TOWNSHIP OF NORTHAMPTON
55 Township Road
Richboro, PA 18954
Building - Code Enforcement Department

Phone: 215-355-3883 Fax: 215-357-3650

FINISHED BASEMENT REQUIREMENTS IN EXISTING BASEMENTS FOR PLAN REVIEW AND APPROVAL

(Revised: March 2026)

Construction to Comply with International Residential Code 2021

Provide three (3) sets of construction documents along with plans and specifications, drawn to scale (1/4"), fully dimensioned, showing the entire basement area (finished and unfinished areas).

Show the use of all rooms and spaces, location of all doors/sizes, plumbing fixtures, lights/switches, mechanical ducts/sizes, stairs and handrails, windows, lally columns, and accessories, etc.

General Requirements to Aid in Plan Submittal:

All bedrooms in finished basements shall have an Emergency Escape and Rescue Opening in accordance with the minimum clear opening dimensions, location, height, exiting, etc., of the IRC, Section 310. An additional Emergency Escape and Rescue Opening is not required in any other rooms, spaces, or areas. "Bilco" style doors are acceptable for meeting this requirement. An insulated type of door is required at the opening through the foundation wall at all "bilco" style doors.

Signed and sealed structural details are required for openings through foundation walls and must show in detail how the existing structure is supported along with the wall or bulkhead construction, ladder or steps, drainage, and waterproofing.

Ventilation air is to be provided in each habitable room.

If operable window(s) are provided in any room, it must have a clear opening size of 4% of the floor area of that room. Otherwise, a mechanical ventilation system must be provided. This can be done by installing a 6" diameter metal-insulated duct from the outside to the room(s) with a barometric damper, bird screen, and rain hood. This should be extended into the room as far as possible to temper the air. In addition, install a fan(s) in each room ducted also to the exterior and wired to the room lighting. Locate the fan opposite of the intake air grill within the room. An alternative would be to install a whole house ventilation system or an energy recovery unit(s) (Panasonic Whisper Quiet ERV, or Diakin ERV, or equivalent.

Combustion air is to be provided for all liquid or gas-fueled appliances located in the basement area, usually in a separate mechanical/heater room. In newer houses, (mid-1998 and later), this was done by the builder. Just show the heater(s) and water heater, and the 1 or 2 combustion air ducts running from the outside to the top of the equipment. Depending on interior wall locations, these ducts may have to be extended into the mechanical/heater room. Houses built prior to mid-1998, a few items must be shown:

1. BTU input of the heater(s) and water heater;

2. Type of heater and water heater (oil or gas); and

3. Size of the mechanical/heater room and room adjoining this room, with this information, along with your basement plans. The department will inform you in determining the combustion air size and method of obtaining it.

The Plans Must Also Include the Following HVAC Information:

1. Heater and water heater location, with at least 30" in front for Servicing.

2. A door wide enough to allow the equipment to be replaced.

3. All heating or a/c supply and returns in ceilings or walls.

4. Bathrooms are to have their exhaust fan ducted to the exterior unless there is an operable window of 1.5 square feet. The fan duct is required to be 4" minimum diameter metal (no flex).

5. Heat loss calculations for heating and cooling that indicates the existing system is adequate for the finished basement and existing house, **to be prepared by an HVAC contractor and in accordance with ACCA Manual J or other approved method (IRC M1401.3).**

Provide a Section Detail of the Basement at the Existing Foundation Wall, Showing the Following:

Refer to drawing.

1. Waterproofing type/manufacturer/specs. If house was built after mid-1998, this was already done by the builder.

2. New finished wall construction: metal studs/2X studs with p.t. plates and spacing (interior also).

3. Basement wall insulation: R-13 min. (PHRC Alternative Table 301 or IRC Table N1102.1.3) with vapor barrier. Wood-framed exterior walls such as walk-out basements are to be insulated to R-20 with vapor barrier.

4. Fire blocking at the top plate to the existing foundation wall usually done with ¾" plywood, 2X lumber, ½" drywall, mineral wool, or fiberglass insulation (must be tight-fitting and secured in place), or non-combustible caulk.

5. Install fire blocking in walls vertically every 10' with ½" drywall. Close off ends of all walls. Show locations on the plans.

6. All soffitts, dropped ceilings, concealed spaces, pipes, and ducts are to be fire blocked.

7. Ceiling height (7' min.) and its location (dropped/suspended or attached to joist above).

8. If the ceiling is suspended or hung below open web trusses, draft-stopping is required at 1,000 square feet areas. This is installed as a curtain hung down from the floor joists above to the top of the suspended ceiling. This can be done with ½" drywall. Seal around all ducts, pipes, beams, and wires.

