

# KENCO ENGINEERING COMPANY

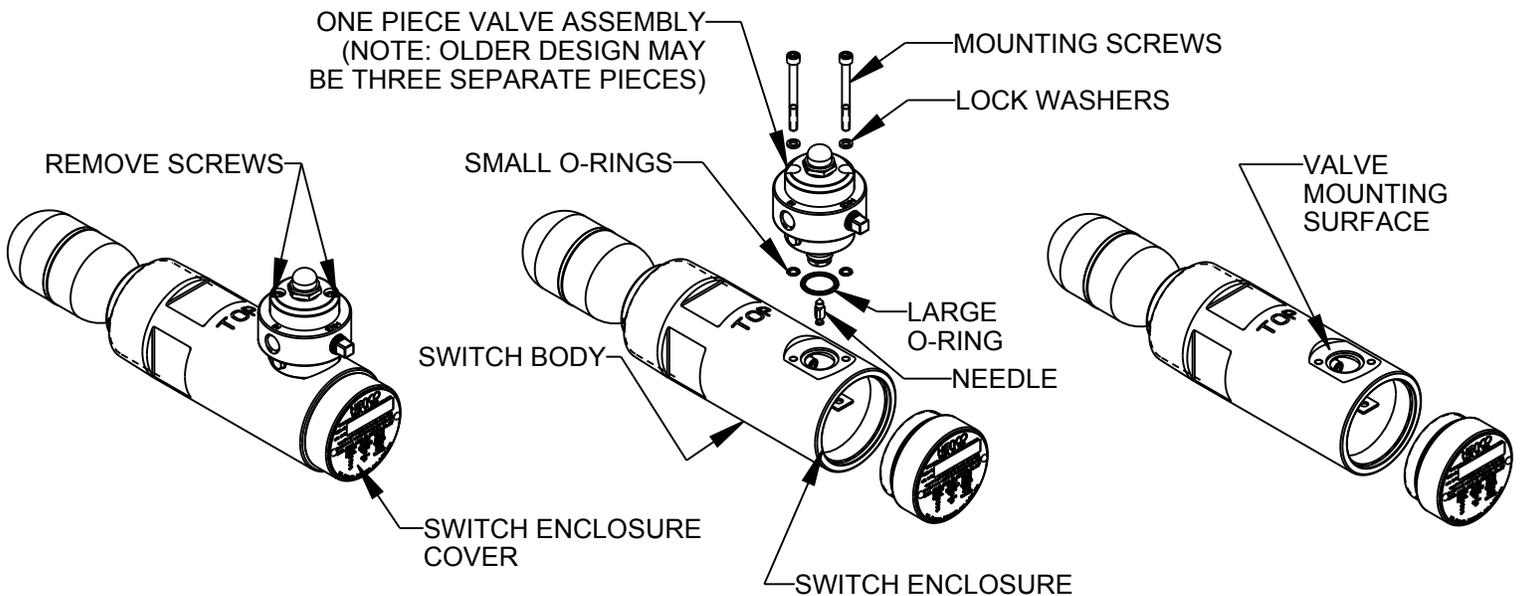
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## VALVE REPLACEMENT KIT INSTRUCTIONS FOR MODEL KPFS LIQUID LEVEL FLOAT SWITCH WITH THE NEEDLE STYLE BLEED VALVE

**NOTE:** Two styles of bleed valves have been produced for model KPFS Float Switches, a needle valve style and an elastomeric pad style. The RK-VALVE-KPFS valve replacement kit and these instructions are for the needle style bleed valve. If your KPFS has a pad style bleed valve, an RK-VALVE-KPFS-PAD kit is required along with the RK-VALVE-KPFS-PAD instructions.

