



## **THE ENERGY CONSERVATORY WARRANTY**

### **EXPRESS LIMITED WARRANTY**

Seller warrants that this product, under normal use and service as described in the operator's manual, shall be free from defects in workmanship and material for a period of 24 months, or such shorter length of time as may be specified in the operator's manual, from the date of shipment to the Customer.

### **LIMITATION OF WARRANTY AND LIABILITY**

This limited warranty set forth above is subject to the following exclusions:

- With respect to any repair services rendered, Seller warrants that the parts repaired or replaced will be free from defects in workmanship and material, under normal use, for a period of 90 days from the date of shipment to the Purchaser.
- Seller does not provide any warranty on finished goods manufactured by others. Only the original manufacturer's warranty applies.
- Unless specifically authorized in a separate writing, Seller makes no warranty with respect to, and shall have no liability in connection with, any goods which are incorporated into other products or equipment by the Purchaser.
- All products returned under warranty shall be at the Purchaser's risk of loss. The Purchaser is responsible for all shipping charges to return the product to The Energy Conservatory. The Energy Conservatory will be responsible for return standard ground shipping charges. The Customer may request and pay for the added cost of expedited return shipping.

The foregoing warranty is in lieu of all other warranties and is subject to the conditions and limitations stated herein. No other express or implied warranty IS PROVIDED, AND THE SELLER DISCLAIMS ANY IMPLIED WARRANTY OF FITNESS for particular purpose or merchantability.

The exclusive remedy of the purchaser FOR ANY BREACH OF WARRANTY shall be the return of the product to the factory or designated location for repair or replacement, or, at the option of The Energy Conservatory, refund of the purchase price.

The Energy Conservatory's maximum liability for any and all losses, injuries or damages (regardless of whether such claims are based on contract, negligence, strict liability or other tort) shall be the purchase price paid for the products. In no event shall the Seller be liable for any special, incidental or consequential damages. The Energy Conservatory shall not be responsible for installation, dismantling, reassembly or reinstallation costs or charges. No action, regardless of form, may be brought against the Seller more than one year after the cause of action has accrued.

The Customer is deemed to have accepted the terms of this Limitation of Warranty and Liability, which contains the complete and exclusive limited warranty of the Seller. This Limitation of Warranty and Liability may not be amended or modified, nor may any of its terms be waived except by a writing signed by an authorized representative of the Seller.

