



TELEDYNE INSTRUMENTS

Advanced Pollution Instrumentation

A Teledyne Technologies Company

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Service Note

08-004A

February 27, 2008

M703E IMPROVED RESPONSE REWORK INSTRUCTIONS

I. PURPOSE:

To instruct how to rework the M703E pneumatics to improve the response time for units deployed in the field as portable O₃ calibrators. The M703E currently uses a 100CC flow control orifice installed inside the O₃ generator assembly. The O₃ concentration from the O₃ generator is diluted downstream with zero air supplied through a 5 LPM flow control installed on the output of the regulator. We have found that the response time for a M703E used for field calibration can be improved by removing the 100 CC flow control and redirecting the entire 5 LPM dilution air flow through the O₃ generator. See attached pneumatic diagram.

II. TOOLS:

Leak Checker

Open End Wrenches (7/16", 1/2", and 9/16").

Screwdrivers (Philips)

III. PARTS:

061390000 KIT, RETROFIT, IMPROVED RESPONSE, M703E

IV. REFERENCE:

This procedure applies to the Model 703E Ozone Calibrator, w/ IZA Pump (054000100) manufactured before 12/1/2007 and used as a portable O₃ calibrator.

This procedure does not apply to M703E's that are operating in a shelter and are connected to an external zero air source. M703Es that are installed in shelters do not exhibit a problem with response time and do not need this modification.



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

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components from ESD during handling, please contact T-API customer service and ask for the ESD Service note number 03-022A.

V. **PROCEDURE:**

Disconnect the power plug from the instrument prior to performing the following modifications.

1. Disconnect and discard the 1/8" Teflon tubing that leads between the output of the O₃ generator and the top of the stainless steel tee. See Figure 1.
2. Remove the stainless steel tee and the 1/4" Teflon tubing that runs to the output manifold and to the 5 LPM orifice holder on the regulator assembly. See Figure 1.
3. Unthread the stainless steel o-ring fitting from the output of the O₃ generator and remove the 100CC flow orifice, o-rings and filter. Reinstall the stainless steel o-ring fitting being careful not to over tighten. It should be snug. See Figure 1.