### RK-VALVE-KPFS-NEEDLE VALVE REPLACEMENT KIT

The RK-VALVE-KPFS is the valve replacement kit for the Kenco pneumatic float switch model KPFS with the needle style bleed valve. The kit includes the one piece valve assembly, mounting screws, lock washers, o-rings and needle. These components are shown in the middle view of figure 1. The KPFS was not always configured with the one piece valve assembly shown. For several years the three main components of the valve were individually assembled to the switch body and were held together with the mounting screws. The three piece configuration did not affect the performance of the valve, but did complicate maintenance. The new one piece valve is a direct replacement for all KPFS switches and greatly simplifies the maintenance of the KPFS. To get started with assembly, the old valve must first be removed.

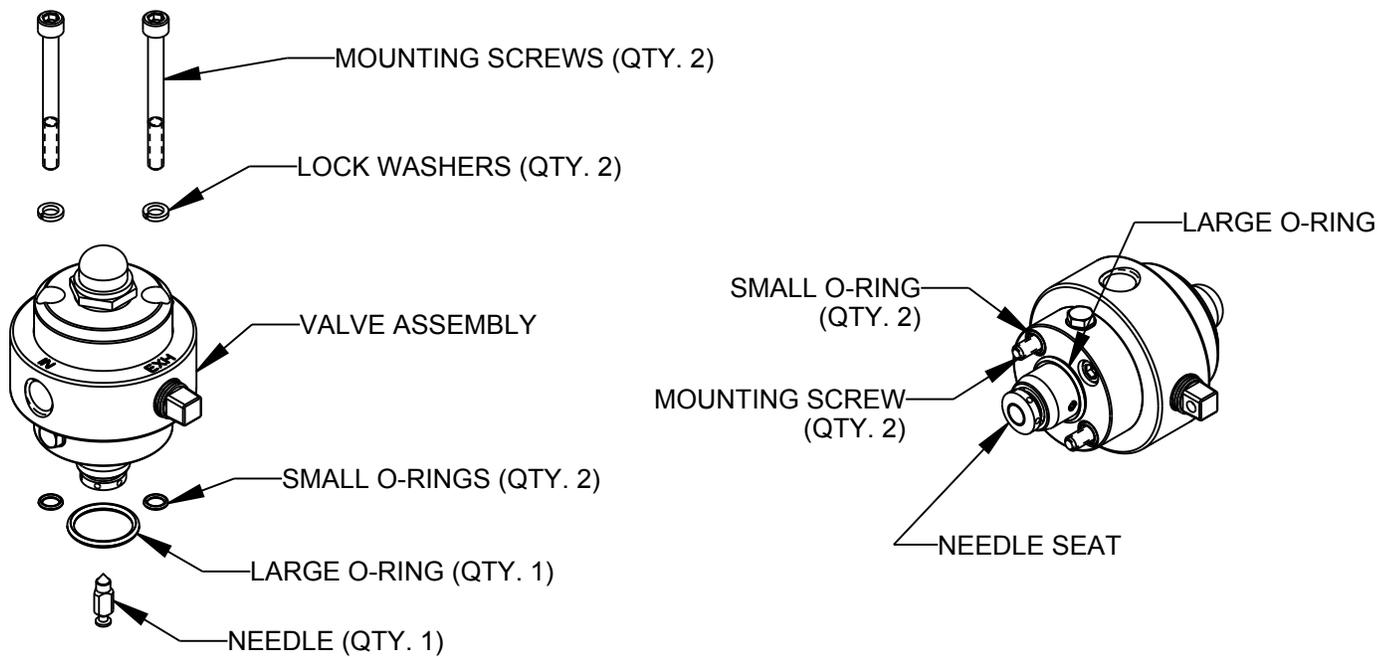


**FIGURE 1**

Refer to the illustrations in figure 1 for the valve removal process.

