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MODEL KPFS NEEDLE RETAINER REPLACEMENT/CONVERSION INSTALLATION INSTRUCTIONS

SUMMARY:

The Kenco model KPFS pneumatic float switch utilizes a needle valve to operate the bleed port of a 3-way 2-position block and bleed style pneumatic valve. While this system has proven itself to be robust and reliable, there are rare circumstances such as extreme heat, low valve operating pressure or wet operating gas that can cause the needle to not function properly. The Kenco Model RK-RETAINER-KPFS needle retainer kit addresses this by providing a retainer that mechanically engages the needle and the switch arm. All Kenco KPFS pneumatic float switches shipped after 5/24/21 will have this retainer installed. If you have a KPFS unit built prior to this time and suspect the application may have one of the circumstances noted above, this kit will bring your unit up to date with the current design.

Step 1:

Start by removing the switch cover and valve from the switch body. If needed, details for this procedure can be found in the "Valve Replacement Kit Manual" located on the Kenco website. Locate the old needle and dispose of it. Remove the switch assembly from switch body by removing the two screws and lock washers holding it in place. See Figure 1.

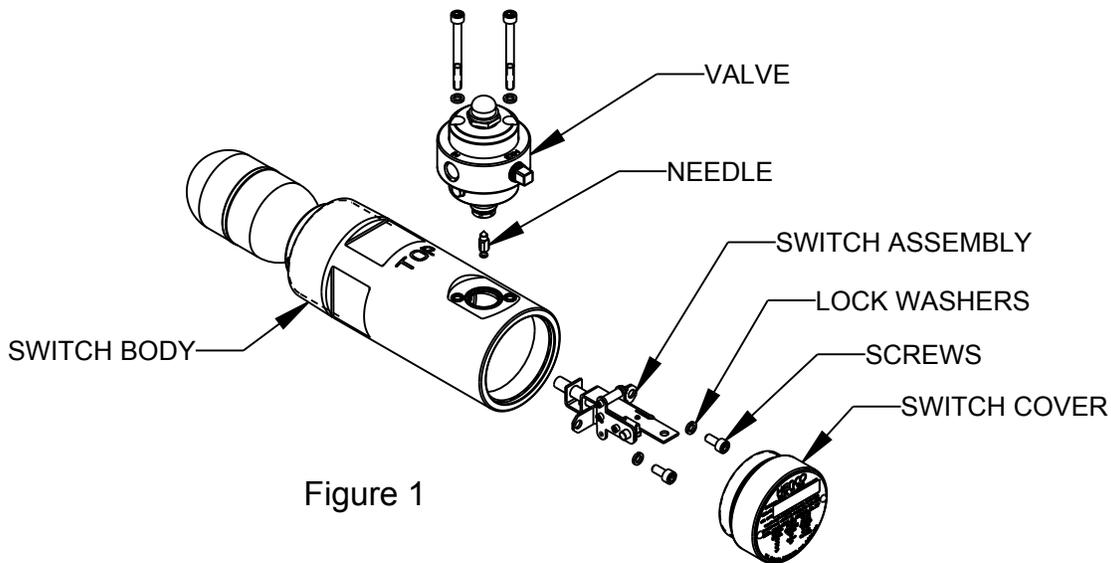


Figure 1

Step 2:

Remove and discard the 2-56 x 3/8 retaining screw and threaded pivot pin from the switch assembly (Figure 2). Locate the new counter-bored pivot pin, 2-56 x 7/16 retaining screw and needle retainer supplied in the kit. Note that the new pivot pin is bored through (no threads) and has a counter-bore on one side (Figure 3). It is important that the counter-bore faces down so that the head of the 2-56 x 7/16 retaining screw is seated in the counter-bore after installation. Install the counter-bored pivot pin in the switch assembly and insert the 2-56 x 7/16 retaining screw into the pin and through the hole in the switch arm. Apply a small drop of thread locking compound to the threads of the needle retainer and thread the retainer on to the 2-56 screw. Caution! An excess amount of threadlocker could run down to the pivot pin and keep the switch arm from moving freely. Leave the retainer a little loose so that it can be properly oriented before tightening the retaining screw.

