Quick Guide

Collecting Data for a Manual RESNET One-Point Airtightness Test

If you are manually collecting data for a RESNET One-Point Airtightness Test, in accordance with Chapter 8 of the RESNET Standards (adopted in 2012), follow the Quick Guide procedures below. The last page of this guide includes a form for you to record the test data.

The RESNET One-Point test requires that a series of 5 pre-test baseline building pressure readings be taken, using a time-averaging period of at least 10 seconds. From these 5 baseline readings, the RESNET test standard has you calculate a Baseline Range (defined as the largest baseline reading <u>minus</u> the smallest baseline reading). The calculated Baseline Range is then used to determine the accuracy level of the test:

- **Standard Accuracy** Test (Baseline Range less than 5.0 Pa)
- **Reduced Level of Accuracy** Test (Baseline Range between 5.0 and 10.0 Pa)
- **Invalid** Test (Baseline Range greater than 10.0 Pa)

If your test is classified as **Reduced Level of Accuracy** or **Invalid**, you may repeat the test and increase the time averaging period, or use one of the other approved RESNET test standards (multi-point test or repeated single-point test).

Note: TEC has PC software (**TECTITE 4.0**) to fully automate this test procedure. In addition, both **TECTITE 4.0** and our Apple mobile **iTEC RESNET** software can be used to manually input the collected test data, calculate test results, store test data. If you will be manually inputting the collected data into our software, follow the specific data collection instructions below.

A. Collecting the 5 Pre-Test Baseline Measurements – Determining Test Accuracy Level

1. Prepare the building and install the Blower Door system and DG-700 gauge for a standard airtightness test.

2. Turn on the DG-700 gauge by pressing the **ON/OFF** button. Leave the gauge in the default **PR/PR** Mode

3. Press the **BASELINE** button <u>once</u> to initiate the baseline pressure measurement feature. The word "BASELINE" will <u>begin to flash</u> in the **Channel A** display, indicating that the baseline feature is active. At this point, the gauge is monitoring the real-time **Channel A** pressure reading, but is not recording the reading. The **Channel B** display is not active at this time.

4. With the fan inlet covered and the fan off, press the **START** button to begin the first baseline pressure measurement. Once the **START** button is pressed, the word "BASELINE" <u>stops flashing</u> and the gauge begins displaying a *long term average* baseline pressure reading on **Channel A**. During the baseline measurement procedure, the **Channel B** display is used as a timer to let the user know how long (in seconds) the baseline measurement has been active. Once the timer on **Channel B** reaches 10 seconds, record the first baseline reading from **Channel A** in **Section A** of your **Test Form** (-2.6 Pascals in the example below). **Note:** Be sure to include the sign of the baseline readings (i.e. positive or negative).

5. Once you have recorded the first baseline reading, press the **START** button again to clear the gauge and begin a second baseline reading. Record the second baseline reading after the timer reaches 10 seconds. Continue pressing the **START** button and recording your baseline readings until you have collected all 5 readings.

START

6. After you have collected the 5 baseline readings, press the **CLEAR** button to turn off the baseline measurement feature.

CLEAR

7. Complete **Section A** of the **Test Form** to determine the Accuracy Level of your Test. If your test is classified as **Reduced Level of Accuracy** or **Invalid**, you may repeat the test and increase the time averaging period, or use one of the other approved RESNET test standards (multi-point test or repeated single-point test).

B. Completing the One-Point Test

Decide if you will be entering your manually collected test data into TEC software (**TECTITE 4.0** or **iTEC RESNET**), or simply using the **Test Form** and not using the software (this decision affects the way you collect the rest of the test data).

If Using TEC Software (iTEC or TECTITE 4.0 – Manual Entry Mode)

Conduct a standard one-point CFM50 test, but <u>do not use</u> the **BASELINE** and **PR/FL @50** features on the gauge.

- Use the **PR/FL** Mode.
- Do not take additional baseline measurements – we will use the baseline measurements from **Section A**.
- Once you have adjusted the fan and achieved a building pressure of approximately -50 Pascals, change the Time Averaging feature to **10 seconds**. Now record the *Nominal (unadjusted) Building Pressure* (**Channel A**) and *Nominal Fan Flow* (**Channel B**) in **Section B** of the **Test Form**.
- Fill out **Section C** of the **Test Form,** and then enter all test data into the software program to perform the necessary calculations.

