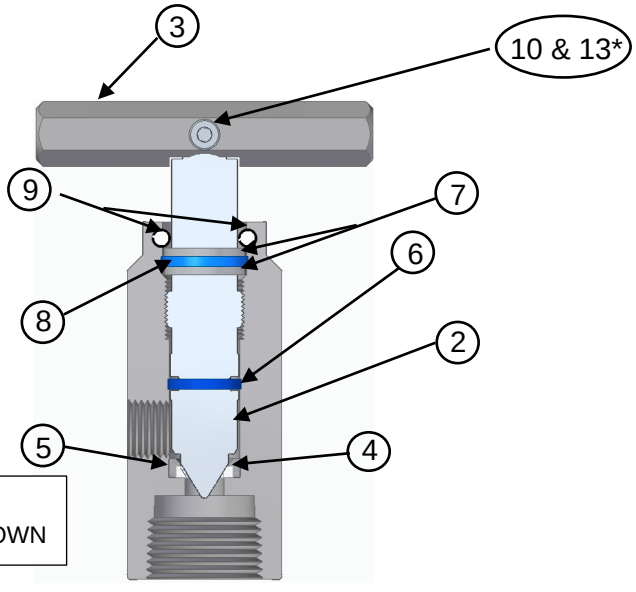


FIGURE 7
SYMBOL 11 NOT SHOWN

* SYMBOL 13 NOT SHOWN

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11.2. The McKenzie Sample Valve Components are listed in Table 2 below.

TABLE 2 - BILL OF MATERIAL					
PART NO.	DESCRIPTION	MATERIAL	QTY	SYMBOL	WT. (LBS)
516203-XX	SNV-T-3636 - ¾" FNPT INLET - VALVE ASEMBLY				1.7
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111491-01	FLANGED BODY	316L	1	1	2.21
COMMON COMPONENTS					
PART NO.	DESCRIPTION	MATERIAL	QTY	SYMBOL	WT. (LBS)
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111025-01	HANDLE	316L	1	3	0.18
111037-01	SEAT*	TEFLON	1	4	0.005
111038-01	RETAINER*	316L	1	5	0.02
TABLED	GASKET RING, 0.0935 THK X 0.460 ID X 0.647 OD	TABLED	1	6	0.005
114032-01	RETAINER RING, 0.070 THK X 0.610 ID X 0.740 OD	316L	2	7	0.02
TABLED	GASKET RING, 0.0935 THK X 0.581 ID X 0.768 OD	TABLED	1	8	0.005
305-0092	SPRING PIN, SLOTTED, M4 DIA X 14 MM LG	18-8 SST	1	9	0.01
304-20293	SOCKET HEAD CAP SCREW. M4 X 0.7, 18 MM LG	18-8 SST	1	10	0.01
113923-XX	METAL PLATE	304 SS	1	11	0.01
509934-01	PLUG AND CHAIN ASSEMBLY	416/316 SS	1	12	0.2
304-20294	LOCKNUT,M4 x 0.7	18-8 SST	1	13	0.01

*Permanently installed in the body (1), See Figure 8.

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11.3. Refer to Figure 7 and Table 2 for the components listed in the assembly sequences below. Cutaway views of the body are used to illustrate the placement of internal components.

