

HR150B, HR200B Perfect Window™ Fresh Air Ventilation Systems

PRODUCT DATA



FEATURES

- 220V, 50 Hz
- Low voltage, high-speed override.
- Integral balancing dampers for quick installation.
- Provides ventilation that helps contractors meet ASHRAE 62-89.
- 4-speed fan control.
- Automatic, economical built-in frost control for operation to design temperatures of -40°F (-40°C).
- Easy-to-clean aluminum cross-flow core.
- Includes vibration isolation hardware and duct collars.
- Insulated cabinet made of rugged steel.
- Permanent (washable) prefilters.
- Quiet operation.
- Digital fan timer option on all models.

APPLICATION

The HR150B, HR200B Perfect Window™ Fresh Air Ventilation Systems provide proper levels of ventilation with energy savings by transferring heat between the exhaust and fresh air streams.

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SPECIFICATIONS

IMPORTANT

The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit might not exactly match the listed specifications. Also, this product is tested and calibrated under closely controlled conditions, and some minor differences in performance can be expected if those conditions are changed.

Color: White.

Electrical Ratings:

Power Rating: 220 Vac, 50 Hz.

Consumption: 0.8A at maximum speed.

Mounting:

Mount in *conditioned* space such as a basement, utility room, hallway or closet. Can also be mounted in *conditioned* attic space.

Approvals:

CE:

Installed Weight: 70 lb (32 kg).

Ventilation Performance: See Tables 1 and 2.

Table 2. HR200B1021 Ventilation Performance.

Ext. Static Pressure		Low Speed		High Speed	
(Pa)	(in. wg)	(L/s)	(cfm)	(L/s)	(cfm)
25	0.1	39	82	97	206
50	0.2	35	73	93	196
75	0.3	30	64	85	180
100	0.4	23	49	76	161

Dimensions: See Fig. 1.

Maximum Temperature Recovery: 80%.

Sensible Efficiency (Performance per CAN/CSA-C439-88):

Low Speed at 32°F (0°C): 68%.

High Speed at 32°F (0°C): 62%.

Low Speed at -13°F (-25°C): 60%.

Table 1. HR150B1039 Ventilation Performance.

Ext. Static Pressure		Low Speed		High Speed	
(Pa)	(in. wg)	(L/s)	(cfm)	(L/s)	(cfm)
25	0.1	37	78	89	189
50	0.2	33	70	83	175
75	0.3	20	43	76	160
100	0.4	—	—	62	132