No Sofware Procedure

Conduct a standard one-point CFM50 test using both the **BASELINE** and the **PR/FL @5**0 features on the DG-700 gauge. Follow the instructions in TEC's Quick-Guide **BD-DEP700-CR**.

- Use the **PR/FL @50** Mode
- Use the **BASELINE** feature and be sure your baseline pressure reading is taken for 10 seconds before pressing the **ENTER** button.
- Once you have adjusted the fan and achieved a building pressure of approximately -50 Pascals, change the Time Averaging feature to **10 seconds.** Now record the *Induced Building Pressure* (**Channel A**) and *Nominal CFM50* (**Channel B**) in **Section B** of the Test Form.
- Fill out **Section C** of the **Test Form**. Use the charts attached to the **Test Form** to manually adjust for temperature and site elevation (if required).

C. Using a Longer Time Averaging Period

If you need to repeat your test with a longer time averaging period, follow these guidelines.

- Use a longer time period in **Section A** above when collecting your baseline readings.
- Use the <u>Long-Term</u> average setting rather than the <u>10 Second</u> average setting in the **Section B** above.
- Once you are in the <u>Long-Term</u> average setting, press the **START** button to clear the gauge readings and start a new long-term average measurement.
- After pressing **START**, use a stop watch to keep track of the length of time of each measurement so that the measurement times are the same as those used to record the baseline readings in **Section A**.

RESNET One-Point Airtightness Test Form

Technician: _____   Date: _____

Building Address: _____

Building Address: _____

Section A

Pre-Test Baseline Pressure Readings
(include sign of reading)

Time Averaging Period (seconds)

Largest Baseline Reading   ☐

minus

Smallest Baseline Reading   ☐

_____

Baseline Range   ☐

Check the appropriate accuracy level below, based on the size of the Baseline Range.

☐ **Standard Accuracy Test** (Baseline Range less than 5.0 Pa)

☐ **Reduced Level of Accuracy Test (**Baseline Range between 5.0 and 10.0 Pa)

☐ **Invalid Test** (Baseline Range greater than 10.0 Pa)

Section B

If Using TEC Software: (**PR**/**FL** Mode)	☐	Nominal Building Pressure (Pa)	☐	Nominal Fan Flow (CFM)	☐	Fan Configuration
If Not Using Software: (**PR/FL@50** Mode)	☐	Induced Building Pressure (Pa)	☐	Nominal CFM50	☐	Fan Configuration

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Section C

☐ Indoor Temp (F):   ☐ Outdoor Temp (F):   ☐ Site Elevation (ft)

Blower Door Fan

- **Model:** _____

- **Serial Number:** _____

Digital Gauge

- **Model:** _____

- **Serial Number:** _____

If Not Using Software:

You may need to make corrections to your **Nominal CFM50** reading:

- If the site altitude is greater than 5,000 feet, use the ***Altitude Correction Factor***.
- If the difference between the indoor outdoor temperature is greater than 30 degrees (F), use the ***Temperature Correction Factor***.

Corrected CFM50 = **Nominal CFM50** x ***Altitude Correction Factor*** x ***Temperature Correction Factor***, where

    Altitude Correction Factor = **1 + (0.000006 x altitude (ft))**   [   ]

    Temperature Correction Factor = **value in Table 802.1 below.**   [   ]

Table 802.1 Temperature Correction Factors for Pressurization and Depressurization Testing- Calculated according to ASTM E779-10

Correction Factors for Pressurization Testing

INSIDE TEMPERATURE (F)