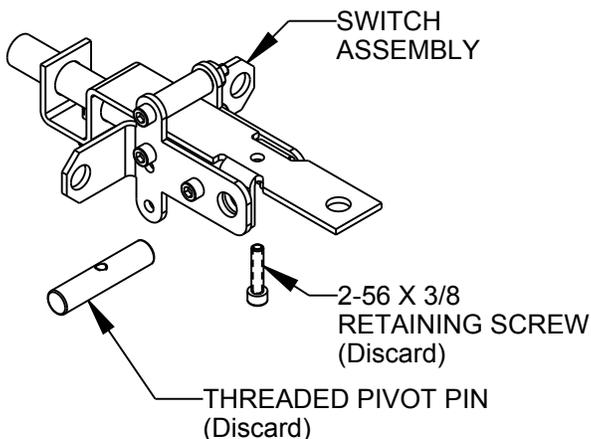


Figure 2

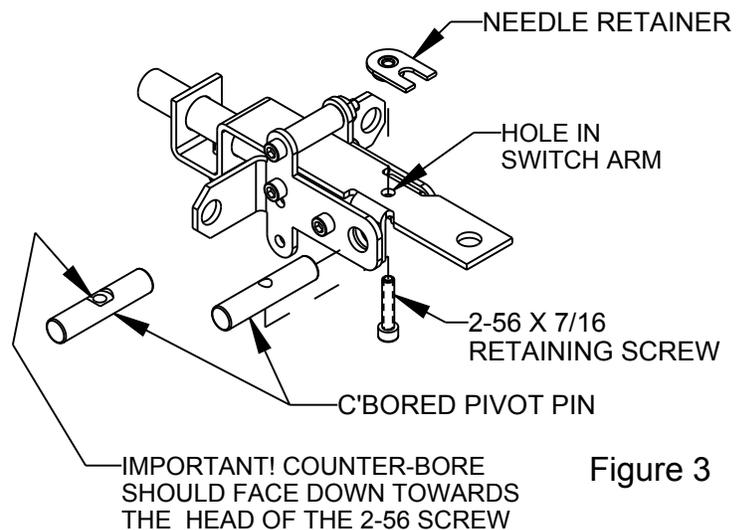


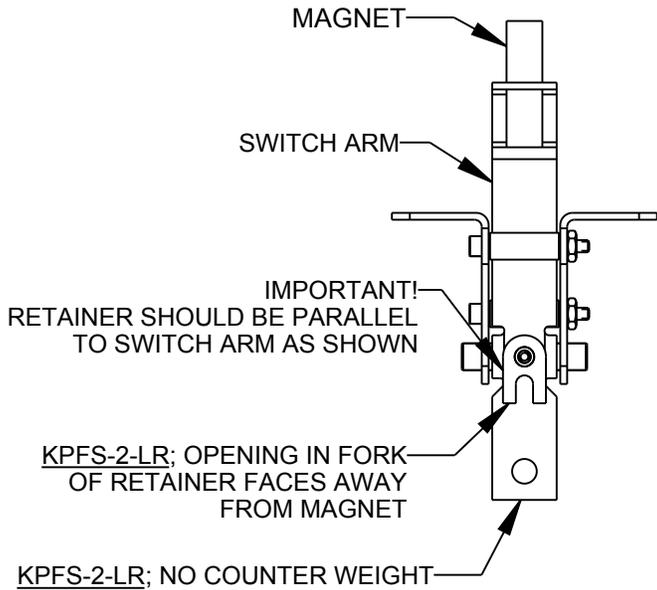
Figure 3

RETAINER ORIENTATION

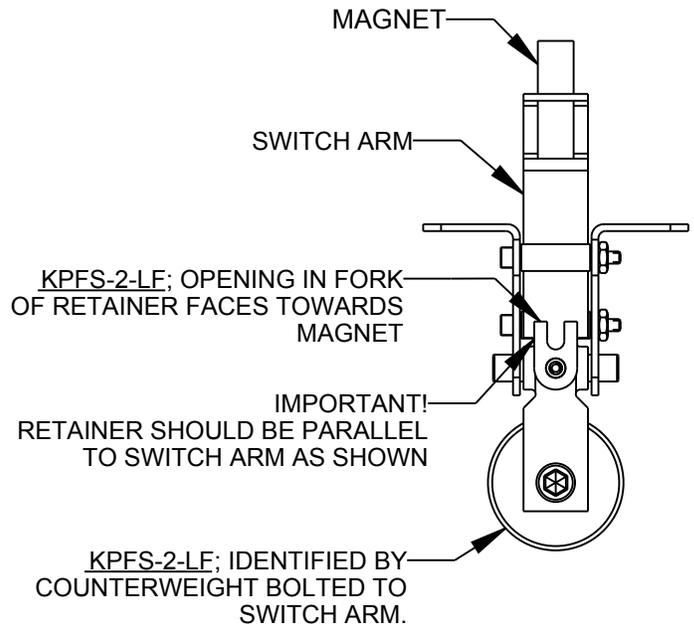
Step 3:

Orient the needle retainer based on the version of KPFS you have. As noted in Figure 4 below, the LR version (which represents 95% of all the KPFS units in the field) does NOT have a counterweight installed, as shown in Figure 5. On the LR version, the open fork in the retainer should be oriented away from the magnet and parallel with the switch arm as shown in Figure 4. Tighten the retaining screw enough to securely hold the needle retainer in position, but not so tight that it strips the threads or bends the switch arm. Important! The retainer should be as straight and as parallel as possible with the switch arm as shown in Figure 4.

