

Let's Talk Tubing:

Pressurizing a Building with a Blower Door



Sam Myers | 2019-06-10

Let's Talk Tubing: Pressurizing a Building with a Blower Door

Author: Sam Myers, Retrotec

When pressurizing a building with a blower door, did you know that extra tubing must be added to the Channel B side of your gauge if you are not using a Retrotec DM32? If this tubing connection is neglected, you will have a reading that is approximately 20% high due to the open Channel B port that is referencing the indoor pressure of 50Pa instead of the outdoor pressure. Therefore, the extra tube is needed to connect that port on Channel B to the outside so that it is referencing the outside instead of the pressure induced by the blower door.

However, the [Retrotec DM32](#) automatically removes the need to connect additional tubing by mathematically removing the additional pressure from the equation. The gauge knows to do this whenever a blower door is selected and the open input port on Channel A (blue) feels a positive pressure.

Below are some screenshots from both the TEC and Retrotec blower door manuals that show how each gauge should address positively pressurizing buildings:

Ch. 7 of TEC Blower Door Manual:

Blower Door airtightness measurements are typically performed with the building depressurized relative to the outdoors (i.e. the Blower Door fan exhausting air out of the building). However, under certain conditions it is necessary to conduct a Blower Door test by pressurizing the building. For example, if a Blower Door test is being conducted where there is a fire in a fireplace or woodstove, pressurization testing should be performed to prevent smoke from being drawn into the building through the fireplace. Pressurization testing may also be used to avoid the possibility of pulling known pollutants into the building during the test procedure (e.g. mold from walls or crawlspaces). In addition, some testing procedures (ASTM E779, EN 13829) recommend that both depressurization and pressurization tests be performed, and then averaged to determine building airtightness.

7.1 Gauge Set-Up For Pressurization Measurements

Gauges should be set-up inside the building using the following procedures.

7.1.a DG-700 and DG-3 Gauges:

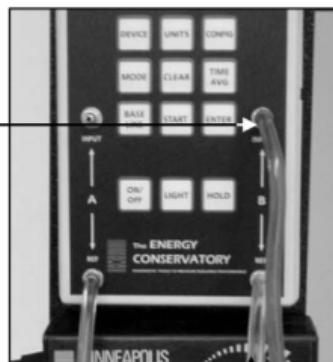
Connect one end of the **Red** tubing to the Channel B Input tap.

The remaining end of the **Red** tubing should be connected to the pressure tap located on the left side of the Blower Door fan electrical box.



Connect the **Green** tubing to the Channel A Reference tap.

The remaining end of the **Green** tubing should be run to the outside (see Chapter 3 instructions for installing the Outside Building Pressure Tubing).



Connect one end of the extra 30 foot **Clear** tubing (stored in the accessory case) to the Channel B Reference tap.

The remaining end of the **Clear** tubing should be run to the outside, through the open patch at the bottom of the nylon panel. The end of this tubing should be placed next to the side of the fan, but not in the fan's airstream. *

Ch. 10 of Retrotec Blower Door Manual:

10.1.3. When fans are turned around and blow towards the operator

This configuration will work perfectly; no matter which way the fans are turned around.

Normally, a second tube had to be connected from Channel B in order to get the correct flow reading; if this tube was forgotten, readings would be 20% high. BUT Retrotec gauges and software are smart enough to subtract the test pressure making this tubing change unnecessary.

When using DM32s and FanTestic software, this arrangement will always work regardless of the make of fan as long as the correct fans is selected. For Retrotec Fan Models 1000, 3000, 5000 and 6000 the Test Pressure will be deducted from the Room Pressure in each case

As shown below, a blower door test was done on house with a Retrotec DM32 and a TEC DG-700 Pressure & Flow Gauge connected to the fan. The fan is set up to pressurize the house. Since the DG-700 can only work with TEC fans, a TEC Blower Door fan was used. The DM32 can read and control both Retrotec and TEC fans. The photo on the left has both gauges connected correctly, with the extra tubing (green in this case) connected to the reference port on Channel B of the DG-700. The photo on the right shows the same set-up with the additional tubing removed from Channel B. Notice the difference in readings on the DG-700 with the green tubing connected and disconnected. It is worth mentioning that the DG-700 used in this demonstration is passed its calibration date but is reading well enough to for this example.



In this test scenario, both the outside reference tubing (red) and tubing reading the fan pressure (yellow) are split using nylon T connectors so that both gauges can take readings at the same time. A Retrotec speed control adapter is installed so that the DM32 has full control of the TEC fan. This adapter converts the TEC stereo jack to the Retrotec ethernet outlet.

No matter what brand of equipment you use, it's always important to ensure your gauges are set up correctly for each test scenario. Whether you are new to the industry or new to a certain test procedure, always refer to your manufacturer's operation manual to make sure you are using your equipment correctly.

Retrotec focuses much of its attention on equipment design that helps speed up the equipment set up process and reduce user error by incorporating items such as color-coded pressure ports and tubing, removing the need for additional tubing when pressurizing buildings, removing the need to add a flow straightener when depressurizing ducts with a duct tester, etc. If you have any questions regarding your Retrotec equipment, please feel free to reach out to us at support@retrotec.com or visit our [YouTube channel](#) for instructional videos and webinars.