

## **Service Call:**

Loss of Individual Functions on Pilot Control Valve (1989 and newer)

## **Tools Required:**

- Open end wrench set
- Wire Brush
- 0-600 PSI pressure gauge
- Scribe or Screwdriver

## **Model(s):**

TC, TCX, FC, RM, RMX, 6H, 5F, SK, SC

## Tech Tip Safety Rules




### Danger

Failure to obey the instructions and safety rules in the appropriate Operator's Manual and Service Manual for your machine will result in death or serious injury. Many of the hazards identified in the operator's manual are also safety hazards when maintenance and repair procedures are performed.

### Do Not Perform Maintenance Unless:

- You are trained and qualified to perform maintenance on this machine.
- You read, understand and obey:
  - manufacturer's instructions and safety rules
  - employer's safety rules and worksite regulations
  - applicable governmental regulations
- You have the appropriate tools, lifting equipment and a suitable workshop.

The information contained in this tech tip is a supplement to the service manual. Consult the appropriate service manual of your machine for safety rules and hazards.

 **WARNING**



Escaping fluid under pressure can penetrate skin causing serious injury.

Relieve pressure before disconnecting hydraulic lines. Keep away from leaks and pin holes. Use a piece of cardboard or paper to search for leaks. Do not use your hand.

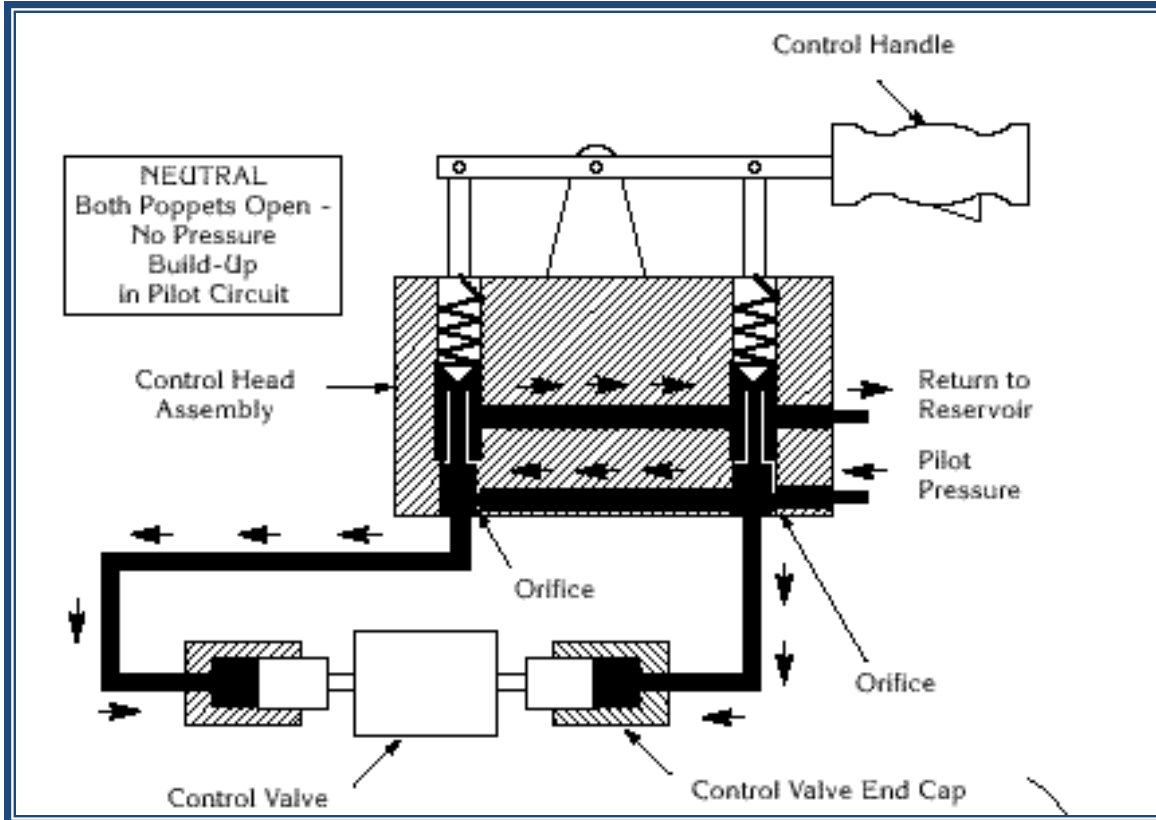
Fluid injected into skin must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene will result.

