

PRICE®

UNDERFLOOR PRODUCTS SERVICE & INSTALLATION MANUAL

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Introduction

In this manual, you will find technical descriptions and diagrams of underfloor system components along with their installation instructions. Practical guidelines and recommendations are also provided. If more information is required about this equipment, please contact an Price sales representative.

General Safety Guidelines

This document is intended for use by owner-authorized operating/service personnel who are expected to possess the required training to enable them to perform their tasks properly and safely. This individual must have read and understood this document and any referenced materials prior to performing a task on this equipment. Also, it is essential that this individual be familiar with and complies with all applicable governmental standards and regulations pertaining to the task in question. This individual must also verify that installation and connections comply with local building codes. It is the obligation and responsibility of the operating/service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements could result in severe personal injury or death to themselves and people at the site, as well as serious damage to the equipment and the property in which it is situated.

The equipment discussed in this manual is relatively complicated apparatus and must be handled with the necessary precautions. Individuals may be exposed to certain components or conditions such as refrigerants, oils, materials under pressure, rotating components, and both high and low voltage during installation, operation, maintenance or service of this equipment. If misused or mishandled, each item has the potential to cause bodily injury or death.

Safety symbols

The following symbols are used in this document to alert the reader to areas of potential hazard:



WARNING: Failure to observe may result in personal injury, death or equipment damage.



CAUTION: Failure to observe may result in equipment damage.

Note: Used to highlight additional information helpful to the reader.

Underfloor Systems Control Zones

Due to the extensive line of products available from Price, the underfloor air distribution system can be designed in many configurations to satisfy a floor in each space. The cooling or heating requirement may be divided into six typical zones, four exterior or perimeter zones, at least one interior zone, and special zones such as conference rooms.

The two main methods of supplying air to an underfloor ventilation system are to use a pressurized plenum or to duct the supply air to each of the air outlets.

Perimeter / Special Zones

Ducted Supply

This system utilizes a Fan Booster unit, equipped with an ECM motor, ducted to remote terminal units. Airflow from the Fan unit is controlled by the UMCB between pre-programmed maximum and minimum set points. In this mode, the ECM motor is programmed with a constant volume program therefore changes in static pressure will not cause changes in airflow and this results in pressure independent control.

The UMCB controls the ECM motor to modulate the airflow from min flow set point when the cooling load is 0% and max flow set point when the cooling load is 100%.

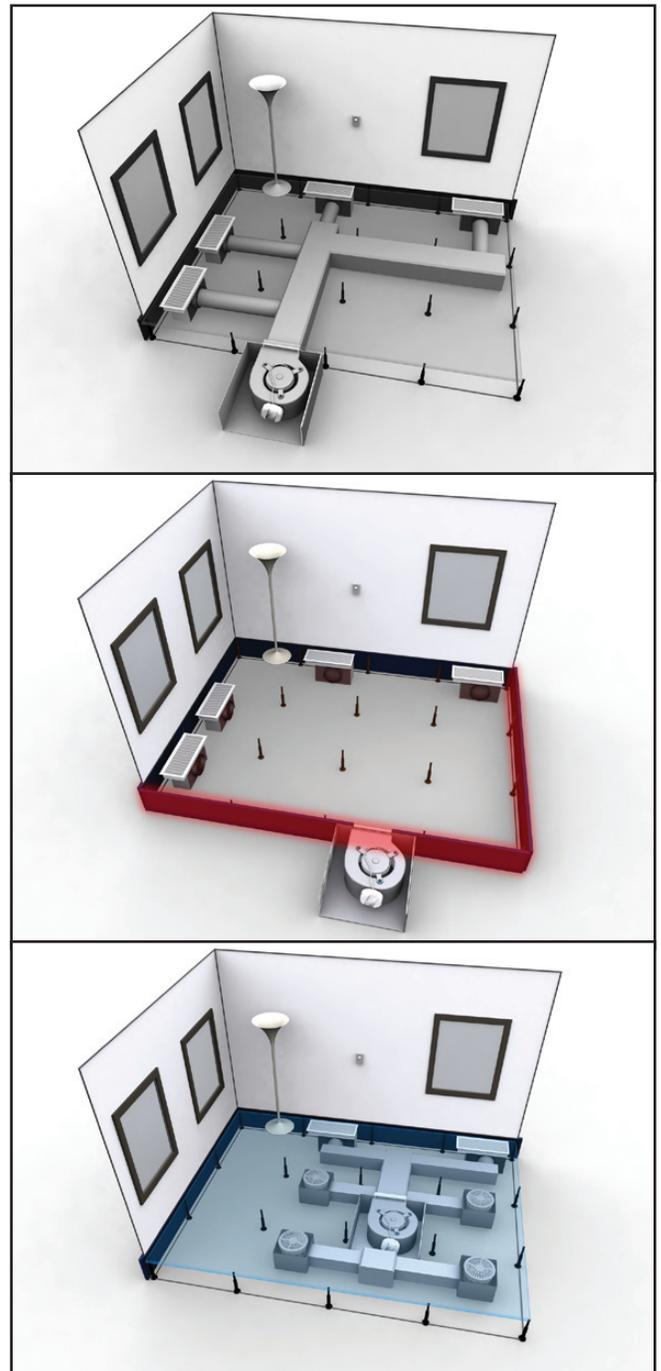
The local supply air temperature is monitored by the Price temperature sensor allowing for adjustment in airflow according to the supply air temperature. Should the slab warm up during the day therefore affecting the plenum air respectively, control of the cooling zones can be more responsive than waiting for a typical controller to compensate.

Pressurized Partitioned Plenum

The Fan control system in this method works in a similar manner as the Ducted System mentioned above however, ductwork is omitted and an entire zone is partitioned instead. The UMCB would control the FDBU to increase or decrease airflow according to the cooling demand. Use of the Booster unit allows for independent pressure control of the partitioned plenum from the open plenum. The FDBU would pull air from the pressurized plenum (pressurized by the AHU) and discharge air into the partitioned plenum thereby forcing more air through the floor diffusers. A typical candidate of an isolated zone is a meeting or conference room due to increased cooling demands or intermittent loads. The Fan Booster unit is equipped with a back draft damper, ensuring reduction of airflow or shut down capabilities when the zone is occupied.

Recirculating System

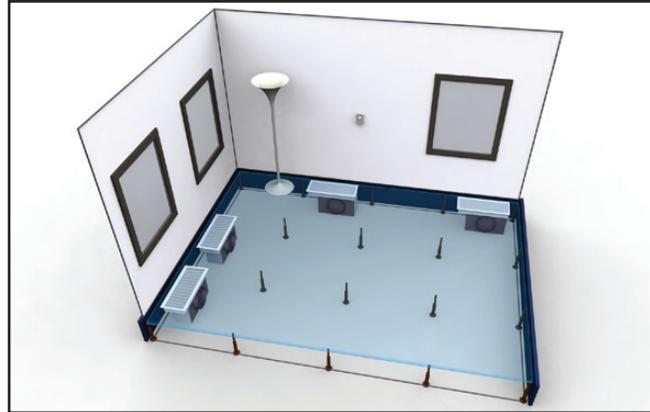
This system entails supplying heated air to the perimeter zone by mixing room and plenum air. The fan terminal unit is ducted to the heating side of the LFG-HC while the inlet of the Fan terminal is ducted to the RFB-HC. A call for heating along the perimeter will close both the LFGs and RFBs to the plenum and open to the terminal unit. Air is drawn from the room through the RFBs and supplied to the perimeter area through the LFGs. Upon increase in room temperature above the set point, the Fan Terminal unit will shut and the dampers on the LFGs and RFBs open to the pressurized plenum thus supplying cool air into the occupied space.



Underfloor Systems Control Zones (con't)

Pressurized Open Plenum

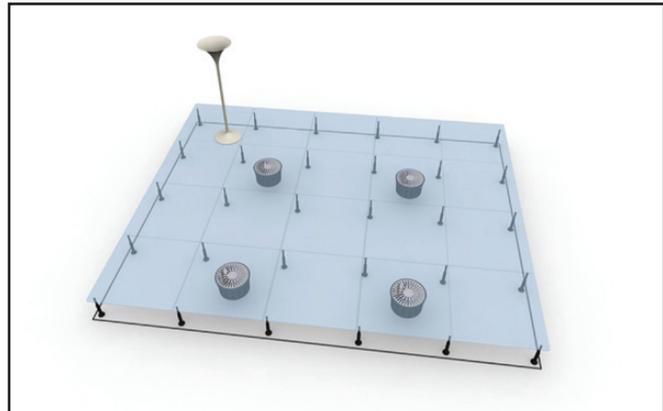
Use of linear floor grilles with integrated heating elements offer a system with heightened flexibility and efficiency as it omits the use of fan terminal units and ducting. In cooling mode, dampers on the LFGH modulate open to the plenum allowing more airflow into the space to satisfy the cooling demand. When a call for heat arises, the hot water or electric coil energizes and the diffusers either open to the plenum or to a perimeter cavity to allow air to pass over the heating element. LFGHs are controlled by the UMCIII where upto 12 LFGHs can be daisy chained.



Interior Zones

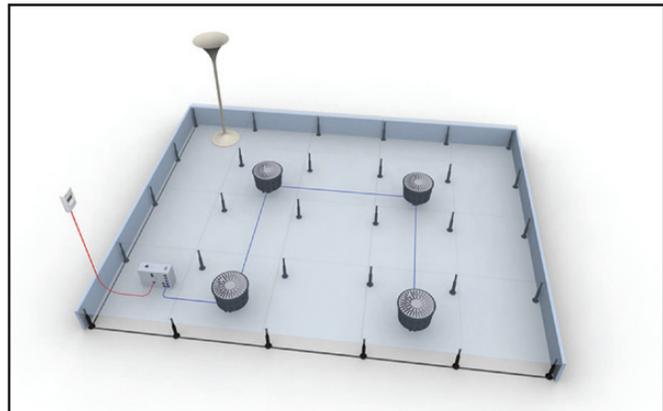
Constant Air Volume - Cooling Only

Typically, interior zones have relatively stable loads hence constant volume supply is often employed. A typical interior zone consists of constant volume or constant pressure turbulent floor twist outlets installed in a large, common plenum space. In this method the entire plenum space is treated as one zone and, under fluctuating loads, the amount of air delivered to the space is regulated by the relative pressure in this plenum, modulated by a single point of control. Manual Face-adjustable diffusers (RFTDAs) provide occupant control of airflow volume while the RFIIDs provide control of the direction of airflow.



