



**BlowerDoor GmbH**  
MessSysteme für Luftdichtheit

## Minneapolis **FlowBlaster**

Testing and adjusting supply  
and exhaust air valves





The Energy Conservatory

Minneapolis BlowerDoor  
manufactured by The Energy Conservatory, Minneapolis, MN, USA



**BlowerDoor GmbH**  
MessSysteme für Luftdichtheit

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## Safety Instructions



**The BlowerDoor DuctBlaster B fan (BlowerDoor MiniFan) should only be connected to a properly installed and tested power supply. In case of emergencies, disconnect the power cord from the AC power mains outlet. During installation, use the nearest readily accessible power outlet and keep all objects away from interfering with access to the outlet.**

- Disconnect the power plug from the BlowerDoor fan receptacle before examining or making any adjustments to the fan motor, blades or electrical components.
- The BlowerDoor fan is a very powerful and potentially dangerous piece of equipment if not used and maintained properly. Carefully examine the fan before each use. If the fan housing, fan guards, blade, controller or cords become damaged, do not operate the fan until repairs have been made. Repairs should only be made by qualified repair personnel.
- If you notice any unusual noises or vibrations, stop and unplug the fan. If you can't find the source of the problem, contact the manufacturer/distributor. Make sure that there is sufficient clearance between the tips of the fan blades and the fan housing. Examine the motor for excessive dust build-up. Use a vacuum to remove the dust, or blow out the dust with compressed air.
- Keep people, animals and objects away from the BlowerDoor fan when it is operating.
- Do not operate the Duct Blaster fan unattended.
- Press the power plug firmly into the power receptacle on the BlowerDoor fan, and the AC power mains outlet. Failure to do so can cause overheating of the power cord and possible damage.
- Do not use ungrounded outlets or adapter plugs. Never remove or modify the grounding prong. Use only approved and inspected electrical wiring and connections. If using a power extension cord, use an extension cord with a core cross section of at least 1.5 mm<sup>2</sup> (i.e. type H07 RRF).
- Do not operate the BlowerDoor fan if the motor, controller or any of the electrical connections are wet. Recommended for indoor use only.
- Before connecting the speed controller to the fan, be sure that the toggle switch of the controller is at zero and that the control knob is turned completely to the left (counterclockwise).
- The operator should wear hearing protection when in close proximity to the fan operating at high speed.

- Equipment safety measures may be compromised if the BlowerDoor system is used in a manner other than recommended in this document, and the BlowerDoor system operation manual.
- **Be sure you have returned all settings of heating/ventilation/air conditioning systems back to their original position before leaving the building**

# 1 Introduction

Ventilation and air conditioning systems transport air into or out of rooms via ventilation ducts in order to establish high indoor air quality and ensure comfort. The Minneapolis FlowBlaster supports the system adjustment and airflow measurement for the inspection protocol. Measuring the supply and exhaust air flows is useful for checking the planning requirements.

The Minneapolis FlowBlaster has been specifically developed for the adjustment and control of ventilation valves in residential and commercial building projects. It has a measuring range from 17 to 500 m<sup>3</sup>/h.



*Fig. 1.1: Measurement System Minneapolis FlowBlaster with DuctBlaster B fan, fan speed controller, and pressure gauge DG-700.*

Installing measuring devices without pressure compensation at the supply or exhaust air valves changes the pressure ratios at the valves.

With its DuctBlaster fan, the FlowBlaster offsets this pressure influence, thus allowing for precise airflow measurements with an accuracy of  $\pm 7\%$ .

It is relatively simple to measure exhaust air valves, as the air flow out of the rooms and into the measuring path is laminar. At supply air valves, however, the air receives a pulse, making the air flow chaotically into the hood; however, the hood size, the orifice plate, and the guiding plates realign the air, allowing for a precise measurement.

The Minneapolis FlowBlaster is an attachment to the BlowerDoor MiniFan System and requires the use of a Duct Blaster B fan with controller, flow rings, connection trim and a digital pressure gauge DG-700.

## 2 Setting Up the Measurement System Minneapolis FlowBlaster

### 2.1 Individual parts of the Minneapolis FlowBlaster



Fig. 2.1: Minneapolis FlowBlaster

#### Portable FlowBlaster Equipment

The Minneapolis FlowBlaster equipment consists of the following components:

- FlowBlaster transport bag
- FlowBlaster fan attachment incl. flexible connecting trim
- FlowBlaster capture hood
- Handles for BlowerDoor DuctBlaster fan including mounting material
- Silicone tube set (transparent, red and blue, 3 m each)
- Cable with jack plugs (3 m)
- Holding device for speed controller
- FlowBlaster reference guide



### FlowBlaster Fan Attachment

The FlowBlaster fan attachment is a tapered cylinder with three stainless steel flow sensor rings, a white orifice plate, and guiding plates.