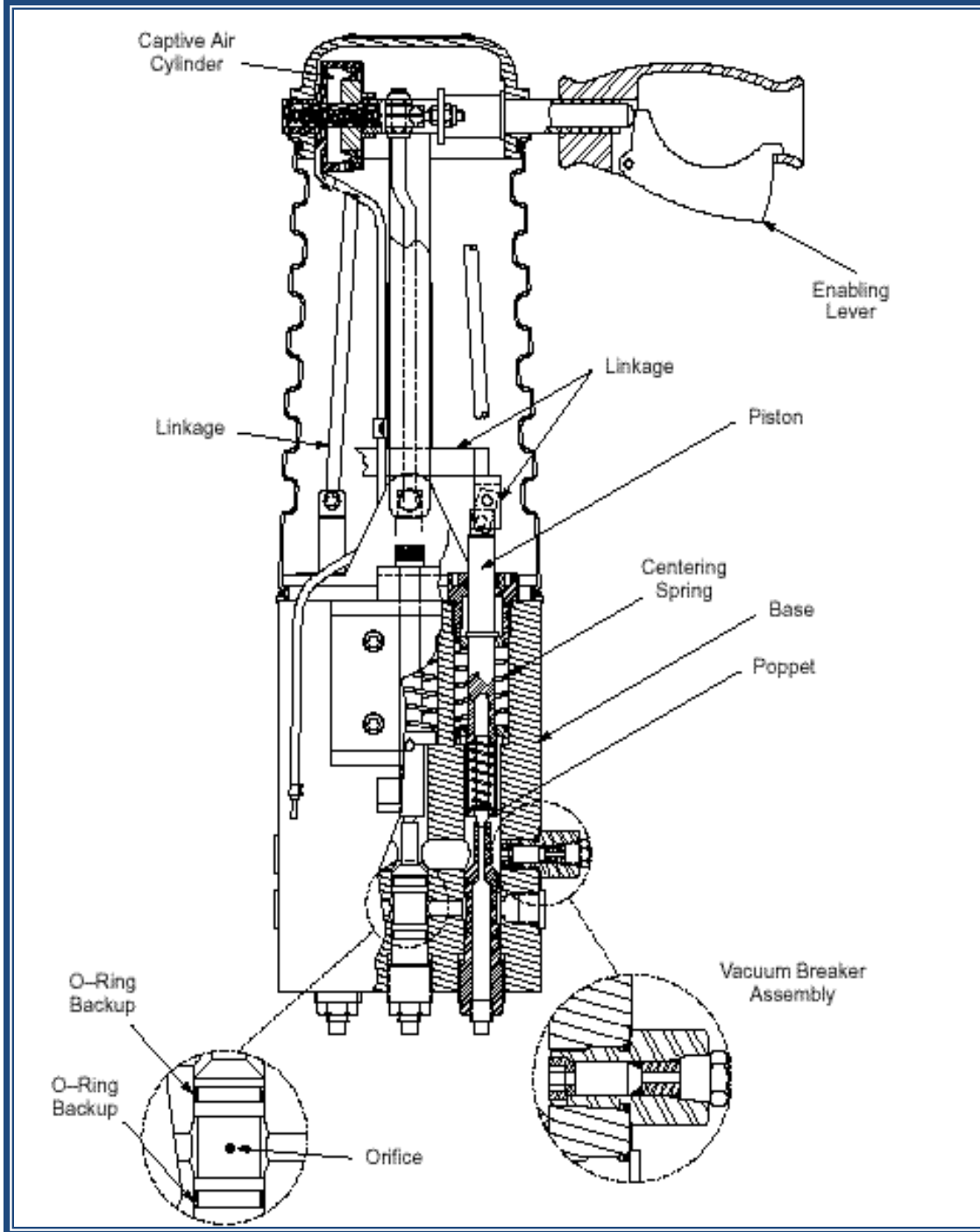
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## Overview