11.4. All parts shall be visually inspected prior to assembly and cleaned as necessary to remove dirt, dust or grease.

11.5. Place the body (1) in a fixture. Refer to Figure 8.

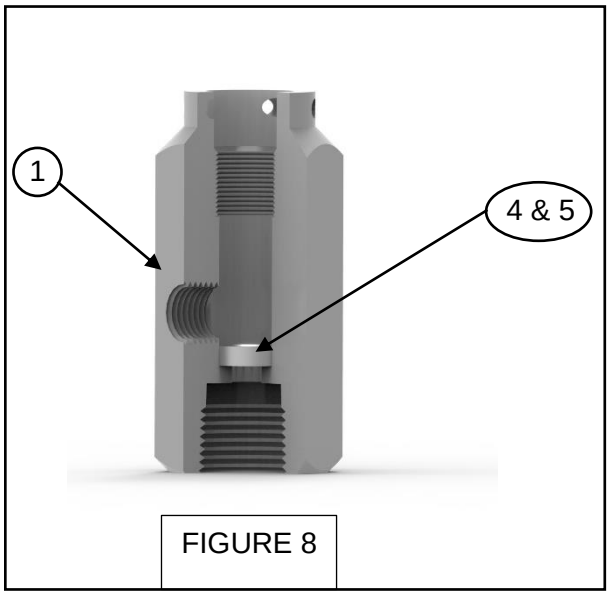

FIGURE 8

11.6. Refer to Figure 9

11.6.1. Apply a light coating of lubricant as required by the tank car owner, shipper or jurisdictional authority to the gasket (6).

11.6.2. Slide gasket (6) over stem (2) and into the groove of stem (2).

11.7. Refer to Figure 10.

11.7.1. Apply a light coating of lubricant as required by the tank car owner, shipper or jurisdictional authority to the threads on stem (2).

11.7.2. Insert the stem (2) and gasket (6) into the body (1) as shown in Figure 10.

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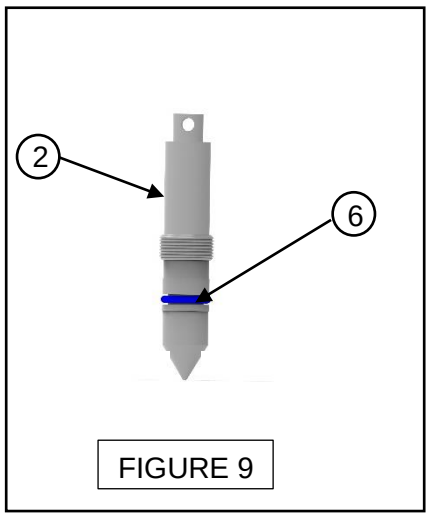

FIGURE 9

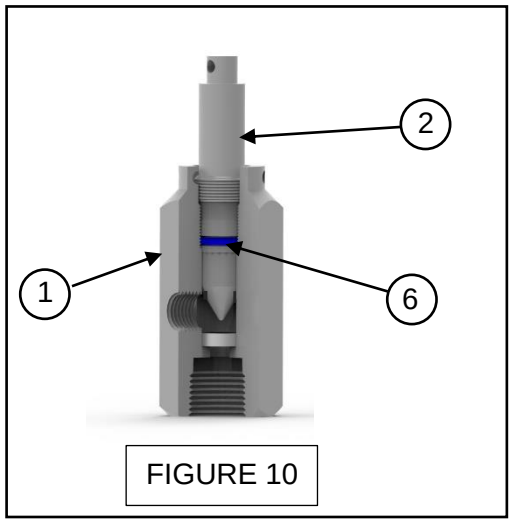

FIGURE 10

11.8. Refer to Figure 11

11.8.1.1. Place a 4mm Rod into the drilled hole in the stem (2) as shown.

11.8.1.2. Using the 4 mm Rod, turn the stem (2) clockwise until contact with the seat (4) is made.

11.8.1.3. Remove the 4 mm Rod.

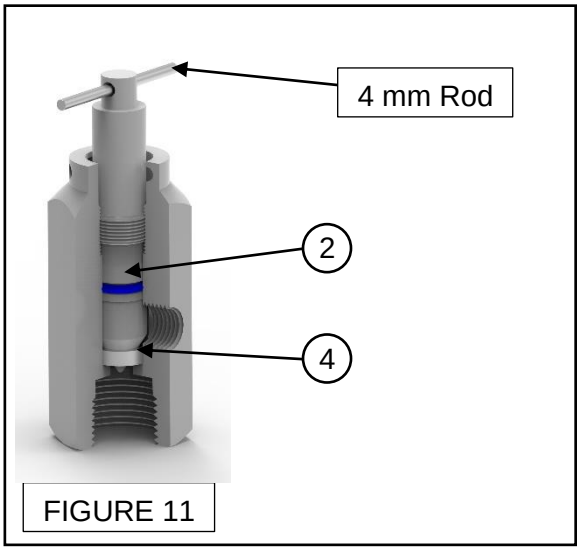

FIGURE 11

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11.9. Refer to Figure 12.