The largest diameter flow sensor ring [1] serves as the reference pressure for the DuctBlaster Fan when measuring supply airflow. The tube connection is labeled “**Reference / Measurement supply air** (remains open when measuring exhaust air)”.



A two-ring assembly [2] is located at the narrow part of the housing. The larger ring is for measuring supply air valves (tube connection: **Supply air measurement / Target pressure = -0 Pa**), the smaller ring is for measuring exhaust air valves (tube connection: **Exhaust air measurement / Target pressure = 0 Pa**).

The pressure measured at the flow sensors allows you to control the measuring fan in such a way that the impact of the FlowBlaster on the ventilation system is eliminated (compensation method). The pressure differential between the room and the interior of the capture hood is adjusted to 0 Pascal.

A foldable gauge mounting plate for the DG-700 is installed on the FlowBlaster attachment. On the back of the measuring device and on the mounting plate, you will find Velcro straps to affix it.

Fig. 2.2: FlowBlaster Fan Attachment; view of both sides



### FlowBlaster capture hood

The FlowBlaster capture hood consists of an elastic, airtight cloth skirt, a four-part aluminum frame, and four flexible poles. The cloth skirt with the aluminum frame is preinstalled on the FlowBlaster fan attachment.

To complete the hood assembly, you will need to insert the four flexible poles into the pole pockets. See Chapter 2.3.2 for more detailed assembly instructions.



Fig. 2.3: Pre-installed capture hood with four flexible poles



### Cable with jack plugs (3 m)

to connect the gauge DG-700 to the speed fan controller.

Fig. 2.4



### Duct Blaster fan handles incl. mounting material

Two handles that can be attached to the measuring fan make it easier to hold the Measuring System above the supply and exhaust air valves. See Chapter 2.3.1. for more detailed assembly instructions.

Fig. 2.5

## 2.2 Required BlowerDoor Equipment to Minneapolis FlowBlaster

The Minneapolis FlowBlaster requires the use of a BlowerDoor fan DuctBlaster B incl. flow rings, and a digital pressure gauge DG-700.



Fig. 2.6: BlowerDoor fan DuctBlaster B incl. flow rings and fan speed controller (not figured)



Fig. 2.7: Pressure gauge DG-700

## 2.3 Assembling the Components

### 2.3.1 Attaching handles to BlowerDoor DuctBlaster fan

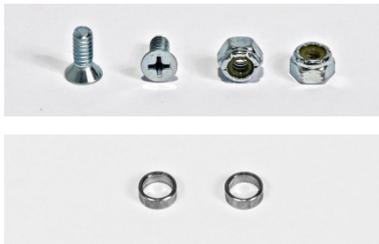


Fig. 2.8

The handles are attached to the DuctBlaster fan using the existing as well as newly provided screws, lock nuts, and bushings.

You will need the following tools to install the handles:

- Phillips screwdriver
- Needle nose pliers, or open-end wrench
- Drill and 5 mm drill bit



Fig. 2.9



Fig. 2.10



Fig. 2.11

The handles are mounted as follows:

1. Put the DuctBlaster fan on a flat surface with the fan inlet opening (side of flow rings with the flow sensor) facing up.
2. Locate the three bolt bosses on the DuctBlaster fan housing.
3. Using the 5 mm drill bit, drill holes into the center of the two bosses shown in the figure Fig. 2.9.
4. Turn the fan over and remove the two screws on the opposite sides fixing the fan exhaust guard. (Keep the screws and nuts near at hand. You will need them when you get to step 8.)
5. Lift the fan exhaust guard away from the housing slightly and insert the two metal spacers into the holes you just removed the bolts from (this will reduce the diameter of the holes).



Fig. 2.12



Fig. 2.13

6. Place one of the handles along the side of the DuctBlaster fan housing and line up holes in the handle with one set of holes in the fan housing.
7. Insert one of the long bolts provided through the hole in the fan exhaust opening (side with fan guard) and handle and install the lock nut onto the end of the bolt (tighten finger tight).
8. Insert one of the existing shorter bolts through the hole in the fan inlet opening (side of flow rings) and handle and install the lock nut. Fully tighten both lock nuts.
9. Repeat steps 6 through 8 with the other handle.



**Note:**

The handles do not interfere with airtightness measurements of buildings using the mounting frame and BlowerDoor panel. There is no need to remove them.

### 2.3.2 Assembling the capture hood

The capture hood is delivered pre-installed:



Fig. 2.14



Fig. 2.15

1. Remove fan attachment with pre-installed capture hood assembly (aluminum frame and cloth skirt) from carrying case and place unit on a flat surface.
2. Insert the four flexible poles into the pole pockets inside the fan attachment. Rotate poles if needed to seat in pocket.