Show the approximate location of draft stops on floor plan.

Provide an Electrical Plan Showing All Lights, Switches, and Receptacles:

Switches are required at the top and bottom of the stairs, along with a light at the top of the stairway or at the landing. This is not a review for electrical code compliance. The electrical contractor is required to obtain the required electrical inspections by an approved inspection underwriter.

Miscellaneous Items to be Shown or Specified:

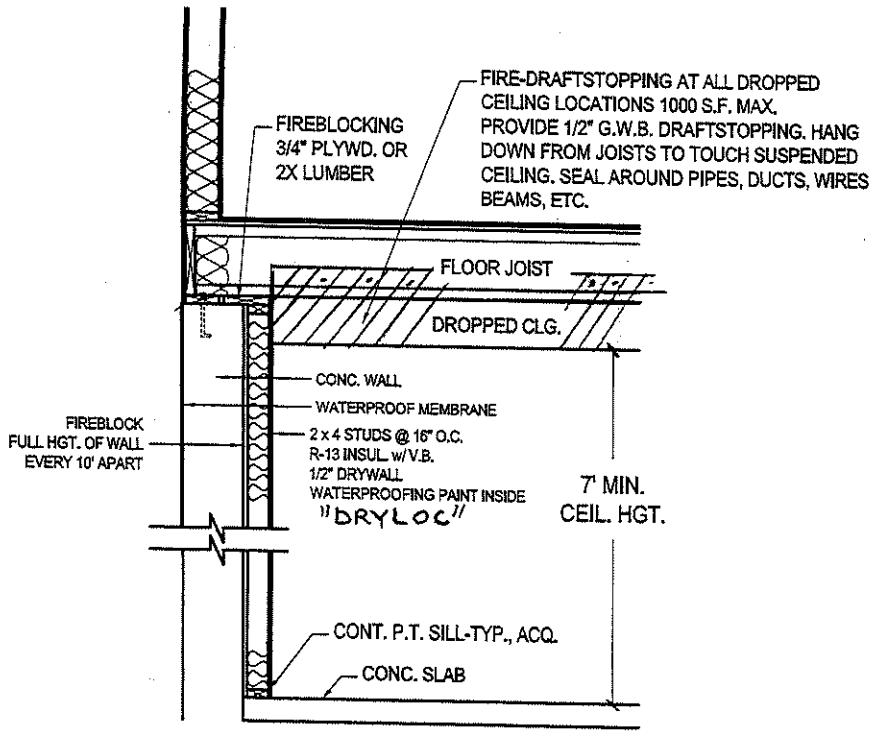
1. Smoke detector in the basement area.

2. Smoke detectors at each floor level in the existing house, in each bedroom, and immediately outside the bedroom area. These smoke detectors may be battery type.

3. Handrail 34" high up to first floor. If installing new rails, they must be continuous, except at landing turns (not winder treads) and be returned to the wall or post at the top and bottom.

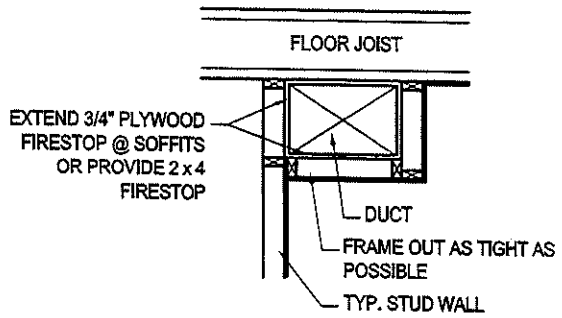
4. Open sides of stairs are to be provided with 34" high guardrails with balusters less than 4" spacing.

5. Carbon monoxide detector(s) outside all existing bedroom areas.



TYPICAL SECTION

SCALE: 3/8"=1'-0"