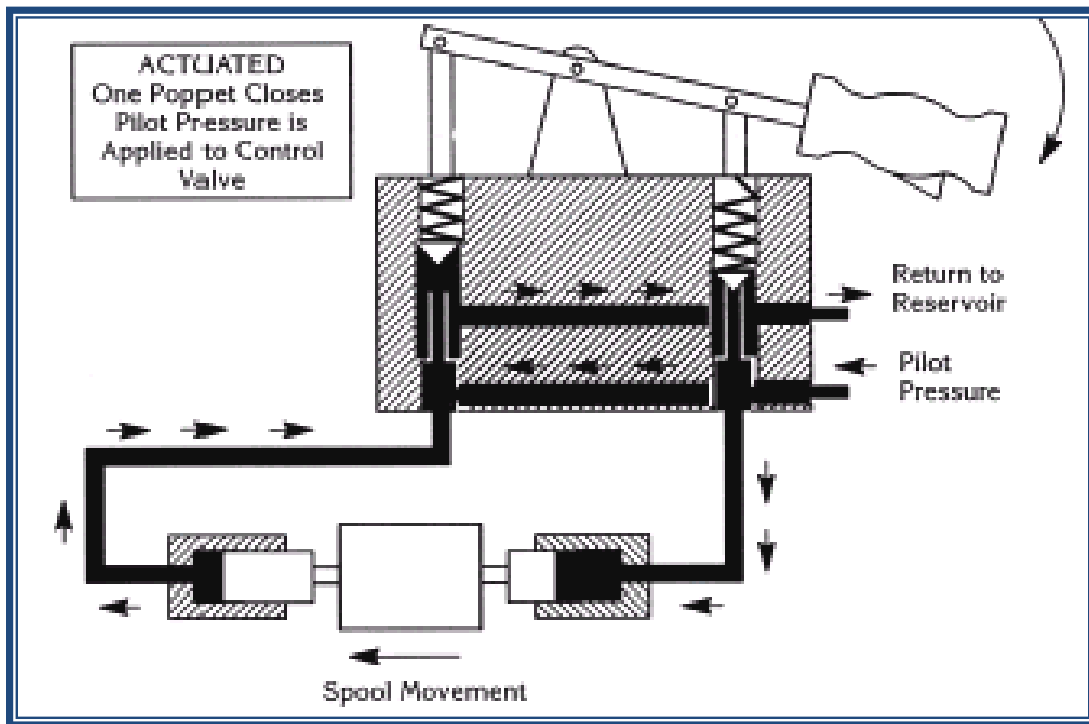
Understanding how the pilot control valve works is very important when troubleshooting this system. When the enable is activated oil is sent from the lower controls through an orifice fitting before going into the filter at the control head.

Once inside the control head the pressure goes into the pressure cavity and through a .013 orifice in the orifice seat cartridge in each seat. The cartridge supplies oil to the low pressure lines going down to the lower control valve, then out the top of the orifice seat cartridge and back to tank.





When the function is activated, the spool seat lowers, restricting the return flow coming out of the orifice seat and causing an increase in pressure down that low pressure pilot line to activate the spool in the lower control. The more pressure that is put on the spool seat, the further the lower control spool moves.