3. Now lift the hood and insert the ends of the flexible poles into the designated pole pockets in the frame.

It is easiest to first insert poles on two opposite sides of the frame, and then complete the remaining two poles.



**Be careful to not tear the elastic skirt with the ends of the flexible poles!**

When disassembling the capture hood later, also take out the poles, starting with two diagonally opposite corners and then moving on to the remaining corners.

## 2.4 Setting Up the FlowBlaster System for Return Airflow Measurements

### 2.4.1 Assembling FlowBlaster, DuctBlaster fan und speed controller



Fig. 2.16



Fig. 2.17

1. Set the FlowBlaster on a flat surface with the capture hood facing down.
2. Place DuctBlaster fan on FlowBlaster fan attachment with the fan inlet opening (side of flow rings) facing up. Orient the DuctBlaster fan so that the gauge mounting plate on FlowBlaster fan attachment is centered between the new handles on the DuctBlaster fan.
3. Fix the fan on the FlowBlaster attachment using the flexible connecting trim. It clasps all the way around the fan flange as well as the FlowBlaster attachment flange.
4. Choose the appropriate flow ring for the flow range you will be measuring.
  - Flow ring 3: 17 – 200 m<sup>3</sup>/h
  - Flow ring 2: 135 – 500 m<sup>3</sup>/h



Fig. 2.18

5. Place the flow ring 2 or 3 on the DuctBlaster fan inlet opening with the ring nozzle pointing inward towards the fan motor. (The labeling must be legible and facing out.) Fix the flow ring to the Fan using the second connecting trim.



Fig. 2.19

6. Mount the speed controller with the gauge board onto its support (wooden holding device) and connect the controller to the DuctBlaster B.



Fig. 2.20

7. Next, the fan speed controller is connected to the fan and to the power supply.



**Before connecting the speed controller to the power supply, make sure the power switch on the controller is set to “off” and the control knob is turned completely to the left (minimum).**

## 2.4.2 Connecting the pressure gauge DG-700



Fig. 2.21

8. Attach the pressure gauge DG-700 to the gauge mounting plate on the FlowBlaster attachment using the Velcro strips.
9. Then connect the DG-700 and the speed controller using the long jack cable. We recommend fixing the jack cable to the power supply cable of the DuctBlaster measuring fan with cable ties.



Fig. 2.22

### 2.4.3 Connecting the tubing for measuring return airflow valves



- Attach one end of the red tubing to the tab on DuctBlaster fan labeled red and the other end to Channel B/INPUT tab of DG-700 (red label).
- Attach one end of the clear tubing to the tap on the FlowBlaster fan attachment labeled "Exhaust air measurement / Target pressure = 0 Pa" and the other end to the Channel A/INPUT tab of DG-700.

Fig. 2.23

## 2.5 Setting Up the FlowBlaster System for Supply Airflow Measurements

### 2.5.1 Assembling FlowBlaster, DuctBlaster fan und speed controller



Fig. 2.24



Fig. 2.25



Fig. 2.26

1. Put the FlowBlaster fan attachment with the pre-installed capture hood on a flat surface with the hood facing down (see Chapter 2.3.2).
2. Choose the appropriate flow ring for the flow range you will be measuring.
  - Flow ring 3: 17 – 200 m<sup>3</sup>/h
  - Flow ring 2: 135 – 500 m<sup>3</sup>/h
3. Place the flow ring 2 or 3 on the FlowBlaster attachment with the ring nozzle facing up.
4. Place DuctBlaster fan on top of the flow ring with the exhaust guard of the fan facing up. Orient the DuctBlaster fan so that the gauge mounting plate on FlowBlaster fan attachment is centered between the new handles on the DuctBlaster fan.
5. Secure the three components – flow ring, DuctBlaster fan and FlowBlaster fan attachment – using one of the flexible connecting trims.
6. Mount the speed controller with the gauge board onto its support (wooden holding device) and connect the controller to the DuctBlaster B.



Fig. 2.27

7. Next, the fan speed controller is connected to the fan and to the power supply.



**Before connecting the speed controller to the power supply, make sure the power switch on the controller is set to “off” and the control knob is turned completely to the left (minimum).**

### 2.5.2 Connecting the pressure gauge DG-700



Fig. 2.28

8. Attach the pressure gauge DG-700 to the gauge mounting plate on the FlowBlaster attachment using the Velcro strips.
9. Then connect the DG-700 and the speed controller using the long jack cable. We recommend fixing the jack cable to the power supply cable of the DuctBlaster measuring fan with cable ties.