Variable Air Volume - Cooling Only

In the case an open plenum is desired to be divided into several zones, variable air volume control is possible with the use of devices installed under the diffuser or with the use of a variable volume basket. The variable volume diffusers would be controlled by the UMC. The UMC would open and close the diffusers releasing air from the pressurized plenum. The variable volume (VAV) diffusers require a 24 VAC signal which is provided by the UMC to modulate the actuators. Meanwhile, the UMC accepts a 0 to 10 VDC cooling signal either from a manual control signal or from a thermostat. The UMC modulates the airflow from 0% to 100%.



Fan Terminals

Price Fan Powered Terminals are available with pneumatic, electronic or direct digital (DDC) controls. In most cases pneumatic and electronic controls are factory supplied and mounted. In the case of DDC controls, the terminal unit controls are often supplied by the Controls Contractor and either factory or field mounted. For information concerning controls, components, sequence of operations, etc. for DDC controls supplied by the Controls Contractor, please refer to the documentation provided by the Controls Contractor.

FDBU Series



Damper rotation is always clockwise to the open position. (Note: FDBU Series does not have a damper). An identification mark on the end of the shaft indicates the damper position.

An optional metal control cover may be provided to protect the terminal unit control components. The protective cover is removable with two sheet metal screws.

CAUTION TO CONTRACTORS

1. Fan Powered Terminal Units are not intended for use as temporary heat or ventilation sources during building construction. The terminal units are not designed nor equipped to operate in a dusty construction environment. Recirculating fan wheels can become coated in construction dust, resulting in an unbalanced wheel. This in turn can contribute to reduced motor life. Inlet air filters, if supplied, would provide little protection as they would quickly become plugged with construction duct.
2. A Fan Powered Terminal Unit should never be operated if the downstream duct work has not been installed. A minimum of 0.10 inches W.G. downstream static pressure resistance is required for safe operation of the recirculating fan motor.

Please note that Price cannot warrant against unauthorized operating conditions as outlined above.

Receiving Inspection

All Price Fan Powered Terminal Units are inspected before shipment. After unpacking the assembly, check it for damage. If any damage to the products is found, report it immediately to the delivery carrier. During unpacking and installation, **do not handle the unit by the inlet velocity sensor**. Caution is required when unpacking the fan powered units with electric coils so as not to damage the elements.

Ensure that all packing material is removed from the inside of the unit, especially around the blower wheel and coil section.

 **WARNING: DO NOT ADJUST THE CONTROL COMPONENTS**

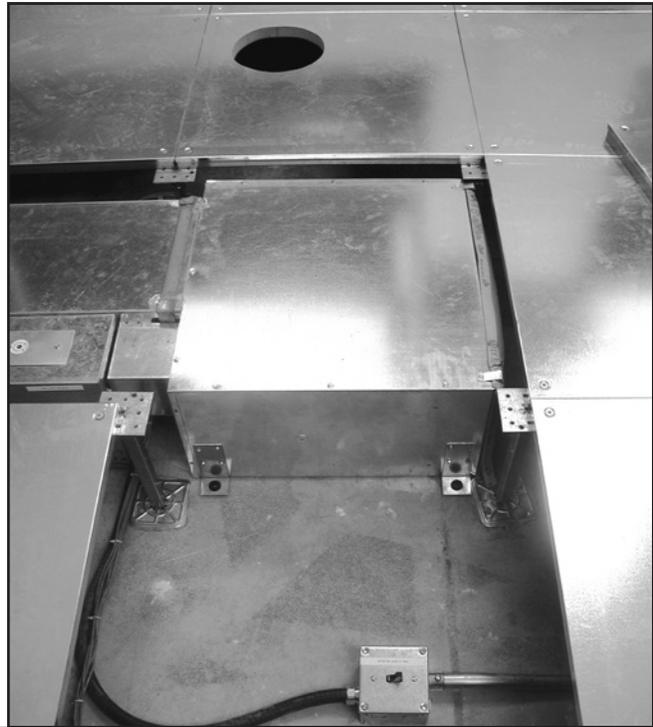
Fan Terminal Installation Instructions

Mounting The Unit

1. Price Fan Powered Terminal Units are designed to be mounted in the direction indicated by the Control Assembly Label found on the protective shroud.
2. Mount the unit directly on the sub-floor, beneath the raised floor. Ensure the area where the unit is to go is clear of cables, wires, etc.
3. Position the unit so that there is no interference with the raised floor support members.
4. Install the unit in a location that allows free access to the unit as well as all control components.
5. Ensure main power to the terminal and electrical coil has been disconnected prior to performing any electrical work or inspection of the circuitry.



WARNING: Do not tamper with control components



Fan Terminal Duct Connection

1. To prevent excessive air leakage, all cleat joints should be sealed with an approved duct sealer. This applies to all accessory connections as well as the basic Fan Powered Terminal Unit.
2. Holes that are drilled in the duct for testing or balancing purposes are to be sealed with duct tape or duct sealer.
3. A minimum of 0.10 inches W.G. downstream static pressure is required to prevent overheating of the fan motor.

Fan Terminal Electrical Connection

1. All field wiring is to be in accordance with the National Electrical Code ANSI/NFPA No. 70 or the Canadian Electrical Code, Part 1, CSA Standard C 22.1 and local codes and standards.
2. Refer to the product identification label on each unit for information to determine the field wire size.
3. **Check voltage requirements prior to power supply connection.** Refer to the electrical label located near the electrical control box and also refer to the schematic drawing provided on the underside of the electrical control box cover.
4. If upon energizing the electric motor(s), excessive noise is apparent, shut down the unit. Determine the cause by checking for packing materials, etc. and re-energize after corrective action has been taken.
5. If an Electric Reheat Coil has been supplied, refer to the electrical schematic which is permanently affixed to the underside of the electrical control cabinet cover, prior to hook-up.



Check the voltage requirements to ensure proper voltage supply is used.

Fan Terminal Control Connections

Pneumatic:

1. External control air connections are provided for main air and thermostat hook-up. These are to be piped according to the label on the control shroud.
2. Main air supply must be clean and dry, delivered at 15 to 25 psi (maximum 25 psi).
3. Ensure that lines are not crimped or cut when installing.

Electronic:

1. A wiring diagram is provided with each assembly. Follow the diagram for wiring of the thermostat and other accessories.

Digital:

1. If controls have been factory mounted, a wiring diagram will be included with the unit indicating the factory mounted components. For field wiring of room sensors and other accessories, refer to the Controls Contractor's documentation for all wiring information.

Fan Terminal Maintenance

1. Disconnect all incoming power before servicing the unit.
2. Price Fan Powered Terminal Units are supplied with permanently lubricated motors.
3. The blower and motor should be inspected annually for accumulation of dust and dirt. Clean as necessary.
4. To access blower and motor for servicing, remove the top access panel.
5. Motors are provided with thermal overload protection. If the motor overheats and trips the thermal overload, it will automatically reset after cooling down to a proper operating temperature.
6. If the fan motor is turned off while the primary air system is operational, the following start-up procedure should be employed for constant volume units.
 - a. Override the primary air damper to the closed position as follows:
 - Pneumatic** - Apply main air to the damper actuator for normally open units or disconnect main air for normally closed units.
 - Electronic** - Disengage gears of the electric actuator with the clutch button and manually close damper.
 - DDC** - Use DDC software to override damper.
 - b. Wait at least 2 minutes to allow the fan wheel to stop rotation.
 - c. Turn power on to the terminal unit
 - d. Restore damper to normal position. The above procedure will prevent backward rotation of the fan motor on start-up.
7. If field amperage draw readings of the fan motor are required, measurements should be taken with a true RMS meter. Non-true RMS meters will not provide accurate reading due to alteration of the sine wave by the fan speed control. Refer to Page 8 for maximum motor operating amps.

Fan Terminal Filter(s)

1. Filters, if supplied, should be replaced or removed after system start-up.
2. If filters are used beyond system start-up, they should be changed regularly to avoid excessive restriction of air flow. Frequency would depend on environment.
3. Contact your Price representative for details on replacement filter media

Fan Terminal Air Balancing Procedure

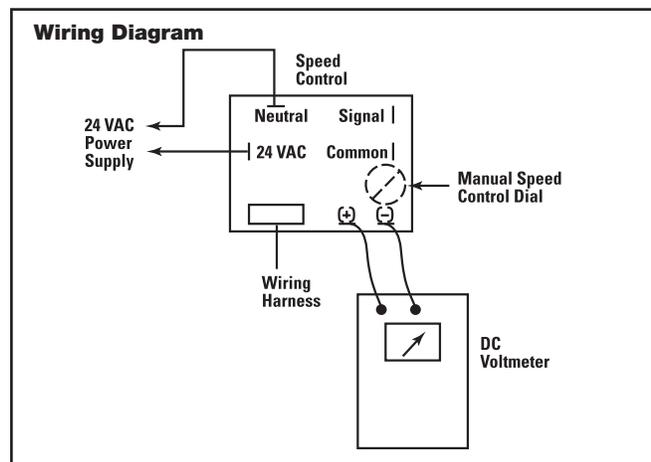
Prior to air balancing of the terminal unit, the following general items should be verified:

1. Return filters (if supplied) are clean.
2. All balancing dampers are adjusted and locked. Dampers downstream of the terminal unit should be proportionally balanced.
3. Thermostats are calibrated and operational.
4. All duct work and connections are free from leaks.
5. All diffusers are installed.
6. Downstream duct static pressure is a minimum 0.1" W.G.
7. FDBU flow adjustment
 - a. Adjust fan air flow with the fan speed controller per the fan curves.
8. The fan volume must be field adjusted with the fan speed controller. Fan curves found in this manual indicate the volume range of each size unit. Adjust the speed control until the desired air flow is measured at the outlets.

Note: Since fan powered terminals are typically operating within a pressurized plenum, all flooring tiles must be replaced prior to verifying outlet flows.

ECM Motor Adjustment

1. Remove the electrical control cover and connect the leads from a DC voltmeter to the terminals indicated.
2. Determine test point voltage from the formula based on the desired air flow.
3. Adjust the manual speed control dial on the outside of the box with a screwdriver until the test point voltage is achieved.
4. Wait a few seconds for the ECM motor to adjust its speed and then verify fan flow with measurements at the supply outlets.
5. If necessary, fine tune the speed control in accordance with the measured outlet flow.



