



07-026
21 December, 2007

OXYGEN SENSOR RETROFIT, INSTRUCTIONS FOR M200EH ANALYZER

I. PURPOSE:

- To provide instructions for the installation of the O₂ sensor retrofit option.

II. TOOLS:

- #2 Phillips screwdriver
- Wrenches: 9/16", 7/16", 1/2"
- Diagonal cutters

III. PARTS:

- KIT000264



The electronics used in T-API analyzers are sensitive to Electrostatic Discharge (ESD). When working on any T-API device, please ensure that you are properly grounded prior to handling or touching any electronic circuitry in the analyzers! For more information on how to protect sensitive components from ESD during handling, please contact T-API customer service and ask for the ESD Service note number 03-022A.

IV. **PROCEDURE:**

1. Remove power from the analyzer, remove analyzer's cover screws and the cover.
2. Refer to **figure 1** and remove fitting cap (FT 28 Plug) from the exhaust/vacuum manifold. Install the 0.004" flow orifice regulator assembly parts in the port where the manifold cap "FT 28" was removed, refer to **figure 2** for flow orifice regulator assembly details.
3. Refer to **figure 3** and locate the bypass manifold. Disconnect the 1/8" piece of tubing that goes to the exhaust/vacuum manifold, remove the 1/8" elbow fitting from the bypass manifold and replace it with a 1/8" "T" fitting". Install the "T" fitting with a vertical orientation see **fig 4**. Reconnect the piece of tubing (previously disconnected) to the top side of the "T" fitting just installed.
4. Find the two connectors for the oxygen sensor located in the wiring harness. They may be covered with heat shrink. The connectors are labeled O2 (has yellow, white, black wires) and O2-p1 (red, black clear wires).
5. Install the oxygen sensor assembly, see **figure 5** for sensor placement. Make the oxygen sensor electrical connections. Route the heater-thermistor harness through the back of the oxygen sensor, route the supply voltage harness through the front of the oxygen sensor.
6. Connect a 1/8" piece of tubing from the lower "T" side (of the bypass manifold) to the input fitting of oxygen sensor.
7. Connect a 1/8" piece of tubing from the oxygen sensor output fitting to the 0.004" flow orifice regulator assembly that was installed in the exhaust/vacuum manifold output in step 2.
8. **Figures 6 and 7** show the pneumatic diagram before and after oxygen sensor installation.
9. Secure the oxygen sensor module to the analyzer's chassis using the four screws provided.
10. Route the tubing away from hot areas.
11. Install the relay (provided) on relay board at location K5 see **figure 5** for location of relay board assembly. Install DOC (disc on chip, part number 043430100) on the cpu board.
12. Turn power on.
13. Leak test the analyzer. Use service note 06-010 instructions to calibrate O₂ sensor assembly just installed.
14. Perform the AIN, DAC, flow, pressure and factory calibrations on the analyzer.
15. Re-install analyzer's cover.

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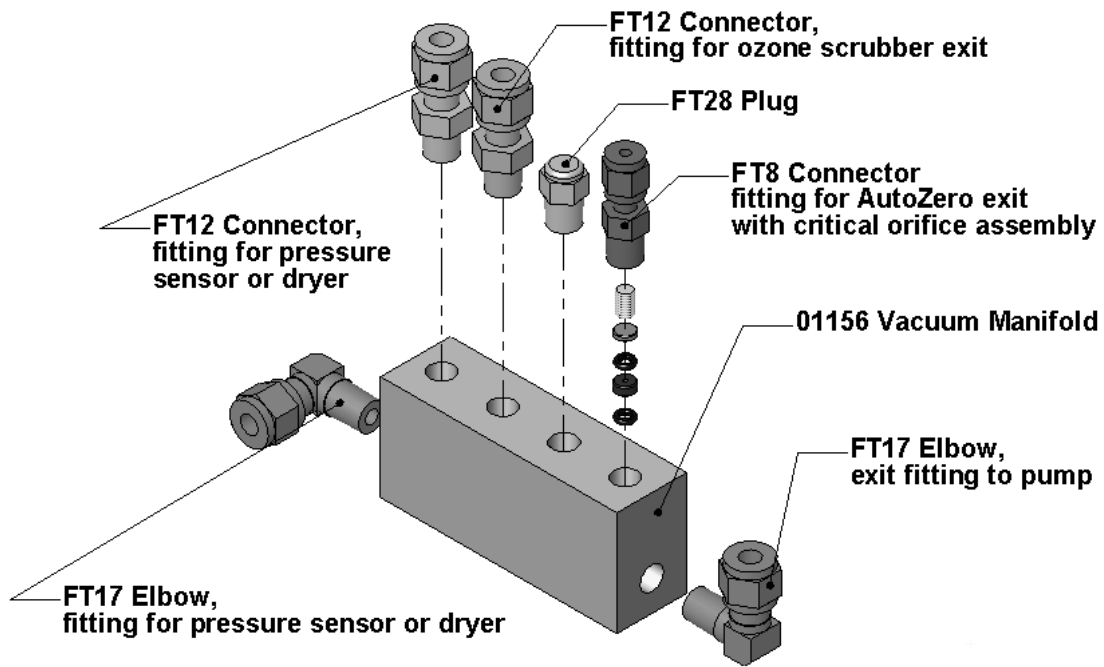


