

Quick Guide BD-DEP700-CR

One-Point 50 Pascal Depressurization Test (blowing air out of the building) Using the Model 3 Minneapolis Blower Door™ and DG-700 Digital Gauge

1. Install the Blower Door System.

- Install the aluminum frame and nylon panel in an exterior doorway of a large open room.
- Attach the gauge mounting board and fan speed controller to a door, or to the aluminum frame gauge hanger bar, using the C-clamp on the back of the mounting board.
- Secure the DG-700 gauge onto the mounting board (using the Velcro strips) and connect tubing to the DG-700 as shown in the illustration to the right.
- Run approximately 3 - 5 feet of the remaining end of the **Green** tubing outside through one of the patches in the bottom corners of the nylon panel. Be sure the outside end of the tubing is well away from the exhaust flow of the Blower Door fan and is protected from the wind.
- Install the Blower Door fan, with the Flow Rings and No-Flow Plate attached, into the large hole in the nylon panel. The exhaust side of the fan should be outside, and the inlet side of the fan (the side with the Flow Rings) should be inside the building.
- Insert the female plug from the fan speed controller into the receptacle located on the fan electrical box. The remaining cord (power cord) should be plugged into a power outlet that is compatible with the voltage/frequency of the fan motor and speed controller.
- Check that the fan direction switch is set to blow air out of the building.
- The remaining end of the **Red** tubing should now be connected to the pressure tap on the Blower Door fan electrical box.
- If your DG-700 gauge and fan speed control are compatible for Cruise Control, install the fan control cable into the 3.5 mm communication jacks located on the top of the DG-700 and on the side of the speed controller (otherwise skip this step). **

Leave the Channel A Input tap open.

Connect the **Green** tubing to the Channel A Reference tap. The other end of the **Green** tubing should be run to the outside.



Optional fan control cable (for Cruise Control).

Connect the **Red** tubing to the Channel B Input tap. The other end of the **Red** tubing should be connected to the Blower Door fan.

Leave the Channel B Reference tap open.

2. Prepare the building for the Test.

- Close all exterior doors and windows, and open all interior doors. Because few house basements can be completely sealed from the house and usually some conditioning of the basement is desirable, they are typically included as conditioned space.
- Adjust all combustion appliances so that they do not turn on during the test.
- Be sure all fires are out in fireplaces and woodstoves. Close all fireplace and wood stove doors to prevent scattering of ashes.
- Turn off any exhaust fans, vented dryers, and room air conditioners.

** Your DG-700 gauge is compatible with Cruise Control if the CONFIG, CLEAR, START and ENTER keys have additional red lettering below the main black script. Cruise Control also requires a Blower Door speed controller with a 3.5 mm communication jack installed on the side of the controller box (standard equipment since September 2004), and a fan control cable.

3. Conducting the Test.

- a) Turn on the DG-700 gauge by pressing the **ON/OFF** button.
- b) Press the **MODE** button twice to put the gauge into the **PR/ FL @50** Mode. In this Mode, **Channel A** is used to measure building pressure while **Channel B** is used to display the estimated building leakage at a test pressure of 50 Pascals. (The leakage estimate shown on **Channel B** is determined by mathematically adjusting the actual air flow from the Blower Door fan using the **Channel A** building pressure reading and a Can't Reach Fifty (CRF) factor).
- c) With the fan inlet still covered, press the **BASELINE** button to initiate the building baseline measurement procedure on **Channel A**. Press **START** to begin the baseline measurement. During a baseline measurement, **Channel A** will display a long-term average baseline pressure reading while **Channel B** is used as a timer in seconds to show the elapsed measurement time. When you are satisfied with the baseline measurement, press the **ENTER** key to accept and enter the baseline reading into the gauge. The **Channel A** display will now show an **ADJ** icon to indicate that it is displaying a baseline adjusted building pressure value.
- d) Remove the No-Flow Plate from the Blower Door fan and install the Flow Ring which you think best matches the needed fan flow (see Table to the right).
- e) Check (and adjust if necessary) the selected test Device (i.e. fan) and Configuration (i.e. Flow Ring) shown in the upper part of the gauge display to match the fan and Flow Ring being used in the test. For example, the Device icon for the Model 3 (110V) Blower Door fan is **BD 3**, and the Configuration icon for Ring A is **A1**. Press the **DEVICE** button to change the selected fan. Press the **CONFIG** button to change the selected Flow Ring.
- f) Turn on the Blower Door fan.

Fan Configuration	Flow Range (cfm) for Model 3 Fan
Open (no Flow Ring)	6,300 - 2,430
Ring A	2,800 - 915
Ring B	1,100 - 300
Ring C	330 - 85

If Using Cruise Control:

Turn the Blower Door speed control knob to the “just on” position (i.e. the controller is on but the Blower Door fan is not turning). Now press the **Begin Cruise (Enter)** button. The **Channel A** display will now show the number 50 (your target Cruise pressure). Press the **Start Fan (Start)** button. The Blower Door fan will now slowly increase speed until the building depressurization displayed on Channel A is approximately -50 Pascals.

If Manually Controlling Fan:

Turn on the Blower Door fan by slowly turning the fan controller clockwise. As the fan speed increases, the building depressurization displayed on **Channel A** should also increase. Continue to increase the fan speed until the building depressurization shown on **Channel A** is between -45 and -55 Pascals. Do not waste time adjusting and re-adjusting the fan speed control to achieve a test pressure of exactly -50 Pascals.

- g) **Channel B** will now be displaying the One-Point 50 Pascal leakage estimate. Record this number. If the leakage estimate is fluctuating more than desired, try changing the Time Averaging setting on the gauge by pressing the **TIME AVG** button and choosing the **5** or **10** second or *Long-term* averaging period. (If “-----” or “LO” appear on **Channel B**, see #4 below).
- h) Turn off the Blower Door fan. If you are using Cruise Control, this is done by pressing the **Stop Fan (Clear)** button.

4. “-----” or “LO” appearing on Channel B

Whenever “-----” or “LO” appears on **Channel B** in the **PR/ FL @ 50** Mode, the DG-700 can not calculate a reliable leakage estimate. The messages “-----” and “LO” appear on **Channel B** under the following three conditions:

- a) “-----” is continuously displayed when the building test pressure from **Channel A** is below a minimum value of 10 Pascals. Estimating building leakage results when the test pressure is below this value may result in large errors. If possible, install a larger Flow Ring or remove the Flow Rings to generate more fan flow. Be sure the fan is off when changing Flow Rings.
- b) “LO” is continuously displayed when there is negligible air flow through the test device.
- c) “LO” alternates with a flow reading when the air flow reading through the device is unreliable (i.e. you are trying to measure a flow outside of the calibrated range of the test device in its current configuration). If possible, you should change the test device configuration to match the flow rate being measured (e.g. install a Flow Ring or a smaller Flow Ring). Be sure the fan is off when changing Flow Rings.

Note: If you change the fan Flow Rings, be sure to change the Configuration setting on the DG-700 to match the installed Ring.