ECM Motor Equation List

FDBU SERIES

Size	Motor Volts	Equation
10,20		No Constant Flow Program, Flow set in the field
30	115	CFM = (512.15 X VDC) - 759.92
30	277	CFM = (548.2 X VDC) - 754.39
40	115	CFM = 476.2 X (VDC - 0.9989)
40	277	CFM = 454.5 X (VDC - 0.8638)
50	115	CFM = (579.71 X VDC) - 679.9
50	277	CFM = (702 X VDC) - 1037
60	115	CFM = 840.36(Vdc) - 789.74
60	240	CFM = 831.09(Vdc) - 721.19
60	277	CFM = 827(Vdc) - 888.59

Fan Terminal Operating Guidelines

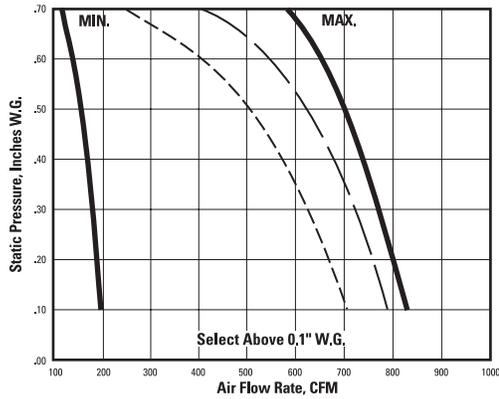
1. Minimum downstream duct static pressure of 0.1 inches W.G. must be maintained to prevent overheating of the fan motor. Overheating of the fan motor can cause the unit to trip the thermal overload and reduce motor life.
2. If electric duct heaters are supplied, 63 CFM/kW minimum air flows across the heater must be maintained.
3. If electric duct heaters are supplied, the discharge air temperature must not exceed 120°F.
4. Motor running amperage must not exceed the values listed in the table below

FDBU/FEBU/FPBU Full Load Amps		
Size	115V	277V
20	3.0	1.1
30	4.8	1.8
40	7.4	2.5
50	7.5	3.0

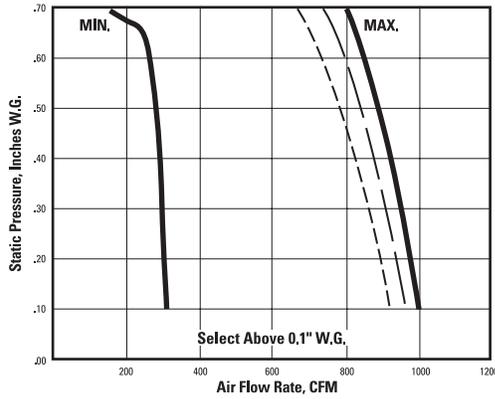
Fan Performance Curves

FPBU, FEBU, FDBU Series - Standard Motor

Unit Size 20



Unit Size 30



Maximum Flow
 — No Coil or Electric Coil
 - - - 1 Row Water Coil
 - - - 2 Row Water Coil

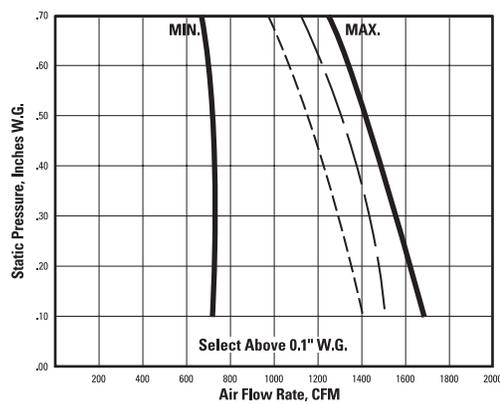
Note: Data obtained in accordance with ARI Standard 880-98.

CAUTION TO CONTRACTORS
 Fan powered terminal units are not intended for use as temporary heat or ventilation during building construction. The terminal units are not designed nor equipped to operate in a dusty construction environment. Recirculating fan wheels can become coated with construction dust, resulting in an unbalanced wheel. This in turn can contribute to reduced motor life. Inlet air filters would provide little protection as they would quickly become plugged with construction dust.

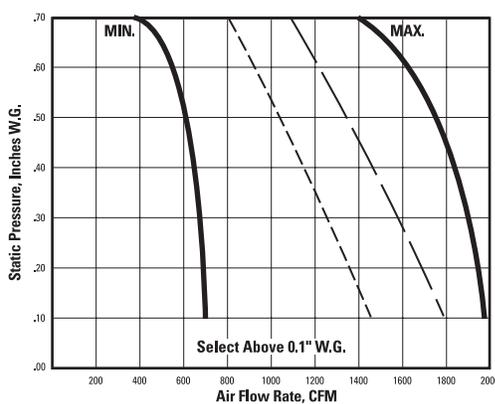
A fan powered terminal unit should never be operated if the downstream ductwork has not been installed. A minimum of 0.10 inches W.G. downstream static pressure resistance is required for safe operation of the recirculating fan motor.

Please Note:
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Unit Size 40



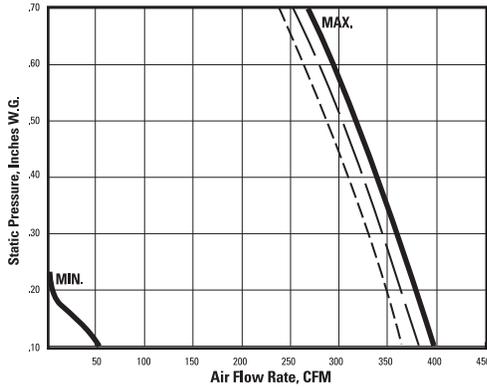
Unit Size 50



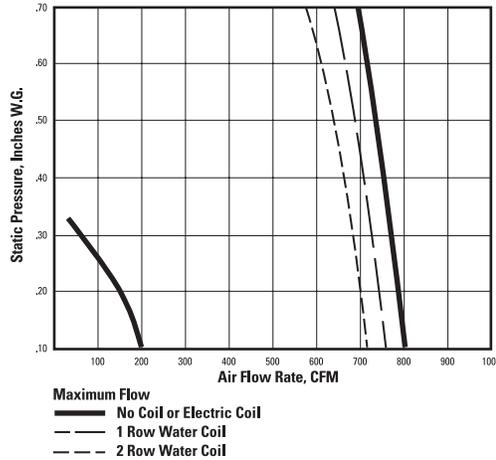
Fan Performance Curves

FPBU, FEBU, FDBU Series - ECM Motor

Unit Size 20 - No Coil, 1 and 2 Row*



Unit Size 30 - No Coil



*Note: Unit size 20 can not be programmed for factory set fan flow. The fan air volume will vary as the external static pressure varies in accordance with the fan curves illustrated. All other features and benefits of the ECM motor apply to the size 20 unit.

Note: Data obtained in accordance with ARI Standard 880-98.

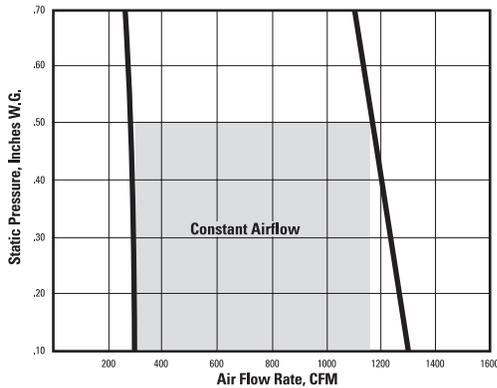
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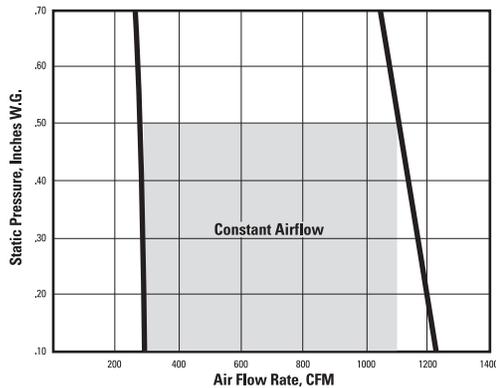
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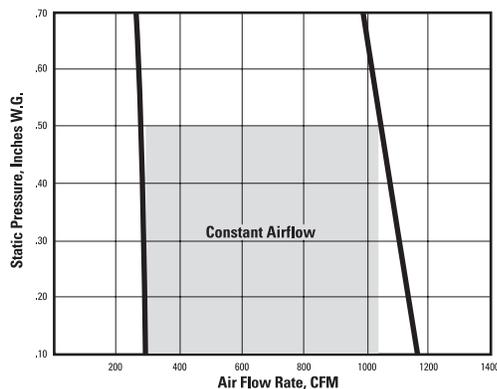
Unit Size 30 - 1 Row Coil



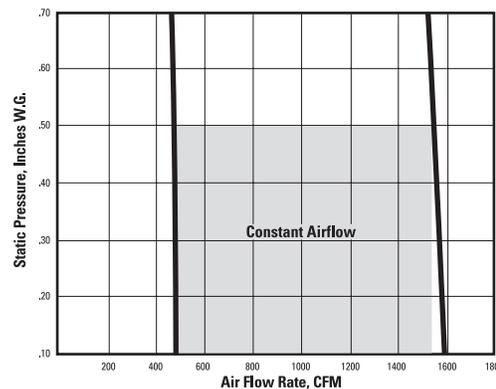
Unit Size 30 - 2 Row Coil



Unit Size 40 - No Coil



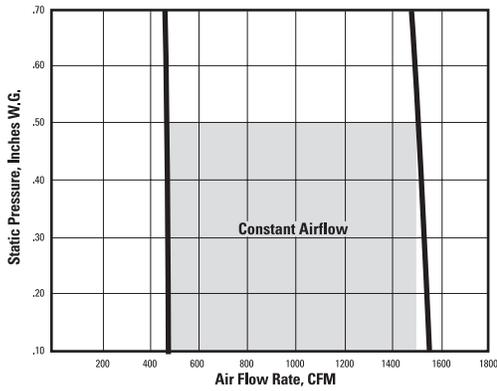
Unit Size 40 - 1 Row Coil



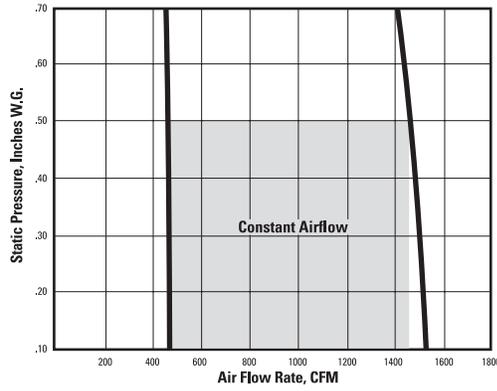
Fan Performance Curves

FPBU, FEBU, FDBU Series - ECM Motor

Unit Size 40 - 2 Row Coil



Unit Size 50 - No Coil



Note: Data obtained in accordance with ARI Standard 880-98.