If you have a KPFS-2-LF unit, the switch assembly will have a counterweight installed on the switch arm as shown in Figure 5. The process for orienting the needle retainer is the same as the LR version, except the open fork in the retainer faces towards the magnet as shown in Figure 5.



SWITCH ASSEMBLY: KPFS-2-LR
(Figure 4)



SWITCH ASSEMBLY: KPFS-2-LF
(Figure 5)

Step 4:

With the needle retainer assembled to the switch assembly, test fit the needle in the needle retainer as shown in Figure 6. The neck and head of the needle (Figure 7) should fit loose and move freely in the retainer without any binding. Once this is confirmed, use the two screws and lock washers removed during Step 1 to reinstall the switch assembly into the switch body of the KPFS. If careful, the needle can be left in the retainer as shown in Figure 6 during this process. The needle can also be assembled to the needle retainer after the switch assembly is installed into the KPFS switch body. Hint: A pair of long needle nose pliers or hemostat clamps will make installing the needle with this method much easier.

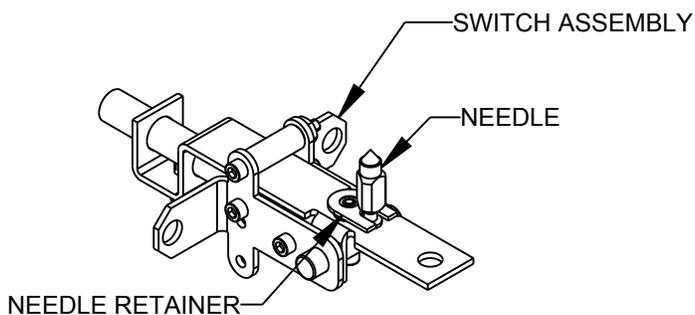


Figure 6

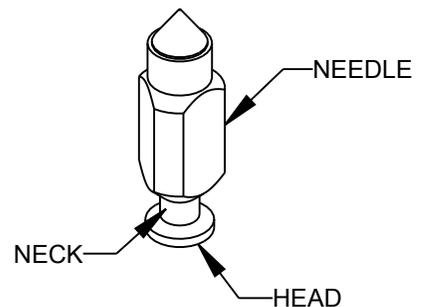


Figure 7

REPLACE NEEDLE SEAT IN VALVE

Step 5:

Locate the set screw locking the needle seat in position and loosen it about 1 turn. Remove and discard the old needle seat by unscrewing from the valve. Locate the new needle seat in the RK-RETAINER-KPFS kit. Verify that the new needle seat has the o-ring installed and lubricated. Screw the new needle seat all the way into the valve until it bottoms out and then unscrew it about a half turn. This will be the starting point for the valve adjustment. Final adjustment will take place after the KPFS is reassembled and ready to be put back into operation.

Caution! With no needle seat in the valve, the valve spring can fall out. Keep the valve inverted during the needle seat replacement process to ensure the valve spring does not fall out and get lost. If the valve spring does come out, simply reinsert it into the valve before installing the new needle seat. Figure 8 shows the spring and how to reinstall it in the event that it comes out during the needle seat replacement.

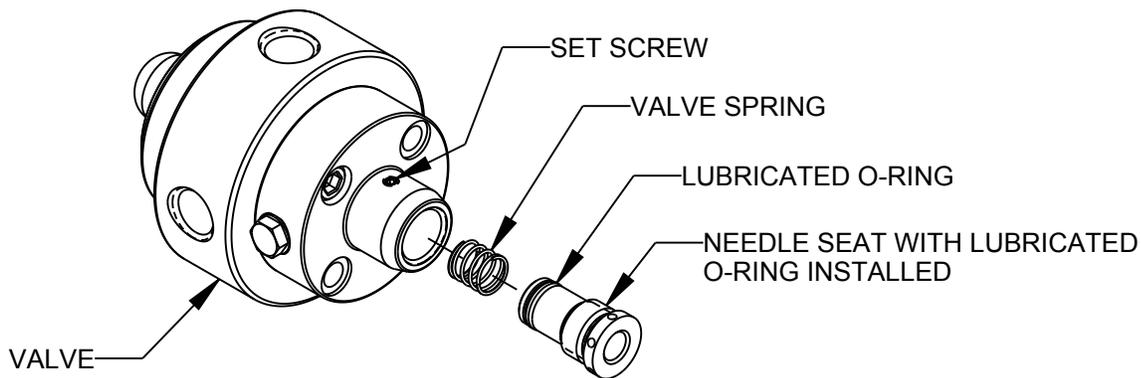


Figure 8

Step 6:

