



## Pressure or Pressure-Flow Compensator Control Adjustment Procedures

This procedure is used to adjust the compensator on the Eaton model 70122, 70422, 70423, and 70523 compensated controlled piston pumps.

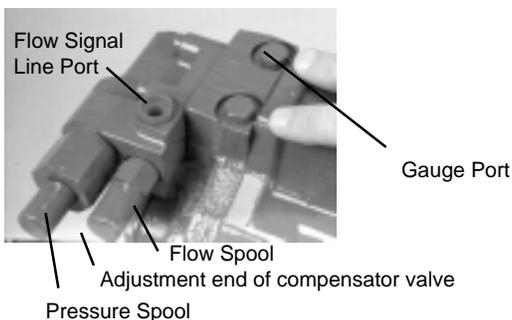


Model 70422

Left hand rotation shown

1) Pump model 70122 incorporates two gauge ports. The models 70422 and 70423 may or may not have gauge ports, it's an optional feature. The pump model 70523 does not incorporate gauge ports.

Gauge port size is 3/8-24 UNF-2B. One gauge port is to check system pressure and the other to check inlet vacuum. To check system pressure on models without gauge ports a tee fitting must be installed in the pumps outlet port. Always adjust flow spool first and then pressure spool.



### To check or readjust flow compensator valve setting:

2) Install pressure gauge into gauge port using a 1/2 inch open end wrench and remove the plug furthest away from adjustment end of the compensator valve. A recommended pressure gauge for checking the flow compensator is 0 to 21 bar or 0 to 41 bar [0 to 300 PSI or 0 to 600 PSI] if the



flow compensator pressure exceeds 15 bar [210 PSI]. Use a gauge that is dampened or glycerine filled. With the gauge installed and the load sensing valve in the closed position, start the system and observe the flow compensator pressure. If the reading is other than 13 to 15 bar [190 to 210 PSI], readjustment of the flow compensator may be required.



3) To change setting, remove the adjustment screw cover from the flow compensator valve. Loosen the flow compensator adjustment screw lock nut with a 7/16 inch open end wrench.

4) With the system running and system control valve in the closed position, use a 1/8 inch Allen wrench to turn the adjustment screw to the proper or desired flow compensated pressure. Clockwise rotation of the adjustment screw will increase the pressure setting and counter-clockwise rotation will decrease the pressure setting. Important: Any readjustments exceeding the 31 bar [450 PSI] maximum factory setting must have prior approval from Eaton Hydraulic Division or the warranty of the pump will be void.



5) After adjustments are complete, hold the adjustment screw stationary and tighten the locknut to (torque 8 to 11 N•m [6 to 8 lbf•ft]).



6) After turning system off, install the compensator screw cover and check pressure compensator settings.



**To check or readjust pressure compensator valve setting:**

7) Install pressure gauge into gauge port use a 1/2 inch open end wrench and remove the plug furthest away from adjustment end of the compensator valve.



8) Install a pressure gauge into the gauge port. A recommended pressure gauge for checking system pressure is 0 - 670 bar [0 - 10,000 PSI]. The gauge used should also be dampened or glycerine filled. With the gauge installed, actuate the directional control valve so that the discharge of the pump is blocked by the system load, observe the reading on the pressure gauge. If the reading is other than the 207 to 214 bar [3000 to 3100 PSI] maximum factory setting, readjustment of the pressure compensator valve may be necessary. A lower setting for special applications may be possible and permissible.

9) To change the compensator setting, you must first use a small screwdriver or similar tool to remove the adjustment screw cover from the pressure compensator cap. Note: The present covers are plastic and if carefully removed may be reused. Prior caps were made of aluminum and in most cases when removed are not reusable.



10) To readjust the pressure compensator you must first use a 7/16 inch open end wrench to loosen the compensator adjustment screw lock nut.



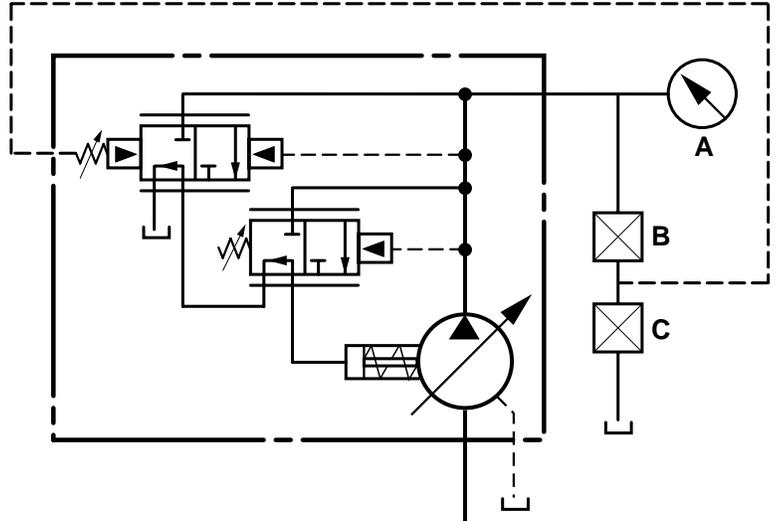
11) Next start the pump and actuate the directional control valve so that the discharge of the pump is blocked by the system load. Observe the pressure gauge and use a 1/8 inch Allen wrench and slowly turn the adjustment screw to obtain the desired pressure setting. Clockwise rotation of the adjustment screw will increase the pressure setting and counter-clockwise rotation will decrease the pressure setting. Important: Any readjustments exceeding the 207 to 214 bar [3000 to 3100 PSI] maximum factory setting must have prior approval from Eaton Hydraulic Division or the warranty of the pump will be void.