Fig. 2.29

### 2.5.3 Connecting the tubing for measuring supply airflow valves

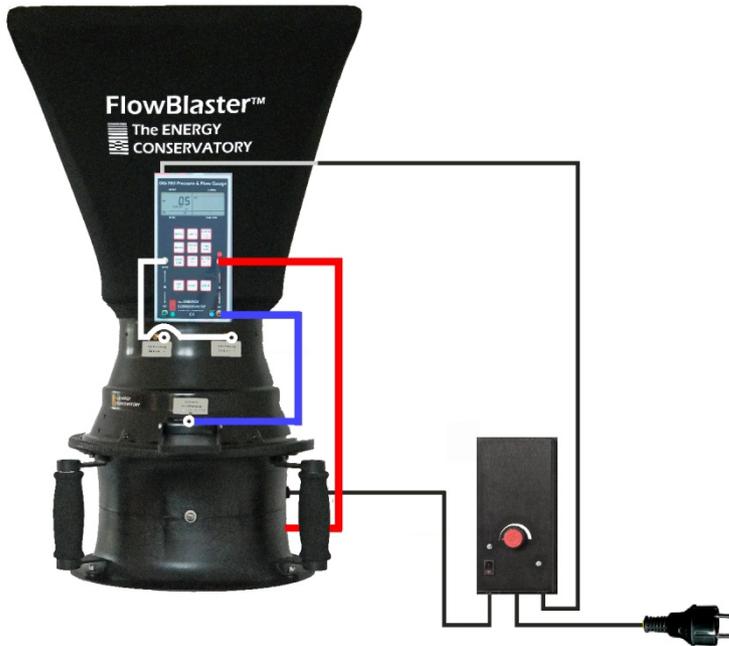


Fig. 2.30

- Attach one end of the red tubing to the tab on DuctBlaster fan labeled red and the other end to Channel B/INPUT tab of DG-700 (red label).
- Attach one end of blue tubing to the tap on the FlowBlaster fan attachment labeled “Reference Measuring supply air” and the other end to the Channel B/REF tab of DG-700 (blue label).
- Attach one end of the clear tubing to the tap on the FlowBlaster fan attachment labeled “Supply air measurement / Target pressure = - 0 Pa” and the other end to the Channel A/INPUT tab of DG-700 (white label).

### 3 Measurements with Minneapolis FlowBlaster



Depending on the ventilation valve to be measured, the Minneapolis FlowBlaster Measuring System must be installed with the parts required for setting up measurements of either exhaust air valves (see Chapter 2.4) or supply air valves (see Chapter 2.5). Take note of the tube connections specific to the measurements! With the exception of selecting the target pressure, the settings of the DG-700 pressure gauge are identical (see Chapter 3.1).

#### 3.1 DG-700 Measurement Settings

##### 3.1.1 Setting the measurement mode, the measuring fan, and the flow ring configuration

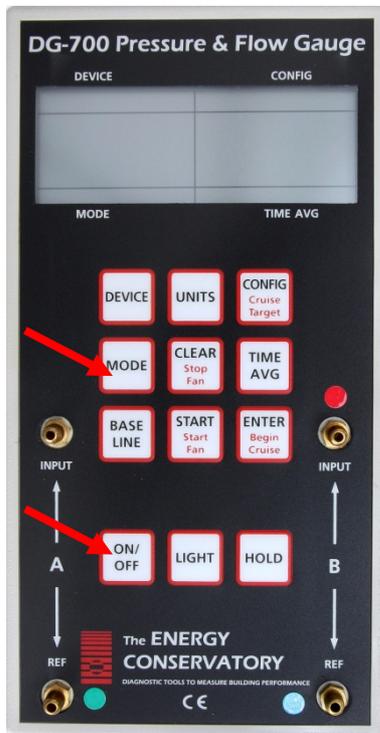


Fig. 3.1

#### Turn on DG-700 and choose measurement mode

When the device is turned on with **ON/OFF** button, it is set to **PR / FL @50** mode. “PR” stands for Pressure and “FL@50” for Flow at 50 Pa

- Press the **MODE** button three times until the lower cell of the left display shows the **PR/FL** mode.

In this mode, Channel A measures the pressure differential at the ventilation valve. Channel B shows the calculated air flow at a target pressure differential (+0 or -0 Pa) selected later on and depending on the flow ring selected.



Fig. 3.2



Fig. 3.3

### Choosing the BlowerDoor model and the flow ring

- Then select the BlowerDoor fan model DuctBlaster B. Model 4 (BD 4) has been preset. Press the **DEVICE** button several times until the upper cell in the left display shows **DB B** for DuctBlaster B.
- The flow ring is configured by pressing the **CONFIG/Cruise Target** button several times. The ring currently selected is displayed in the upper right-hand cell of the display (Ring 3 = C3, Ring 2 = B2).

### Turn on the speed controller

- Turn the Manual Speed Control knob to **Off**.
- Press the power switch to the **On** position (I).