FIGURE 1. EXHAUST VACUUM MANIFOLD.

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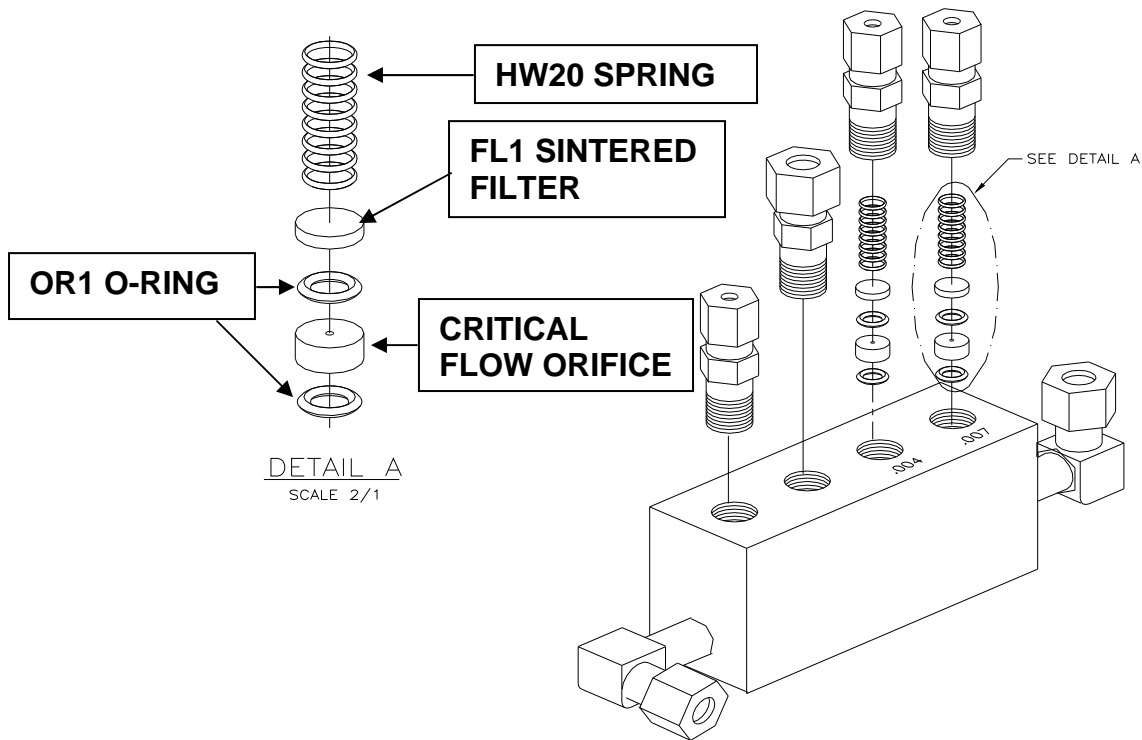


FIGURE 2. EXHAUST VACUUM MANIFOLD SHOWING THE ADDITIONAL 0.004" FLOW ORIFICE ASSEMBLY.