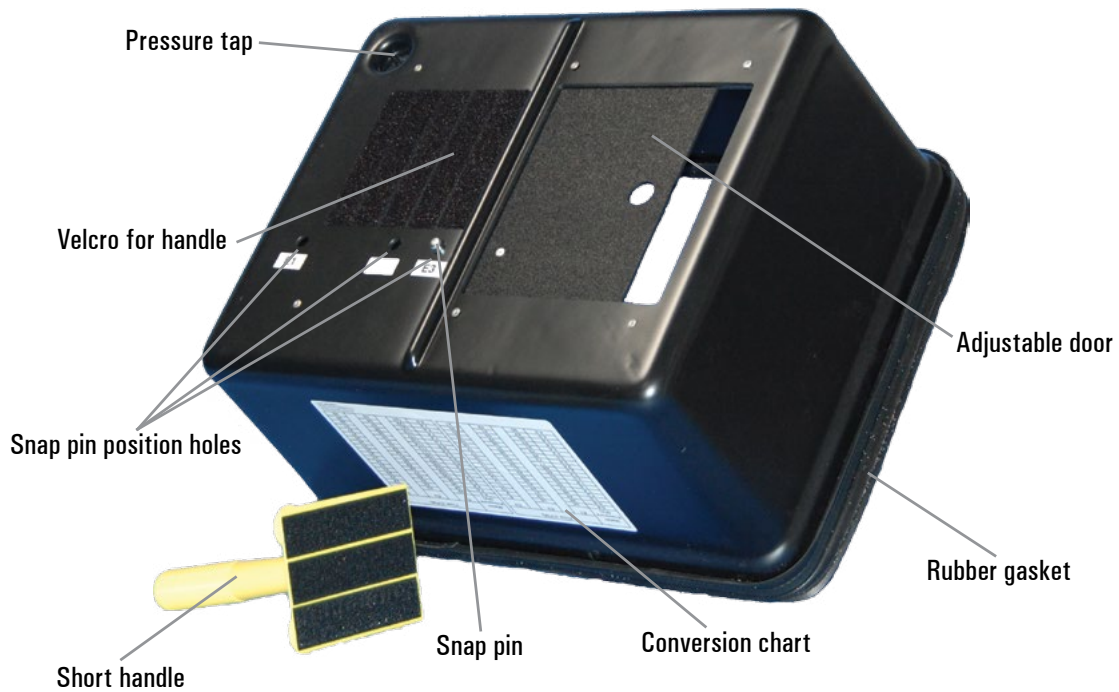
### **TO ARRANGE A REPAIR**

Please call The Energy Conservatory at 612-827-1117 before sending any product back for repair or to inquire about warranty coverage. All products returned for repair should include a return shipping address, name and phone number of a contact person concerning this repair, and the purchase date of the equipment.

## Kit components and parts of the Exhaust Fan Flow Meter

The Exhaust Fan Flow Meter kit includes

- Metering box
- Handle
- Overview booklet



## Overview



The Energy Conservatory's (TEC) Exhaust Fan Flow Meter is designed to make quick and accurate measurements of air flow through residential exhaust fans. The effective air flow measurement range for the Exhaust Fan Flow Meter is 10 to 124 cubic feet per minute (CFM). The device should be used with a TEC pressure and flow gauge, such as the DG-1000.

During the measurement procedure, the Exhaust Fan Flow Meter is placed directly over the exhaust fan grille and is pushed up against the wall or ceiling so that the flexible gasket on the end of the metering box creates an air tight seal around the grill.

## Overview continued

The pressure reading taken from the Exhaust Fan Flow Meter is easily converted to air flow in CFM using a flow table attached to the side of the metering box. The DG-1000 and DG-700 digital pressure and flow gauges can also be set up to display air flow readings directly in CFM.

The Exhaust Fan Flow Meter has three calibrated openings to provide an accurate measurement over the full range of the device. A short handle is provided which can be attached to the metering box using Velcro strips. The handle is designed to allow a standard painter's pole or broom handle (not included) to be screwed into the open end of the handle to provide access to exhaust fan grilles mounted high on walls, or on ceilings.

### Connect tubing to the metering box

Connect one end of tubing to the pressure tap on the metering box (tubing is included with the TEC pressure and flow gauge kit).



### Connect tubing to the gauge

Connect the other end of the tubing to the T connector that is included with the TEC pressure and flow gauge kit. Connect the two ends of the shorter tubing that is connected to the T connector to the Channel A and Channel B input taps on the TEC gauge.

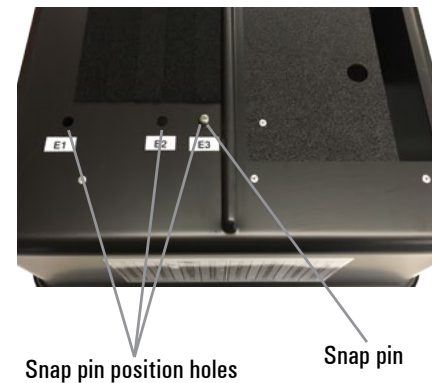


### Set the door position on the metering box

The metering box comes with an adjustable opening which provides three ranges of fan flow measurement.

The door position is determined by the position of the snap pin located on the top of the metering box. The door position can be adjusted by pushing down on the snap pin and sliding the door until the snap pin is in a new position hole.

Door Position	Flow Range in CFM
E1	44 - 124
E2	21 - 59
E3	10 - 28



### Attach the handle to the metering box



A short yellow handle is provided which can be attached to the top of the metering box using the velcro strips. In addition, a standard painters pole can be screwed into the end of the yellow handle to make it easier to reach fan grilles that are high up on walls or on ceilings.