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

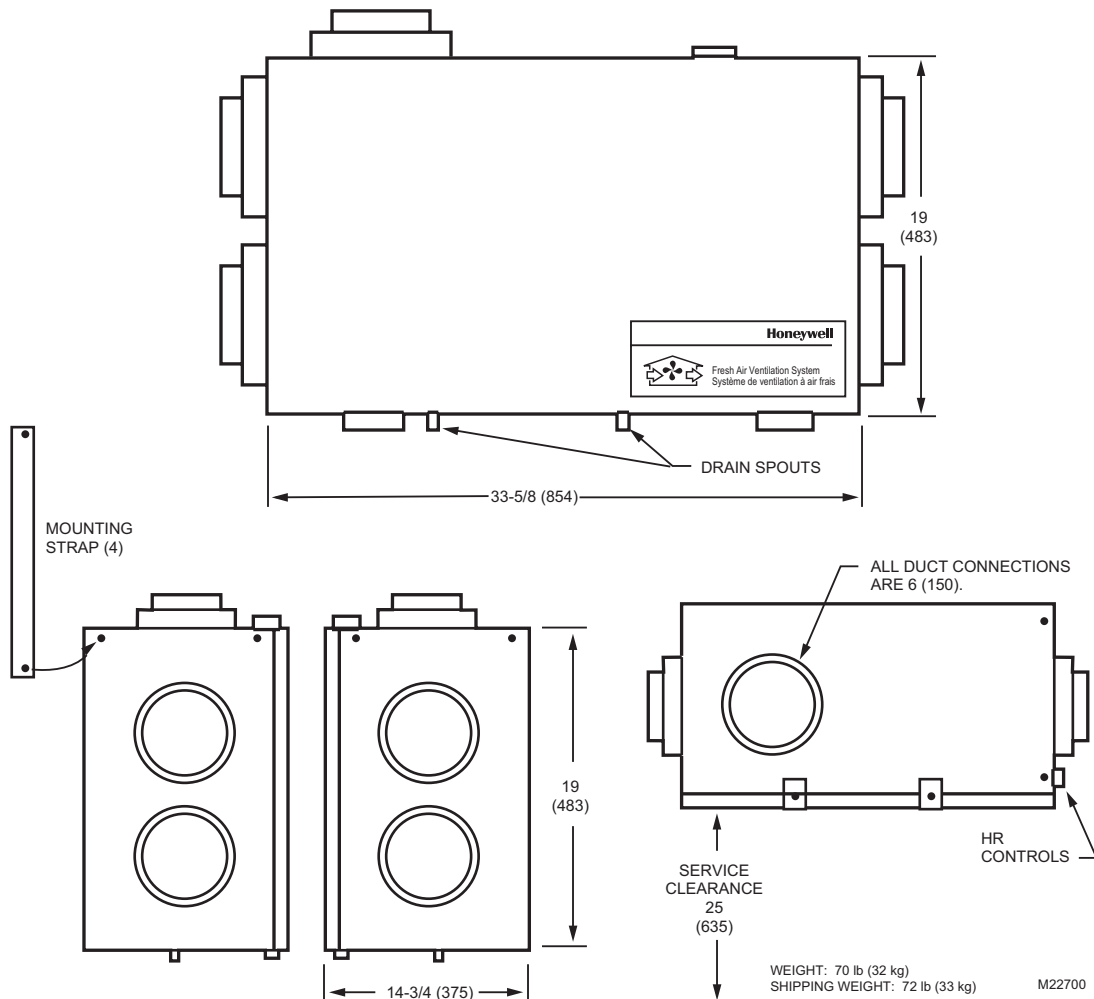


Fig. 1. Dimensions in in. (mm).

PLANNING THE INSTALLATION

Application

The Fresh Air Ventilation System is designed to supply fresh air and exhaust stale air. The system draws fresh outdoor air through the ventilator for distribution throughout the house. Stale air is exhausted through the ventilator to the outdoors. Heat is transferred from one airstream to the other as the air passes through the opposite sides of the heat transfer core. See Fig. 2.

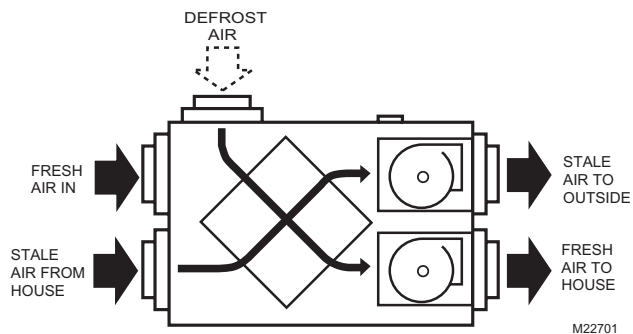


Fig. 2. Duct connections and airflow.

Mounting Position and Location

The fresh air ventilation system can be suspended from exposed ceiling joists, ceiling surface or floor mounted. (Level ventilator so drains function correctly.)

- Locate fresh air intake 6 ft (2m) or more from stale air exhaust to prevent exhaust air from re-entering.
- Locate ventilator where length of ducting required is minimal.
- Pipe drain line from the ventilator to a drain.
- Allow space for drain line by placing the ventilator at least 10 in. (254 mm) off the floor.
- For access and removal of ventilator core, allow at least 25 in. (635 mm) of open space in front of unit.

Ducting

Ducting between the ventilator and the outdoors must be insulated and have a continuous air vapor barrier. See Fig. 3.

IMPORTANT

All ducting to the outdoors must be terminated above anticipated snow lines and be fitted with a weather cap that incorporates bird screening.

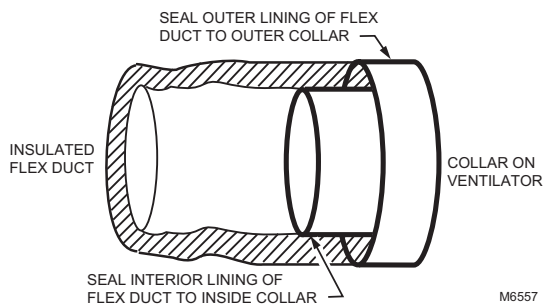


Fig. 3. Sealing insulated duct terminations.

Design and installation of ductwork must be according to standard HVAC practice to deliver required quantities of fresh air to temperature-controlled space and exhaust equivalent quantities of room air to the outside.

Keep intake and exhaust duct runs as short as possible with few bends or elbows.

- Keep duct sizes as large as possible throughout the installation.
- Use a 6 in. diameter round duct for all connections to and from the ventilator.
- Separate outside intake and exhaust vents by at least 6 ft (2m).