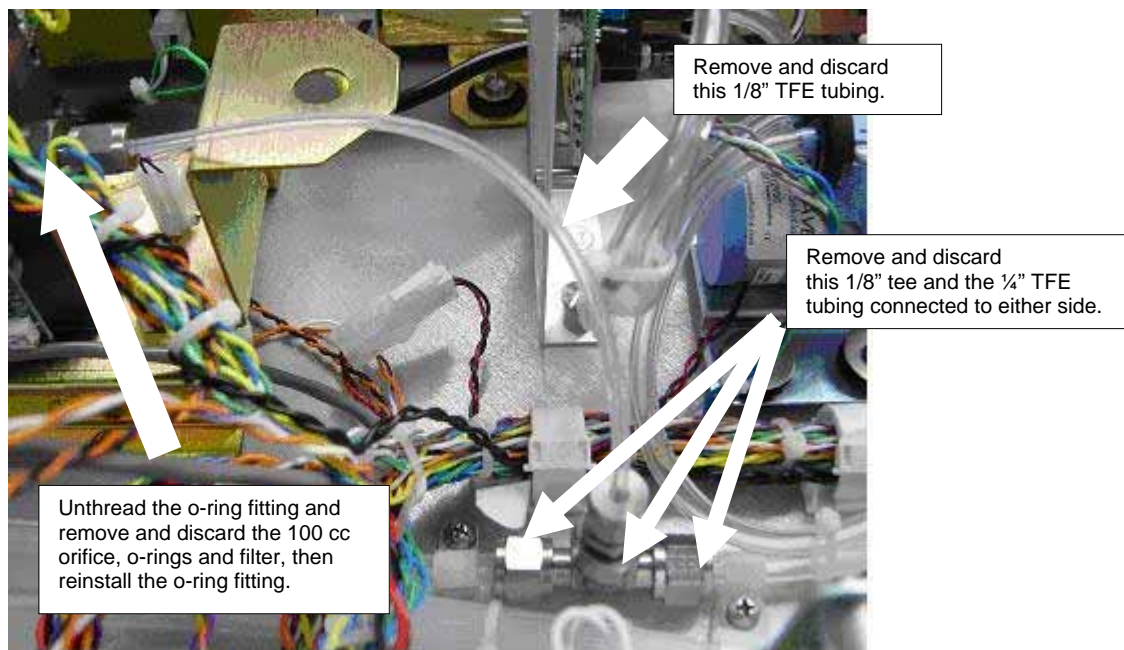


Figure 1

4. Disconnect and discard the 1/4" tygon tubing that leads from the pressure transducer to the 1/4" brass barb fitting on the O₃ generator. Replace the brass barb fitting with the #10-32x3/8 screw (SN 18) and sealing washer (HW 149) from the kit. See Figures 2 and 3.
5. Disconnect the O₃ generator lamp from the power supply. Carefully remove the lamp from the O₃ generator.
6. Remove and discard the 1/8" brass elbow from the top of the ozone generator together with the 1/8" Teflon tubing that leads to the brass tee on the regulator assembly. See Figure 2.

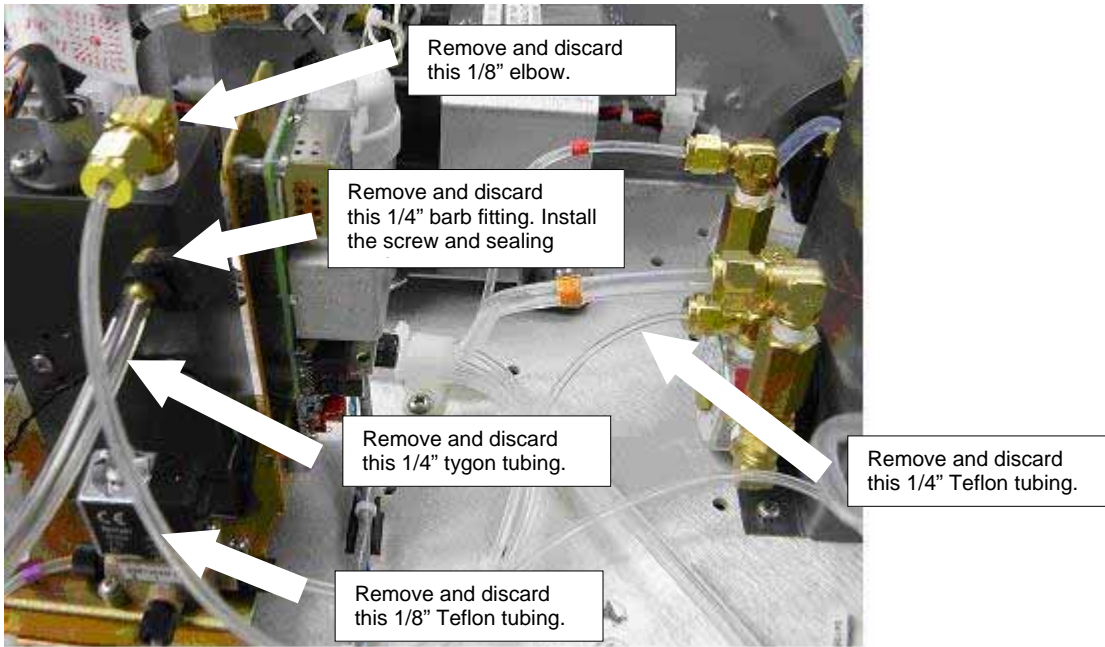


Figure 2

7. Install the new 1/4" brass elbow to the top of the ozone generator.
8. Connect one end of the brown labeled 1/4" Teflon tubing included in the kit to the brass elbow on top of the O₃ generator and the other end to the brass elbow on the 5 LPM flow control. See Figure 3.