11.9.1. Insert retaining ring (7) over stem (2).

11.9.2. Insert the Gasket Guide Tool into the two cross drilled holes in the body (1) as shown.

11.9.3. The Gasket Guide Tool is required to allow the gasket (8) to be inserted over the stem (2) without becoming fouled in the body (1) cross drilled holes.

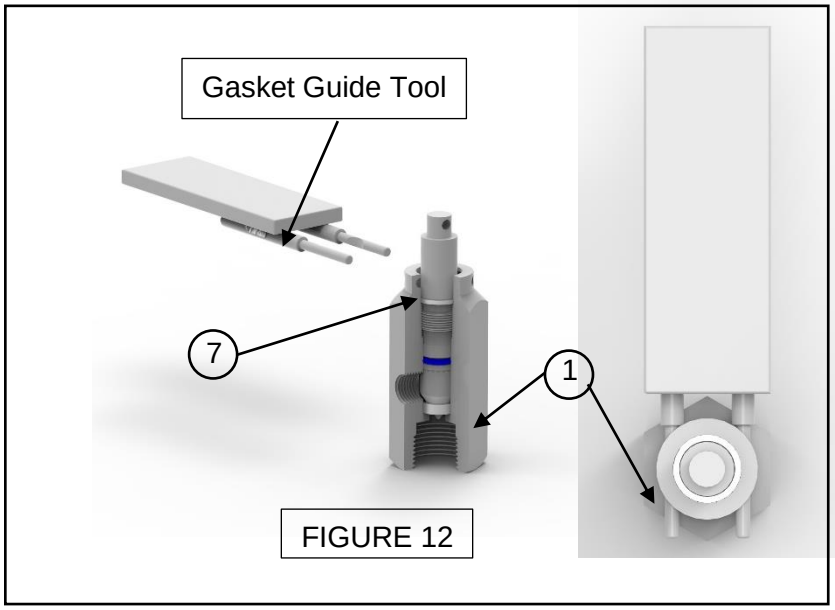

FIGURE 12

11.10. Refer to Figure 13.

11.10.1. Apply a light coating of lubricant as required by the tank car owner, shipper or jurisdictional authority to gasket (8).

11.10.2. Insert gasket (8) over stem (2) as shown.

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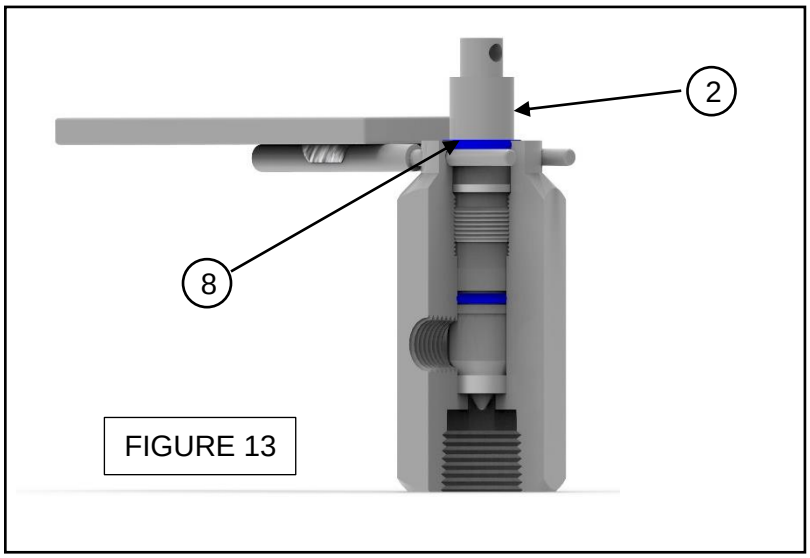

