

# KENCO ENGINEERING COMPANY

P.O. BOX 470426 TULSA, OK 74147-0426

PHONE: (918) 663-4406 FAX: (918) 663-4480

Web: [www.kenco-eng.com](http://www.kenco-eng.com) e-mail: [info@kenco-eng.com](mailto:info@kenco-eng.com)

## MODEL KPFS LIQUID LEVEL FLOAT SWITCH NEEDLE AND NEEDLE SEAT REPLACEMENT INSTRUCTIONS.

### RK-NEEDLE-KPFS, NEEDLE AND NEEDLE SEAT KIT

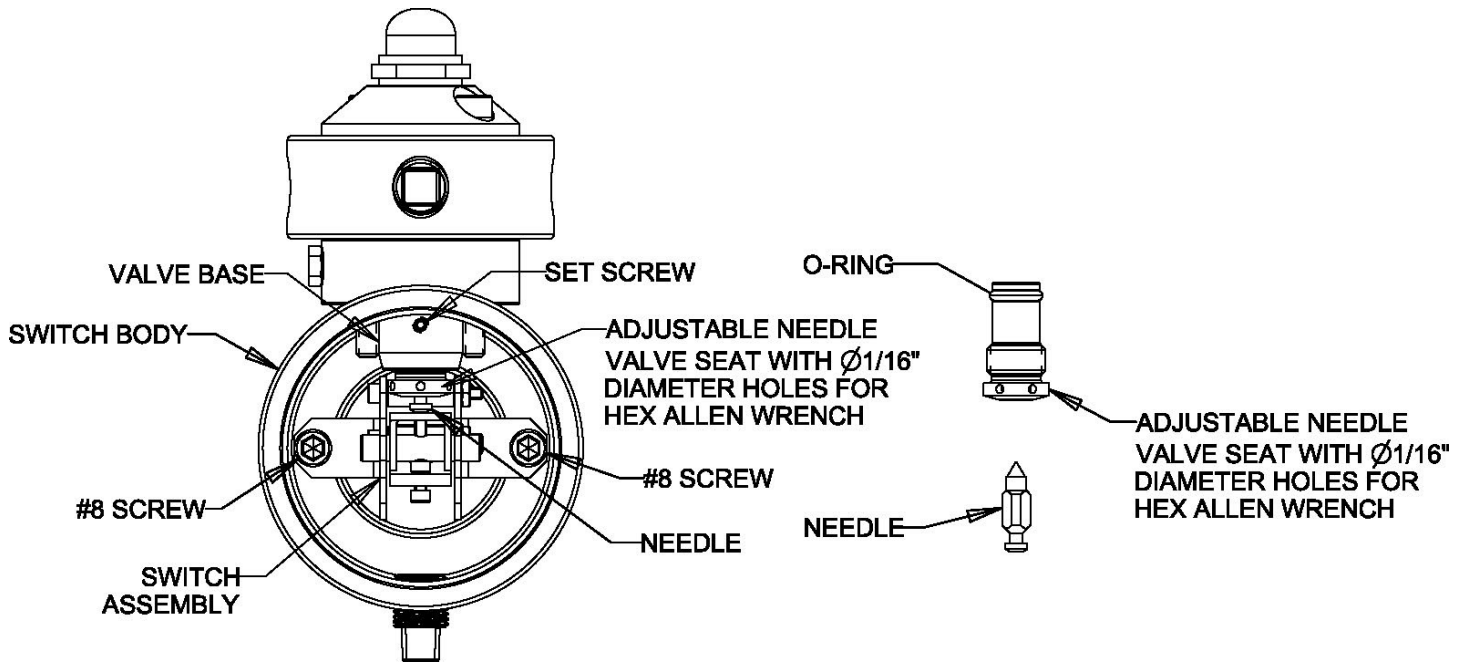


Figure 1

#### To replace the Needle and Adjustable Needle Valve Seat:

- 1.) Turn off the supply line pressure to the switch if system is pressurized.
- 2.) Remove the Switch Enclosure Cover on the end of the Switch Body. The Switch Assembly will be visible as in Figure 1.
- 3.) Using a 9/64" Allen wrench (not supplied) loosen, but do not remove the two #8 Screws. They should be loosened between four and five turns from the fully seated position. This will allow the Switch Assembly to drop down but still stay attached to the Switch Body. **Note: If you have a KPFS-LF version then there will be a counter weight attached to the back of the Switch Assembly that will prevent the Switch Assembly from being able to drop far enough to remove the Needle and Adjustable Needle Valve Seat. In this case the Switch Assembly will need to be completely removed from the Switch Body.**
- 4.) With the Switch Assembly dropped down, the Needle should fall out of the Needle Valve Seat. Discard the old Needle.
- 5.) Remove the 0.050" "L" Shaped Hex Allen Wrench from inside the Switch Enclosure Cover.
- 6.) Using the 0.050" "L" Shaped Hex Allen Wrench supplied with the switch, loosen the Set Screw. **Important: Only loosen the Hex Socket Head Set Screw 1 to 1-1/2 turns**
- 7.) The 0.050" "L" Shaped Hex Allen Wrench is used to screw the Adjustable Needle Valve Seat in and out. Since we are going to remove the old Needle Valve Seat in this step, we will be screwing it out. With the Set Screw loosened, insert the .050" Allen Wrench into the right most visible hole in the Needle Valve Seat and move the wrench to the left to unscrew the Needle Valve Seat. Repeat this procedure until the Needle Valve Seat falls out of the Valve Base. Discard the old Needle Valve Seat.
- 8.) Insert the new Needle Valve Seat into the Valve Base and screw it in until the threads have engaged and it is no longer comfortable to screw in by hand.
- 9.) Insert the .050" Allen Wrench into the left most visible hole in the Needle Valve Seat and move the Allen Wrench to the right to screw the Needle Valve Seat in. Repeat this procedure until you have raised the Needle Valve Seat to the point that it has bottomed out against the Valve Base. (Note: the Needle Valve Seat may seem a little tight at first. This is normal and is due to the O-Ring seating. Once the O-Ring is fully seated, the Needle Valve Seat will get easier to turn).