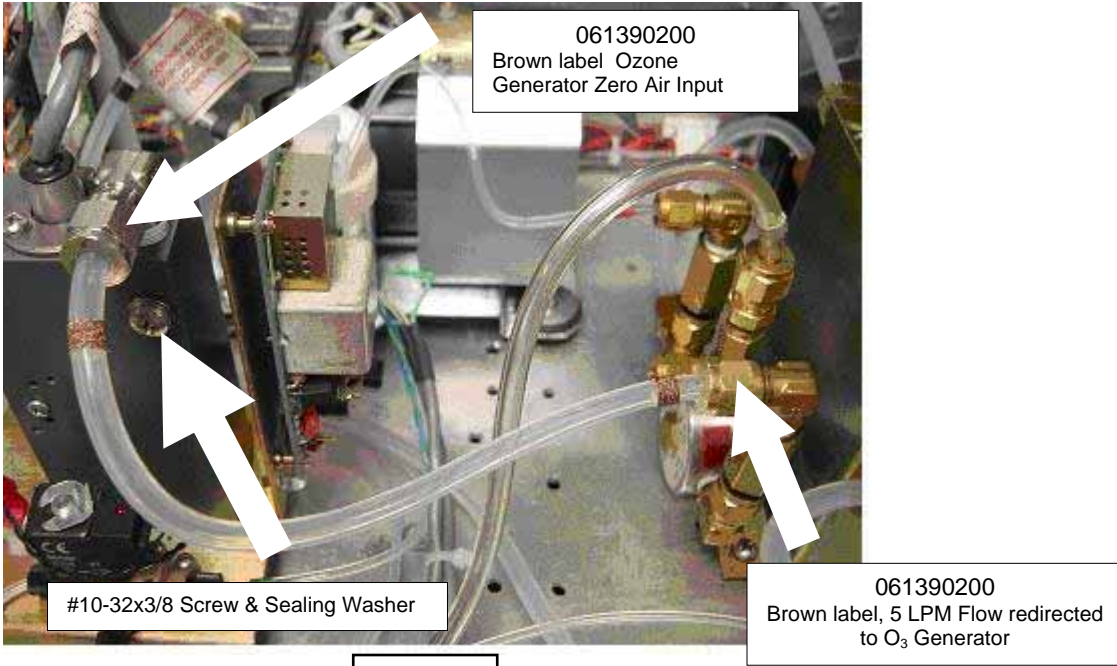


Figure 3

9. Move the 1/8" brass cap from the top of the tee on the regulator assembly to the lower port on the same tee. See Figure 4.
10. Connect the open end of the grey labeled 1/4" tygon tubing included in the kit to the bottom port on the pressure transducer. Connect the other end of the grey tubing with the stainless steel 1/4" to 1/8" reducer to the 1/8" tee on the regulator assembly. See Figures 4 and 5.

