DIRECT-FIRED VAPORIZER
LIQUID INLET VALVE INSPECTION/REPLACEMENT
3/20/03

PURPOSE

The purpose of these instructions is to describe the steps necessary to inspect and, if necessary, replace the liquid inlet valve subassembly on AES, Inc. model AE-50, 80, and 120 vaporizers.

Also, these instructions describe steps necessary to replace the liquid inlet plunger on the same vaporizers. The liquid inlet plunger is an individual part contained in the liquid inlet subassembly.

These instructions should be used in addition to, and in conjunction with, regular maintenance procedures outlined in the *Installation, Operating and Instruction Manual Direct Fired LPG Vaporizers*.

PROCEDURE FOR LIQUID INLET VALVE REMOVAL AND INSPECTION

Parts needed:

None

Tools needed:

5/16" socket with ratchet or wrench
Means of conducting a 250 psi pressure test

1) Shut down the vaporizer and bleed any contained LPG to a safe location.

2) Disconnect the liquid inlet piping from the vessel.

3) Remove the four 5/16"-24 screws and washers attaching the brass liquid inlet valve to the vessel.

4) Gently pull the liquid inlet valve assembly out of the vessel. Salvage the –132 Viton O-ring.

5) Visually inspect the position of the flat portion of the plunger in relation to the liquid inlet valve body with the valve in the free state (arm approximately 5° above horizontal). If the plunger protrudes beyond the edge of the liquid inlet valve body, the valve must be replaced (see Drawing A below). Follow the Procedure for Replacing Liquid Inlet Valve in the next section.

6) If the plunger is flush or recessed in relation to the valve body (see Drawing A below), conduct a leak test using 250 psig test medium. In the presence of pressure at the inlet, the liquid inlet valve in the free position (arm at an

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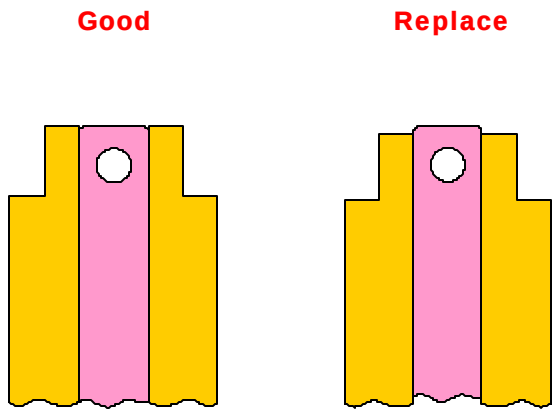
approximate 5° above horizontal position) should form a bubble-tight seal. If leaks are present, the valve must be replaced. Follow the Procedure for Replacing Liquid Inlet Valve in the next section.

7) If the valve does not leak, it does not need to be replaced. Place the valve back in the vessel following the Procedure for Replacing Liquid Inlet Valve in the next section.

Drawing A



PROCEDURE FOR REPLACING LIQUID INLET VALVE

Parts needed:

(1) New Liquid Inlet Valve Subassembly
(1) –132 Viton O-ring
(4) 5/16"-24 x 1¼" Hex Head Screws
(4) 5/16" Lock Washers

Tools needed:

5/16" socket
Torque wrench capable of imparting 10 ft-lb (120 in-lb) with ratchet for socket
AE Liquid Inlet Valve Replacement Detail drawing (attached)

1) Place a –132 viton O-ring into the machined groove on the face of the valve that mates with the liquid inlet flange.

2) Insert the float ball rod into the liquid inlet of the vapor tube. The valve should be oriented with the "T" facing upwards. Make sure the stainless steel float ball rests on top of the rod.

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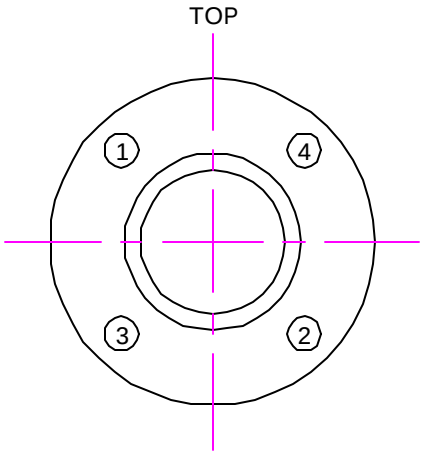
3) Insert four 5/16"-24 x 1¼" hex head screws coated with Anti-Seize compound into the four openings on the liquid inlet valve. Include 5/16" lock washers.

4) Using a torque wrench, tighten the bolts to 10 ft-lb (120 in-lb) using a crossover technique as shown in Drawing B below.

Drawing B



PROCEDURE FOR LIQUID INLET VALVE REPAIR

If replacing the liquid inlet valve is impractical or not desired, perform the following procedure. Refer to attached drawing *Liquid Inlet Assembly Diagram*.