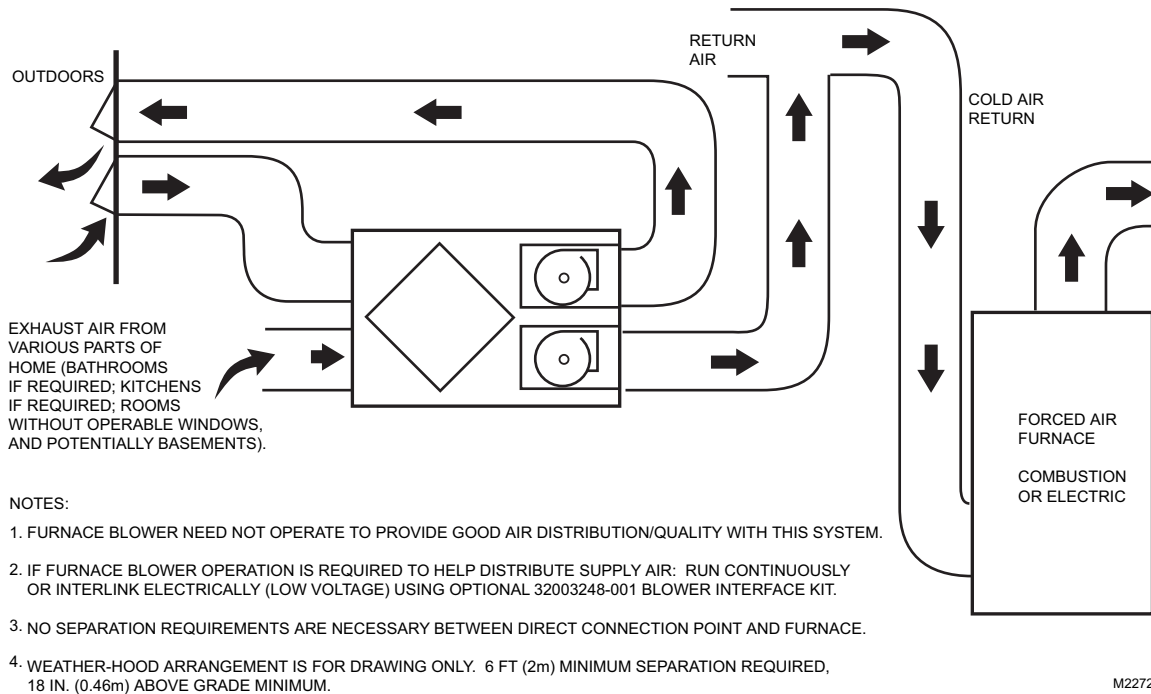
NOTES:

- Do not locate the fresh air vent where it blows directly onto occupants or the thermostat.
- Do not locate the fresh air intake close to known sources of pollutants such as automobile exhaust, a dryer vent or chimney smoke.

- Ducting the supply outlet and/or the exhaust inlet of the ventilator to the return air plenum of the air handler is an excellent way to distribute fresh air and exhaust stale air from all parts of the house, while reducing installation costs. When choosing this method, balance the ventilator when the air handler is running and interlock the ventilator so that it can run only when the air handler runs. See Fig. 4. An alternate method is to balance the ventilator when the air handler is not running and let the ventilator run whether the air handler is running or not, see Fig. 5. An independent installation is shown in Fig. 6.

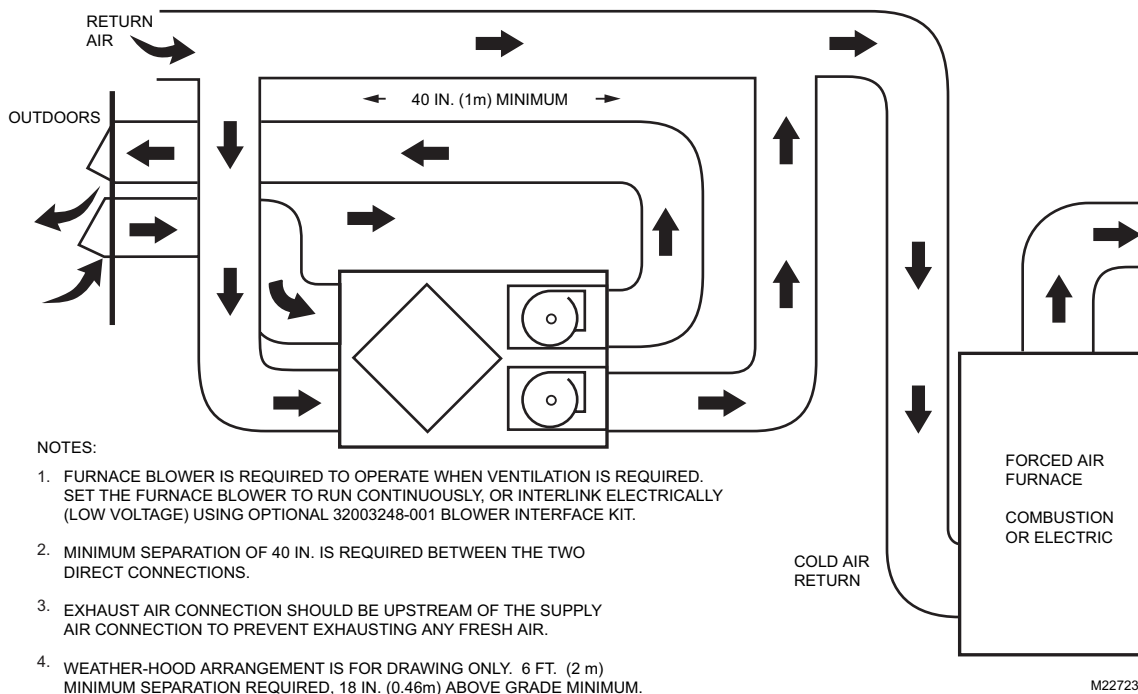
NOTE: When the home is occupied, continuous operation of the ventilator is recommended. When the furnace air handler operates, fresh air is distributed through the heating/air conditioning supply registers. When the air handler is off, fresh air is delivered through both supplies and returns.