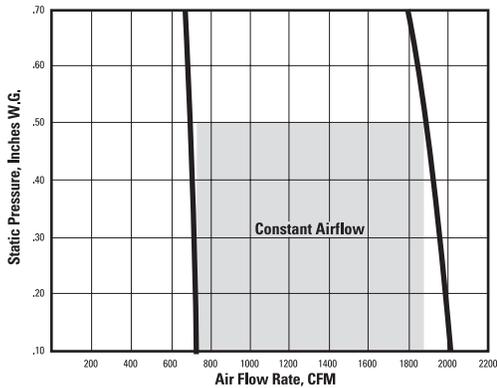
⚠ CAUTION TO CONTRACTOR

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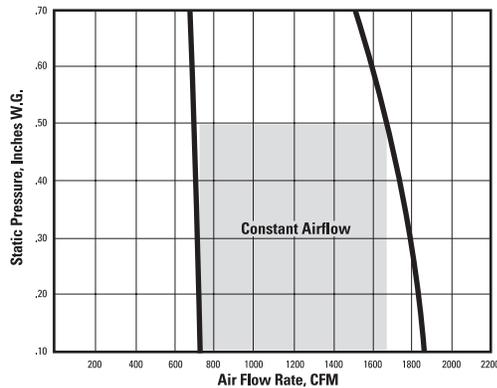
A fan powered terminal unit should never be operated if the downstream ductwork has not been installed. A minimum of 0.10 inches W.G. downstream static pressure resistance is required for safe operation of the recirculating fan motor.

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Unit Size 50 - 1 Row Coil



Unit Size 50 - 2 Row Coil



ECM Speed Controller

The ECM Speed Controller is manufactured by EDC (Electronic Development Center) at E.H. Price in Winnipeg. It allows for ON/OFF and 0-100% speed control of any ECM motor (120/240/277 VAC 1/2 HP 1 HP). The ECM Speed Controller has 2 modes. Manual adjust and B.A.S. (BAS stands for Building Automation System.)

Manual Mode

In manual mode the speed is controlled by adjusting the potentiometer (POT). The POT can be adjusted from 0-100%. To set the POT precisely the voltage output must be measured. Using a standard multi-meter on a DC voltage setting the (+) and (-) tabs on the board can be measured. The output is 0-5 VDC. (See Figure 1)

POT VOLTAGE	MOTOR
0 - 1 VDC	OFF
1 - 4.5 VDC	0 - 100% CONTROL
4.5 - 5 VDC	100%

BAS Mode

In Building Automation Mode the speed controller reads a 2-10 VDC signal from a controller/computer to adjust the motor speed. NOTE: Speed Controller will automatically ignore the POT/DIAL when a BAS signal is detected! The 2-10 VDC signal is connected to the BAS Signal and BAS common tabs. (Note: A 4-20 mA signal can be used as well. (series/current signal) However a jumper on the board must be relocated. Default is voltage input signal.)

BAS Input Signal	MOTOR
0 - 1 VDC	Manual Mode (responds to POT/DIAL)
1 - 2 VDC	OFF
2 - 9 VDC	0 - 100% Control
9 - 10 VDC	100%

NOTE: BAS Common is connected to 24 VAC Common. If 24 VAC is earth grounded then BAS Common will be earth ground as well. Polarity must be observed when connecting multiple speed controllers and transformers.

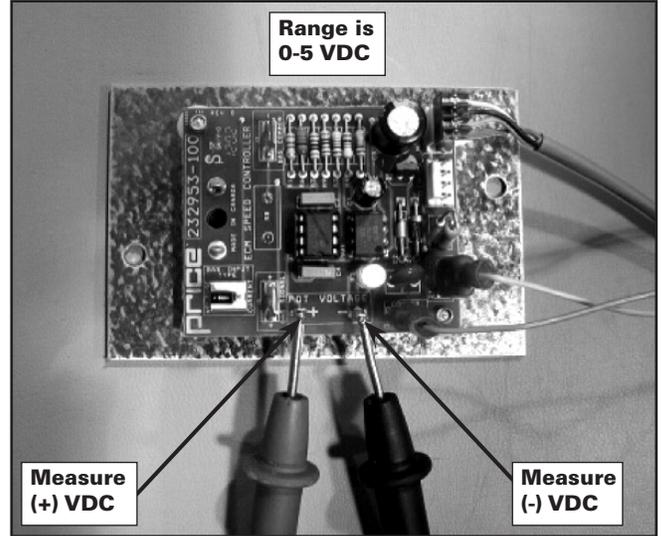


Figure 1 - ECM Speed Controller (Manual Setting)



Figure 2 - ECM Speed Controller Face

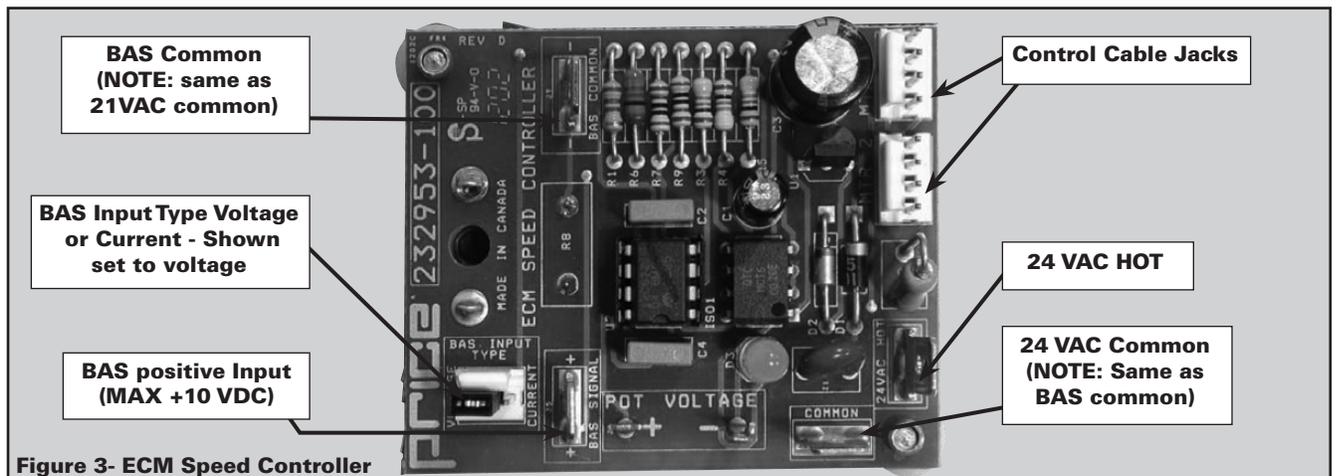


Figure 3- ECM Speed Controller

ECM Speed Controller

Wiring and Cables

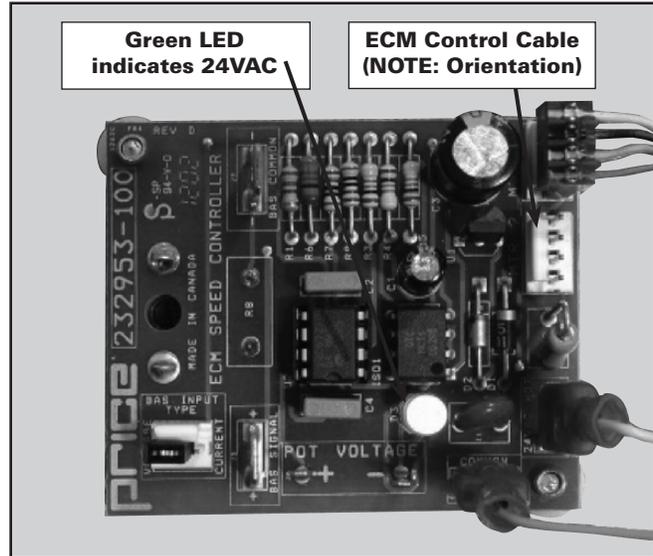


Figure 4 - ECM Speed Controller Powered Up

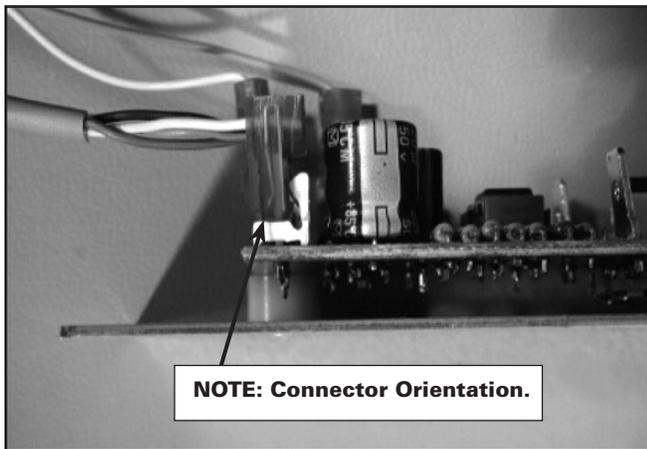
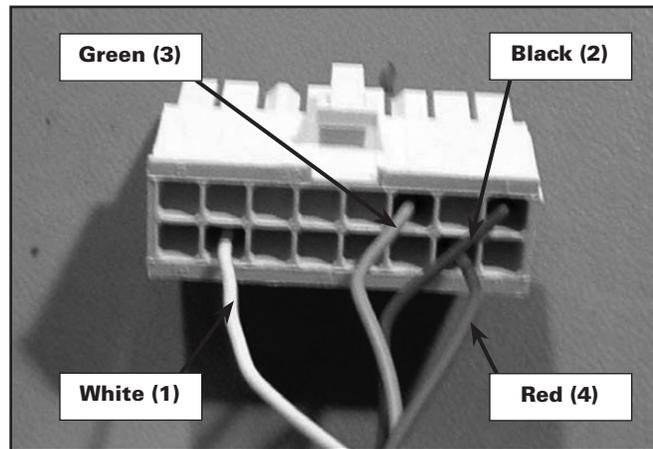
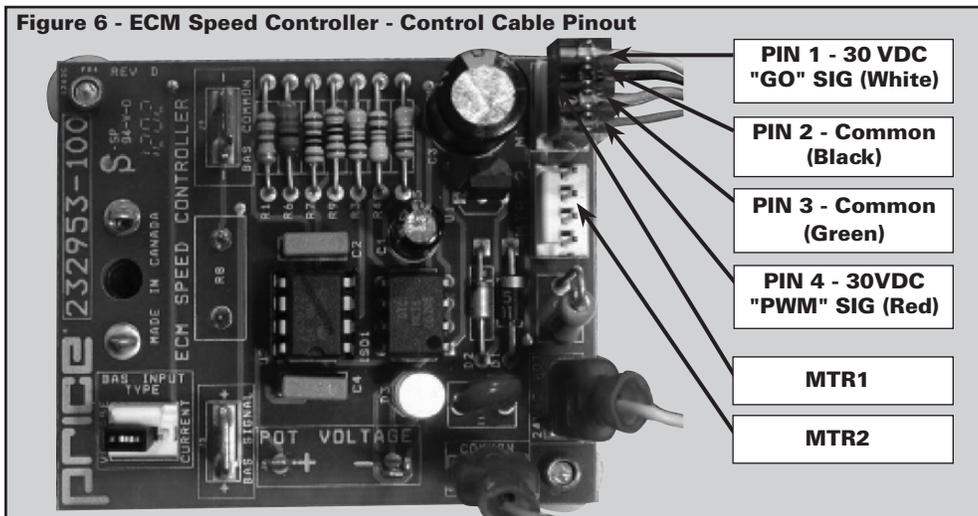