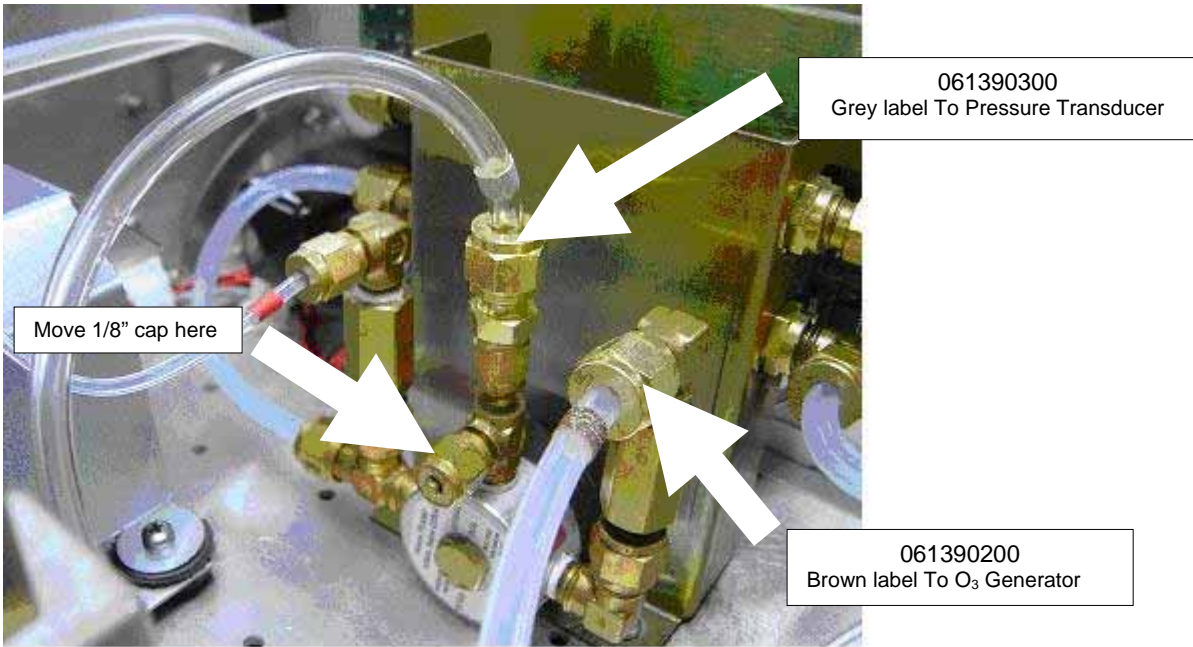


Figure 4

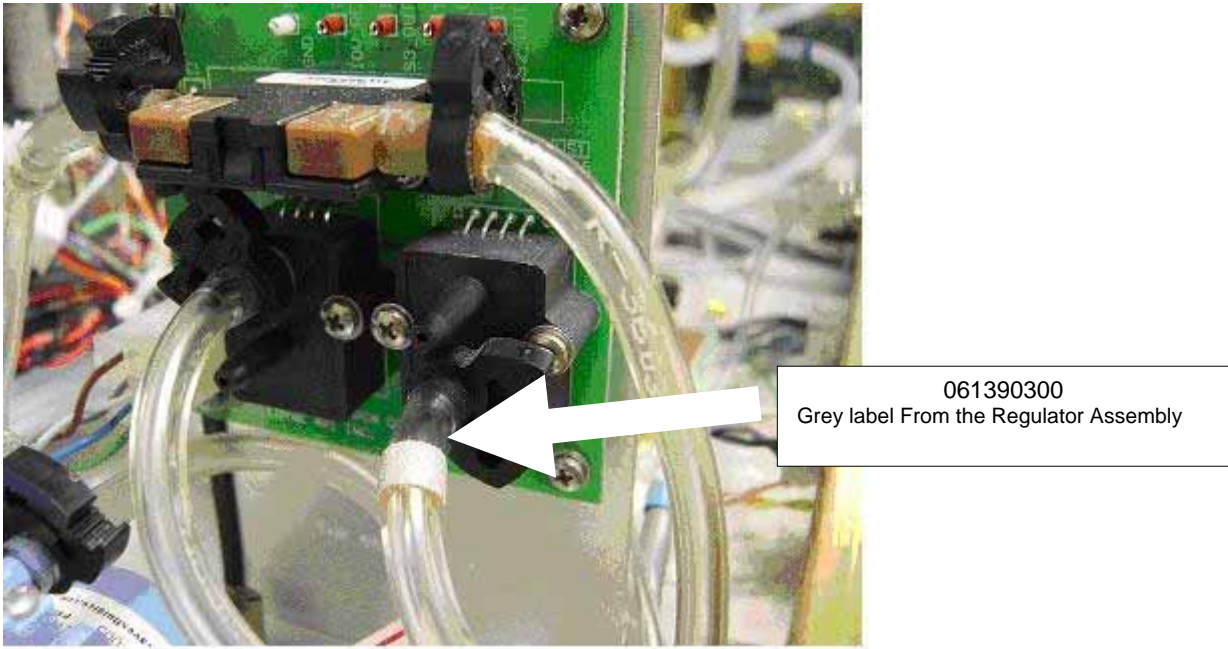


Figure 5

11. Bend down the bracket to make room for the new 1/4" reducer fitting and tubing assembly. See Figure 6.

