# *Quick Guide TF2 – Using the TrueFlow Air Handler Flow Meter and the DG-700 Gauge*

**1. Measure the Normal System Operating Pressure (NSOP) with the existing filter in place.**

**a)** Locate the air handler system filter and replace if it is dirty.

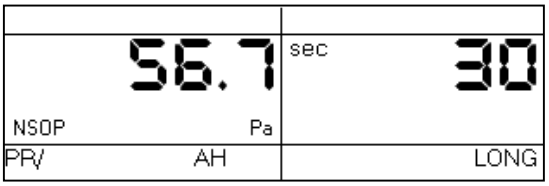
**b)** Install a static pressure probe into the ductwork at one of the 3 locations listed below:

- Insert the static pressure probe into the side surface of the supply plenum. The side of the supply plenum chosen should not have a trunk line, distribution duct or supply register connected to it. The static pressure probe should point into the airstream.
- Or, insert the tip of the static pressure probe into a "dead-end" corner of the supply plenum. A "dead-end" corner is a corner of the plenum that does not have a trunk line connection, distribution duct connection or supply register within 8 inches of the corner.
- Or, insert the static pressure probe in the side surface of the return plenum. The side of the return plenum chosen should not have a trunk line, return duct or return register connected to it. The location chosen should also be at least 24 inches upstream from the TrueFlow Metering Plate, and at least 24 inches downstream from any 90 degree corners or return trunk line connections. The static pressure probe should point into the airstream. **Note:** if the Metering Plate will be installed at a remote filter grille, the static pressure probe may not be installed in the return plenum (i.e. install it in the supply plenum).

**c)** Connect a piece of tubing between the static pressure probe and the **Channel A Input** tap. If the gauge is in the house during the test procedure, leave the **Reference** tap on **Channel A** open. If the gauge is not in the house during the test procedure (e.g. attic, crawlspace), run additional tubing from the **Channel A Reference** tap to inside the house.

**d)** Turn on the air handler fan to the desired speed. Now turn on the gauge and put it the **PR/ AH** mode by pressing the **MODE** button 4 times. The icon "**NSOP**" will begin to flash in the **Channel A** display. At this point, the gauge is monitoring the real-time **Channel A NSOP** pressure, but is not recording the reading. The **Channel B** display is not active at this time.

**e)** Press the **START** button to begin the **NSOP** measurement procedure on **Channel A**. Once the **START** button is pressed, the **NSOP** icon stops flashing and the gauge begins recording a long term average **NSOP** pressure reading on **Channel A**. During the measurement procedure, the **Channel B** display is used as a timer to let the user know how long (in seconds) the **NSOP** measurement has been active. The longer the measurement time, generally the more stable the reading typically becomes. In the screen to the right, the measured **NSOP** pressure is 56.7 Pascals (measured over the past 30 seconds).




**f)** Once you are satisfied with the **NSOP** reading, press the **ENTER** key to accept and enter the reading into the gauge. Turn off the air handler fan, and leave the static pressure probe in place and connected to the gauge on **Channel A**.

**2. Install the TrueFlow Metering Plate in an Existing Filter Slot.**

**a)** Remove the existing filter and set it aside.

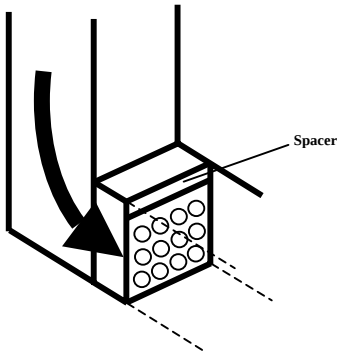
**b)** Choose and assemble the metering plate and spacers needed to match the filter slot size.

| Filter Slot (in. x in.) | Flow Metering Plate | Spacer Dimension (in. x in.) | |
|---|---|---|---|
| | | Spacer 1 | Spacer 2 |
| 14 x 20 | #14 | ------ | ------ |
| 14 x 25 | #14 | 5 x 14 | ------ |
| 16 x 20 | #14 | 2 x 20 | ------ |
| 16 x 24 | #14 | 2 x 20 | 4 x 16 |
| 16 x 25 | #14 | 2 x 20 | 5 x16 |
| 18 x 20 | #14 | 4 x 20 | ------ |
| 20 x 20 | #20 | ------ | ------ |
| 20 x 22 | #20 | 2 x 20 | ------ |
| 20 x 24 | #20 | 4 x 20 | ------ |
| 20 x 25 | #20 | 5 x 20 | ------ |
| 20 x 30 | #20 | 10 x 20 | ------ |
| 24 x 24 | #20 | 4 x 20 | 4 x 24 |

**c)** Install the assembled metering plate into the filter slot. Be sure the front side of the metering plate is facing into the air flow (front side has two diamond shaped labels on it). The H-channel gasket should provide a seal around the metering plate - all of the air flow should pass through the metering plate and not around it. Be sure that the ends of the flexible tubing connections attached to the plate's pressure sensing grids remain out of the filter slot. Occasionally, drilling holes into the ductwork may be required as a pathway for the ends of the flexible tubing. The flexible tubing can be passed through one of the plate's metering holes if this helps in getting the tubing ends outside of the filter slot.