Prepare to install the valve onto the switch body. Start by inserting the screws, lock washers and O-rings onto the valve (See Figure 9). Hint: A little grease applied to the small O-rings that go around the screws will help keep them in place during assembly. Orient the valve so that the exhaust port is facing the switch cover as shown in Figure 9. While noting the position of the needle, carefully lower the valve down onto the switch body. You may have to gently push down on the switch arm while inserting the needle into the needle seat when placing the valve onto the switch body. Once the valve is fully seated with the needle properly inserted into the needle seat, tighten the screws. Caution! Make sure there is adequate clearance between the needle seat and needle retainer as shown in the detail view below before tightening the screws to prevent permanent damage to the needle retainer and/or switch assembly.

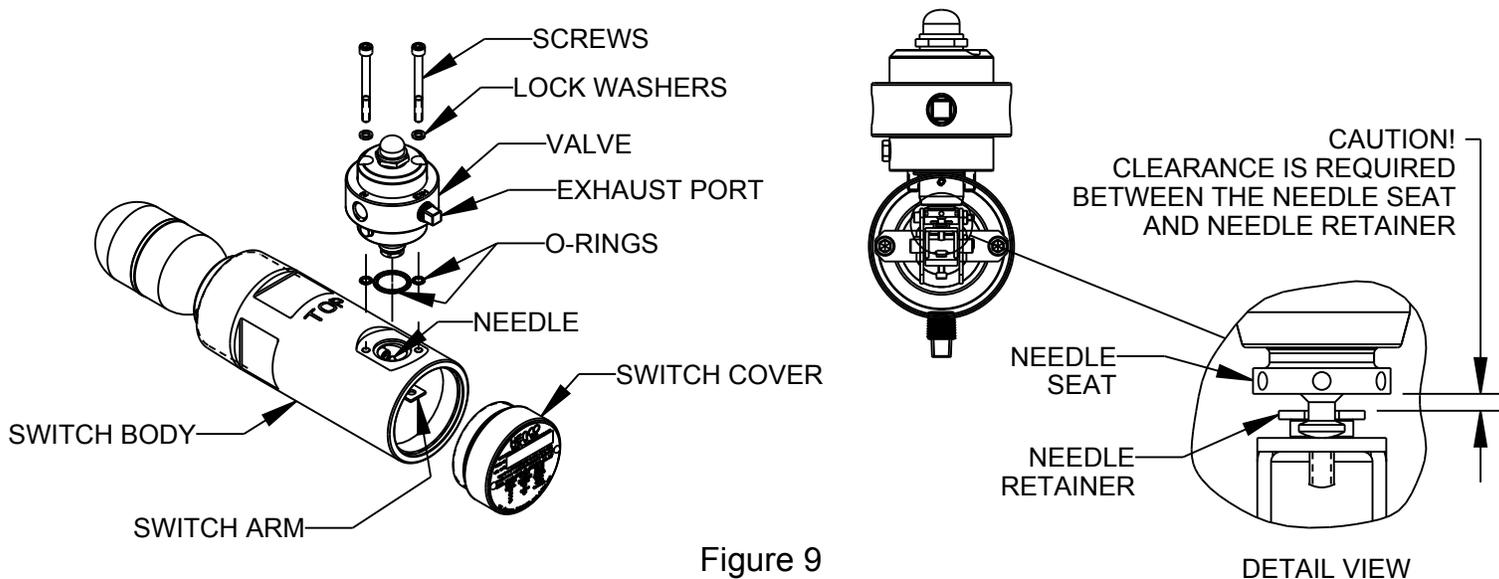


Figure 9

Step 7:

With the valve fully assembled, it is ready to be adjusted. Valve adjustment procedures can be found in the installation/operation manual that comes with the switch. Valve adjustment instructions can also be found on the Kenco Engineering website in the "Needle Replacement", "Valve Replacement", or "KPFS" kit manuals under "Engine and Gas Compressor Equipment\KPFS Pneumatic Float Switch\Downloadable PDFs". Once adjusted, the KPFS pneumatic float switch is ready to be put into service.