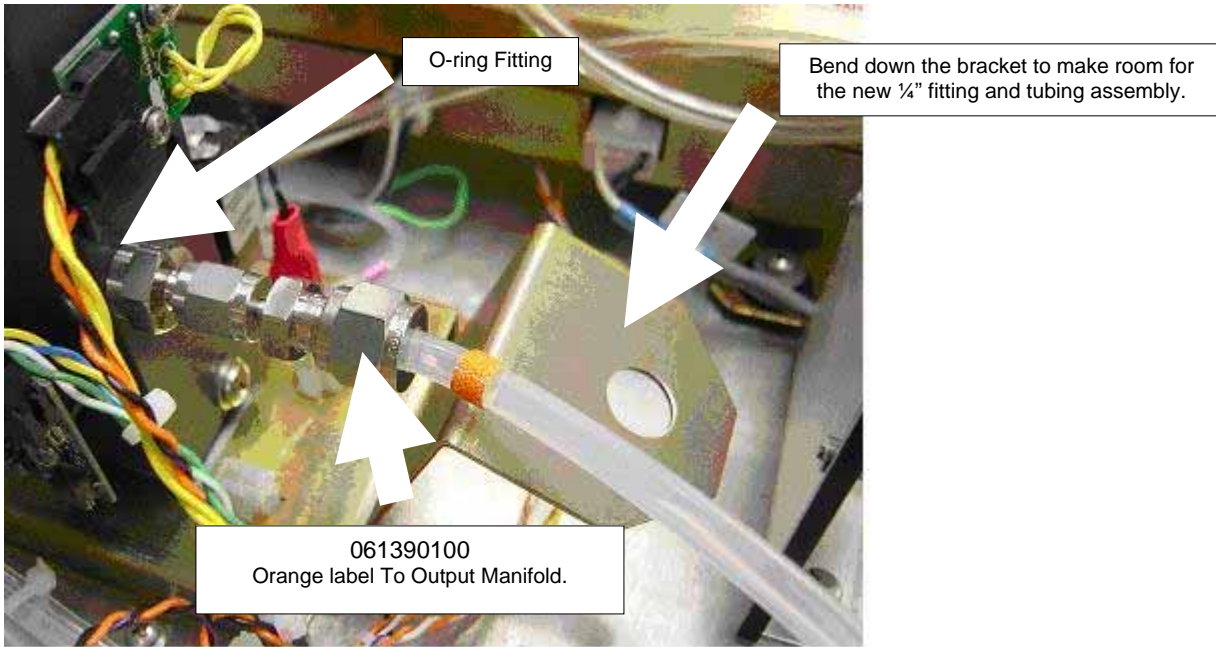


Figure 6

12. Connect the end of the orange labeled tubing with the stainless steel reducer to the output of the ozone generator and the other end of the orange tubing to the output manifold. See Figure 7.

