

INITIAL RELEASE E.O.:	REV.	DESCRIPTION	INCORP BY	DATE	
E.O. 32796					

! WARNING

IMPROPER REPAIR OR SERVICING OF THIS PRODUCT CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

SAFETY PRECAUTIONS

Users must be trained and equipped for the handling, use and servicing of high pressure fluids and systems. Users should contact their gas and liquid supplier for specific safety precautions and instructions. Always wear appropriate protective clothing including approved safety glasses, gloves, aprons, etc... User should follow all applicable safety and maintenance procedures. Obey all local government and agency codes and regulations. Do not exceed the maximum pressure of the product or system. Always operate within the temperature limits and conditions specified for the product or system. Venting fluids and gases can be dangerous and hazardous. Always vent to a safe environment away from employees or other hazards. Always ensure adequate ventilation exists to prevent possible suffocation or unsafe conditions.

1.0 GENERAL INSTRUCTIONS

- 1.1 Veriflo valves have been manufactured as "ultra high purity" products in a class 100 or better environment. The same level of cleanliness or better should be maintained at all times when repairing or servicing the valve in the field.
- 1.2 Purge all inlet and outlet flow passages prior to servicing.
- 1.3 If the valve is to be serviced while installed in a system, isolate the valve prior to servicing.
- 1.4 A pressload should be applied to the valve cap when removing or installing (torquing) the clampnut. This prevents cap rotation which can lead to galling of the outboard seal and/or diaphragm buckling which reduces cycle life.
- 1.5 The following instructions apply to 944G (toggle) assemblies. 944G-LK (locking toggle) and panel mount options are similar. See section 7 for design characteristics and service information for other models.
- 1.6 For panel mount options, open the valve (toggle up) and unscrew panel mount nut CCW – 3/4" end wrench – remove valve from rear of panel.

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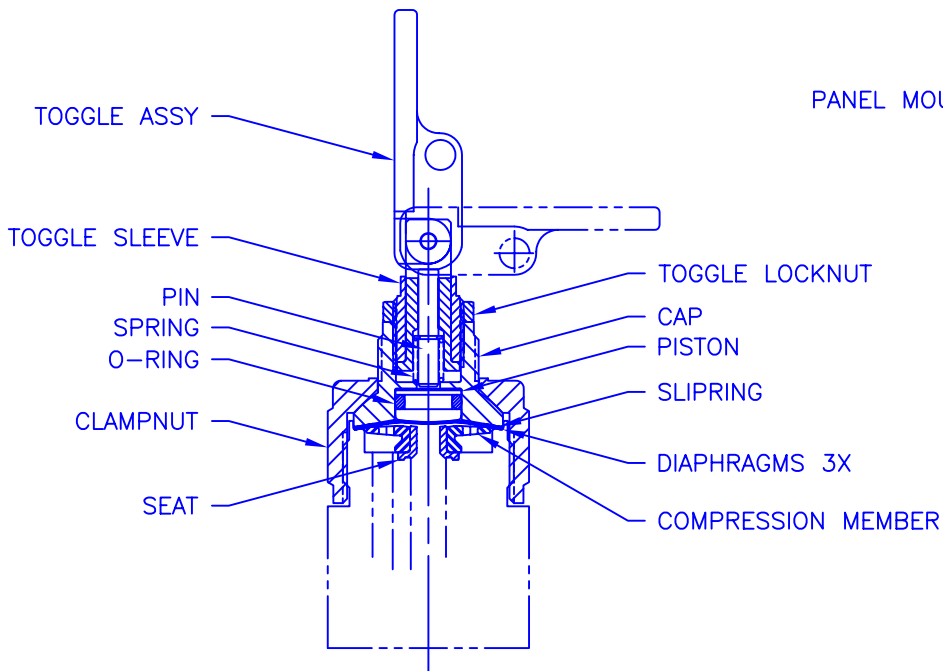
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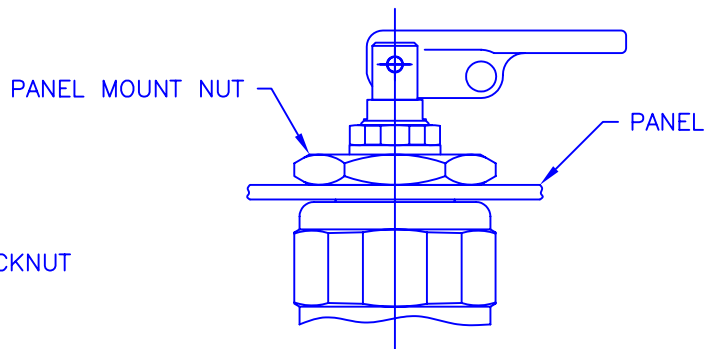
DRAWN	HEW	DATE	06/14/05	TITLE	REPAIR INSTRUCTIONS, TOGGLE ACTUATED VALVES	
				PART NUMBER	54099446	REV.
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SCALE				1/1	SHEET 1 OF 5	