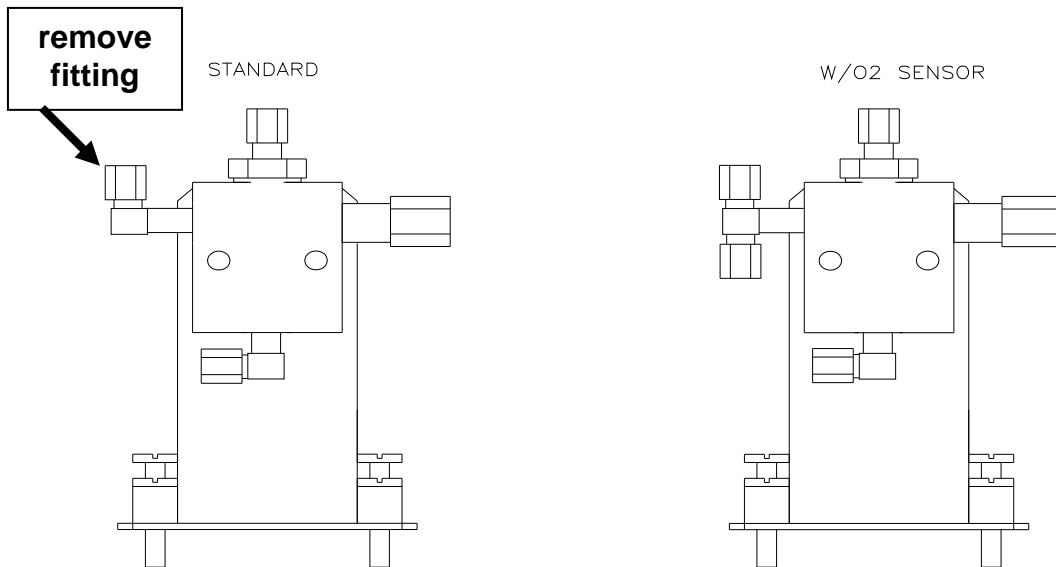


FIGURE 3. SHOWS THE BYPASS MANIFOLD BEFORE AND AFTER OXYGEN OPTION FITTING CONFIGURATIONS.