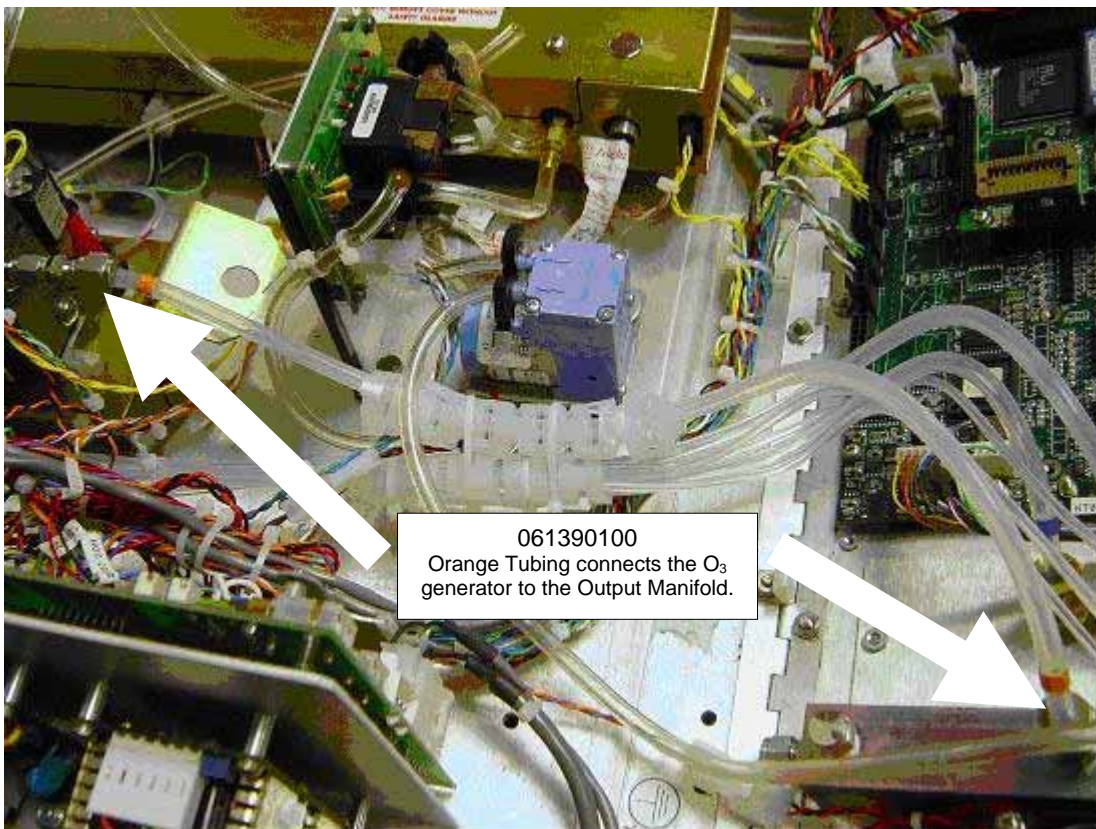


Figure 7

13. Use tie-wraps to attach the two tubing bundles