## Conducting the test

- DG-1000:** Turn on the DG-1000 gauge by pressing and holding the power button until the green light comes on.  
**DG-700:** Power on the gauge by pressing the On/Off button.

DG-1000 power button

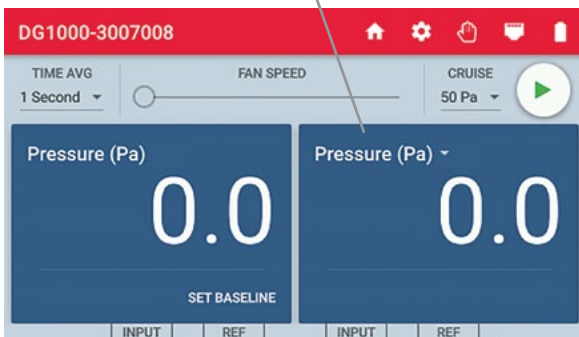


- DG-1000:** After the Home screen loads, touch Gauge to open the Gauge app.

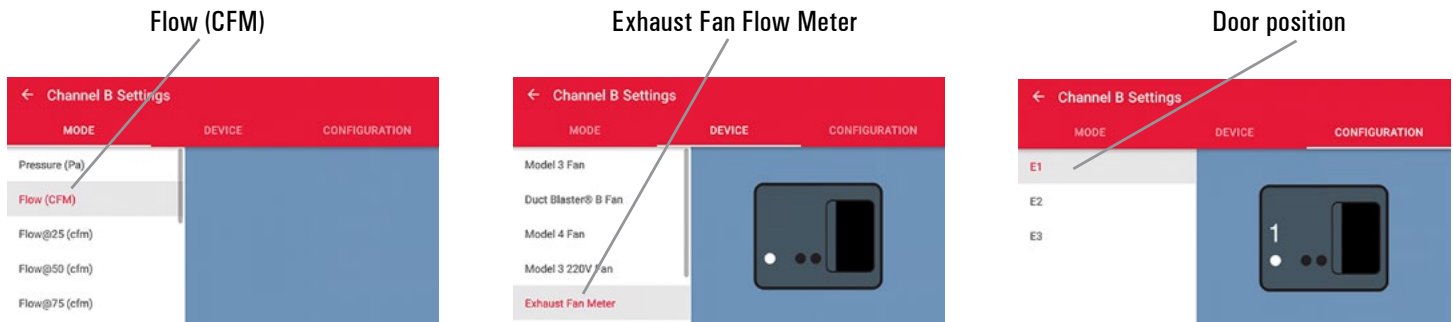


- DG-1000:** Touch the mode area to open the Channel B Configuration menu.

Mode



- DG-1000:** Select Flow (CFM) from the Mode menu. Touch Device to open the Device menu and select Exhaust Fan Flow Meter. Touch Configuration to open the Configuration menu and select which door position is being used. Touch the arrow in the upper left of the screen to return to the Gauge app screen.  
**DG-700:** Press the Mode button twice to put the gauge in PR/FL mode. Press the Device button until EXH appears in the device section of the display. Press the Config button until the setting on the gauge matches the door position on the metering box.



- With the exhaust fan turned on, place the Exhaust Fan Flow Meter completely over the fan grill so that the flexible gasket on the end of the metering box creates an air tight seal around the grill. Hold the gauge steady for at least 10 seconds so that the gauge auto-zeros.



### 3. Acceptable metering box pressures

- When using the Exhaust Fan Flow Meter, the measured metering box pressure should never be greater than 8.0 Pa, and never lower than 1.0 Pa. Pressures above 8.0 Pa will commonly result in erroneous flow measurements because the metering box will tend to restrict air flow through typical residential exhaust fans. Metering box pressures below 1.0 Pa are too small to measure accurately.