- Obstructions within 6 inches upstream or 2 inches downstream of the metering plate that are blocking air flow through any of the metering holes may reduce the accuracy of the device.
- If there is an obstruction and there is a spacer attached to the metering plate, try to install the metering plate so that the spacer is directly in front of the obstruction (this will minimize the effect of the obstruction on the flow measurement).

- If the metering plate is installed directly downstream of a 90 degree bend in the duct system, and there is a spacer attached to the plate, install the metering plate so that the spacer is on the inside corner of the bend (see diagram to right).

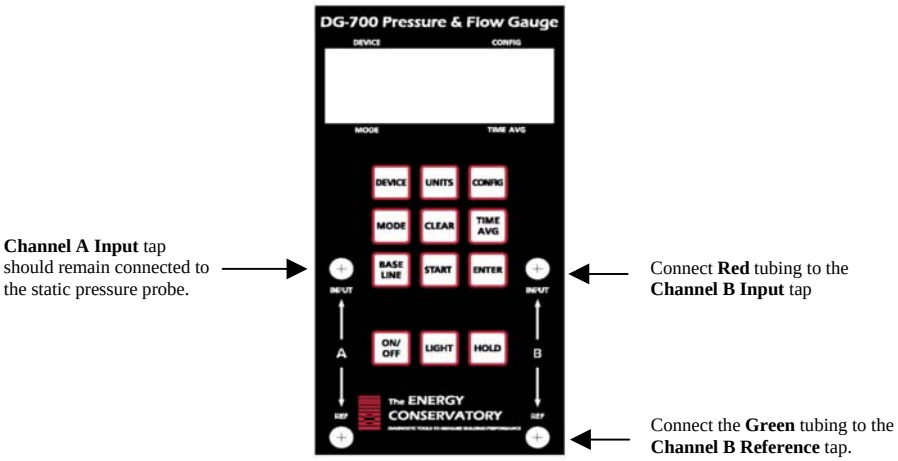



**d)** Close the filter access opening. Be careful not to pinch off the flexible tubing connections. Temporarily seal around the filter slot cover with masking tape to prevent air leakage.

**Note:** If you are installing the metering plate at the filter grille of a single return duct system, simply push the plate into the empty filter rack. Make sure that the front of the metering plate is facing out (into the air flow). Keep the filter grille door open for the remainder of the test.

**3. Connect the Metering Plate to the DG-700.**

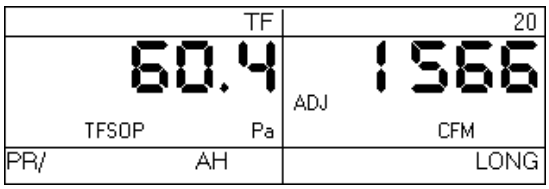
**a)** Connect the tubing from the installed metering plate to the DG-700. Connect the Red ("total pressure grid") tubing connection to the **Channel B Input** pressure tap. Connect the Green ("static pressure grid") tubing connection to the **Channel B Reference** pressure tap.




**4. Measure the TrueFlow System Operating Pressure (TFSOP) and Adjusted Total Air Handler Flow.**

**a)** Check and adjust if necessary the selected test Device and Configuration shown in the upper part of the gauge display to match the metering plate installed in **Step 2** above. When using the TrueFlow Metering Plates, the Device icon should always be set to **TF**, and the Configuration icon should be set to **14** or **20** depending on which metering plate is installed. Changes to the selected Device and Configuration are made by pressing the **DEVICE** and **CONFIG** buttons.

**b)** Turn the air handler fan back on to the same speed as used in **Step 1** above. **Channel A** will now display the **TFSOP** reading from the static pressure probe, and **Channel B** will display adjusted air handler flow. The static pressure probe should be in exactly the same position as it was in **Step 1** above. The air handler flow rate estimate shown on **Channel B** is determined by continuously adjusting the measured air flow from the TrueFlow Metering Plate using a flow resistance correction factor calculated from the **NSOP** and **TFSOP** pressure readings. If the readings are fluctuating, change the time averaging setting to ***5 second***, ***10 second***, *or* ***Long-Term*** average using the **TIME AVG** button.




**c)** Record the adjusted air flow reading from **Channel B**. In the screen to the right, the adjusted air flow reading is 1,566 CFM. This result is the estimated air flow at the measurement location with the existing filter in place. Turn off the air handler fan.

**Note:** When the TrueFlow Air Handler Flow Meter is installed at a remote filter grille, it is possible to make a correction to the measured flow through the metering plate which increases the accuracy of the flow measurement. See **Appendix C** of the TrueFlow manual for more details.