- An electrical interlock and an automatically powered damper must be used to prevent unwanted entry of outside air if the ventilator is turned off while the furnace air handler continues to operate.



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Fig. 4. Direct connection of supply air stream to furnace cold air return.



M22723

Fig. 5. Direct connection of ventilator supply air stream and exhaust air stream to furnace cold air return.

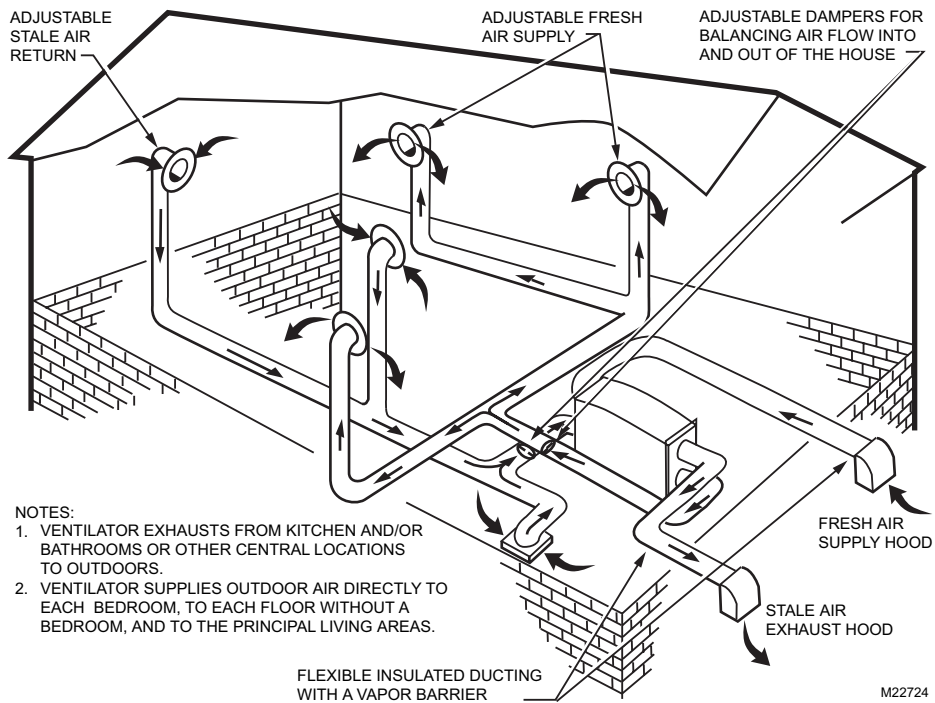


Fig. 6. Independent ventilator installation.

Balancing Airflow

Balancing the airflow verifies that the Fresh Air Ventilation System is delivering the intended airflow and energy performance. Use the Airflow Balancing instructions in the Installation section to check and balance the airflow.

Controls

Remote Override Switch Functions On/Off Control

If continuous ventilation is not required, an on/off control can be used to activate the ventilator when it is switched to Standby. Controls that can be used for this function include dehumidistats, timers and wall switches. If moisture control in bathrooms is a primary function of the system, a dehumidistat can be used to switch the ventilator from a Low or Standby setting to the High setting. Moisture removal throughout the entire home can only be achieved when the outside air contains less moisture than the inside air (typically during cold weather conditions).

Moisture Control

When a building is new, there is excess moisture in the wood, plaster, cement and other construction materials. When the new building is occupied, the activities of the occupants also increase the moisture level. There can also be high levels of formaldehyde and other chemicals that were used in the building materials. Running the ventilation system on high speed provides optimum indoor air pollutant reduction. High speed also provides maximum moisture removal when the outside air contains less moisture than the inside air. (Typically during cold weather conditions.)

Operating Damper Frost Control

Some models have an electronically-controlled damper frost control mechanism. When the outside temperature drops below 27°F (-3°C), the defrost timer is activated. At the end of the 17 minute run cycle, when the core can experience some nominal frost buildup, the timer activates a motor-driven damper door that simultaneously opens the defrost port and closes off the supply air port. At the end of the 4.5 minute defrost cycle, the damper operates in the opposite direction and ventilation is resumed. The cycles continue until the outdoor temperature rises above the defrost temperature.

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow these instructions could damage the product or cause a hazardous condition.
2. Check the ratings on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.



CAUTION

Electrical shock hazard.

Can cause personal injury or equipment damage.

Disconnect power supply to prevent electrical shock or equipment damage.

Unpacking Fresh Air Ventilation System

Check that all the components are included. The Fresh Air Ventilation System is shipped assembled. The carton contains the following:

- Fresh Air Ventilation System.
- Vibration isolation straps (4).
- Drain fittings (2) and T fitting (1).
- Literature package.

Except for the mounting hardware and drain fittings, the ventilator is ready for installation. Wiring, drain connections and ducting are required to complete the installation.