together. See Figure 8.

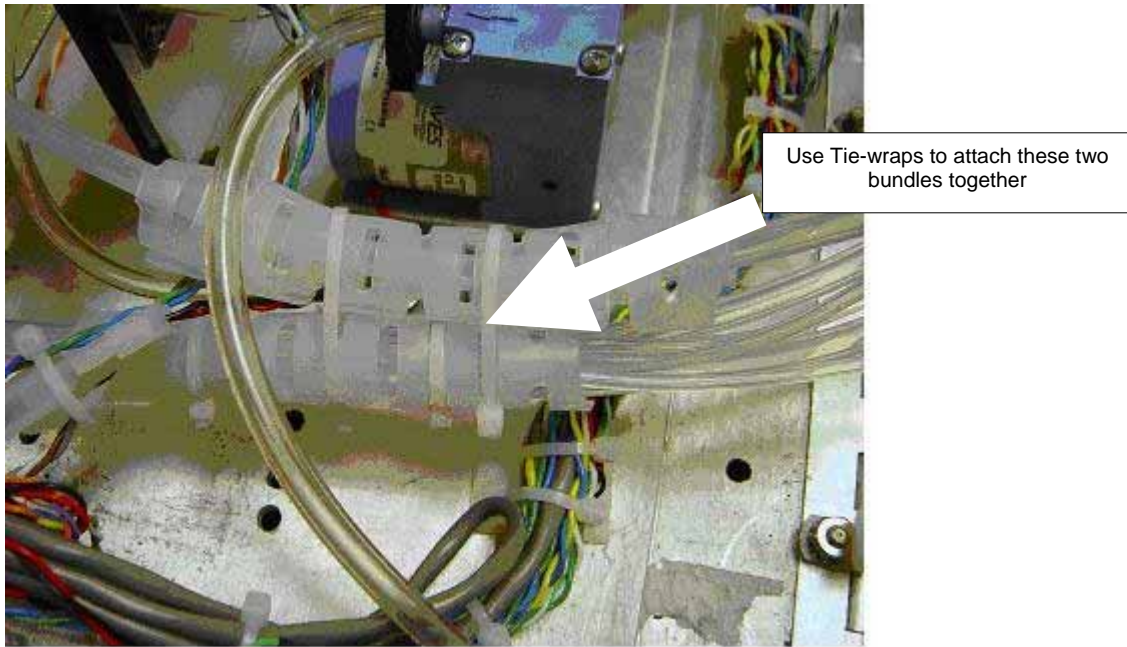
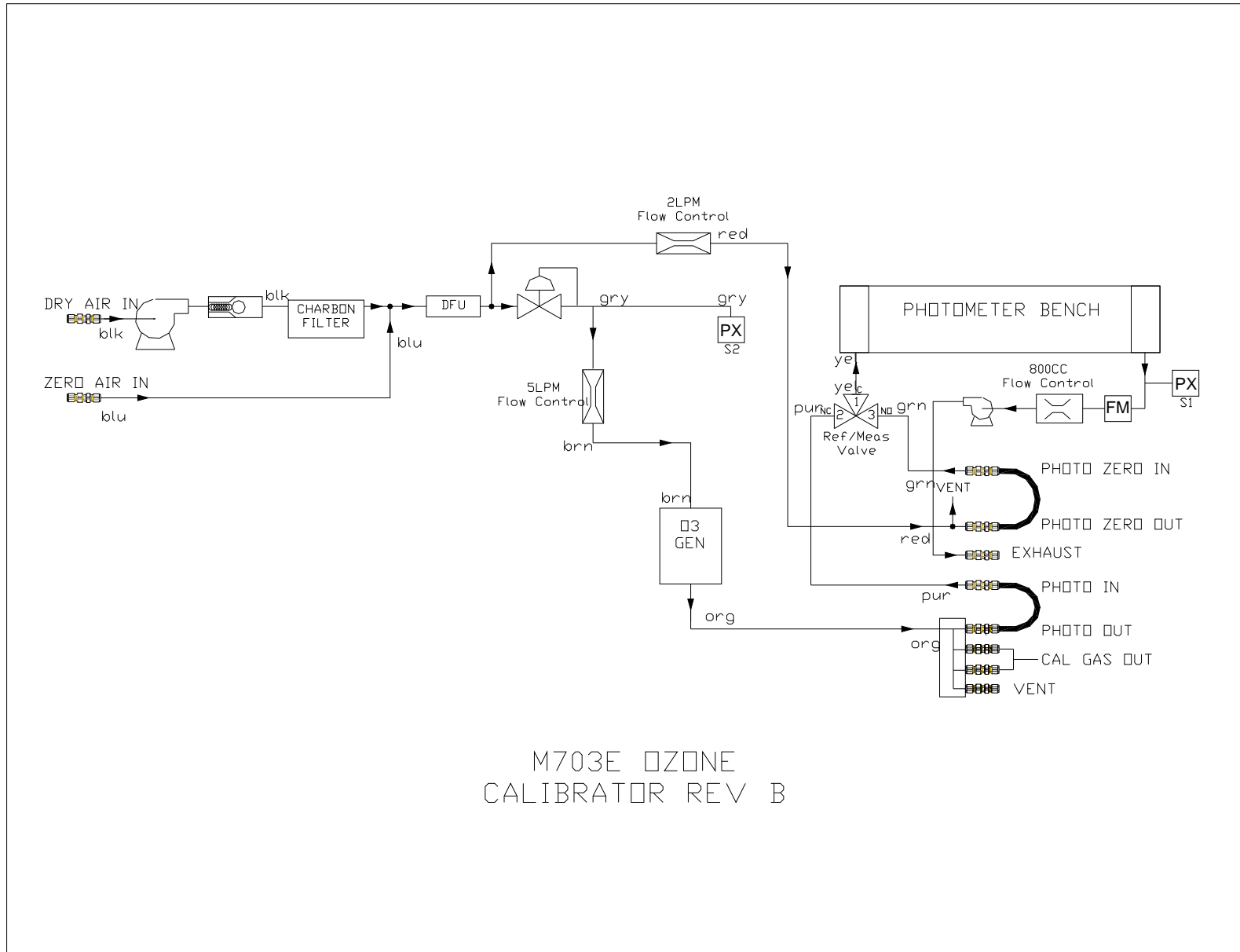