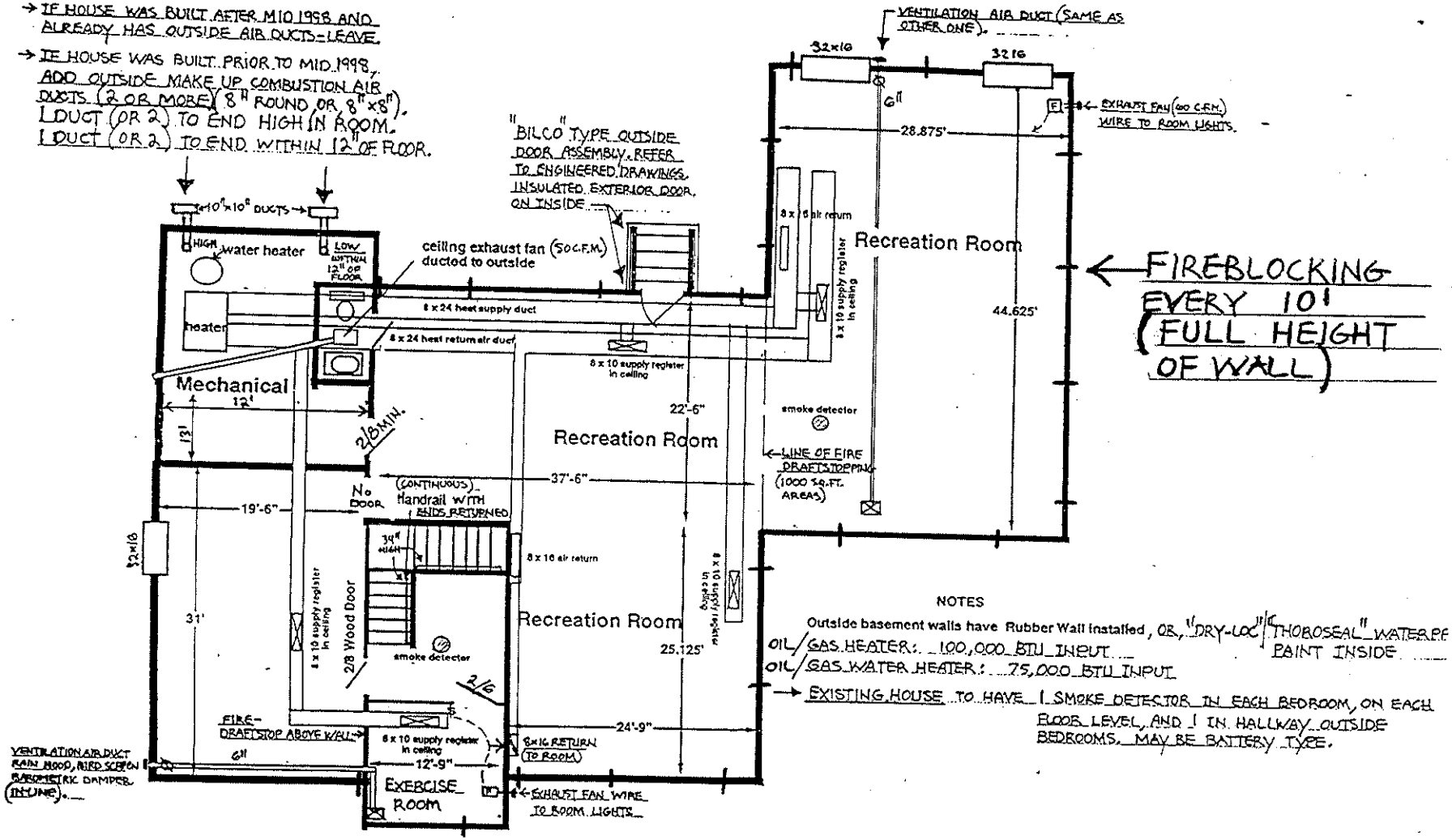


SECTION @ SOFFIT

SCALE: 3/8"=1'-0"

→ IF HOUSE WAS BUILT AFTER MID 1998 AND ALREADY HAS OUTSIDE AIR DUCTS - LEAVE.

→ IF HOUSE WAS BUILT PRIOR TO MID 1998, ADD OUTSIDE MAKE UP COMBUSTION AIR DUCTS (2 OR MORE) 8" ROUND OR 8"x8". 1 DUCT (OR 2) TO END HIGH IN ROOM. 1 DUCT (OR 2) TO END WITHIN 12" OF FLOOR.



NOTES

Outside basement walls have Rubber Wall installed, OR, "DRY-LOC" / "THOROSEAL" WATERPROOF PAINT INSIDE

OIL/GAS HEATER: 100,000 BTU INPUT

OIL/GAS WATER HEATER: 75,000 BTU INPUT

→ EXISTING HOUSE TO HAVE 1 SMOKE DETECTOR IN EACH BEDROOM, ON EACH FLOOR LEVEL, AND 1 IN HALLWAY OUTSIDE BEDROOMS. MAY BE BATTERY TYPE.