Mounting

Suspended from Floor Joists

1. Mount the four vibration isolation straps (provided) to the side of the ventilator using the mounting screws located on the cabinet. See Fig. 2 and 3.
2. Securely fasten the other ends of the straps to the floor joists with wide-head nails (not supplied), making sure the unit is level. The straps are designed to reduce noise, resonance or harmonics; therefore, using the full length of the strap between the ventilator and the floor joists is recommended.

NOTE: Removing door and core reduces the weight of the ventilator, making it easier to lift into place.

Floor Mounting

The mounting hardware included is not needed for floor mounting.

1. Use 2 x 4 in. wood pieces to build a frame to support the ventilator along the bottom edge. The frame must hold the ventilator at least 10 in. up from the floor to allow clearance for the drain line.
2. Set the frame back approximately 2 in. from the front-edge to avoid interference with the hinged door.

3. Place the ventilator on the frame. Secure the ventilator to the frame using screws and a strip of wood or metal; screw into the side walls of the ventilator within 1 in. of the bottom.
4. Connect the drain lines to a drain; see Installing Drain Line and P-Trap section.
5. Connect the ventilator to the ducts.

Installing Drain Line and P-Trap

There are two holes at the bottom of the ventilator for the drain pan connectors.

1. Insert the connectors through the hole in the drain pan and the bottom of the unit.
2. Place the washer and nut on the connector.
3. Hand tighten the nut. See Fig. 7.

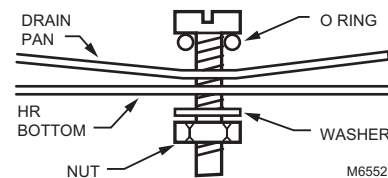


Fig. 7. Installing drain line.

Construct a P-trap using the plastic T-fitting provided.

1. Cut two lengths of 1/2 in. ID hose and connect each drain fitting to the end of the T-fitting.
2. Position the center leg of the T-fitting so it points upward.
3. Connect the drain line to the center leg and tape it in place to prevent any kinks. See Fig. 8.

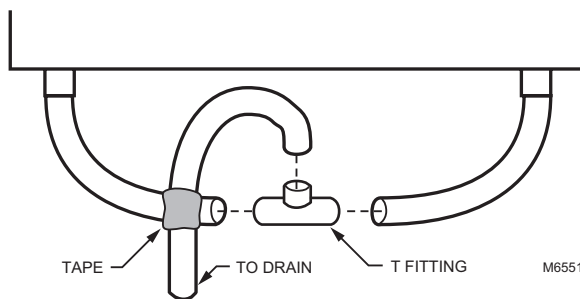


Fig. 8. Installing P-trap.

This creates a trap that will hold some condensation and prevent odors from being drawn up through the drain hose into the unit. If the unit is installed during a season when it is unlikely that condensation will form, fill the trap with tap water.

WIRING



CAUTION

Electrical Shock Hazard.

Can cause personal injury.

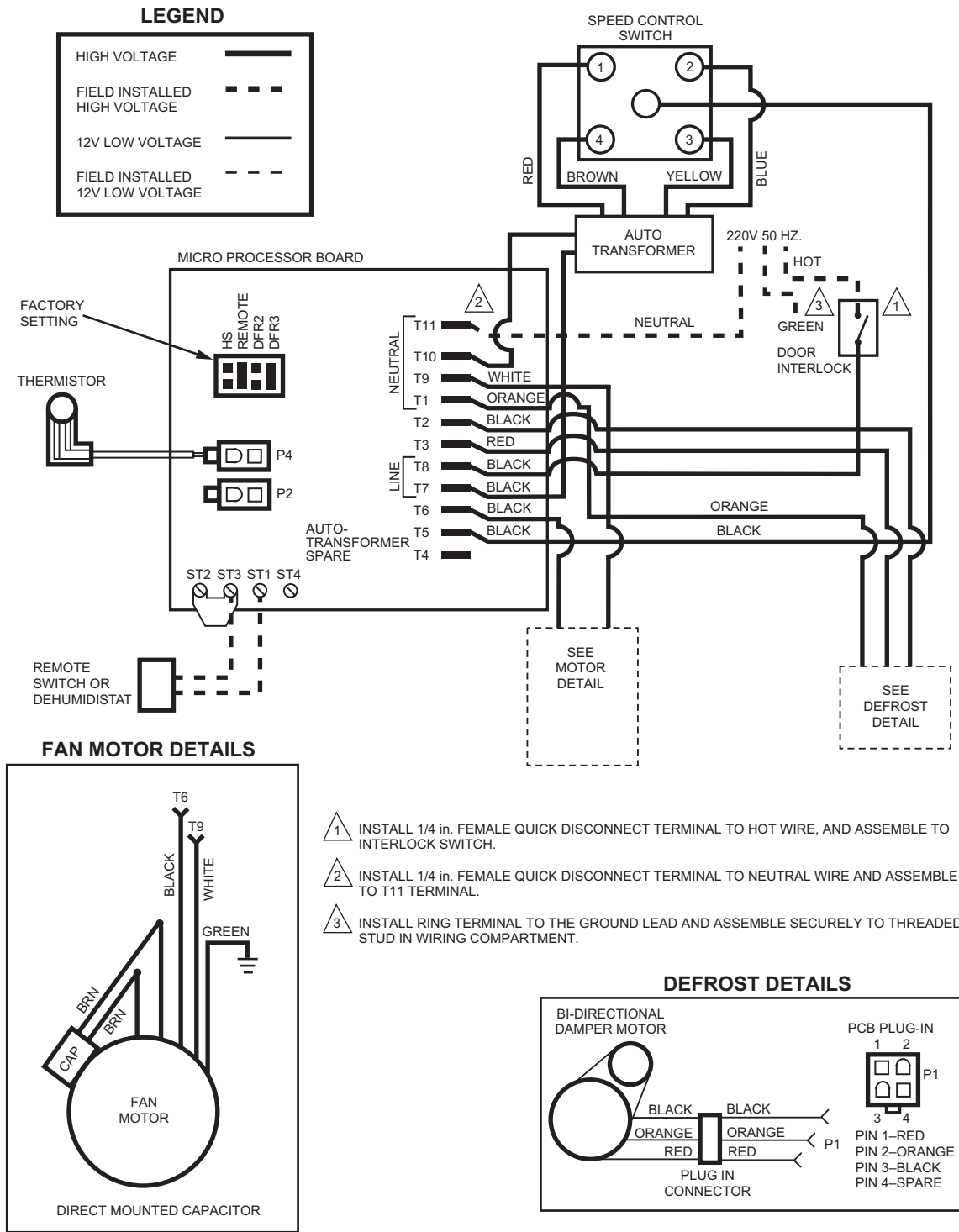
Be sure ventilator is correctly grounded.