### **REMOVE VALVE:**

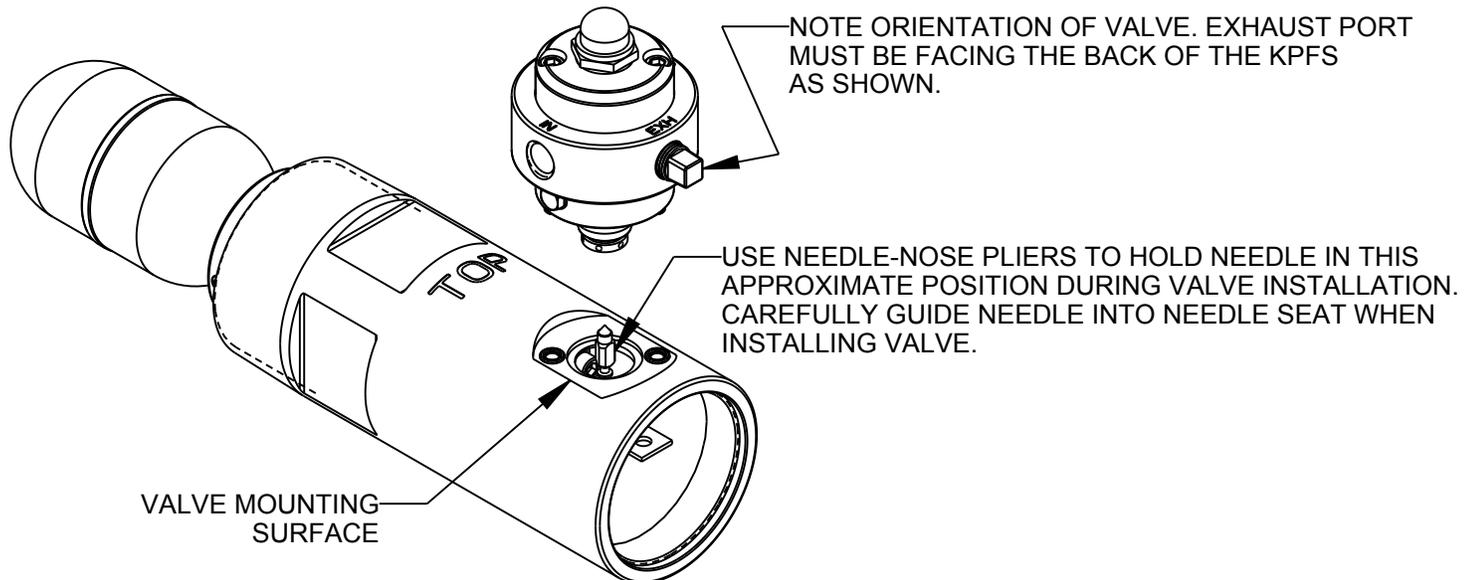
1. Turn off the supply line pressure to the valve if the system is pressurized.
2. Disconnect the supply and outlet lines. Disconnect the exhaust line if equipped.
3. Remove the switch enclosure cover.
4. Remove the two mounting screws holding the valve assembly in place and discard.
5. Remove the valve assembly. Remove all of the o-rings and discard.
6. If the switch assembly does not have a needle retainer, the needle will be loose and probably laying inside the switch enclosure. If the switch assembly has a needle retainer, the needle will be captured in the retainer on the switch lever arm. Locate needle and discard.
7. Make sure the valve mounting surface on the switch body is clean and free of any dirt or debris. The KPFS is now ready to have the new valve installed.