#### **Note:**

Fan may slowly turn for 1 second when power switch is activated – this is normal.

### 3.1.2 Set the DG-700 cruise control feature for measuring a **return** airflow valve

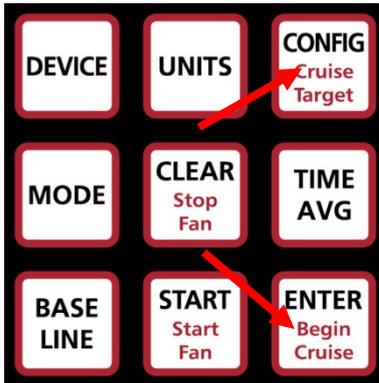


Fig. 3.4

- Press the **ENTER/Begin Cruise** button once to enter Cruise setup.

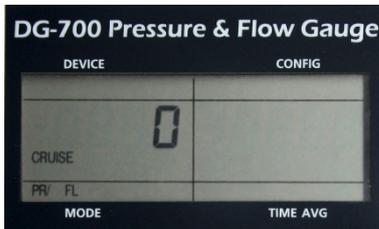


Fig. 3.5

- Press the **CONFIG/Cruise Target** button twice to select the **+0** (plus zero) cruise target pressure.

### 3.1.3 Set the DG-700 cruise control feature for measuring a **supply** airflow valve

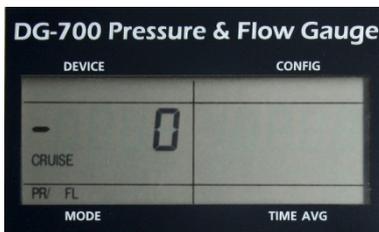


Fig. 3.6

- Press the **ENTER/Begin Cruise** button once to enter Cruise setup (see Fig. 3.4).
- Press the **CONFIG/Cruise Target** button three times to select the **- 0** (minus zero) cruise target pressure.

### 3.2 Begin Measurement

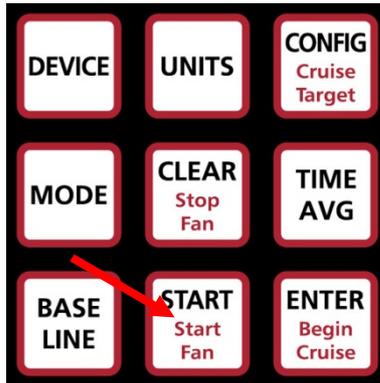


Fig. 3.7

- To start the fan press the **START/Start Fan** button on the DG-700; first of all the DuctBlaster fan may turn very slowly.

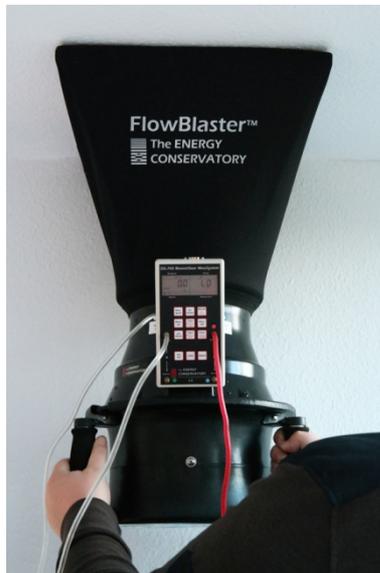


Fig. 3.8

- Put the FlowBlaster hood over the exhaust or supply air valve, making sure that there is no gap between the wall or ceiling and the rim of the capture hood. Be careful to place the valve under the hood in the center.
- The DuctBlaster fan will automatically speed up until the “supply zero sensor” reading on Channel A is close to zero.
- Once pressure on Channel A reads "0" ( $\pm 0.2$  Pa), read the airflow on Channel B (right side of the DG-700 display). This is the **measured airflow** at the valve.

**Note:**

Press the **HOLD** button on the DG-700 to turn off the fan. The measured value display will continue to show the last value measured.



Before turning off the fan or continuing the measurement, be sure to write down the **measured values (!)**.



Fig. 3.9

**Optional:**

You may connect the DG-700 to a computer using a wireless connection, and record the measured values with the TECLOG3 software or the iTEC-700 app.

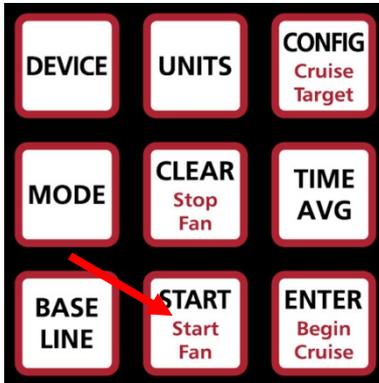


Fig. 3.10

- Pressing **START/Start Fan** will allow you to take another measurement.