Figure 8

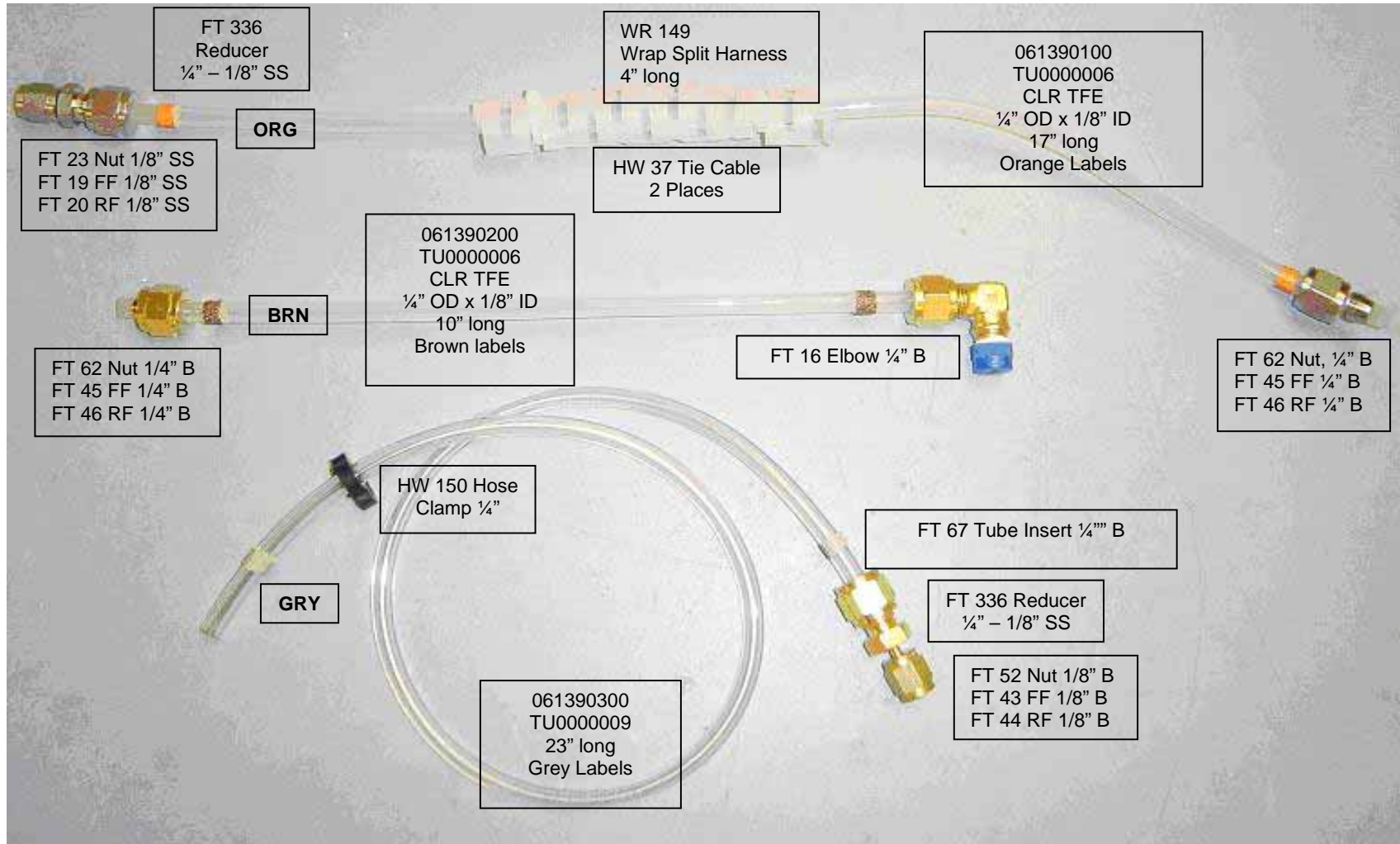
14. Reinstall the O₃ lamp and reconnect it to the UV lamp power supply.
15. Leak check the instrument.
16. Reconnect the power cord and turn on the instrument.
17. Allow the instrument to warm-up for 1 hour.
18. Using the M703E Operator's Manual, perform a pressure calibration followed by a flow calibration. Measure the dilution flow at either the output fitting on the O₃ generator or at the output manifold.
19. This modification should not have affected the bench calibration of the M703E but the O₃ generator will have to be recalibrated. Follow the O₃ generator calibration instructions in the M703E Operator's Manual or if you need help contact our customer service department.



M703E Pneumatic Diagram with the Improved Response Time Modification



M703E OZONE
CALIBRATOR REV B



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