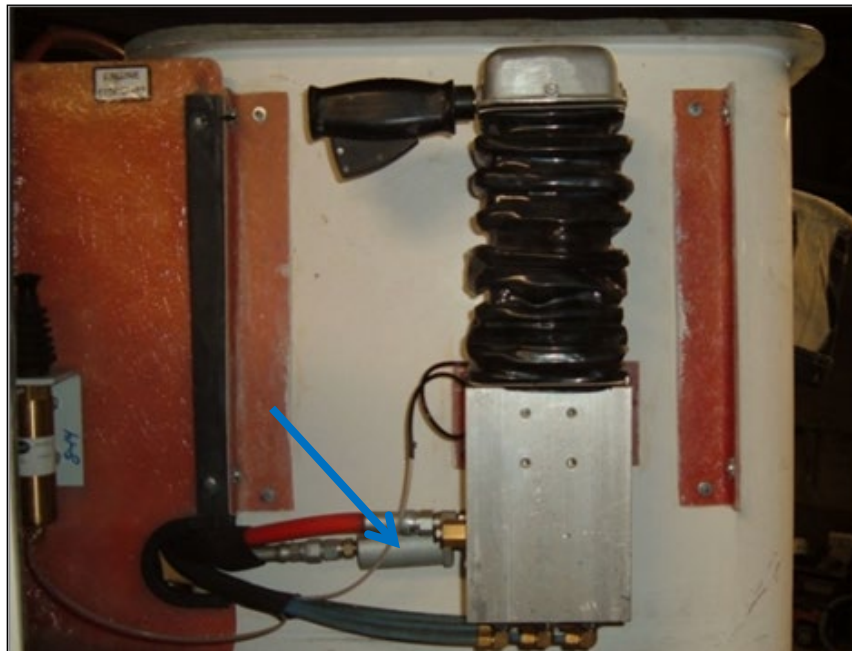


When troubleshooting, if some functions work while one or more functions do not, the orifice is likely plugged. If all functions are not working, it is likely that the enable is not working, no pressure is going to the control head, or the filter is possibly plugged.

## Step 1

To troubleshoot a plugged orifice in the orifice seat:

Find the filter on the PA (Power Assist) line located at the Top Control Shut Off at the lower controls or on the pressure inlet at the control head and change it to prevent more contamination from entering into the control head. Part number 423070

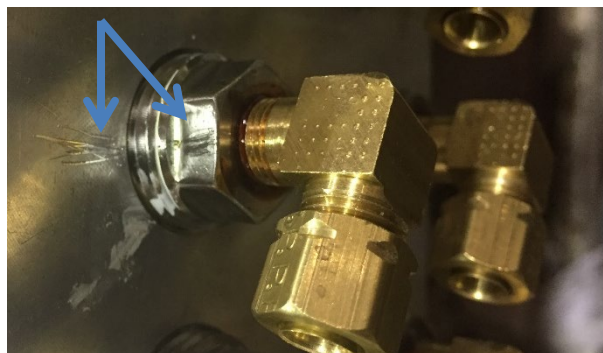
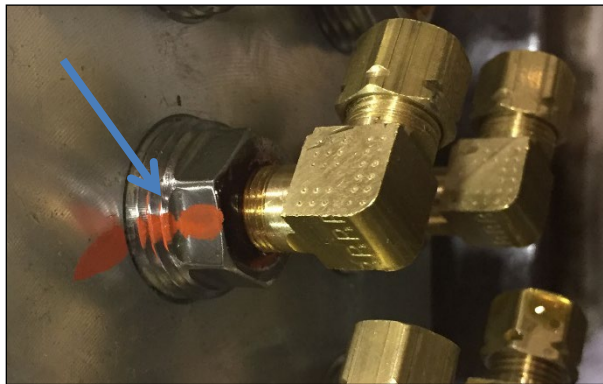


## Step 2

Remove the spring around the bottom of the boot and pull the boot up on the controller. Identify the function not working by moving the control handle and see which spool is being pushed down.

## Step 3

On the bottom side of the controller directly below the spool being pushed down, take the scribe or screw driver and mark the bottom of the controller and the orifice seat so they line up.





Count how many threads are sticking out of the controller on the orifice seat. You will need to remember this for reinstalling the orifice seat. If you don't remember to check this, then hook a 600 PSI gauge into it and adjust to 350 psi when the spool is fully activated.

## Step 4

Remove the low pressure line off of the orifice seat by taking an 11/16" open end wrench to hold the orifice seat and 1/2" open end wrench to loosen up the ferrule nut on the low pressure line. Then with the 11/16" wrench unscrew the orifice seat and remove it.



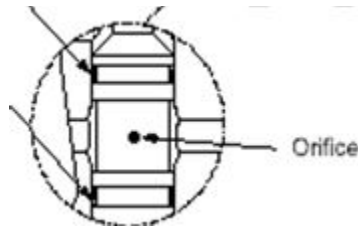
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## Step 5

With the orifice seat removed find the orifice in the big portion of the orifice seat. It's only .013 so it's very small. Take your wire brush and pull out one of the wires and use it to clean the orifice out. **(Do not try and drill it out).**

Once it's cleaned out, blow air through the big hole in the orifice seat pushing out the contamination.



## Step 6

Reinstall the orifice set back into the control head to the scribe mark and the number of threads that were documented before removal.

Hook the low pressure line back up. Refer to Tech Tip #1 on how to bleed the low pressure lines.

## Step 7

Verify proper operations of all single stick functions and the enable.