**FIGURE 2**

**INSTALL REPLACEMENT VALVE**

1. Slide lock washers onto mounting screws and insert mounting screws into valve assembly.
2. Slide the large o-ring over the needle seat portion of the valve as shown in figure 2.
3. The two small o-rings can be assembled by applying a small amount of o-ring lubricant or grease to the o-rings and then sliding them over the end of the mounting screws that is protruding out the bottom of the valve. Note that there is a small counterbore in the base of the valve that these o-rings will fit into. The grease will hold the o-rings in place as the valve is installed.
4. The next step is to install the valve onto the switch body while simultaneously installing the needle. If the valve has a needle retainer, insert the needle into the retainer so that the rubber tip faces up and the button on the base of the needle is captured in the retainer. If it has no needle retainer, use a pair of clean hemostats (or needle-nose pliers) to hold the needle in position in the switch body. Gently grip the needle with hemostats, taking care not to damage the rubber tip. With the rubber tip of the needle facing up, insert the needle into the switch enclosure of the switch body and position it underneath and in the middle of the valve mounting surface as shown in Figure 3.
5. Whichever method is used, the next step is to carefully lower the valve down onto the mounting surface while simultaneously guiding the needle into the needle seat. Make sure the rubber tip end of the needle is facing up when inserted into the needle seat. If the needle is installed upside down, the valve will not work!
6. With the exhaust port facing the back of the KPFS switch body as shown in Figure 3, screw in and torque the mounting screws to approximately 20 in-lbs to secure the valve assembly in place.
7. Plumb the outlet port of the valve to the Kenco KDV or other pneumatically operated device. Adjust the valve according to the valve setup procedures on page 3 of these instructions.