12) After readjustment of the pressure compensator is completed, hold the adjustment screw stationary and tighten the locknut (Torque 8 to 11 N•m [6 to 8 lbf•ft]). Remove the load and install the compensator screw cover. Remove pressure gauge and replace the gauge port (torque 8 to 11 N•m [6 to 8 lbf•ft]).



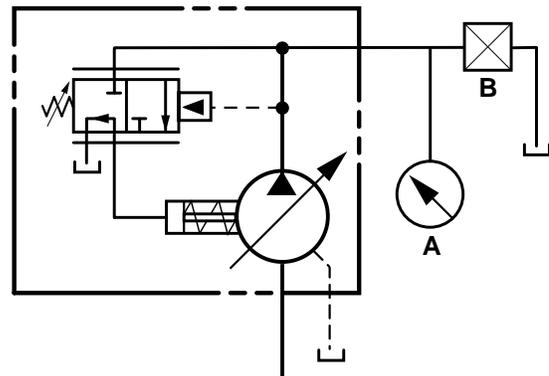
## Test Circuit Set Up for Pressure-Flow Compensators

- 1) Do not connect the flow signal line to the unit and leave the flow compensator signal port open.  
For 1.16, 2.32, and 2.77 in<sup>3</sup>/r pumps: Block flow from pump using shut-off valve "B" and set flow compensator to produce pressure range specified at point "A".  
For 4.21 in<sup>3</sup>/r pumps: Set flow compensator for range specified at an output flow of 5-7 gal/min.
  - 2) Connect flow compensator port downstream of shut-off valve "B" with the flow signal line.
  - 3) Open shut-off valve "B". Block flow from pump using shut-off valve "C" which is downstream from the flow signal line. Set pressure compensator to produce a pressure range at point "A" as specified.
- Note: For 1.16 in<sup>3</sup>/r pumps, and 2.32 in<sup>3</sup>/r pumps with non A-pad backplate, add the inlet pressure to the pressure setting tolerance.



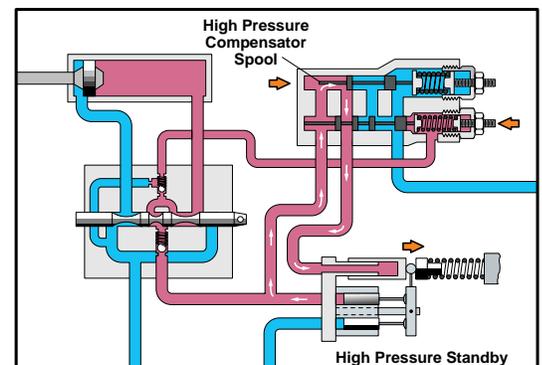
## Test Circuit Set Up for Pressure Compensators

- 1) Block flow from pump using shut-off valve "B". Set pressure compensator to produce a pressure range (at Zero flow).
- Note: For 1.16 in<sup>3</sup>/r pumps, add the inlet pressure to the pressure compensator setting tolerance. For all other units, add the case pressure to the pressure setting tolerance.



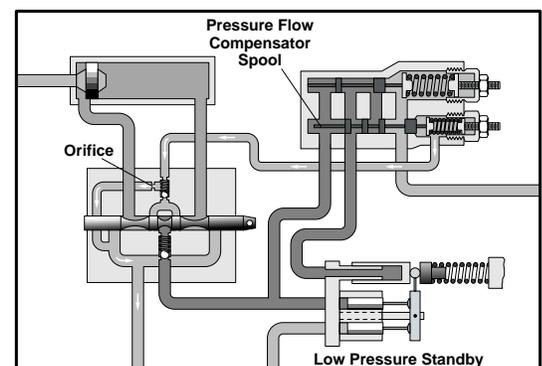
## Operation of System High Pressure Standby

Eventually, the piston in the cylinder (actuator) reaches the end of its travel. When it does, flow past the lands of the directional control spool stops. Pressure equalizes on both sides of the directional control spool and pressure also equalizes on both ends of the pressure-flow compensator spool. The 200 PSI spring forces the pressure flow compensator spool all the way to the left. When pressure reaches 3000 PSI, the high pressure compensator spool moves to the right and directs oil to the camplate control piston. The piston moves the camplate to near zero angle and the pump stops producing flow. This is called the high pressure standby mode.



## Low Pressure Standby

Here the spool in the directional control valve has been returned to neutral. The pressure that was directed to the right end of the pressure-flow compensator spool is now drained through the orifice in the control valve. The pump will stroke back to near zero displacement and practically no flow is produced. The 200 PSI acting on the left end of the pressure-flow compensator spool will be offset by the 200 PSI spring acting on the right end of the spool. The spool will modulate back and forth to maintain 200 PSI in the discharge circuit of the pump.



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