Confirm polarity of power line switched with safety (disconnect) switch when cleaning or servicing unit.

IMPORTANT

Be sure to connect the hot line to the interlock switch. See Fig. 9. To confirm correct polarity, use voltmeter or test lamp to verify there is no power after the switch when the door is open. Check between that point and ground (on cabinet). This process must be used because occasionally some dwellings are incorrectly wired.

Connect line voltage to the ventilator according to Fig. 9. Honeywell recommends that a licensed electrician make all electrical connections. It is very important that the unit be correctly grounded.



M22720

Fig. 9. Internal schematic for fresh air ventilation systems.

Airflow Balancing

Volume-balanced airflow in the ventilator is required. Volume of outside air brought in must equal the volume of air the unit exhausts. If airflow is not correctly balanced:

- unit does not operate at its maximum efficiency.
- negative or positive air pressure can occur in the house.
- unit will not defrost properly.
- warranty can be voided.

Excessive positive pressure can drive moist indoor air into building external walls where it can condense (in cold weather) and degrade structural components. Moist indoor air can also cause keyholes to freeze.

Excessive negative pressure can have several undesirable side effects; in some geographic locations, soil gases such as methane and radon can be drawn into the home through basement/ground contact areas. Excessive negative pressure can also cause back drafting of vented combustion equipment when adequate combustion air supply is not provided.

Balancing Procedure

Six-inch (150 mm) diameter flow collars connected to inclined or digital manometer, or magnehelic, with range of 0 to .25 in. (0 to 62.5 Pa) of water are recommended for accurate airflow measurements. To avoid airflow turbulence and incorrect readings, flow stations should be located at a distant point of at least five duct diameters; for example, 6 in. (150 mm) duct requires five diameters x 6 in. (150 mm) = 30 in. (76 cm) from nearest valve or flow restriction. This requirement applies to both stale air to exchanger duct and fresh air to house duct.

Before balancing, make sure:

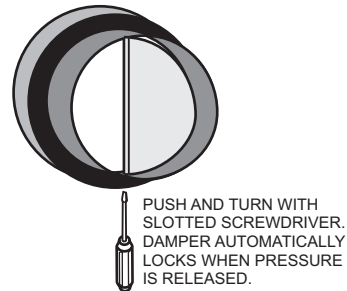
- all sealing of the ductwork system is completed.
- all of the ventilator system components are in place and functioning properly.
- balancing dampers are fully open.
- unit is on High speed.
- airflows in branch lines to specific areas of house are adjusted before balancing the unit. (A smoke pencil used at the grilles is a good indicator of relative airflow for each branch line.)

After taking readings in stale air and fresh air ducts, duct with lower cfm (L/s) velocity reading should remain as is, while duct with higher reading should be dampered back to match lower reading. See Fig. 10.

Return unit to appropriate fan speed for normal operation.

STARTUP AND CHECKOUT

After installation is complete, check to be sure system is working correctly. Turn speed-selection knob to desired position to set continuous background ventilation rate. Activate two-wire control devices in system to make sure devices switch ventilator to High speed. For operating instructions, see instructions packed with digital fan timer. Leave instructions with homeowner.



M13462

Fig. 10. Balancing airflow.