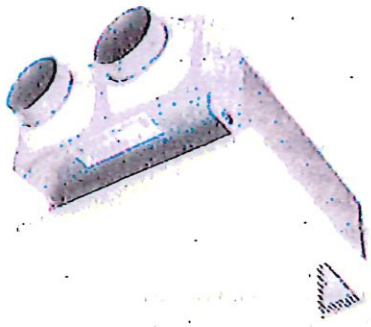
FINISH BASEMENT EXAMPLE (ELECTRICAL NOT SHOWN)

8/3

Panasonic

WhisperComfort™ Ventilation Fans

WhisperComfort VENTILATION FAN SpotERV



FV-04VE1 Two 4" Ducts

Panasonic WhisperComfort Spot Energy Recovery Ventilator (ERV) offers a revolutionary way to provide balanced ventilation. Affordable and easy to install, WhisperComfort is energy efficient and provides fresh ventilated air while maintaining Indoor Air Quality (IAQ).

- Spot balanced ventilation
- Low-rate continuous run ideal for multi-family dwellings
- Ideal for new air tight homes built to meet energy efficiency standards
- UL listed for ceiling or wall mount installation
- Exchange capillary core recovers heat, energy and moisture
- Balances air pressure inside the house

Whisper Comfort ERV
VENTILATION FAN

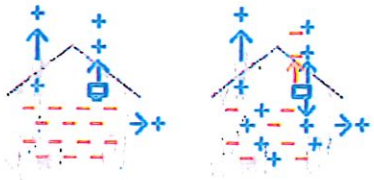
Balanced Ventilation

Tightly built homes and buildings utilizing exhaust only fans can create negative pressure. WhisperComfort solves this by supplying air to replace exhausted air, helping to balance air pressure within the home.

Panasonic WhisperComfort Spot ERV uses two 4 inch ducts – one to exhaust stale air and the other to supply fresh air from outdoors. Its low, continuous run ensures volatile organic compounds (VOC's) are vented out and replaced with fresh air.

WhisperComfort does not require connection to the Central HVAC or the addition of a condensation line. This 'Spot' ERV feature allows it to be installed in many places throughout the home to meet comfort, health and IAQ needs.

Tight Home Air Pressure



Without ERV With Spot ERV

Energy Recovery Core

Indoor and outdoor air passes through Panasonic's patented capillary core technology designed to transfer heat energy and moisture. This process tempers supply air while transferring moisture.

Motor Technology

Panasonic uses a single AC condenser motor to run two highly efficient blower wheels. The motor is totally enclosed to ensure long-life and continuous quiet operation..

Filters

Two filters clean exhaust and supply air before passing through the ERV core, extending the life of the core.

Grille Design

The contemporary, low profile grille design incorporates spring clips for easy removal.

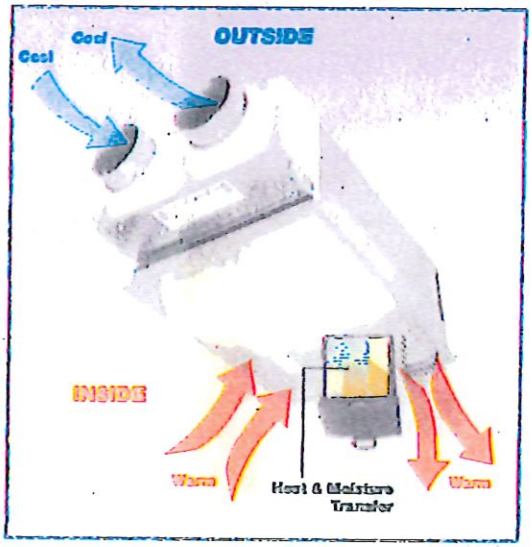
Spot ERV

WhisperComfort is a ceiling or wall-mount Energy Recovery Ventilator (ERV) that is ideal for a single large, open space room or for multistory homes' hallways. Two or even three WhisperComfort ERV's may be installed, often at a cost lower than a traditional whole building ERV that requires connecting to the Central HVAC System.

Ideal for: *Home Office / Game Rooms / Family Rooms / Bonus Rooms*

This is an affordable way to add ERV to a specific room or a new addition.