### 3.3 Stop Measurement

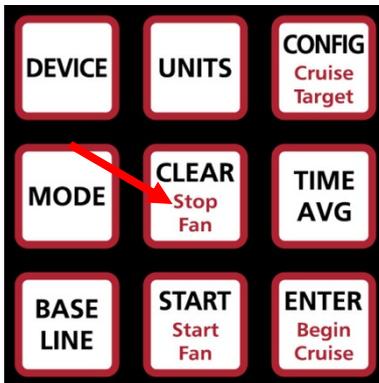


Fig. 3.11

- Press the **CLEAR/Stop Fan** button on the DG-700 gauge to turn off the fan. Switch off the fan speed controller: turn control knob completely to the left (minimum) and put the power switch to the off position (0).

### 3.4 Measuring range of Minneapolis FlowBlaster

The measuring range of FlowBlaster goes from 17 m<sup>3</sup>/h to 500 m<sup>3</sup>/h.

If you are trying to measure an airflow that is outside of the calibrated measuring range of the currently installed ring, it may be necessary to change the ring. Before any change turn off the fan. Be sure to choose the actual ring configuration setting on the DG-700 with the **CONFIG/Cruise Target** button.

#### Airflow too large for the DuctBlaster fan configuration

If you are trying to measure an airflow that is too large for the DuctBlaster fan configuration (flow ring) on the FlowBlaster, you will not achieve “zero” pressure on Channel A of the DG-700. In this case the fan will simply run as fast as it can and the gauge will emit a beeping sound. Stop the measurement by pressing **CLEAR/Stop Fan** button.

If this happens and you have ring 3 installed on the DuctBlaster fan, then install ring 2. Be sure to change the ring configuration setting on the DG-700 with the **CONFIG/Cruise Target** button. Then continue the measurement by pressing **START/Start Fan** button.

If this happens and you have ring 2 installed on the DuctBlaster fan, then you are trying to measure an airflow that is outside of the range of the Minneapolis FlowBlaster system; maximum airflow is 510 m<sup>3</sup>/h.

#### Airflow too small for the DuctBlaster fan configuration

If you are trying to measure an airflow that is too small for the DuctBlaster fan configuration (flow ring) on the FlowBlaster, Channel B of the DG-700 will display “LO” (either continuously or alternating with an airflow reading). Stop the measurement by pressing **CLEAR/Stop Fan** button.

If this happens and you have ring 2 installed on the DuctBlaster fan, then install ring 3. Be sure to change the ring configuration setting on the DG-700 with the **CONFIG/Cruise Target** button. Then continue the measurement by pressing **START/Start Fan** button.

If this happens and you have ring 3 installed on the DuctBlaster fan, then you are trying to measure an airflow that is outside of the range of the Minneapolis FlowBlaster system; minimum airflow is 17 m<sup>3</sup>/h.

## Appendix A: Density Corrections

All Minneapolis BlowerDoor measurement devices are adjusted to an air density standard of 1.204 kg/m<sup>3</sup>. This corresponds to an air density under ambient conditions of 20° C and 101325 Pa. If the density of air going through the FlowBlaster differs from this air density, the air flow indicated on the pressure gauge will not be the actual volumetric air flow.

In order to calculate the amount of air actually flowing through the FlowBlaster, or the air flow under standard conditions, multiply the air flow shown (reading) on the DG-700 with the correction factors in Tables 1 and 2

Tab. 1: Correction factors for calculating the actual (measured) air flow based on the measured value reading

Temperature [°C]	Elevation [m]						
	0	500	1.000	1.500	2.000	2.500	3.000
-20 °C	0,929	0,957	0,986	1,016	1,047	1,080	1,114
-15 °C	0,938	0,961	0,995	1,026	1,057	1,090	1,125
-10 °C	0,947	0,971	1,005	1,036	1,067	1,101	1,135
-5 °C	0,956	0,981	1,014	1,045	1,077	1,111	1,146
0 °C	0,965	0,991	1,024	1,055	1,087	1,121	1,157
5 °C	0,974	1,001	1,033	1,065	1,097	1,132	1,167
10 °C	0,983	1,01	1,042	1,074	1,107	1,142	1,178
15 °C	0,991	1,02	1,052	1,084	1,117	1,152	1,188
20 °C	1,000	1,03	1,061	1,093	1,127	1,162	1,198
25 °C	1,008	1,039	1,070	1,102	1,136	1,172	1,209
30 °C	1,017	1,049	1,079	1,111	1,146	1,181	1,219
35 °C	1,025	1,058	1,087	1,121	1,155	1,191	1,229
40 °C	1,034	1,067	1,096	1,130	1,164	1,201	1,239
45 °C	1,042	1,076	1,105	1,139	1,174	1,210	1,248
50 °C	1,050	1,085	1,114	1,148	1,183	1,220	1,258
55 °C	1,058	1,094	1,122	1,156	1,192	1,229	1,268

$$\text{airflow}_{\text{measured}} [\text{m}^3/\text{h}] = \text{airflow}_{\text{reading}} [\text{m}^3/\text{h}] \cdot$$

$$\sqrt{\frac{1,204 \text{ kg/m}^3}{\text{Air density} [\text{kg/m}^3] *}}$$

\*) Density of the air going through the FlowBlaster is taken in account.