FIGURE 13

11.11. Refer to Figure 14.

11.11.1. Use the Gasket Installation Tool to press the gasket (8) past the pins of the Seal Guide Tool.

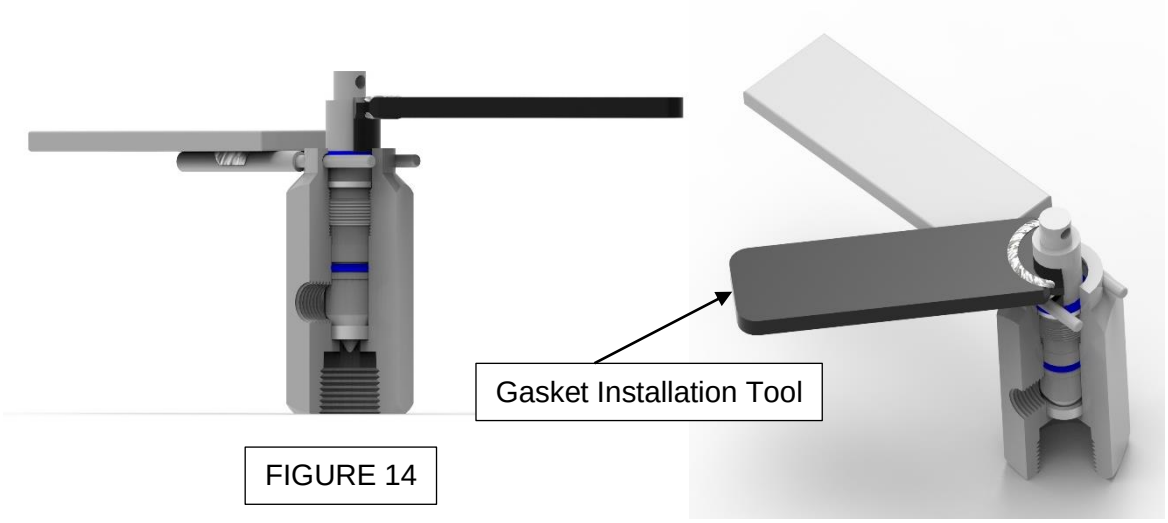

FIGURE 14

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11.12. Refer to Figure 15

11.12.1. Remove the Gasket Installation Tool and the Gasket Guide Tool.

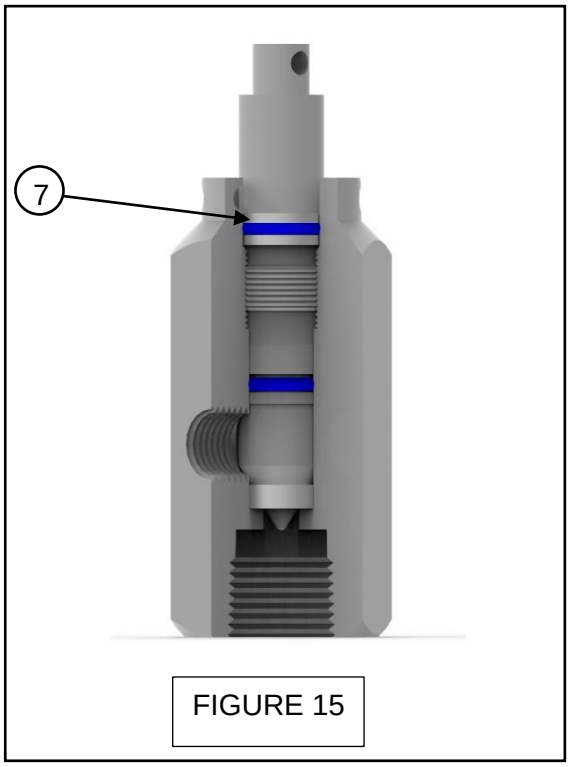

FIGURE 15

11.12.2. Insert retaining ring (7) over the stem (2) as shown.

11.13. Refer to Figure 16.

11.13.1. Align a spring pin (9) with a cross drilled hole in the body (1). Insert the pin into the drilled hole with a 4 mm pin punch.

11.13.2. Repeat for the other spring pin (9).

11.13.3. The spring pins are shown on both sides of the body to indicate that they may be inserted from either side of the body.