2.0

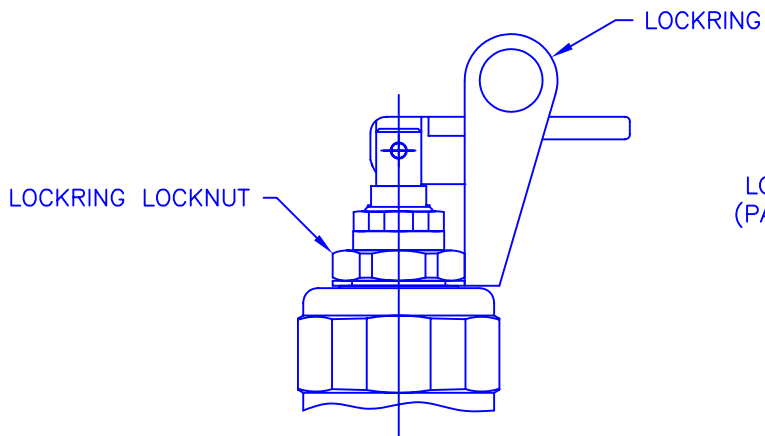
VALVE DISASSEMBLY



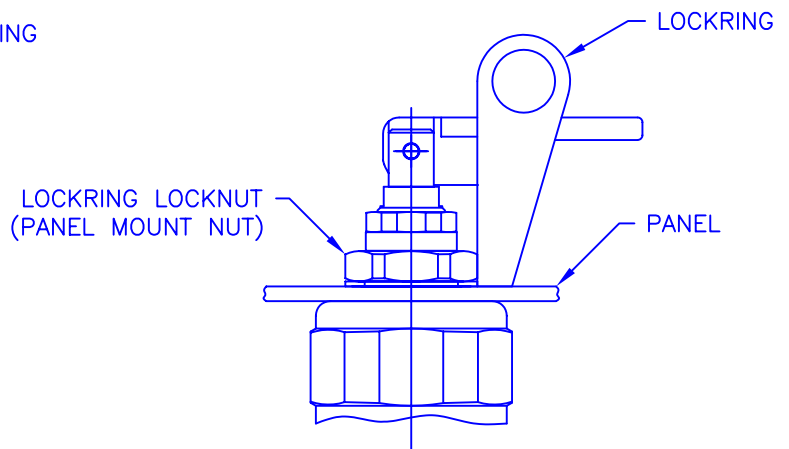
944G



944G PANEL MOUNT



944G LOCKING TOGGLE



944G LOCKING TOGGLE
PANEL MOUNT

- 2.1 Open valve (toggle up).
- 2.2 Hold toggle sleeve stationary – 11/32” end wrench – and loosen toggle locknut CCW – 17/32” end wrench.
- 2.3 Unscrew toggle sleeve CCW and remove toggle assembly.
- 2.4 Remove pin and spring.
- 2.5 Apply 1700±200 lb pressload to cap.
- 2.6 Unscrew clamp nut – 1 3/16” end wrench.
- 2.7 Remove cap with stem and piston, slipring, diaphragms, compression member and seat.