Parts needed:

(1) Liquid inlet assembly
(1) New liquid inlet plunger, spring, and nut/seat seal

Tools needed:

Punch capable of removing a 1/8" diameter roll pin
Small hammer
5/16" deep-well socket
Torque wrench capable of imparting 1 ft-lb (12 in-lb) with ratchet for socket
Means of conducting a 250 psi pressure test

1) Using a punch, remove the 1" x 1/8" roll pin (drawing item 6) with pivot, setscrew, lock nut, and arm (drawing item 5) from the liquid inlet valve by gently tapping the pin at one end. Salvage the pivot, setscrew, lock nut and arm.

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2) Using a 5/16" deep-well socket, unscrew and remove the liquid inlet nut/seat (drawing item 7).

3) Remove the plunger (drawing item 4) and spring (drawing item 3).

4) Drop the new spring onto the new plunger and re-insert the spring/plunger in the liquid inlet valve body as before.

5) Visually inspect the liquid inlet nut/seat and verify that the rubber seat is clean and free of scratches, nicks, or abrasions.

6) Using a 5/16" deep-well socket, screw the nut/seat onto the plunger as before. DO NOT torque the nut/seat to more than 1 ft-lb of torque, as the plunger could be damaged.

7) Place the pivot, set screw, lock nut, arm assembly between the liquid inlet valve inlet bosses, lining up the holes in the liquid inlet valve and pivot. The tip of the setscrew should rest against the flat portion of the plunger.

8) Insert the 1" x 1/8" roll pin through the holes in the liquid inlet valve and pivot by gently tapping with a hammer. The pivot should turn freely with the roll pin in place.

9) Ensure the arm is approximately 5° above horizontal (see drawing inset) by adjusting the setscrew and lock nut, if necessary.

10) Perform a leak test using 250 psig test medium. In the presence of pressure at the inlet, the liquid inlet valve in the free position (arm at an approximate 5° above horizontal position) should form a bubble-tight seal.

11) Re-insert the liquid inlet into the vessel following the Procedure for Replacing Liquid Inlet Valve.

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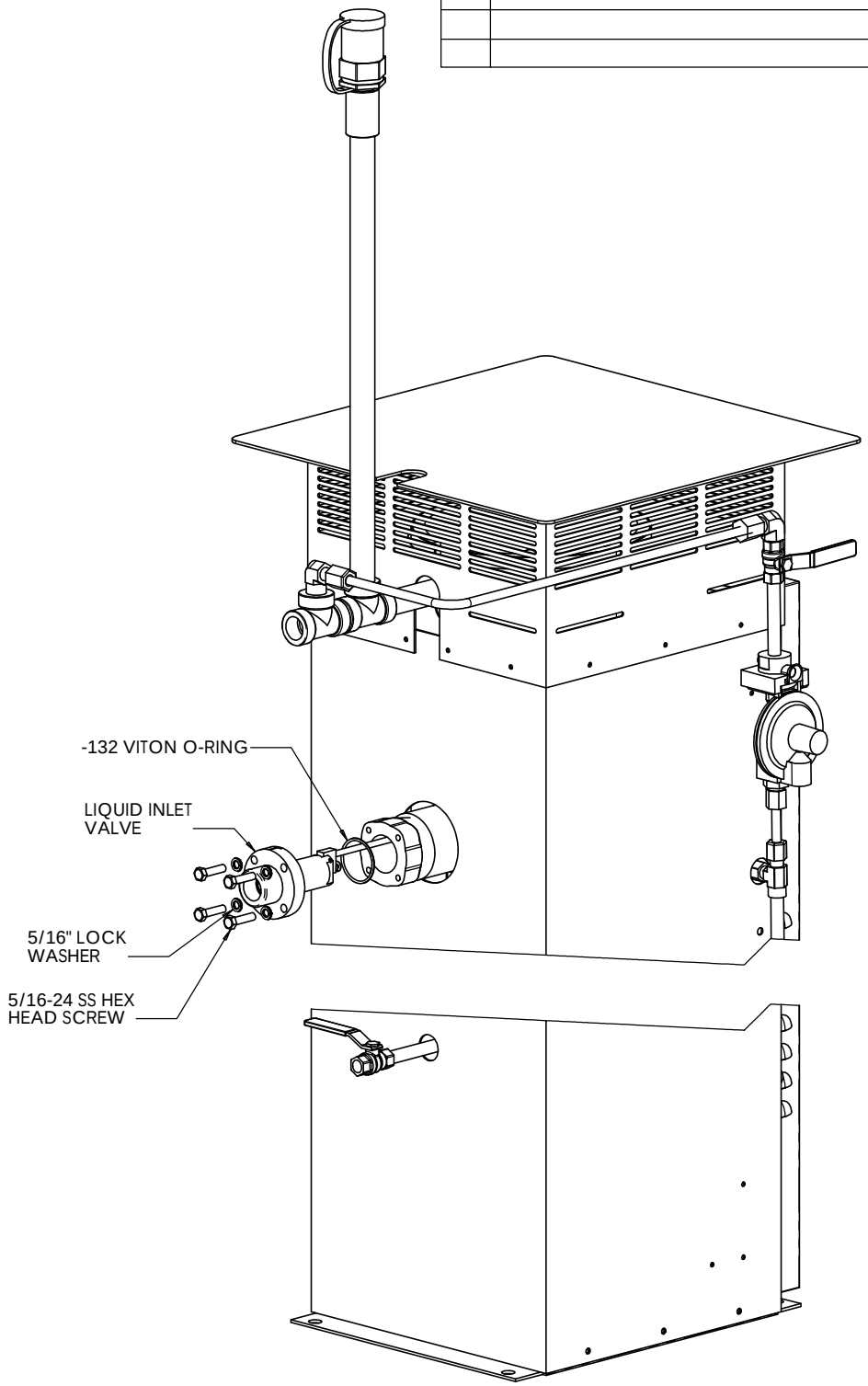
REVISIONS