### 4. Channel A pressure greater than 8.0

- If the Channel A pressure is above 8.0 Pa, first check the door position. If the door position is set to E2 or E3, adjust the position to create a larger opening in the metering box (e.g. E1 or E2). If the door position is set to E1 (the largest opening) and the metering box pressure is still above 8.0 Pa, then the fan flow you are trying to measure is outside the high range of the instrument (i.e. flow is greater than 124 CFM).

1. Channel A pressure less than 1.0 pascal
  - If the Channel A pressure is below 1.0 Pa, first check the door position. If the door position is set to E1 or E2, adjust the position to create a smaller opening in the metering box (e.g. E2 or E3). If the door position is set to E3 (the smallest opening) and the metering box pressure is still below 1.0 Pa, then the fan flow you are trying to measure is outside the low range of the instrument (i.e. flow is less than 10 CFM).
2. Channel B will show the air flow reading from the exhaust fan. If the flow reading is fluctuating, change the time average setting on the gauge by touching TIME AVG.

## Flow Conversion Table

Meter Pressure (PA)	Flow (CFM)		
	E1	E2	E3
1.0	44	21	10
1.2	48	23	11
1.4	52	25	12
1.6	55	26	13
1.8	59	28	14
2.0	62	29	14
2.2	65	31	15
2.4	68	32	16
2.6	71	33	16
2.8	73	35	17
3.0	76	36	17
3.2	78	37	18
3.4	81	38	19
3.6	83	39	19
3.8	85	40	20
4.0	87	41	20
4.2	90	42	21
4.4	92	43	21
4.6	94	44	22
4.8	96	45	22
5.0	98	46	23
5.2	100	47	23
5.4	102	48	23
5.6	103	49	24
5.8	105	50	24
6.0	107	51	25
6.2	109	52	25
6.4	111	52	25
6.6	112	53	26
6.8	114	54	26
7.0	116	55	27
7.2	117	56	27
7.4	119	56	27
7.6	121	57	28
7.8	122	58	28
8.0	124	59	28



## Calibration and Measurement Accuracy

### CALIBRATION FORMULA

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#### Door Opening

#### Formula

E1 Flow (CFM) =  $43.73 \times (\text{Metering box pressure in pascals})^{0.5}$

E2 Flow (CFM) =  $20.72 \times (\text{Metering box pressure in pascals})^{0.5}$

E3 Flow (CFM) =  $10.07 \times (\text{Metering box pressure in pascals})^{0.5}$

### FLOW ACCURACY

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±10% of reading when used with a 1% accurate pressure gauge (such as a DG-700) with a display resolution of 0.1 Pa (0.0004 inches of water)

### FLOW RANGE

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Door position E1: 44 - 124 CFM

Door position E2: 21 - 59 CFM

Door position E3: 10 - 28 CFM

### DIMENSIONS (INSIDE)

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16 in. L x 13 in. W x 8 in. D

### WEIGHT

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3 lbs. including handle

## Software Information

The Energy Conservatory (TEC) offers a variety of Windows-based programs. These programs can be found and downloaded for free at [software.energyconservatory.com](http://software.energyconservatory.com).

TEC also offers driver support for the DG-500, DG-700 and DG-1000. The drivers are designed to work with Windows-based computers with the following operating systems:

- Windows 7
- Windows 8
- Windows 8.1
- Windows 10

The drivers are available through Windows Update, and the DG-500 and DG-700 drivers can be downloaded from TEC at [software.energyconservatory.com](http://software.energyconservatory.com).

TEC also offers mobile apps for Apple and Android devices that can be found in the Apple App Store or the Google Play Store.

## Instructional Videos

The Energy Conservatory (TEC) offers a variety of online instructional videos, including

- Minneapolis Blower Door™ Quick Guide
- Minneapolis Duct Blaster® Quick Guide
- Field Calibration Checks for Gauges
- Pressure and Airflow Basics
- Exhaust Fan Flow Meter
- TECLOG3
- TECTITE 4.0
- And many more

Visit [www.YouTube.com/EnergyConservatory](http://www.YouTube.com/EnergyConservatory) to see all of TEC's instructional videos.

