



MODEL 700 LEAK CHECK PROCEDURE

SCOPE:

This Service Note outlines the procedures for leak testing and service of the Model 700 Calibrator.

BACKGROUND:

Finding a Pneumatic leak in an instrument as complex as the API Model 700 can be a time consuming and frustrating endeavor. In order to ease the problems associated with finding a leak, API has incorporated an Auto Leak Check procedure in the instruments diagnostics. This procedure, in most cases, is run simply by pressing the front panel buttons to select the routine and then running the routine. This makes it a simple process to incorporate a leak check on a regular basis; thereby, discovering leaks before they are a problem. The exception to this is a M700 with the Photometer option installed. In this case it will be necessary to bypass the internal bench sample pump.

The leak check procedure is performed in two stages. During the first stage; lasting one minute or 17% of the test, the Vent Valve and Output Valve are closed and the Purge Valve and Input Valve are opened, pressure is tested and if it does not reach 25 PSIG the test is aborted with a "LEAK CHECK FAILED" message. If the pressure does reach 25 PSIG the test continues by closing the Input Valve and monitoring pressure decay. If pressure decay exceeds 5 PSIG in the ensuing five minutes the test will end with a "LEAK CHECK FAILED" message.

PROCEDURE for AUTO LEAK CHECK:

Tools Required:

#2 Philips Screwdriver
9/16" Wrench
1/2" Wrench

If you do not have the photometer option skip to step 3)

- 1) Remove the fitting with tygon tubing from the brass tee at the rear of the photometer.
- 2) Remove the fitting from the pressure side of the sample pump and attach it to the

CAUTION

This procedure bypasses the photometer sample pump and flow sensor. Since these pumps have internal leaks it is necessary to bypass them.

The flow sensor could be damaged if subjected to 30 PSIG, this technique is required to ensure no damage to the instrument occurs.

- fitting at the rear of the photometer where the fitting was just removed
- 3) Ensure a source of clean, dry air at 30 to 35 PSIG is connected to the DILUENT IN port at the rear of the M700
 - 4) Press SETUP-MORE-DIAG. Select AUTO LEAK CHECK. Press ENTR.
 - 5) At the 17% complete point, record the pressure reading from the M700 display. (this will allow you to determine the severity of any leak that might occur.)
 - 6) At test completion the final pressure will be displayed. Any leak greater than 2 PSIG at this point would indicate a leak of sufficient severity to warrant finding and repairing it.

The AUTO LEAK CHECK only pressurizes the M700 for the first 17% or 1 minute of the test making it difficult to use it to find leaks. A method to pressure test the instrument is:

PROCEDURE for AUTO LEAK CHECK:

Tools Required:

#2 Philips Screwdriver

9/16" Wrench

1/2" Wrench

7/16" Wrenches (2)

Leak Detector (bubble solution)

- 1) From the main menu, press SETUP-MORE-DIAG-ENTR-ENTR-NEXT. Ensure OFF indicator is present. Press JUMP-7-ENTR-OFF-OFF-ENTR. Press JUMP-53-ENTR-OFF-OFF-ENTR. Press NEXT-OFF-OFF-ENTR. You have now closed the Vent and Output valves and opened the Purge and Input valves. This will apply the clean, dry air at 30 to 35 PSIG from the DILUENT IN port throughout the calibrator.
- 2) Apply bubble type leak detector to all seals and fittings until the leak(s) is(are) located.
- 3) Tighten seal/fitting until leak stops.
- 4) Cleanup any excess bubble solution.
- 5) Press EXIT-NEXT-NEXT-NEXT-NEXT-ENTR. This will restart the AUTO LEAK CHECK.
- 6) Repeat these procedures until no more leaks exist.