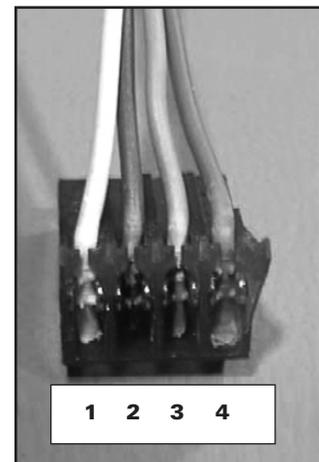
Figure 5 - ECM Speed Controller with Control Cable Properly Connected



Motor End of Control Cable

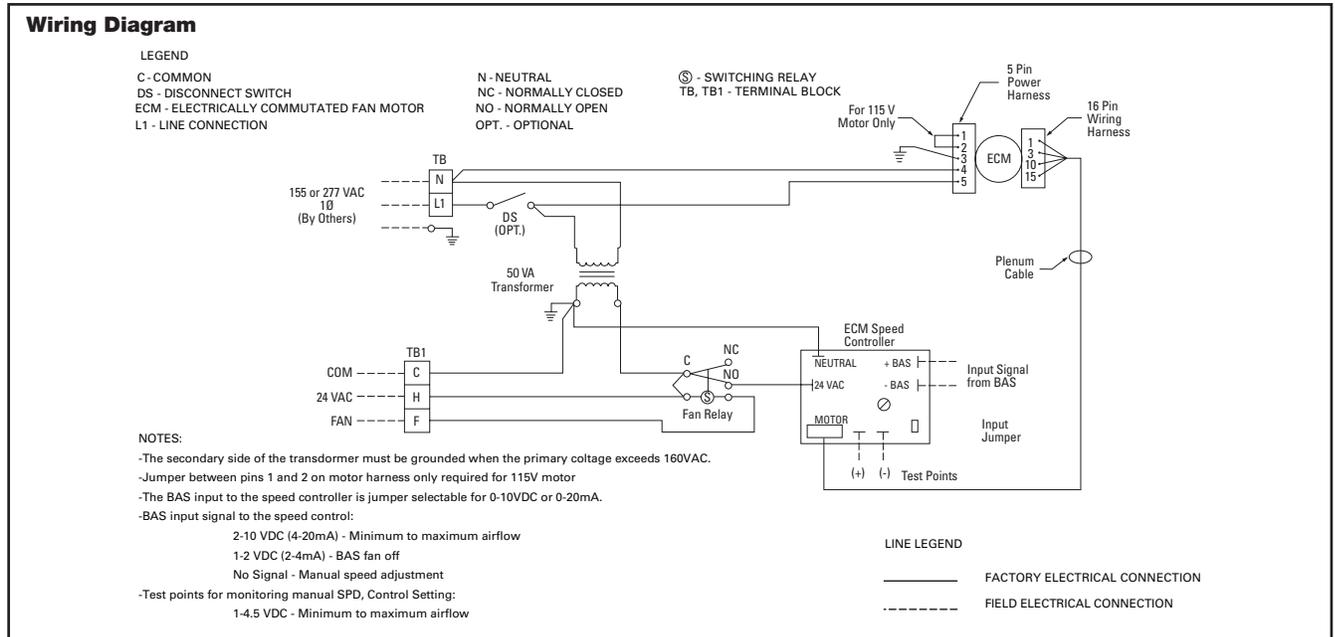


Speed Controller End of Control Cable



NOTE: There are two motor output jacks (MTR1 & MTR2). They are in parallel so either one can be used. Both jack are used on dual blower units.

ECM Speed Controller



NOTE: The ECM motor is turned ON/OFF with ECM speed controller. It is not recommended to switch the main (120/240/277 VAC) power on and off. This is because the ECM motor has large capacitors that cause a current surge when turned on. This could cause a significant power spike if many units are turned on at once

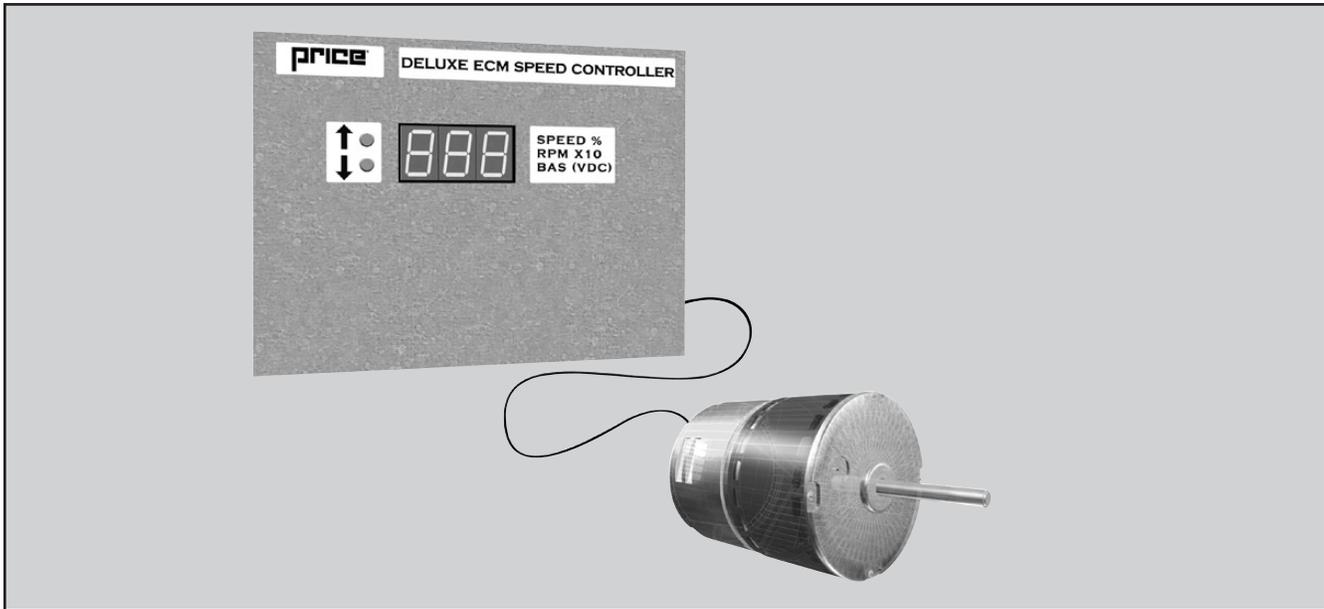
The Price ECM speed controller works with a high efficiency ECM motor. This low voltage (24VAC) speed control allows full manual (dial adjust) or BAS (2-10VDC signal) control of the ECM motor.

BLINK	Mode	Voltage at Taps
1	Manual Mode (dial adjust) – OFF	0-1 VDC (at Dial Taps)
2	Manual Mode (dial adjust) – CONTROL	0-100% 1-5 VDC (at Dial Taps)
3	BAS Mode (1-2VDC signal) – OFF	1-2 VDC (at BAS taps)
4	BAS Mode (2-10VDC signal) – CONTROL	0-100% 2-10 VDC (at BAS taps)

LED ON Fault Mode
 STEADY • measure input voltage – ensure 24VAC +-10%
 or stays • check wiring to speed control (ensure 24 VAC HOT and COMMON are
 OFF not reversed)
 • cycle 24 VAC power to unit
 • check BAS input wiring – NOTE: (BAS -) and 24 VAC common are
 connected – observe polarity when interfacing to other systems

Specifications - ECM	
Power	24 VAC +-10% @ 50/60Hz (2VA)
Outputs	3 Digital (GO signal to ECM and Vspd PWM signal @ 80.0 Hz) and LED
Inputs	2 Analog (1 manual adjust dial and 1 BAS 0-10VDC)
Operating Conditions	0°C to 50°C (32°F to 122°F) 0% - 95% R.H. non-condensing
Processor	8-bit flash microcontroller with on board Analog to Digital Converter
Storage Conditions	-30°C to 50°C (-22°F to 122°F) 0% - 95% R.H. non-condensing
Connections	¼" Spade Terminals – Recommend 18-22AWG copper wire
Dimensions	2.1" by 1.7" (53.3 mm by 43.2 mm)
Shipping Weight	0.1 lbs (45.4 grams)

Deluxe ECM Speed Controller



LED Digital Display

The Digital Display shows the user several modes of operation. This allows for easier and more precise field adjustment and troubleshooting. By pressing both the UP and DOWN push buttons at the same time the user can cycle between the following modes:

- 1) Speed Adjustment - is easier and more precise with the digital display and push buttons than with a standard dial.
- 2) Motor RPM - displays the real time motor speed to aid in troubleshooting.
- 3) BAS input voltage - displays the input voltage signal from the building automation system (BAS). Note: Any BAS voltage signal above 1 VDC overrides local speed control.

Display	Mode	Range
Spd	Manual Speed Adjust Mode	0-100%
RPN	Shows current RPM of ECM motor #1	0-1350 RMP
BAS	BAS Mode – Voltage Signal	2-10VDC

NOTE: Do not switch 120/208/240/277 VAC power to turn ECM motor on and off. Instead control the 24VAC signal or BAS signal to turn the ECM motor on and off. The ECM motor has large capacitors that charge quickly on mains power up. Switching on several motors frequently could reduce building power quality and is not recommended.

Specifications - ECM	
Power	24 VAC +-10% @50/60 Hz (2VA)
Outputs	2 Digital (GO signal to ECM and Vspd PWM signal @ 80.0 Hz)
Inputs	1 Analog and 3 digital inputs
Operating Conditions	0°C to 50°C (32°F to 122°F) 0% - 95% R.H. non-condensing
Processor	8-bit enhanced flash microcontroller
Storage Conditions	-30°C to 50°C (-22°F to 122°F) 0% - 95% R. H. non-condensing
Connections	¼" Spade Terminals – Recommend 18-22 AWG Copper Wire
Dimensions	2.8" by 3.8" [71mm by 96mm](includes mounting plate)
Shipping Weight	0.220 lbs, 100 grams

Product Overview

The LFG-HC and LFG-VC utilize a 24 VAC floating point actuator to modulate a gasketed control damper based on a signal from the building control system or from the Price UMC – Underfloor Modulating Controller. The Linear Floor Grilles can be daisy chained from one unit to another using the provided plenum rated cable with plug-in modular connectors.