Tab. 2: Correction factors for calculating the air flow at standard ambient conditions (20° C and 101325 Pa) based on the measured value reading.

Temperature e [°C]	Elevation [m]						
	0	500	1.000	1.500	2.000	2.500	3.000
-20 °C	1,076	1,045	1,015	0,985	0,955	0,926	0,898
-15 °C	1,066	1,035	1,005	0,975	0,946	0,917	0,889
-10 °C	1,056	1,025	0,995	0,966	0,937	0,909	0,881
-5 °C	1,046	1,015	0,986	0,957	0,928	0,900	0,873
0 °C	1,036	1,006	0,977	0,948	0,920	0,892	0,865
5 °C	1,027	0,997	0,968	0,939	0,911	0,884	0,857
10 °C	1,018	0,988	0,959	0,931	0,903	0,876	0,849
15 °C	1,009	0,980	0,951	0,923	0,895	0,868	0,842
20 °C	1,000	0,971	0,943	0,915	0,888	0,861	0,834
25 °C	0,992	0,963	0,935	0,907	0,880	0,854	0,827
30 °C	0,983	0,955	0,927	0,900	0,873	0,846	0,821
35 °C	0,975	0,947	0,920	0,892	0,866	0,840	0,814
40 °C	0,968	0,940	0,912	0,885	0,859	0,833	0,807
45 °C	0,960	0,932	0,905	0,878	0,852	0,826	0,801
50 °C	0,952	0,925	0,898	0,871	0,845	0,820	0,795
55 °C	0,945	0,918	0,891	0,865	0,839	0,814	0,789

$$\text{airflow at amb. cond. (20° C; 101325 Pa) [m}^3\text{/h]} = \text{airflow}_{\text{reading}} \text{ [m}^3\text{/h]} \cdot \sqrt{\frac{\text{Air density [kg/m}^3\text{]}^*}{1,204 \text{ kg/m}^3}}$$

\*) Density of the air going through the FlowBlaster is taken in account.

## Appendix B: Technical Data of Minneapolis FlowBlaster

Flow range:	with ring 2: 135 - 500 m <sup>3</sup> /h with ring 3: 17 - 200 m <sup>3</sup> /h
Flow Accuracy:	± 5% of indicated flow or ± 3,4 m <sup>3</sup> /h (whichever is greater)
Weight:	without DuctBlaster fan: 1,4 kg with DG-700 and with DuctBlaster fan: ca. 4,9 kg
Dimensions	
FlowBlaster capture hood:	40 x 40 cm (inside dimensions)
Dimensions	Height without DuctBlaster fan: 60 cm
Minneapolis FlowBlaster:	Height with DuctBlaster fan: 75 cm
Operating Temperature Range:	0° C to 50° C
Storage Temperature Range:	-10° C to 65° C

**For the technical specifications of the DuctBlaster B (BlowerDoor MiniFan) and the corresponding fan speed controller, please consult the BlowerDoor MiniFan reference guide (free download at [www.blowerdoor.com](http://www.blowerdoor.com)).**

## Appendix C: Calibration and Maintenance

### FlowBlaster fan attachment



*Fig. 4.12: FlowBlaster fan attachment*

Minneapolis FlowBlasters basically always maintain their manufacturer's calibration as long as they are free of mechanical damage. Conditions which could cause the calibration to change are primarily damaged pressure sensing rings, movement of the pressure sensors relative to the housing, leaks in the hood assembly, and leaks in the tubing running from the pressure sensors to the pressure taps on the housing

### Test the flow sensors for leaks

Parts of the FlowBlaster fan attachment are three stainless steel pressure flow rings which serve to determine the airflow in dependency of the installed ring.

Regularly test the flow sensors for leaks/damage. Visually confirm that the pressure sensing rings are not broken or bent. Check that the flow rings are firmly attached to the fan attachment.

**For our recommendation concerning calibration and maintenance of the DuctBlaster B fan as well as the pressure gauge DG-700, please consult the BlowerDoor MiniFan reference guide (free download at [www.blowerdoor.com](http://www.blowerdoor.com)).**

## **Our Service Offer**

### **Calibration of your BlowerDoor Measurement Systems**

The accuracy of the BlowerDoor testing flow rings at 4% as well as that of the pressure gauge DG-700 at  $\pm 1\%$  clearly exceed the legal minimum requirements.