**FIGURE 3**

VERIFY SET SCREW IS  
VISIBLE AND ORIENTED  
AS SHOWN. HEX PLUG  
SHOULD BE FACING THE  
LEFT SIDE AS SHOWN

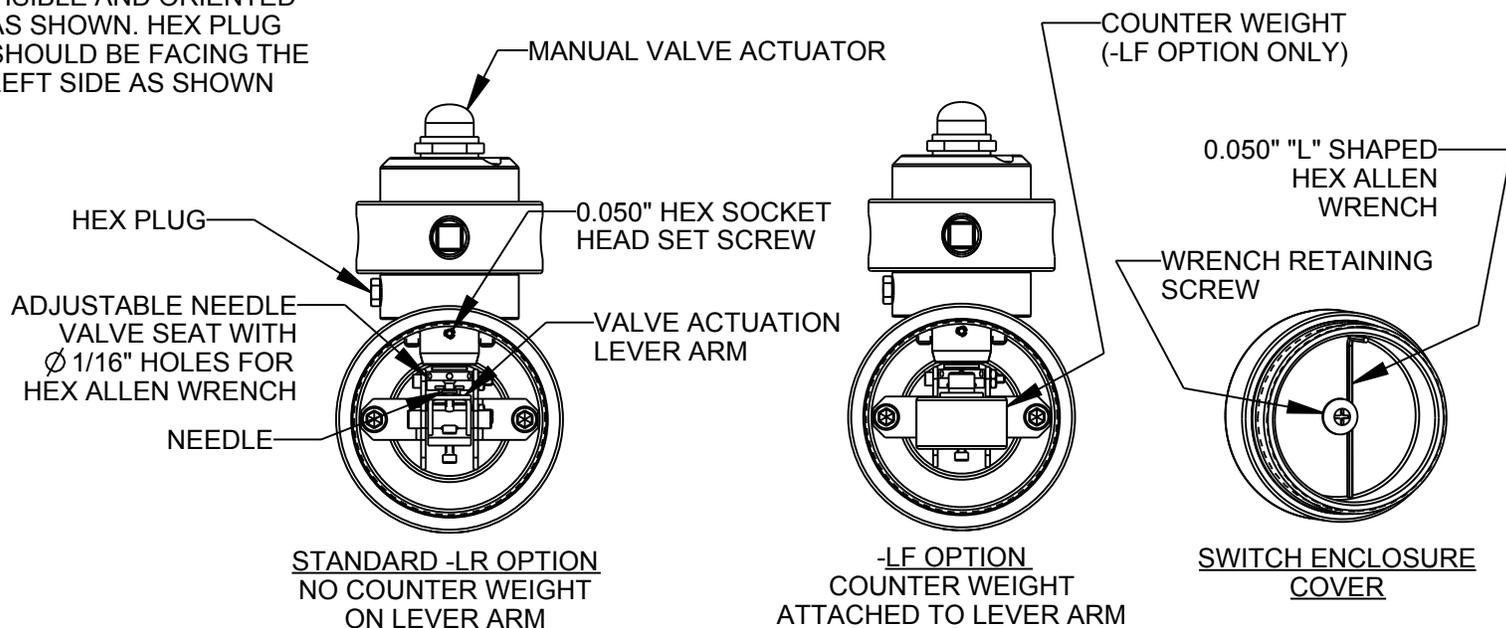


FIGURE 4

## VALVE SETUP

**Note:** For safety reasons, KENCO Engineering recommends the use of air when setting up the valve. If natural gas is being used as the supply gas, temporarily connect a portable tank pressurized with air to the KPFS valve. Make sure the supply pressure is within the rated range of 30-75 PSI and the air is clean and dry. Once the valve is adjusted, disconnect the portable air tank and reconnect the supply gas.

- Make sure the switch float is in the “valve closed” position. On the KPFS-LR model, the switch float will need to be in the down position. On the KPFS-LF model, the switch float will need to be in the up position. You will know which model you have by the model number on the switch enclosure cover name tag. In addition to this, the KPFS-LF has a counter weight attached to the lever arm and the KPFS-LR does not. See illustrations in Figure 4.
- Turn off the air supply line pressure to the valve if system is pressurized.
- Remove the switch enclosure cover on the end of the switch body.
- Remove the 0.050” “L” shaped hex allen wrench from inside the switch enclosure cover by loosening the wrench retaining screw.
- Using the 0.050” “L” shaped hex allen wrench supplied with the switch, loosen the hex socket head set screw located at the 12 o’clock position inside the switch enclosure. **Important:** Only loosen the hex socket head set screw 1/2 to 1 turn. Any more than this may cause the set screw to fall out and become lost.
- The adjustable needle valve seat is designed to be raised and lowered using the “L” shaped hex allen wrench supplied with the switch. There are six holes in the seat and you can only turn one hole at a time. It takes six turns to rotate the seat one complete revolution. A good starting point for adjustment is to raise the needle valve seat until it bottoms out against the valve base and then screw it back out one complete revolution. To accomplish this insert the long end of the wrench into one of the holes in the needle valve seat and turn it to the right as far as possible before moving the wrench to the next hole.
- Once the needle valve seat is bottomed out against the valve base, lower the needle valve seat 6 turns to the left or one complete revolution.
 

**Important:** Great care must be taken here. If the needle valve seat is lowered so much that the lever arm is in a bind, damage to the needle and/or lever arm can occur. During adjustment, continuously check the movement of the lever arm by gently toggling it with your finger to make sure it moves up and down freely. If the lever arm does not move up and down freely, the needle valve seat has been lowered too much and has the lever arm in a bind. If this is the case, raise the needle valve seat by turning the wrench to the right until the lever arm moves freely.
- With this starting point established, pressurize the system somewhere within the 30-75 psig switch pressure range.
- Air should be leaking from the needle valve seat. If it is not, toggle the lever arm or switch float to verify that the valve is shifting properly.
 

**Note:** If air is still not leaking from the needle valve seat, raise the seat by turning the wrench to the right until you hear the air leaking.
- While the air is leaking, pay close attention to the sound it makes as it leaks out.
- Slowly lower the needle valve seat by turning the wrench to the left until you hear the air stop leaking.
- When you hear the air stop leaking, lower the needle valve seat an additional 1 to 1-1/2 turns. This will put the right amount of preload on the needle valve seat to ensure that the valve opens when the switch float is level.
- Gently toggle the lever arm a few times to make sure it moves up and down freely and to verify that the valve is opening and closing properly.
- Tighten the hex socket head set screw.
- Reinstall the hex allen wrench inside the switch enclosure cover and reinstall the switch enclosure cover.
- Your KPFS is now ready for operation.