The LFG-HC is designed to deliver VAV cooling flows as well as constant volume heating. In cooling mode the 24 VAC floating point actuator modulates the damper to throttle the supply air from the pressurized underfloor plenum to the occupied zone. The motorized damper provides control of cooling flows from maximum to near shut-off.

When the control system sends the zone into heating mode, the damper drives to the minimum cooling position. The space is then supplied with constant volume heated air.

The LFG-VC is designed to deliver VAV cooling flows only. In cooling mode the 24 VAC floating point actuator modulates the damper to throttle the supply air from the pressurized underfloor plenum to the occupied zone. The motorized damper provides control of cooling flows from maximum to near shut-off.

When the control system sends the zone into heating mode, the damper drives to the minimum cooling position. There is no supply air to the space in this mode.

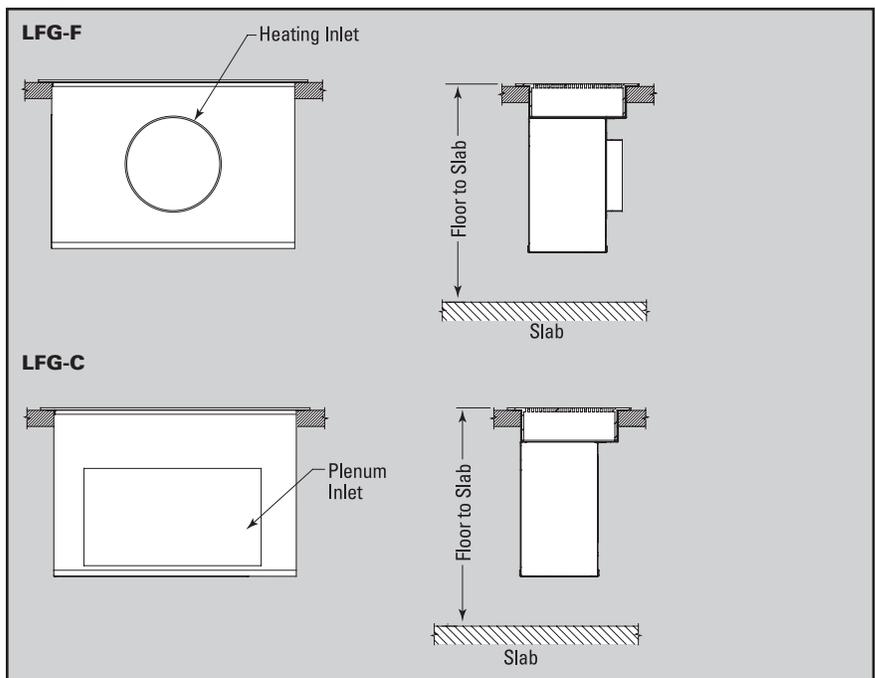
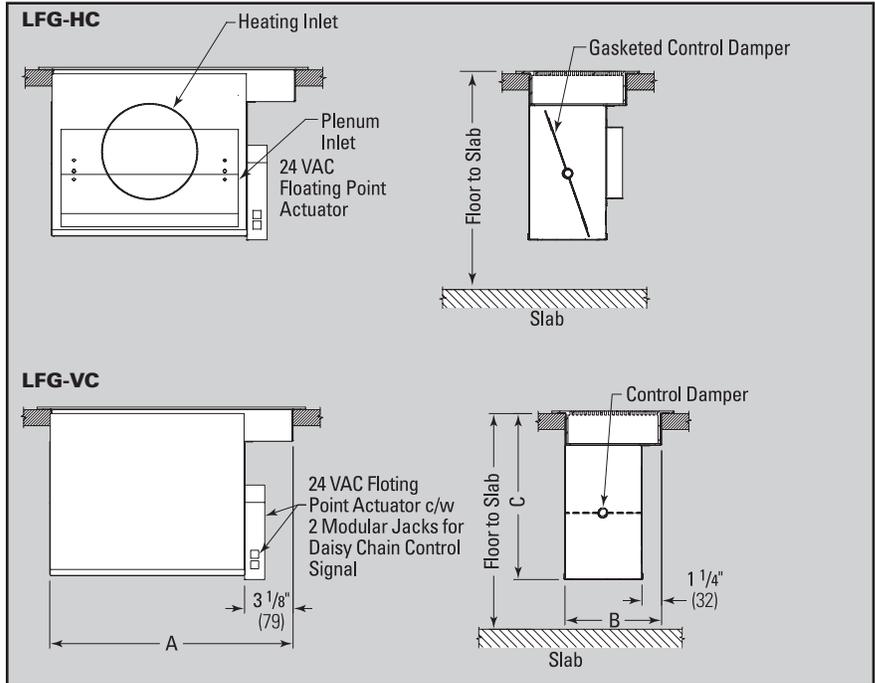
The LFG-F and LFG-C provide constant volume flow for either heating only or cooling only applications. These grilles function with no actuators as they rely solely on system pressure.

The LFG-F is designed to deliver ducted fan powered supply air. Cool or reheated plenum air is supplied to the space via the round inlet when the fan is on.

The LFG-C is designed to deliver constant volume cooling flows only. In cooling mode the large rectangular opening in the plenum allows air to flow from the pressurized plenum to the room based on the static pressure differential. The plenum serves as a debris collector and sight baffle in this case.

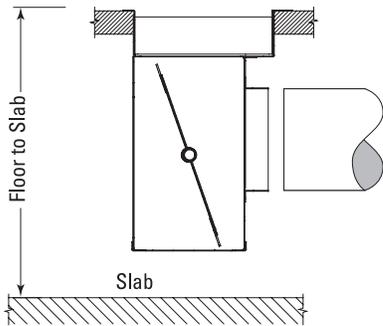
Both the LFG-F and LFG-C can be provided with optional internal fiberglass insulation.

There is no heating mode function associated with this grille.



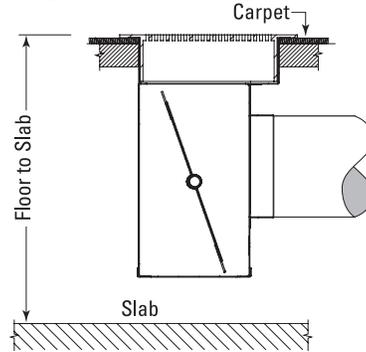
Linear Floor Grille – Installation Instructions

For all LFG configurations



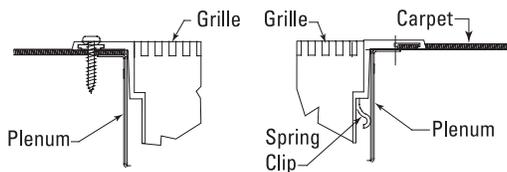
A rectangular opening of the appropriate size is cut through the tile. Linear floor grille plenum is dropped into place from the room side of the tile. Ductwork to configurations with heating modes can be connected.

For all LFG configurations with carpet



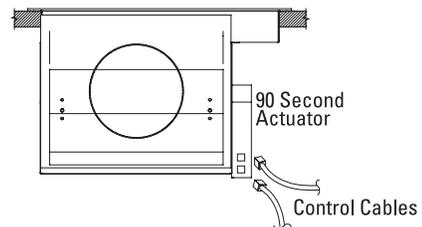
With the plenum in place, carpet can be applied if applicable. Then the grille face can be inserted into the plenum, which holds the edges of the carpet.

Fastening for all LFG configurations



The grille is held in place with either Screw Mounting or Spring Clips.

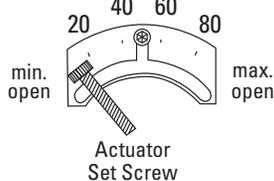
For LFG-HC and LFG-VC models



Models with HC and VC configurations are provided with a modular plug-in plenum rated cable for simple connection to controller or daisy chain connection to additional LFG's.

CAUTION: Adjust set screw and damper to minimum airflow for balancing.

Actuator Set Screw and Damper Adjustment Instruction



1. Move damper to open.
2. Loosen minimum airflow set screw. Press clutch and turn set screw to min. open position.
3. Tighten set screw onto damper shaft.

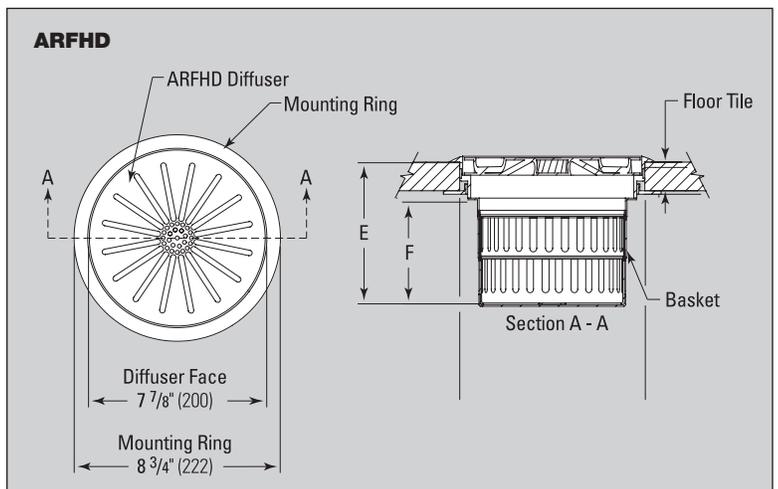
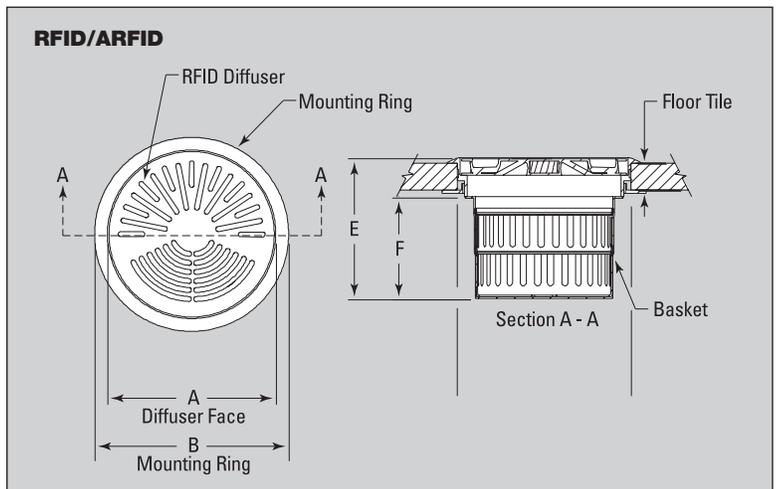
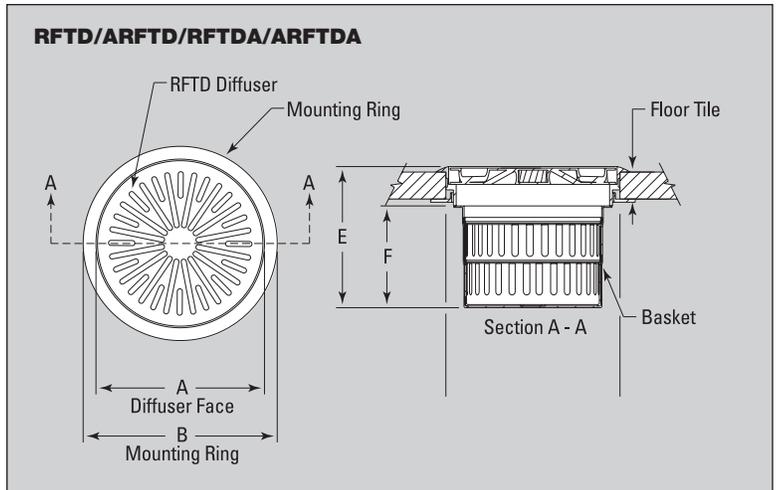
Round Floor Diffusers – RFD Series

Product Overview

The **RFTD/ARFTD** is designed with a twist effect using radial slots in combination with an inclined discharge. This generates a vertical supply with very high induction due to the turbulent flow. This symmetrical discharge is ideal for mixing within the occupied zone and is available with a 30-degree discharge angle.