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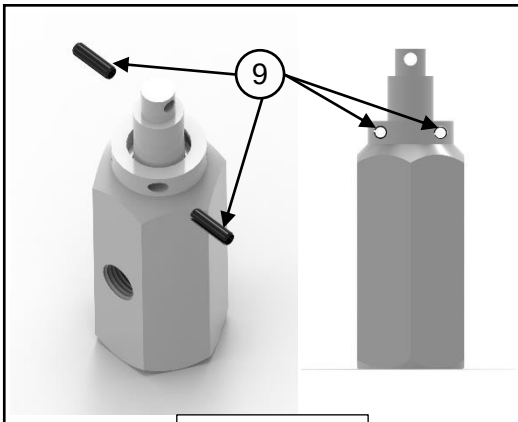

FIGURE 16

11.14. Refer to Figure 17.

11.14.1. Place handle (3) over stem (2) and align cross drilled holes in handle (3) and stem (2).

11.14.2. Insert cap screw (10) into drilled holes in handle (3) and stem (2).

11.14.3. Thread locknut (13) onto cap screw (10). Tighten locknut and cap screw tool tight.

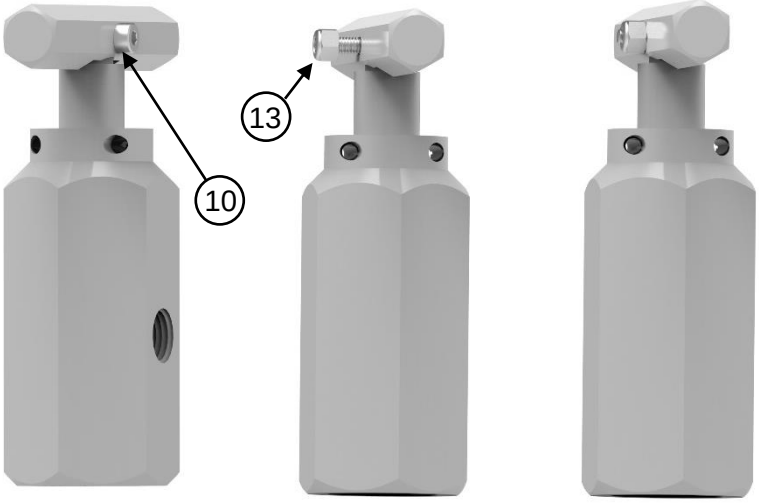

FIGURE 17

11.15. This completes the assembly of the valve.

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12. VALVE TESTING

NOTE: THE VALVE AND THE TEST EQUIPMENT WILL BE PRESSURIZED DURING THE TESTING. FLUIDS UNDER PRESSURE CAN RELEASE ENERGY THAT MAY BE HARMFUL IF THE PRESSURIZED COMPONENT(S) FAIL. MAKE CERTAIN THAT ALL TEST EQUIPMENT IS RATED FOR THE TEST PRESSURE AND TEMPERATURE AND FOLLOW THE MANUFACTURER’S AND SITE INSTRUCTIONS FOR OPERATING THE TEST EQUIPMENT.

12.1. Scope

12.1.1. This section details bubble leak testing for the McKenzie 3/4” Sample Valve.

12.1.2. All personnel conducting the test shall meet the requirements of AAR MSRP C-III [M-1002] Appendix T.

12.1.3. Testing shall be conducted to the requirements of AAR MSRP C-III [M-1002] Appendix T.

12.2. Test Equipment

12.2.1 Pressure Gages

12.2.1.1 Dial indicating (analog) gauges used to monitor test pressures shall be per AAR MSRP Section C-III, Appendix D. Gauges preferably shall have a four (4) inch minimum face and shall be graduated over a range of approximately twice the test pressure.

12.2.1.2 The use of digital gauges is permitted provided the test pressure is within the manufacturer’s range.

12.2.1.3 Calibration of the pressure gages used to monitor test pressure shall be in accordance with AAR MSRP C-III [M-1002] Appendix T.

12.2.2 Test Liquids

12.2.2.1 Liquid film solutions shall meet the requirements MSRP C-III Appendix T.

12.2.3 Gas Medium

12.2.3.1 The gas medium used for the liquid film bubble leak test of the seat shall be air or nitrogen, concentration not applicable.

12.3 Test Procedure

All testing required in this section shall be documented and traceable to the valve serial number

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and retained per the quality requirements of the organization performing the testing.