REV.	DESCRIPTION	DATE	APPROVED



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MATERIAL: AS NOTED | FINISH: N/A

DESCRIPTION:
AE LIQUID INLET REPLACEMENT DETAIL

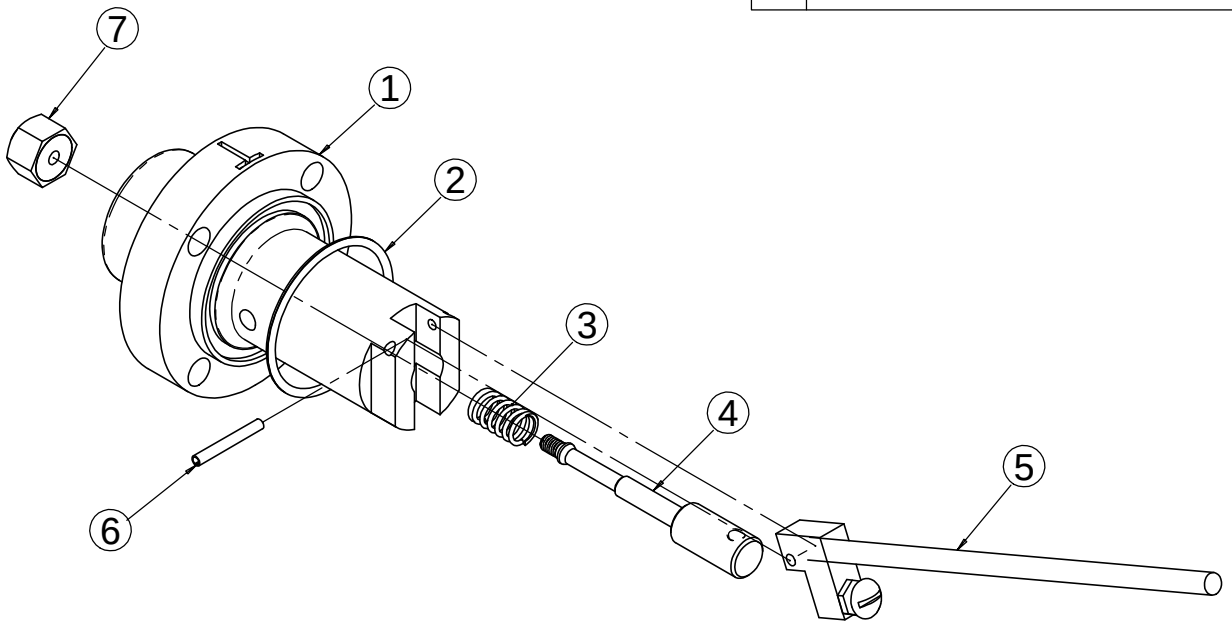
TOLERANCES ARE:
FRACTIONS ±1/32"
DECIMALS ±0.005"
ANGLES ±0.05°
OR AS NOTED

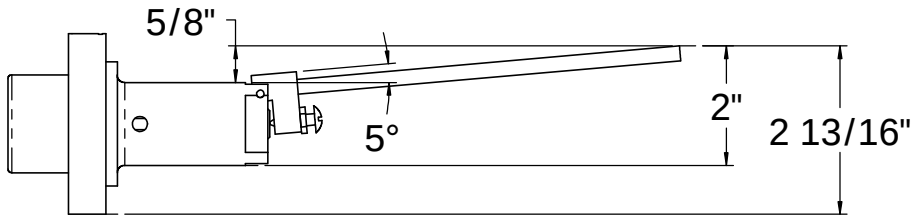
APPROVALS	BY	DATE
DRAWN	JPR	03/12/03
APPROVED	WH	03/13/03
REVISION 0		

SHEET NAME: Sheet1

SHEET SIZE A | SCALE 1:7 | DWG #: LIQ IN VLV RPLCMT | Sheet 1 of 1

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED





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MATERIAL: N/A | FINISH: N/A

DESCRIPTION:
LIQUID INLET ASSEMBLY DIAGRAM

TOLERANCES ARE:		APPROVALS	BY	DATE
FRACTIONS	±1/32"	DRAWN	JPR	03/05/03
DECIMALS	±0.005"	APPROVED	WH	03/21/03
ANGLES	±0.05°	REVISION 0		
OR AS NOTED		SHEET NAME: Sheet1		

SHEET SIZE A | SCALE 1:2 | DWG #: Assy Diagram | Sheet 1 of 1