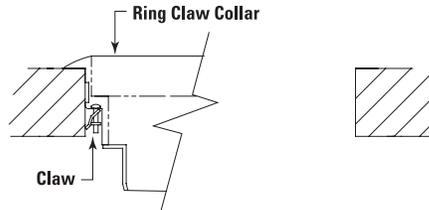
The **RFID/ARFID** use a combination of radial and circular discharge jets to create a sloped high induction discharge. The radial slots create a turbulent vertical flow while the circular openings provide a fast mixing angular throw. The occupant can adjust the diffuser rotation to suit their personal preference of air circulation.

The **ARFHD** is used where low turbulent, floor level flow is required. The diffuser slots discharge the air horizontally across the floor where it can absorb the heat load and rise to the return grilles in the ceiling.



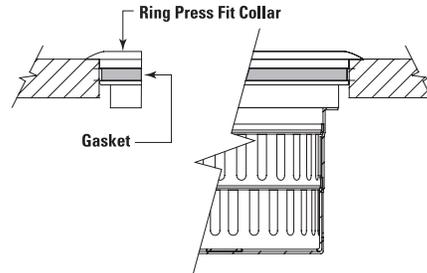
Round Floor Diffusers (RFD) - Installation Instructions

Through Bore installation with Ring Claw



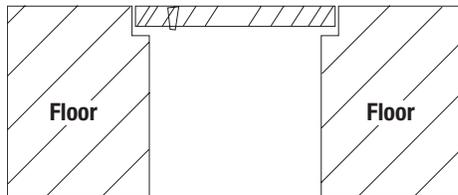
A bore of the appropriate size is cut through the tile. The Ring Claw mounting frame is inserted from the room side of the tile after carpet is laid. With added pressure to compress any floor coverings, the Claws can be extended to grab the sides of the bore and secure the frame. After the mounting frame has been installed, the basket and diffuser core can be dropped into the Ring Claw collar for a finished assembly.

Through Bore installation with Ring Press Fit



A bore of the appropriate size is cut through the tile. The Ring Press Fit mounting frame is inserted from the room side of the tile after carpet has been laid. The gasket on the collar will secure the mounting within the tile. After the mounting frame has been installed, the basket and diffuser core can be dropped into the Ring Press Fit collar for a finished assembly.

Installation in Stepped Bore



For Stepped Bore installations, two cuts must be made into each tile that requires a diffuser. The first cut will be completely through the tile. The diameter of cut must be smaller than the diffuser for adequate support and must be large enough to accommodate diffuser accessories. The second cut is to the room side of the tile and enlarges the opening enough to insert the diffuser core. The second cut must be made to depth to fit the diffuser core and accessories flush with the finished floor.

With the stepped core cut, the diffuser and accessories can be placed in the tile. Carpet and other tile coverings will need to be cut to the bore size.

If RFB boots are required for any installation, they may be screwed and sealed to the underside of the tile after the bore for the tile has been cut and any diffuser fasteners are applied.

For correct bore sizes please consult the hole size for each product and size.

Hole Size - Roundfloor Diffusers

RFID

SIZE	RN	RC	RPF
8"	8.307 + 0.040 (211)	8.307 + 0.040 (211)	8.464 + 0.040 (214)
5"	5.219 + 0.040 (160)	5.219 + 0.040 (160)	-

RFTD / RPN

SIZE	RN	RC	RPF
8"	8.307 + 0.040 (211)	8.307 + 0.040 (211)	8.464 + 0.040 (214)
6"	6.338 + 0.040 (160)	6.338 + 0.040 (160)	-

ARFID

SIZE	RN	RC	RPF
8"	-	8.307 + 0.040 (211)	8.464 + 0.040 (214)

ARFTD

SIZE	RN	RC	RPF
8"	8.307 + 0.040 (211)	8.307 + 0.040 (211)	8.464 + 0.040 (214)
Rough Opening	Top Step	Bottom Step	-
6"	5.219 + 0.040 (160)	5.219 + 0.040 (160)	-

ARFHD

SIZE	RN	RC	RPF
8"	-	8.307 + 0.040 (211)	8.464 + 0.040 (214)

*Note: **RN:** Ring Nut **RC:** Ring Claw **RPF:** Ring Press Fit

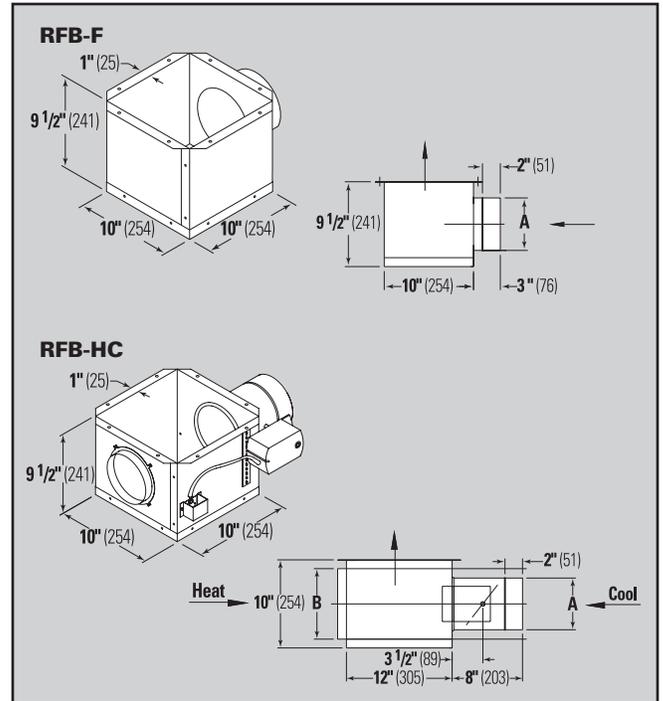
Round Floor Boot - RFB Series – Product Overview

The Price round floor boots are specially designed for mounting on the bottom of a floor tile under a round floor diffuser. A top plate with a 8 1/2" discharge hole outlet ensures proper sealing to the diffuser even when structural depressions exist on the bottom surface of the floor tiles. All models available with 8" inlets.

The **RFB-F** enables a ducted connection to a fan powered terminal unit. It is designed to control the supply of conditioned air to a space which has a variable occupancy schedule.

The **RFB-HC** is used in conjunction with heat/cool applications. The **RFB-HC** comes with two (2) inlets, one (1) for connecting to a fan powered terminal unit and the second to admit supply air from the pressurized plenum. The **RFB-HC** comes complete with a 24 VAC floating point actuator on the inlet open to the plenum to cycle a gasketed control damper through a 90° range of movement. The controller modulates based on a call for cooling either directly from the building control system, from the Price **UMC** (Underfloor Modulating Controller, see page I46 for details) or from the Price **UMCB** (see page I-47). A 25 foot plenum rated control cable is provided with each unit for connecting to a controller or daisy chaining to multiple boots.

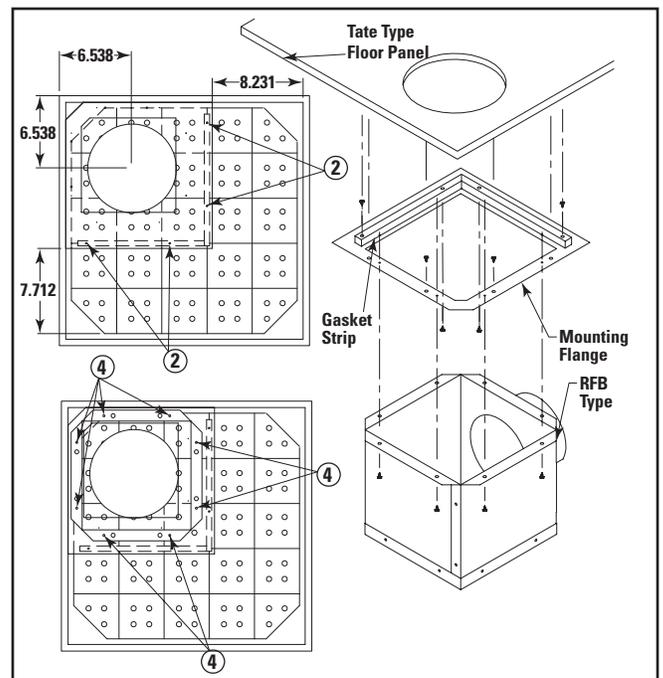
Supply air is either provided through an open connection to the pressurized plenum or via a ducted fan powered terminal unit.



Round Floor Boot – Installation Instructions

1. Cut hole in tile (hole must be located as marked on submittal and installation page).
2. Fasten the flange on the floor tile by screwing through the outer hole labeled 2.
The gasket will cover the holes. Ensure that self-drilling screws are used.
3. Place RFB over flange in with small holes aligned, the large holes provide clearance for the fastener used in Step 2.
4. Fasten RFB to mounting flange and floor tile by screwing through holes labeled 4.