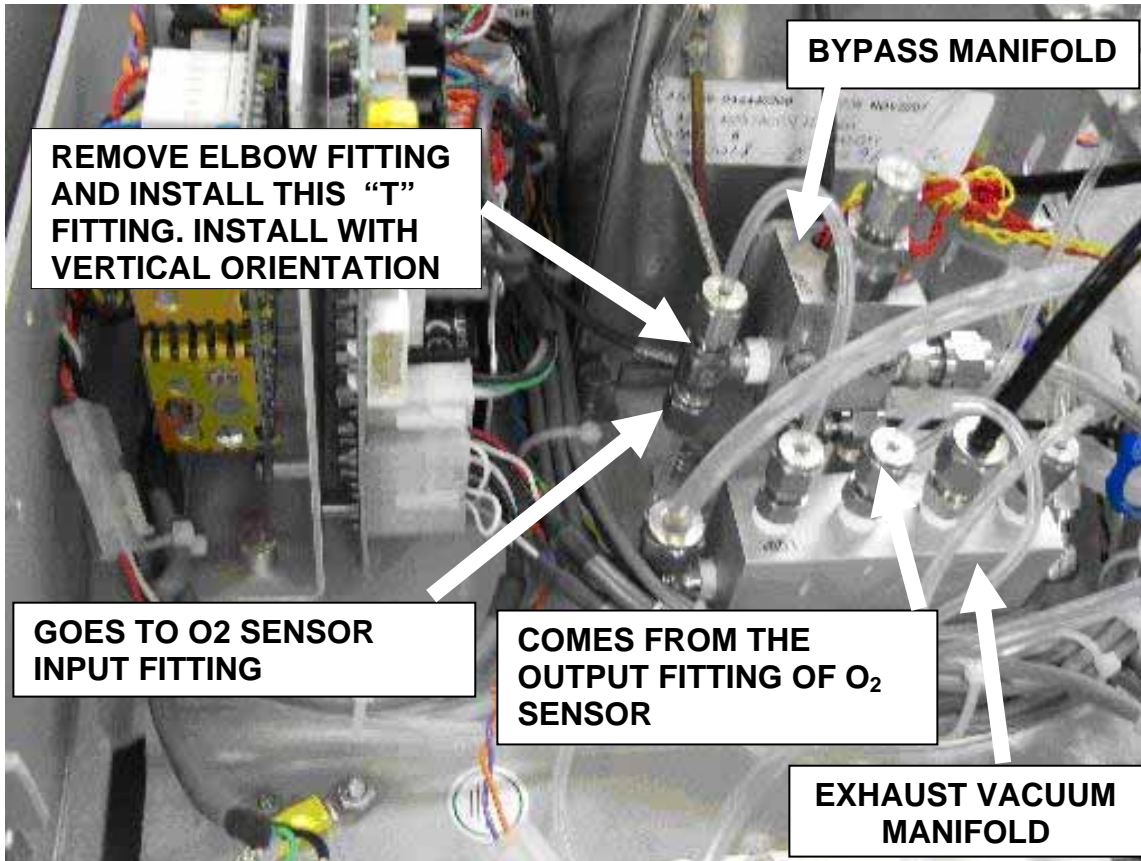


FIGURE 4. SHOWS THE "T" FITTING PLACEMENT WITH VERTICAL ORIENTATION AND LOCATION OF BYPASS MANIFOLD AS WELL AS THE EXHAUST/VACUUM MANIFOLD.

M200EH W/ O2 SENSOR LAYOUT

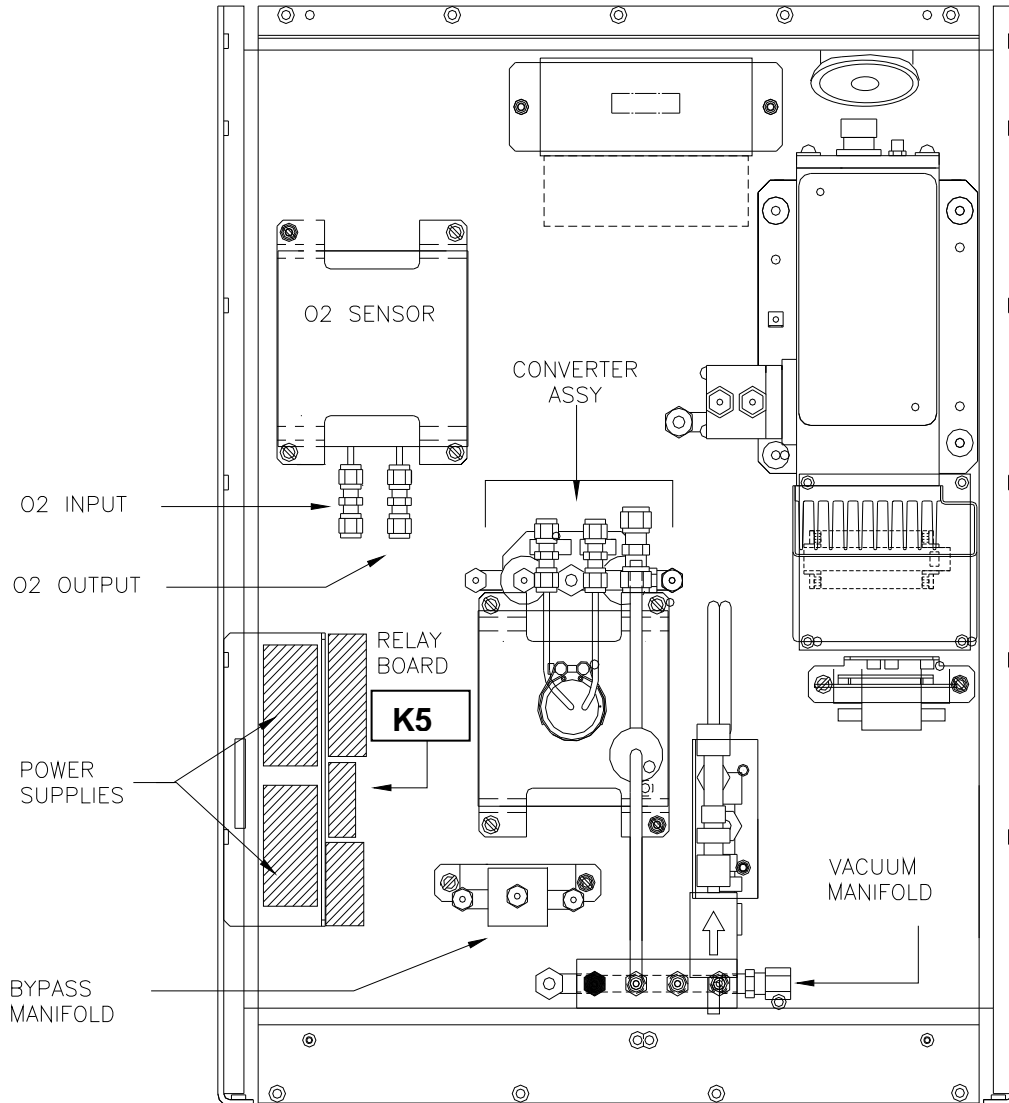


FIGURE 5. SHOWS THE O2 SENSOR INSTALLED AND CONNECTED. IN ADDITION, THIS FIGURE SHOWS THE INPUT AND OUTPUT FITTINGS OF THE O2 SENSOR.