OUTSIDE TEMP (F)	50	55	60	65	70	75	80	85	90
-20	1.062	1.072	1.081	1.090	1.099	1.108	1.117	1.127	1.136
-15	1.056	1.066	1.075	1.084	1.093	1.102	1.111	1.120	1.129
-10	1.051	1.060	1.069	1.078	1.087	1.096	1.105	1.114	1.123
-5	1.045	1.054	1.063	1.072	1.081	1.090	1.099	1.108	1.117
0	1.039	1.048	1.057	1.066	1.075	1.084	1.093	1.102	1.111
5	1.033	1.042	1.051	1.060	1.069	1.078	1.087	1.096	1.105
10	1.028	1.037	1.046	1.055	1.064	1.072	1.081	1.090	1.099
15	1.023	1.031	1.040	1.049	1.058	1.067	1.076	1.084	1.093
20	1.017	1.026	1.035	1.044	1.052	1.061	1.070	1.079	1.087
25	1.012	1.021	1.029	1.038	1.047	1.056	1.064	1.073	1.082
30	1.007	1.015	1.024	1.033	1.041	1.050	1.059	1.067	1.076
35	1.002	1.010	1.019	1.028	1.036	1.045	1.054	1.062	1.071
40	0.997	1.005	1.014	1.023	1.031	1.040	1.048	1.057	1.065
45	0.992	1.000	1.009	1.017	1.026	1.035	1.043	1.051	1.060
50	0.987	0.995	1.004	1.012	1.021	1.029	1.038	1.046	1.055
55	0.982	0.990	0.999	1.008	1.016	1.024	1.033	1.041	1.050
60	0.977	0.986	0.994	1.003	1.011	1.019	1.028	1.036	1.045
65	0.973	0.981	0.989	0.998	1.006	1.015	1.023	1.031	1.040
70	0.968	0.976	0.985	0.993	1.001	1.010	1.018	1.026	1.035
75	0.963	0.972	0.980	0.988	0.997	1.005	1.013	1.022	1.030
80	0.959	0.967	0.976	0.984	0.992	1.000	1.009	1.017	1.025
85	0.955	0.963	0.971	0.979	0.988	0.996	1.004	1.012	1.020
90	0.950	0.958	0.967	0.975	0.983	0.991	0.999	1.008	1.016
95	0.946	0.954	0.962	0.970	0.979	0.987	0.995	1.003	1.011
100	0.942	0.950	0.958	0.966	0.970	0.982	0.990	0.998	1.007
105	0.938	0.946	0.954	0.962	0.970	0.978	0.986	0.994	1.002
110	0.933	0.942	0.950	0.952	0.966	0.974	0.982	0.990	0.998

Correction Factors for Depressurization Testing

INSIDE TEMPERATURE (F)

OUTSIDE TEMP (F)	50	55	60	65	70	75	80	85	90
-20	0.865	0.861	0.857	0.853	0.849	0.845	0.841	0.837	0.833
-15	0.874	0.870	0.866	0.862	0.858	0.854	0.850	0.846	0.842
-10	0.883	0.879	0.874	0.870	0.866	0.862	0.858	0.854	0.850
-5	0.892	0.887	0.883	0.879	0.875	0.871	0.867	0.863	0.859
0	0.900	0.896	0.892	0.887	0.883	0.879	0.875	0.871	0.867
5	0.909	0.905	0.900	0.896	0.892	0.888	0.883	0.879	0.875
10	0.918	0.913	0.909	0.905	0.900	0.896	0.892	0.888	0.884
15	0.927	0.922	0.918	0.913	0.909	0.905	0.900	0.896	0.892
20	0.935	0.931	0.926	0.922	0.917	0.913	0.909	0.905	0.900
25	0.944	0.939	0.935	0.930	0.926	0.922	0.917	0.913	0.909
30	0.952	0.948	0.943	0.939	0.934	0.930	0.926	0.921	0.917
35	0.961	0.956	0.952	0.947	0.943	0.938	0.934	0.930	0.925
40	0.970	0.965	0.960	0.956	0.951	0.947	0.942	0.938	0.934
45	0.978	0.974	0.969	0.964	0.960	0.955	0.951	0.946	0.942
50	0.987	0.982	0.977	0.973	0.968	0.963	0.959	0.955	0.950
55	0.995	0.990	0.986	0.981	0.976	0.972	0.967	0.963	0.958
60	1.004	0.999	0.994	0.989	0.985	0.980	0.976	0.971	0.967
65	1.012	1.008	1.003	0.998	0.993	0.988	0.984	0.979	0.975
70	1.021	1.016	1.011	1.006	1.001	0.997	0.992	0.988	0.983
75	1.029	1.024	1.019	1.015	1.010	1.005	1.000	0.996	0.991
80	1.038	1.033	1.028	1.023	1.018	1.013	1.009	1.004	0.999
85	1.046	1.041	1.036	1.031	1.026	1.022	1.017	1.012	1.008
90	1.055	1.050	1.045	1.040	1.035	1.030	1.025	1.020	1.016
95	1.063	1.058	1.053	1.048	1.043	1.038	1.033	1.028	1.024
100	1.072	1.066	1.061	1.056	1.051	1.046	1.041	1.037	1.032
105	1.080	1.075	1.070	1.064	1.059	1.054	1.050	1.045	1.040
110	1.088	1.083	1.078	1.073	1.068	1.063	1.058	1.053	1.048