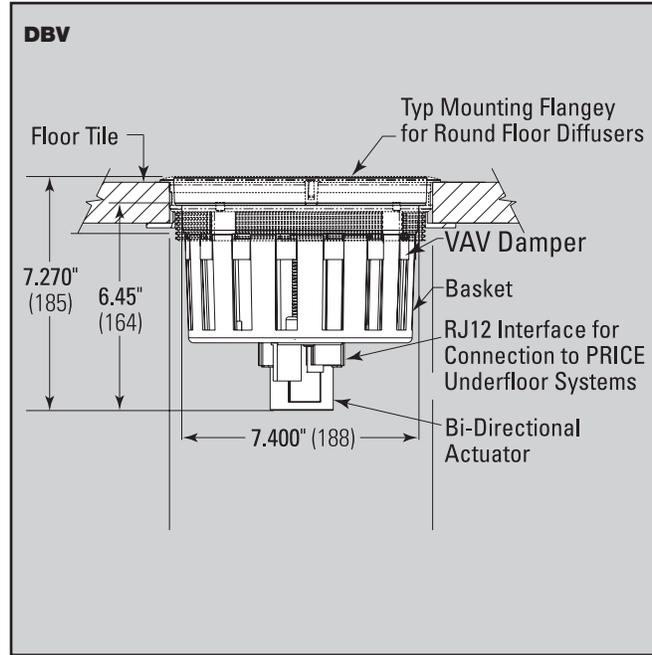
CAUTION: Adjust set screw and damper to minimum airflow for balancing.



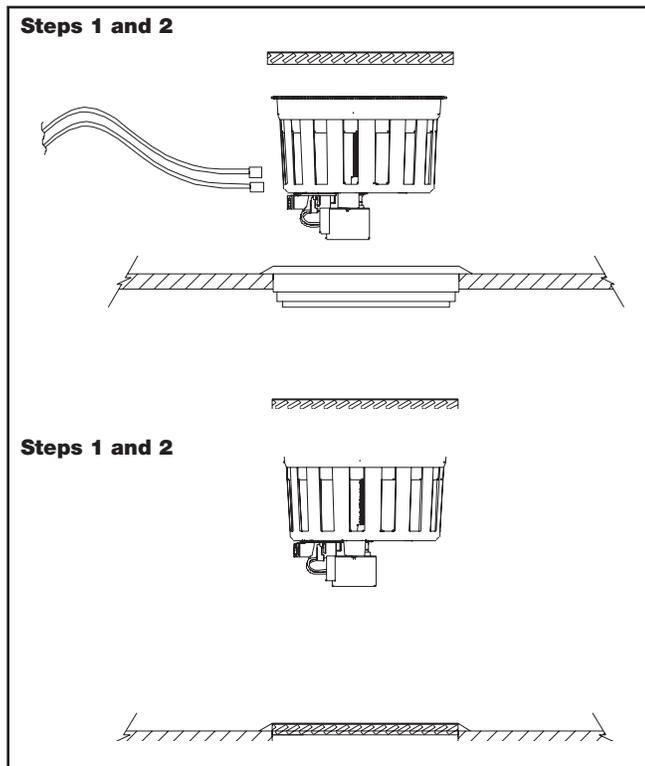
Variable Volume Diffuser Basket (DBV) – Product Overview

The Variable Volume Diffuser Basket (DBV) is designed to allow even distribution of supply air through the round floor diffuser core while integrating into a VAV cooling system. It utilizes a 24 VAC floating point actuator to modulate a gasketed control damper based on a signal from the building control system or from the Price UMC – Underfloor Modulating Controller. The actuator modulates the damper to throttle the supply air from the pressurized underfloor plenum to the occupied zone. The motorized damper provides control of cooling flows from maximum to near shut-off. The DBVs can be daisy chained from one unit to another using the provided plenum rated cable with plug-in modular connectors.

Supply and install Price DBV, black Distributor Basket with integral VAV Damper. The DBV shall be supplied with a floating point actuator furnished with two modular jacks (RJ12) for system connections and one 25 foot plenum rated modular plug-in control cable. The electric actuator shall be 24 VAC bi-directional, directly coupled to the damper screw. The damper shall move from a full open position to a fully closed position in 90 seconds. The actuator must be capable of operating in the stalled position without overheating or mechanical damage. Peripheral gasket shall be provided on the control damper and shall allow zero leakage at 0.05 "wc when fully closed.



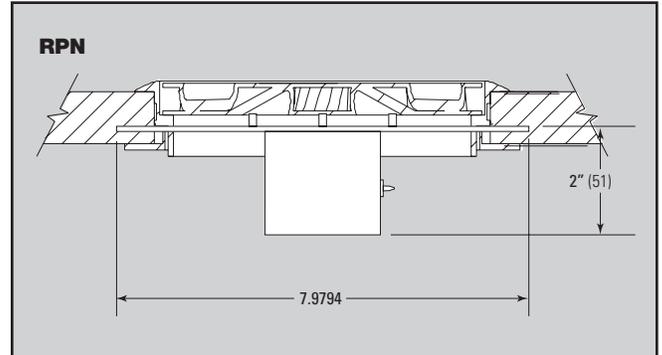
Variable Volume Diffuser Basket (DBV) - Installation Instructions



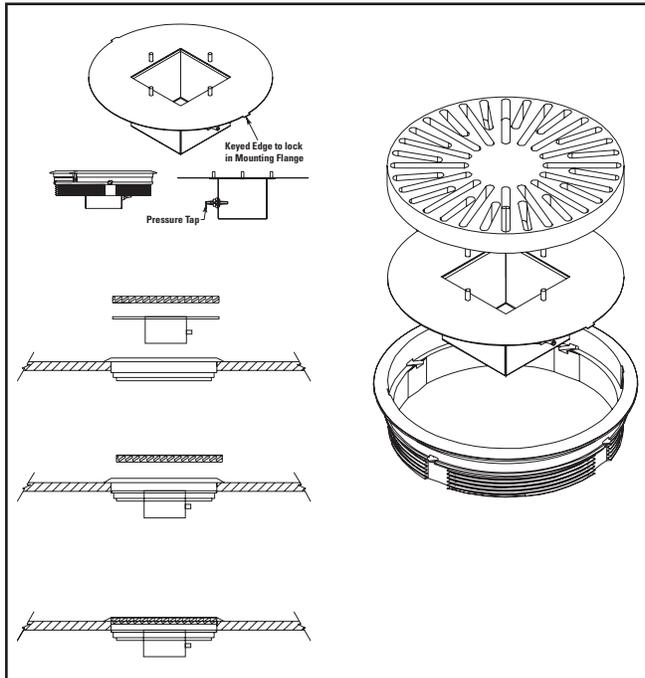
1. Locate the mounting ring in the hole in the floor tile.
2. Connect the control wire to the DBV through the floor.
3. Insert the DBV, ensuring that the tabs on the DBV align with the holes in the mounting ring.
4. Place diffuser face on mounting ring.

Relative Pressure Node - RPN

The RPN is designed to measure the relative pressure between the pressurized underfloor plenum and the room. It is designed to fit inside any style of mounting ring underneath any Price Round Underfloor diffuser. The advantage to the RPN is that it maintains a uniform look with other Price underfloor diffusers. Its ability to be hidden, while providing a convenient location for pressure measurements makes the RPN a very useful product for UFAD applications with plenum pressure control.



Relative Pressure Node – Installation Instructions



1. Connect the pneumatic line to RPN.
2. Once the Ring Fastener is located in the hole in the floor tile, place the PRN into the fastener.
3. Ensure that the tabs on the RPN align with the holes in the fastener.
4. Place diffuser on RPN.

*Refer to RFTD hole size chart on page 29.

Parts List

FDBU / FEBU / FPBU; FDCU / FECU / FPCU Fan Powered Terminal Units				
	20	30	40	50 (FDBU Only)
Blower	#100185-001 Morrison 90-4R c/w wheel	#100185-002 Morrison 100-4R c/w wheel	#100185-003 Morrison 100-6R c/w wheel (2 Required)	#100185-002 Morrison 100-4R c/w wheel
Wheel	Morrison c/w Blower	Morrison c/w Blower	Morrison c/w Blower (2 Required)	Morrison c/w Blower
Motor	#019150-001 1/8 HP 115V	#019152-002 1/4 HP 115 V	#019154-003 1/2 HP 115 V (2 Required)	#019152-002 1/4 HP 115 V
	#019151-001 1/8 HP 277V	#019153-002 1/4 HP 277 V	#019155-003 1/2 HP 277 V (2 Required)	#019153-002 1/4 HP 277 V
ECM Motor	N/A	#019595-001 1/2 HP; Split Style 115V / 240 V	#019595-001 1/2 HP; Split Style 115V / 240 V	N/A
	N/A	#019595-002 1/2 HP; Split Style 277V	#019595-002 1/2 HP; Split Style 277V	N/A
Capacitor	Capacitor size must match motor nameplate. (Varies per Manufacturer) Confirm motor nameplate data. #019874-001 5 MFD #019874-006 7.5 MFD #019874-002 10 MFD #019874-003 15 MFD #019874-007 20 MFD			
Fan Speed Controller	115V-8A-233563-100			
	277V-8A-233563-200			
	#232953-100 (For Use With ECM Motor Only)			
Disconnect Switch	#019903-001 15A Single Pole 115V, 277V			
	#019903-003 Two Pole 240V			
Fuse Block	#019459-001			
Motor Fuses	#019124-009 115V 6A	#019124-009 115V 6A	#019124-015 115V 15A	#019124-009 115V 6A
	#019124-005 277V 2.5A	#019124-005 277V 2.5A	#019124-010 277V 7A	#019124-005 277V 2.5A
ECM Motor Fuses		#019124-001 115V 8A	#019124-0015 115V 15A	
		#019124-009 240V 6A	#019124-010 240V 7A	
		#019124-002 277V 6A	#019124-009 277V 6A	
LFG-HC / LFG-VC Linear Floor Grille				
Actuator	GDE 131.1P 24VAC Floating Point			
Junction Board	RJ11 Plenum Rated Electrical Junction Board			
DBV Variable Volume Diffuser Basket				
Motor	#MSEDC10S61 24VAC 60 Hz 14 RPM 4.8 W			
Junction Board	DBV RJ11 Plenum Rated Electrical Junction Board			
Capacitor	#236934-50 685K MF 250VAC			
RFB-VC / RFB-HC Round Floor Boot				
Actuator	GDE 131.1P 24VAC Floating Point			
Junction Board	RJ11 Plenum Rated Electrical Junction Board			

PRICE[®]



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- International Sales Office
- Winnipeg Manufacturing Facility



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- Toronto Manufacturing Facility

Product Improvement is a continuing endeavour at Price. Therefore, specifications are subject to change without notice. Consult your Price Sales Representative for current specifications or more detailed information. Not all products may be available in all geographic areas.

All goods described in this brochure are warranted as described in the Limited Warranty shown at the web site www.price-hvac.com.

The Price catalog is available online at www.price-hvac.com