SERVICE

⚠ CAUTION

Electrical shock hazard.

Can cause personal injury or equipment damage.

Disconnect power to unit before starting maintenance.

For maximum efficiency, the Fresh Air Ventilation System must be maintained on a regular basis. Honeywell recommends checking and cleaning at least twice a year, preferably at the beginning of each heating and cooling season.

Cleaning Filters and Core

Remove the room air filter, fresh air filter and heat transfer core from the ventilator as a unit.

1. Open ventilator door by loosening draw latches on top of unit and swinging door open. For easier access, remove door by moving it right to disengage hinges.
2. Carefully grip ends of core, (be careful not to damage aluminum fins); then pull evenly outward. Core fits tightly, but slides out of channels.
3. Once core is removed, filters can be removed by removing clips holding them in place. Note clip installation for reassembly.
4. Wash the filters and the core in warm soapy water. Do not wash them in a dishwasher.
5. Place the clean filter (wet or dry) over the core and secure it in place with the clips.
6. Reinstall core by sliding it into the four corner channels. (Water cannot damage gasket and label on core ends, so it is not necessary to remove them from the core.)

Inspecting Exterior Hoods

Inspect exterior hoods at least monthly. Be sure exhaust and fresh air supply hoods are not blocked or restricted by leaves, grass or snow. In winter, be sure snow does not block hoods and frost does not accumulate on wire mesh bird screen.

IMPORTANT

Blocked hoods can cause house/building pressure change that can lead to possible combustion product spillage from heating appliances.

TROUBLESHOOTING (TABLE 3)

Table 3. Troubleshooting Guide.