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3.0 VALVE RE-ASSEMBLY

- 3.1 Push seat into compression member and place in body.
- 3.2 Place 3 diaphragms dome side up and slipping in body.
- 3.3 Apply thin film of Krytox or equal to the piston o-ring and install on the piston.
- 3.4 Push the piston into the cap with dome facing toward the diaphragms.
- 3.5 Install cap and push down to verify that slipping and diaphragms are seated in body.
- 3.6 Install clampnut finger tight.
- 3.7 Apply 1700±200 lb pressload to cap.
- 3.8 Torque clampnut CW to 80±5 ftlb – 1 3/16” crowsfoot wrench 90° to torque wrench.
- 3.9 Install stem tool CW to close valve.
- 3.10 Tighten stem 3 – 5 times to 15 – 20 inlb to set seat – remove stem tool.
- 3.11 Apply a small dab of Krytox or equal to the end face of the long end of the pin and insert the long end of the pin into the toggle assembly.
- 3.12 Drop spring over pin.
- 3.13 Invert valve and install toggle assembly and screw toggle sleeve CW into cap.
- 3.14 Put the toggle in the closed (down) position.
- 3.15 Tighten the toggle sleeve CW until resistance is felt – 11/32” end wrench.
- 3.16 Connect bubble leak test apparatus to valve outlet and apply 15 – 20 psig clean dry air or nitrogen to valve inlet – tighten toggle sleeve CW until the valve seals “bubble tight” – depressurize inlet and disconnect bubble leak test apparatus.
- 3.17 Open valve (toggle up) and tighten the toggle sleeve CW 1/6 turn.
- 3.18 Hold toggle sleeve stationary and torque toggle locknut CW to 40 – 50 inlb – 17/32” crowsfoot wrench at 90° to torque wrench.
- 3.19 Apply 15 –20 psig to inlet and verify OPEN (up) and CLOSED (down) toggle positions.
- 3.20 Disconnect inlet pressure source.
- 3.21 For locking toggle options, tighten lock ring locknut to 40 – 50 inlb – 3/4” crowsfoot wrench at 90° to torque wrench.



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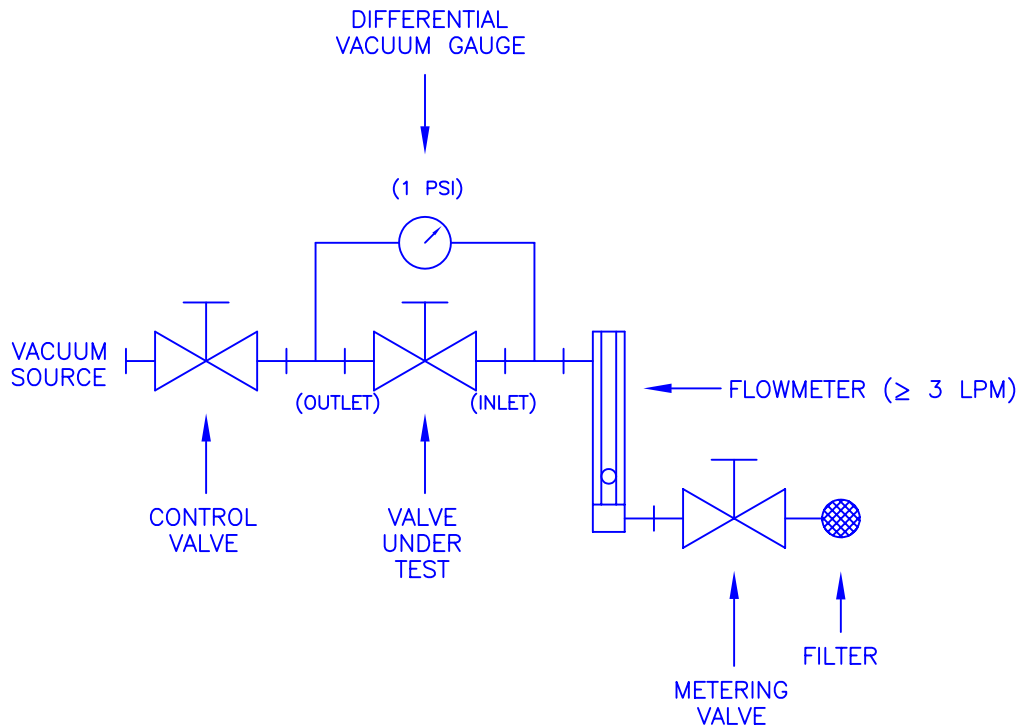
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SHEET 3 OF 5

4.0 VACUUM TEST

This test assures that the diaphragms and seat have been properly installed and that the valve meets its performance specification.

- 4.1 Install the "Valve Under Test" as shown.
Close the "Valve Under Test" then fully open it.
- 4.2 Open the Vacuum Control Valve and allow the test set-up to pump down.
- 4.3 Adjust the Metering Valve to provide a 1 psi vacuum differential across the "Valve Under Test".
- 4.4 The Flowmeter must read 3 lpm or greater.



5.0 HELIUM LEAK TEST

- 5.1 STATIC SEAL – Connect valve outlet to leak tester. Cap inlet and unused ports. Pump down to 10e-10 range. Apply helium to clamp nut test port for 15 seconds. Bag assembly and flood with helium. There must be no rise above background in 2 minutes.
- 5.2 DYNAMIC SEAL – Close valve. Uncap inlet. Pump down to 10e-10 range. Apply helium to inlet. There must be no rise above background in 30 seconds.