To maintain the high measuring accuracy of the BlowerDoor Measurement System, we recommend ensuring regular calibration according to the manufacturer's specifications: For the DG-700, adjustment and manufacturer's calibration is recommended at an interval of two years. The accuracy of the BlowerDoor testing fan should be checked by calibration every four years. A previous fan check forms part of each fan calibration.

BlowerDoor GmbH not only offers regular fan calibration, but also manufacturer's calibration of pressure gauges at favorable prices. Details are available on [www.blowerdoor.com](http://www.blowerdoor.com).

### **Seminars and in-house training**

In addition to the extensive seminar program covering aspects of an airtight building envelope offered by the Energie- und Umweltzentrums am Deister, BlowerDoor GmbH and its contract partners also provide individual training on site or on-demand webinars. Contact us for more information!

### **Service at your construction site**

If required, we will lend our competence to support you in conducting a BlowerDoor measurement at your construction site. Contact us for an offer tailored to your needs!

### **Listing in the directory of providers of BlowerDoor measurements**

As a BlowerDoor testing team, your listing in our online database is free of charge. Contact us at [info@blowerdoor.com](mailto:info@blowerdoor.com) if you would like an address entry, including a link to your email address and website in our directory of BlowerDoor test providers.

## **CompetenceCenter**

All BlowerDoor testing teams receive access to our virtual Center of Competence at [www.blowerdoor.com](http://www.blowerdoor.com) free of charge, where we regularly provide you with news and offer interesting information for download. Contact us if you have not yet received your client number and access data from BlowerDoor GmbH.

## **Advertising material for BlowerDoor testing teams**

Upon request, we support BlowerDoor testing teams with professional printable files on BlowerDoor measurements free of charge. The material will feature your own contact data and company logo. (View a sample at [www.blowerdoor.com](http://www.blowerdoor.com).) If interested, send us an e-mail with your complete address and your company logo as a jpg file in printable resolution to [info@blowerdoor.com](mailto:info@blowerdoor.com).

## **Technical Support**

Should you have unexpected technical problems while conducting BlowerDoor measurements, our tech support team is available free of charge during our office hours at the following number: +49 (0) 5044/975-57 (chargeable call to German landline).

## Guarantee

### **Object of the guarantee:**

### **Minneapolis FlowBlaster, Minneapolis Micro Leakage Meter, BlowerDoor standard, BlowerDoor MiniFan, and BlowerDoor MultipleFan system**

Besides the guarantee set forth in the law, BlowerDoor GmbH offers you a total of four years of guarantee for the complete BlowerDoor Measurement System (BlowerDoor fan including low flow rings and fan cover, DG-700, mounting frame and nylon panel, speed controller, tube set, and accessory bag). The guarantee starts with date of purchase. It takes into account all claims under guarantee submitted to BlowerDoor GmbH in writing during the period of guarantee.

Should a claim under guarantee require the measuring equipment to remain at the premises of BlowerDoor GmbH for more than 7 days, customers upon request will be loaned a corresponding replacement for the duration of the repairs. BlowerDoor GmbH will bear the cost of shipping to the client's premises on the basis of standard cost of freight. Upon repair and on receipt of the repaired measuring device, customers shall send the measuring device loaned to them back to BlowerDoor GmbH at their own expense immediately. The costs as well as the risk of loss or damage on the way to or from the point where the claims under guarantee are accepted are borne by the respective shipping party.

Claims under guarantee cannot be considered

- when the measuring device or the object under guarantee has not been operated according to specifications, e.g. has not been properly handled or stored, in particular also when the operating instructions have not been observed or maintenance has been neglected,
- when the measuring device or the object under guarantee has been opened or repaired by non-authorized workshops or other people,
- when the measuring device or the object under guarantee shows damages that can be traced to wear or tear.

In accordance with this guarantee, BlowerDoor GmbH shall only provide guarantee services if the guarantee case is immediately and without any delay communicated to BlowerDoor GmbH in writing.

This guarantee shall not cover consequential damages, in particular financial losses for the customer caused by failure of the equipment.

Upon completion of the guarantee service, ownership of the parts replaced shall fall to BlowerDoor GmbH.

### **Process/Delivery**

Only BlowerDoor GmbH, Zum Energie- und Umweltzentrum 1 in 31832 Springe-Eldagsen/Germany (Tel.: +49 (0) 5044/975-40) shall be entitled to accept claims under guarantee. Customers shall send the faulty measuring device or component to BlowerDoor GmbH. BlowerDoor GmbH shall bear the cost of return shipping on the basis of standard cost of freight.

The costs and risk of loss or damage on the way to or from the point where the claims under guarantee are received are borne by the respective shipping party.



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