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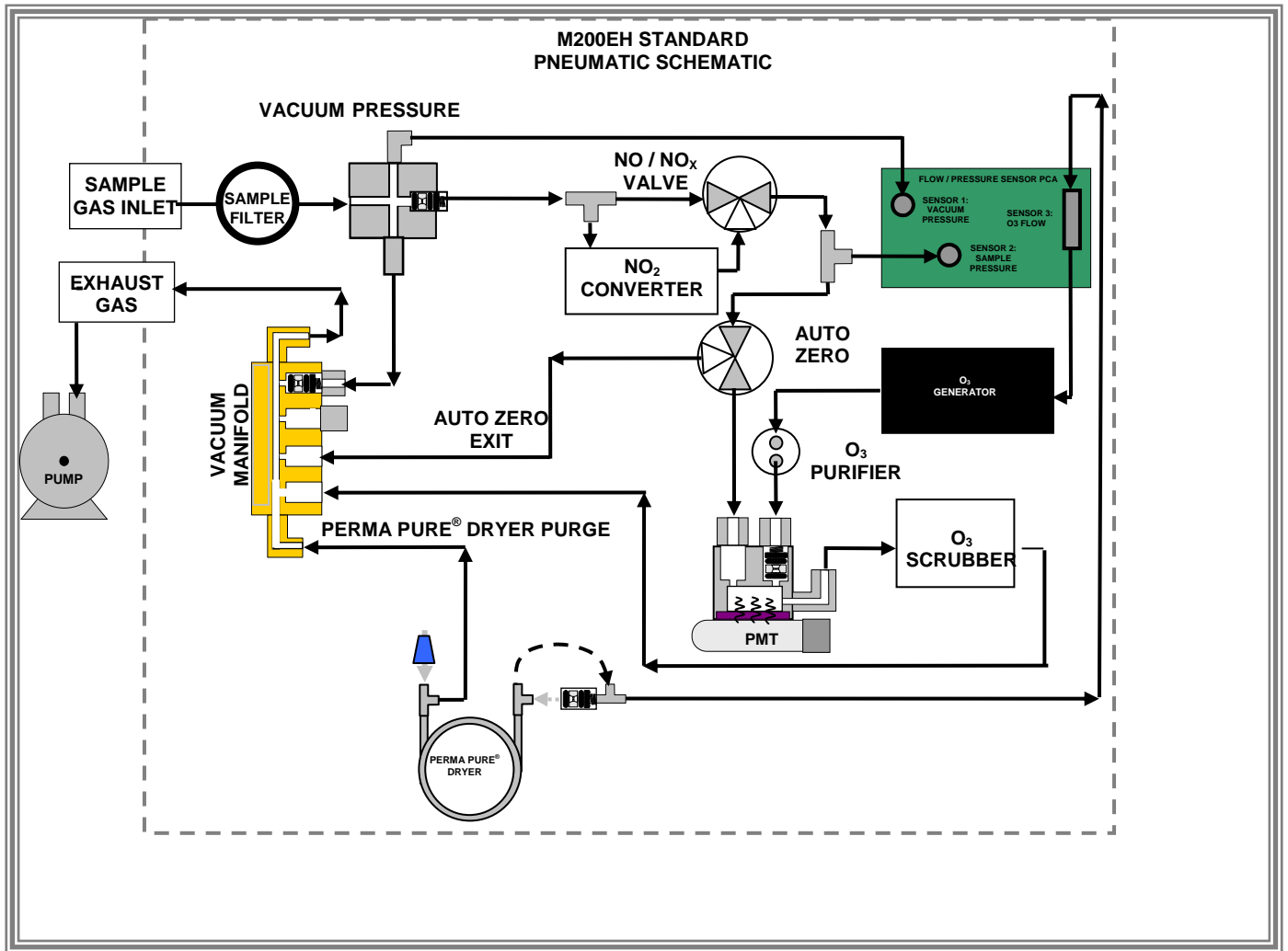


FIGURE 6. SHOWS PNEUMATIC CONFIGURATION BEFORE OXYGEN SENSOR INSTALLATION.