- 10.) Now insert the new Needle into the Needle Seat and using a 9/64" Allen wrench, tighten the two #8 screws that were loosened in step 3 to secure the Switch Assembly in place.
- 11.) With the Needle Valve Seat screwed all the way in and bottomed out against the Valve base, you are ready to adjust the Needle and Needle Valve Seat for proper operation. See **Valve set up** instructions on the back of this document.

## Valve Set Up

After the Needle and Needle Valve Seat have been replaced and the Needle Valve Seat has been raised all the way up until it has bottomed with the Valve Base, the Needle Valve Seat is ready to be adjusted. The following instructions will explain the recommended adjustment procedure: **Note: For safety reasons, KENCO Engineering recommends the use of air only when setting up the valve. If natural gas is being used as the supply gas, temporarily connect a portable air tank pressurized with air to adjust the valve. Make sure the supply pressure is within the rated range of 30-75 PSI and the air is clean and dry. Once the switch is adjusted, disconnect the portable air tank and reconnect the supply gas.**

- 1.) 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.
- 2.) Turn off the supply line pressure to the switch if system is pressurized.
- 3.) 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 lower it one complete revolution.
- 4.) Since the Needle Valve Seat is already 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.***
- 5.) With this starting point established, pressurize the system somewhere within the 30-75 psig switch pressure range.
- 6.) Air should be leaking from the Needle Valve Seat. If it is not, toggle the Lever Arm and/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.***
- 7.) While the air is leaking, pay close attention to the sound of the air as it is leaking out.
- 8.) *Slowly* lower the Needle Valve Seat by turning the wrench to the left until you hear the air stop leaking.
- 9.) When you hear the air stop leaking, lower the Needle Valve Seat an additional 1 to 1-1/2 turns (This will be approximately 1/4 of a revolution or slightly less). 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.
- 10.) 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.
- 11.) Tighten the Hex Socket Head Set Screw.
- 12.) Reinstall the Hex Allen Wrench inside the Switch Enclosure Cover and reinstall the Switch Enclosure Cover.
- 13.) Your KPFS is now ready for operation.