6.0 FLUSHING

- 6.1 Apply clean dry air or nitrogen to the valve inlet.
- 6.2 Cycle the valve open / closed several times.
- 6.3 Disconnect air supply and immediately cap the valve ports – valve should be bagged and sealed as quickly as possible to prevent contamination.



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7.0 OTHER VALVE SERIES

7.1 Design Comparison – The following table details the design differences between Veriflo diaphragm valve models. The information is used to adapt sections 2–6 for each:

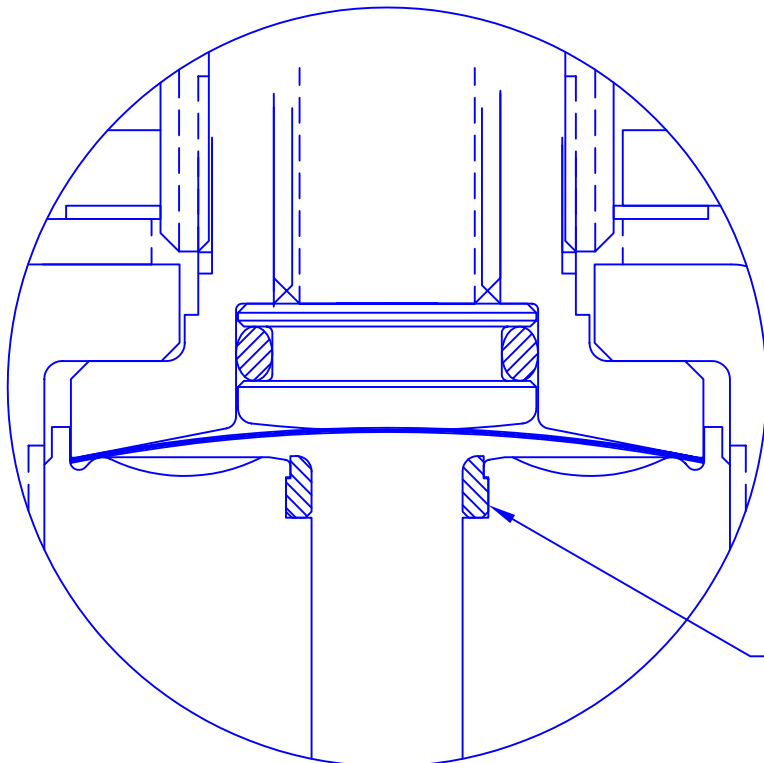
<u>MODEL</u>	<u>No. OF DIAPHRAGMS</u>	<u>SLIPRING</u>	<u>PISTON O-RING</u>	<u>SEAT RETENTION</u>	<u>OTHER</u>
944	3	Yes	Yes	Compression Member	
930, 930A, 930Y	2	No	No	Pressed-in	Internally Threaded Valve Cavity
945, 945A, 945Y	3	Yes	No	Compression Member	Internally Threaded Valve Cavity
955	2	No	Yes	Pressed-in	
955A, 955Y, 955Z	2	No	Yes	Pressed-in	Internally Threaded Valve Cavity

7.2 Clampnut – Valve models require different clampnut tooling, loading and torques. Replace values for the 944 models in Section 3.0 per the following:

<u>MODEL</u>	<u>CLAMPNUT HEX</u>	<u>PRESSLOAD LB</u>	<u>TORQUE FTLB</u>
944	1 3/16"	1700±200	80±5
930, 930A, 930Y	1 1/16"	600±100	60±5
945, 945A, 945Y	1 1/16"	600±100	80±5
955	1 3/8"	1700±200	70±5
955A, 955Y, 955Z	1 1/8"	1700±200	70±5

7.3 Pressed-in Seat Removal and Installation – for PCTFE seat material only.
 Heat seat to 180°–220° F with heat gun.
 Carefully pry softened seat out of its cavity with non-metallic pick – do not scar body.
 Allow body to cool to ambient temperature.
 Press the new seat into the seat cavity using the correct insertion tool:

<u>MODEL</u>	<u>Insertion Tool Part Number</u>
944	Not Required
930, 930A, 930Y	50110097
945, 945A, 945Y	Not Required
955	15000111
955A, 955Y	50113453



SEAT
 955 – ORIENT AS SHOWN
 930 – SEAT IS SYMMETRICAL



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