PPCH pressure controller, Leak test procedure

This procedure is intended for users or other authorized personnel trained on operation of PPCH pressure controllers

Purpose

This document instructs how to leak check a PPCH pressure controller/calibrator and report the results to the Pressure Technical Support team at Fluke Calibration.

Notes

Refer to the PPCH Operation and Maintenance Manual for detailed setup and use instructions. Refer to Figure 9 in the manual for a schematic of the PPCH.

If you are using the PPCH with a PG7302 piston gauge and an automated intensifier pay special attention to #3 to make the intensifier "not present" during leak checking.

Assuming this is PPCH A200M (200 MPa ~ 30000 psi)

1. Drive air supply pressure must be 100 to 120 psi and 450 l/m (15 cfm). If the pressure drops during operation the flow is not adequate
   a. What is air supply pressure, and is it stable when pressure is going from VENT to maximum pressure? How stable? Does it drop at all when viewed on the supply pressure gauge? Note that supply pressure gauge is not part of the PPCH. It is good to have a pressure gauge and regulator on the drive air to the PPCH.

2. Remove any fittings and tubing from the TEST port and plug the TEST port with a plug and gland

3. If you have an intensifier (PPCH/PG system only) make it "not present" because after step 2 it is no longer connected to the PPCH
   a. [SPECIAL], <7internal>, <4intens>, "Intensifier present?", <no>
   b. If it is still physically connected to PPCH (not recommended), turn it off
      i. [SETUP], <6control>, <3inten>, "Intensifier:", <off>

4. Leak check in static mode.
   a. [SETUP], <6control>,<2mode>, <2static>
   b. Wait 5 minutes for thermal effects from TPCU to dissipate
   c. Set Pressure of 25000 psi
   d. Wait 5 minutes
   e. Press [ESC] button twice to ensure control is off.
   f. What is pressure? (psi)
   g. What is pressure Rate of change? (psi/sec), and is it stable?
   h. Wait another minute or so for "Rate of change" to stabilize. What is pressure and Rate of change? Did Rate of change stabilize?

5. Repeat steps 4c. to 4h. with setpoints of 20000, 10000, 20000, 25000, 20000 and 15000 psi. Record all data!

6. For each test, leak rate must be less than 0.002% per sec. (20ppm/sec). Leak rate is calculated by: (Rate of change, in psi/sec) divided by (pressure, in psi)

7. If results are good we might suggest resetting the valve configuration to the factory settings and then try some setpoints in dynamic mode. Reset like this; [Special], <Internal>, <Config>, <Valves>, <factory>.
   a. Then change to standard dynamic mode like this; [SETUP], <6control>,<2mode>, <1dynamic>, <standard>
   b. Wait 5 minutes for thermal effects from TPCU to stabilize, then try some setpoints.

8. If leak test fails send results and we will decide on next actions based on whether leak rate is positive, negative or intermittent.
   a. Negative leak rate could be caused by leaking VENT valve or leaking OUTLET (down) valve. VENT valve is fixed by replacing VENT valve seat.
   b. Positive leak rate is most likely caused by leaking INLET (up) valve. UP or DOWN valves can only be repaired at a Fluke Calibration Service Center.

9. If you have an intensifier turn it back on
   a. [SPECIAL], <7internal>, <4intens>, “Intensifier present?”, <yes>
   b. [SETUP], <6control>, <3inten>, “Intensifier:”, <on>

What is the model, serial number and embedded software (firmware) version? Model is in a format like PPCH-100M A100M/A20M and is shown on the front and back panels. Serial number is shown on the product label on the back panel and by pressing and holding the [ESC] button. Firmware version is shown at power-up or you can press and hold the [ESC] button to view it. It will be in a format similar to v1.01j

Send leak test results and other requested information (model, serial number, firmware version, etc.) to pressuresupport@flukecal.com

End

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