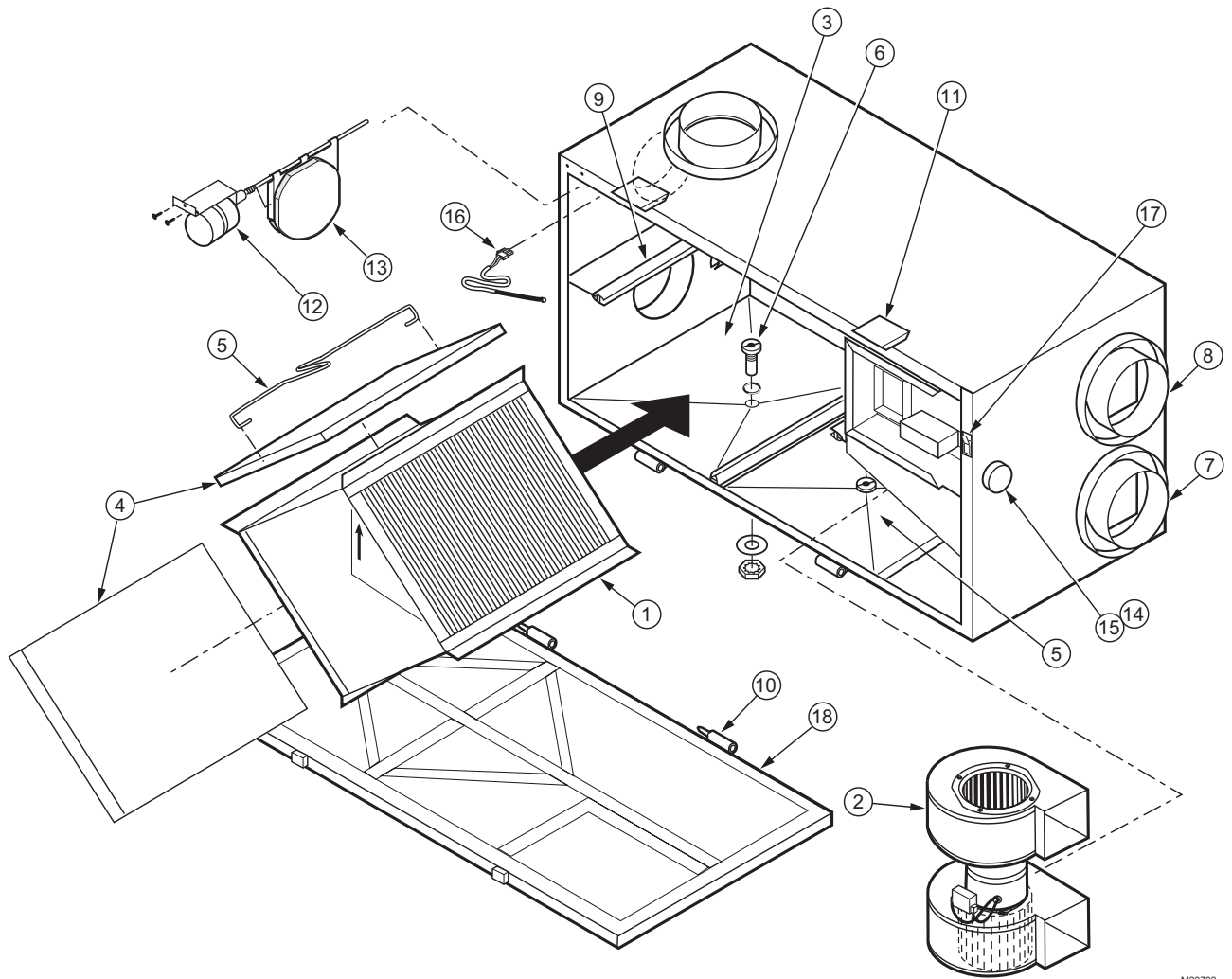
Symptom	Cause	Solution
Poor airflow	• Plugged outside hood 1/4 in. (6 mm) mesh.	• Clean exterior hoods or vents
	• Filters plugged.	• Remove and clean filter.
	• Core obstructed.	• Remove and clean core.
	• House grilles closed or blocked.	• Check and open grilles.
	• Dampers (if installed) are closed.	• Open and adjust dampers
	• Poor power supply at site.	• Have electrician check supply voltage at house.
	• Ductwork is restricting airflow.	• Check duct installation.
	• Improper speed control setting.	• Increase speed of ventilator.
	• Ventilator airflow improperly balanced.	• Have contractor balance ventilator airflow.
Supply air feels cold	• Poor location of supply grilles, airflow can irritate the occupant.	• Locate grilles high on walls or under baseboards; install ceiling-mounted diffuser or grilles to avoid blowing directly on occupants (example: over a sofa).
	• Outdoor temperature extremely cold.	• Turn down ventilator supply speed. Use a small duct heater (1kW) to temper the supply air. • Placement of furniture or closed doors is restricting movement of air in the home. • If supply air is ducted in furnace return, run furnace fan continuously to distribute ventilation air comfortably.
Dehumidistat is not operating	• Incorrect connection to external 24-volt control. • Staple/nail is shorting out external low voltage.	• Check that correct wires were used. • Check external wiring for a short.
	• Check dehumidistat setting; it could be at Off.	• Set dehumidistat at the desired setting.
Humidity levels are too high; condensation appears on windows	• Dehumidistat is set too high.	• Set dehumidistat lower.
	• Undersized ventilator (hot tub, indoor pool, etc)	• Cover pools and hot tubs when not in use.
	• Lifestyle of occupants.	• Avoid hanging clothes to dry, storing wood and venting clothes dryer inside. Consider moving wood outside.
	• Moisture coming into home from crawl space not vented or heated.	• Vent crawl space and place vapor barrier on floor of crawl space.
	• Moisture is remaining in bathroom and kitchen areas.	• Size bathroom ducts to remove moist air as effectively as possible; use bathroom fan to remove additional moisture.
	• Condensation is forming in spring and fall.	• On humid days, as seasons change, condensation appears but air quality remains high with some ventilator use.
	• Ventilator speed is set too low.	• Increase speed of ventilator.
Humidity levels too low	• Dehumidistat control set too low.	• Set dehumidistat higher.
	• Blower speed of ventilator is too high.	• Decrease ventilator blower speed.
	• Lifestyle of occupants.	• Increase humidity with humidifiers.
	• Ventilator airflow can be incorrectly balanced.	• Have a contractor balance ventilator airflow.
Ventilator and/or ducts have frost buildup	• Ventilator airflow is incorrectly balanced.	NOTE: Minimal frost build-up is expected on cores before unit initiates defrost cycle functions. • Check operation of dampers in exhaust vent; damper vanes may be held open or damaged. • Have HVAC contractor balance ventilator.
	• Malfunction of ventilator defrost system.	• Have HVAC contractor check defrost system.
Condensation or ice buildup in insulated duct to outside	• Incomplete vapor barrier around insulated duct.	• Tape and seal all joints. • Tape any hole or tears made in outer duct covering.
	• Hole or tear in outer duct covering.	• Ensure vapor barrier is completely sealed.

Table 3. Troubleshooting Guide. (Continued)

Symptom	Cause	Solution
Water in ventilator bottom	• Drain pans are plugged.	• Ensure O-ring on drain nozzle adjusted correctly.
	• Improper connection of ventilator drain lines.	• Look for kinks in line.
	• Ventilator is not level.	• Level ventilator.
	• Drain lines are obstructed.	• Check water drain connections.
	• Ventilator heat exchange not correctly installed.	• Make sure water drains correctly from pan.

EXPLODED VIEW DETAILS

Item Number (Fig. 11)	Description
1	Heat Transfer Core, Aluminum with Plastic Frame
2	Blower Housing Kit
3	Condensate Pan, Left or Right
4	Foam Prefilter, Set of 2
5	Clip for Foam Prefilter
6	Drain Spout
7	Duct Collar, Red
8	Duct Collar, Blue
9	H-Channel, 13-1/4 in.
10	Door Hinge, Complete
11	Door Latch, Complete
12	Defrost Damper Motor, Bi-directional
13	Defrost Damper Door
14	Speed Control Knob
15	Manual Speed Control, 5-Position
16	Thermistor Assembly
17	Door Interlock Switch
18	Door



M22702

Fig. 11. Exploded view.

Automation and Control Solutions

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