12.3.1 Test Preparation

12.3.1.1 Test areas shall be free of oil, grease and other contaminants, which might mask a leak.

12.3.1.2 The Bubble Leak Technician shall ensure there is sufficient lighting available at the inspection surface. When sufficient lighting is not available the use of auxiliary lighting (e.g. flashlights or flood lamps) is required.

12.3.1.3 The Bubble Leak Technicians eyes shall be within 24" (2 feet) of the examination surface.

12.3.1.4 The angle of view should be no less than 30 degrees with the plane of the surface being examined. Use of a mirror shall be required when viewing angle is less than 30 degrees of access.

12.3.1.5 Component test area temperature shall be between the applicable test solution range of paragraph 12.2.2. Locally heating or cooling of the test area is acceptable.

12.3.2 Body Hydrostatic Test

12.3.2.1 Install the 1/4" NPT plug into the valve body without the other parts assembled. Install the plug wrench tight.

12.3.2.2 If the valve is the threaded design, thread or clamp the valve body onto the test fixture. If the valve is the flanged design, bolt or clamp the valve body onto the test fixture.

12.3.2.3 Attach an external valve rated for at least 800 psig to the top of the body in the open position to vent the air.

12.3.2.4 Apply water pressure to the sample valve body and note the discharge from the external valve. Close the external valve when the discharge stream is water without any air bubbles.

12.3.2.5 Dry the outside of the valve.

12.3.2.6 Apply 750 psig +50/-0 psig to the valve.

12.3.2.7 Observe the valve body for leakage for 1 minute minimum hold time.

12.3.2.8 If no leakage is observed, the valve body is acceptable.

12.3.2.9 Vent the pressure to the valve.

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12.3.3 Seat Hydrostatic Test:

12.3.3.1 Fully assemble the sample valve but do not attach the 1/4" NPT plug.

12.3.3.2 If the valve is the threaded design, thread or clamp the valve onto the seat test fixture. If the valve is the flanged design, bolt or clamp the valve onto the test fixture.

12.3.3.3 Open the valve one turn using the handle.

12.3.3.4 Apply water pressure to the valve and note the discharge from the valve. Close the valve using the handle when the discharge stream is water without any air bubbles. When closing the valve, once the stem contacts the body seat, turn by hand only an additional 1/8 turn.

12.3.3.5 Dry the outside of the valve. Using an air wand and dry rags as necessary, completely dry the cavity seat area.

12.3.3.6 Apply 750 psig +50/-0 psig to the valve.

12.3.3.7 Observe the valve for leakage for 1 minute minimum hold time.

12.3.3.8 If no leakage is observed, the valve is acceptable.

12.3.3.9 Vent the pressure to the valve.

12.3.4 Seat Air Test

12.3.4.1 If the valve is the threaded design, thread or clamp the valve onto the seat test fixture. If the valve is the flanged design, bolt or clamp the valve onto seat test fixture.

12.3.4.2 Close the valve using the handle. Once the stem contacts the body seat, turn by hand only an additional 1/8 turn.

12.3.4.3 Apply 90 psig air to the valve +10/-0 psig. Allow 5 seconds minimum soak time.

12.3.4.4 Apply an approved leak detection solution to the valve seat through the 1/4” NPT outlet on the valve body.

12.3.4.5 Observe the seat for leakage for 90 seconds minimum dwell time.

12.3.4.6 If no leakage is observed, the seat leak test is acceptable.

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12.3.5 External Leak Air Test

12.3.5.1 Install the 1/4” NPT plug attached to the valve. Install the plug wrench tight.

12.3.5.2 Put the valve in the open position then apply 90 psig air to the valve +10/-0 psig. Allow 5 seconds minimum soak time.

12.3.5.3 Apply approved test liquid to the body, retainer ring and stem area.

12.3.5.4 Observe these areas for 90 seconds minimum dwell time.

12.3.5.5 If no leakage is observed, the valve is acceptable.

12.3.5.6 If no leakage is noted, the valve is not acceptable and must be repaired.

12.3.5.7 Vent all pressure from the valve.

12.3.5.8 Remove the valve from the test stand.

12.4 This completes the testing of the valve.

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