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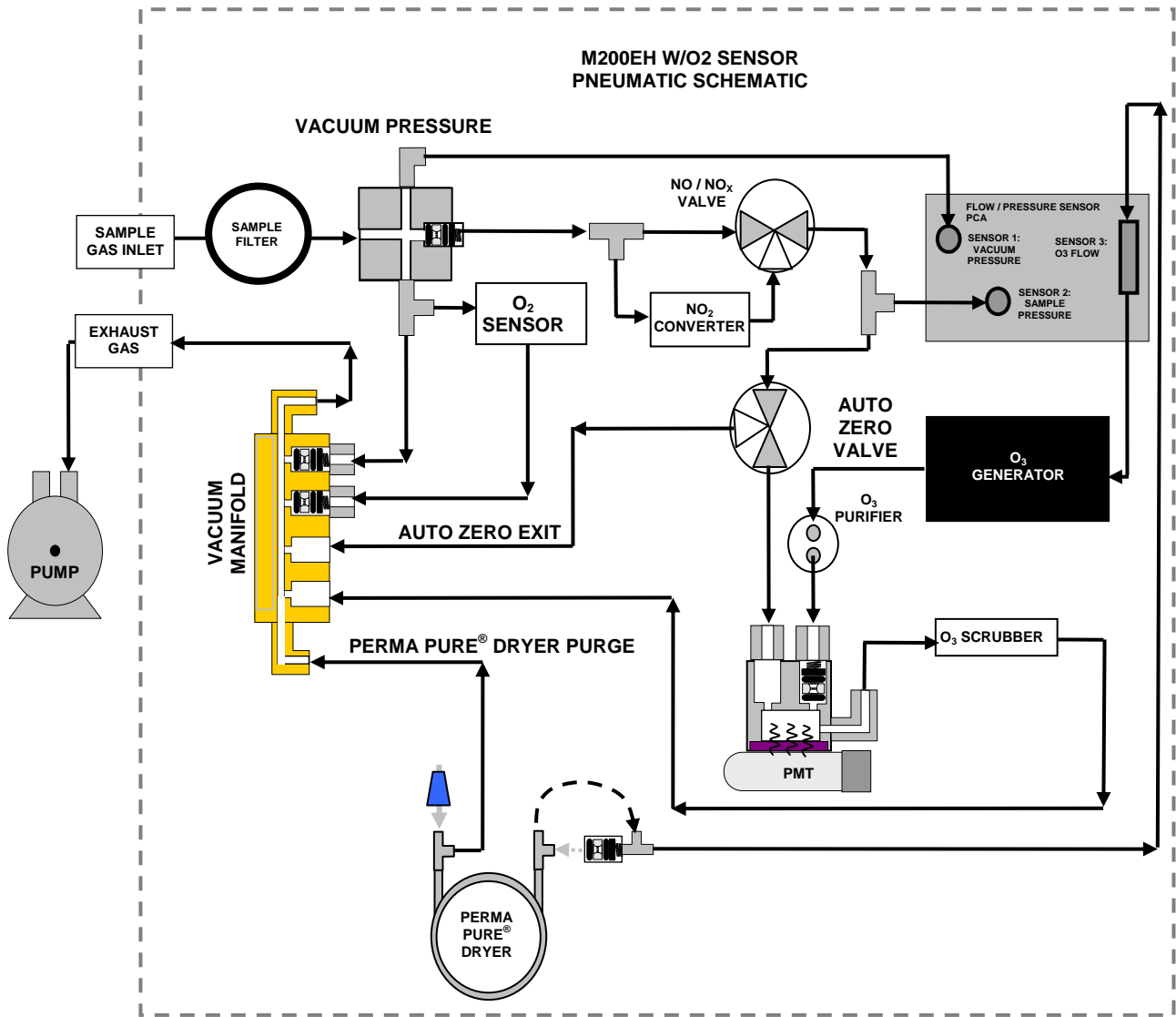


FIGURE 7. SHOWS PNEUMATIC CONFIGURATION AFTER OXYGEN SENSOR INSTALLATION.