Spot ERV Technology



Whole House Spot

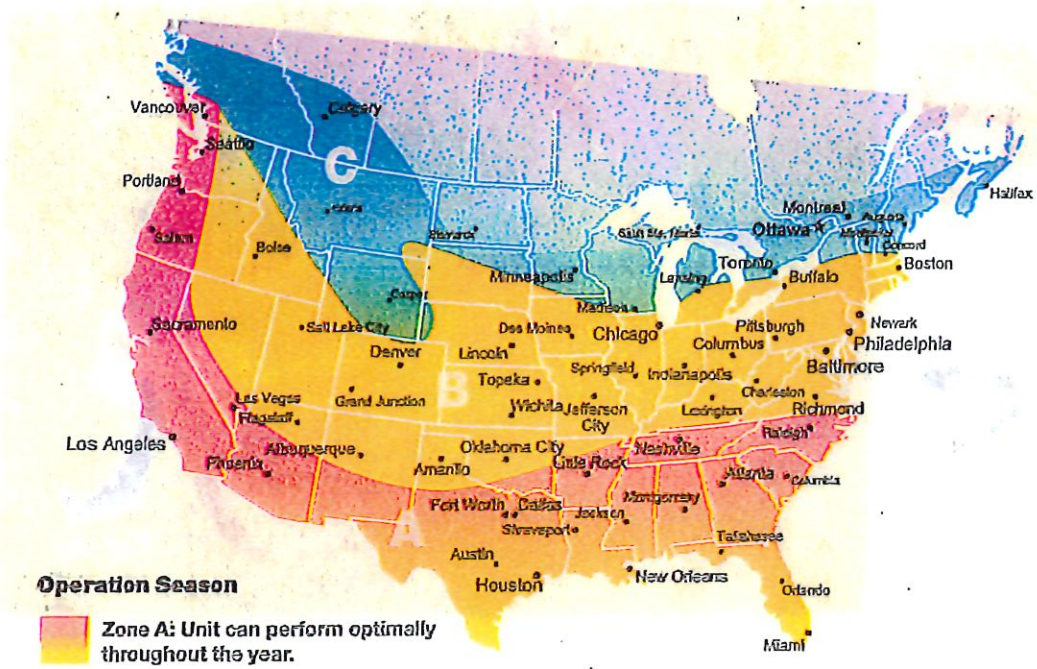
WhisperComfort is also suitable to meet whole house ventilation requirements under ASHRAE 62.2. WhisperComfort is an ideal choice when partnered with mini-splits or VRF Heat Pumps for fresh, balanced air with energy recovery which makes it a very affordable, cost-effective IAQ solution. The sizing charts on the next page provide a guideline for number of bedrooms and square feet. Additionally, two or even three WhisperComfort ERV's may be installed, often at a cost lower than a traditional whole house ERV.

Ideal for: *Condominiums / Apartments / Housing Authority properties / Hotels / Studio apartments*

ASHRAE 62.2 Standard

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) set a standard for whole house ventilation, requiring that continuous mechanical ventilation be 7.5 CFM per bedroom (master bedroom X 2) plus 1 CFM per 100 square feet, with some not to exceed 1.0. ASHRAE 62.2-2013 requires a ventilation rate of 7.5 CFM per person plus 3 CFM per 100 square feet. Please check with your local code to determine which ventilation standard you should follow. Panasonic WhisperComfort ERV is an affordable, efficient way to meet the ASHRAE 62.2 standard

Recommended Zones Map



Operation Season

- **Zone A:** Unit can perform optimally throughout the year.
- **Zone B:** Unit can perform optimally March through November.*
- **Zone C:** Unit can perform optimally April through November.**
- **Zone D:** Panasonic does not recommend this unit due to extremely cold year-round weather.

Note: This map is based on average temperature readings over 10 years from 60 major cities in North America.
Actual performance may vary depending on annual temperature differences and varying altitudes.
Visit www.ashrae.org/technology/page/1330 for the climate zone map adopted by ASHRAE.

*Alternates as balanced or exhaust only Dec-Feb when temperature is above or below freezing.
**Alternates as balanced or exhaust only Dec-March when temperature is above or below freezing.

SIZING

Spot Ventilation

Ventilation Capacity Requirements (ASHRAE 62.2-2010)			
10 CFM	Single Bedroom	Living room	Family room
20 CFM	Master Bedroom	Large Basement room	

Need to choose 10/20 CFM mode when installing.

Whole House Ventilation (IAQ)

ASHRAE 62.2 2010			
	1 Bedroom	2 Bedrooms	3 Bedrooms
20 CFM	500 sq ft.	N/A	N/A
40 CFM	2500 sq ft.	1750 sq ft.	1000 sq ft.

Need to choose 20/40 CFM mode when installing.

Sizing example 1 (based on ASHRAE 62.2):

TWO BEDROOMS at 1600 SQ. FT.

Master Bedroom (7.5 CFM x 2)	=	15 CFM
Second Bedroom	=	7.5 CFM
1600 SQ. FT. x .01	=	16 CFM
Total		**38.5 CFM**

Use WhisperComfort set at 40 CFM

Sizing example 2 (based on ASHRAE 62.2):

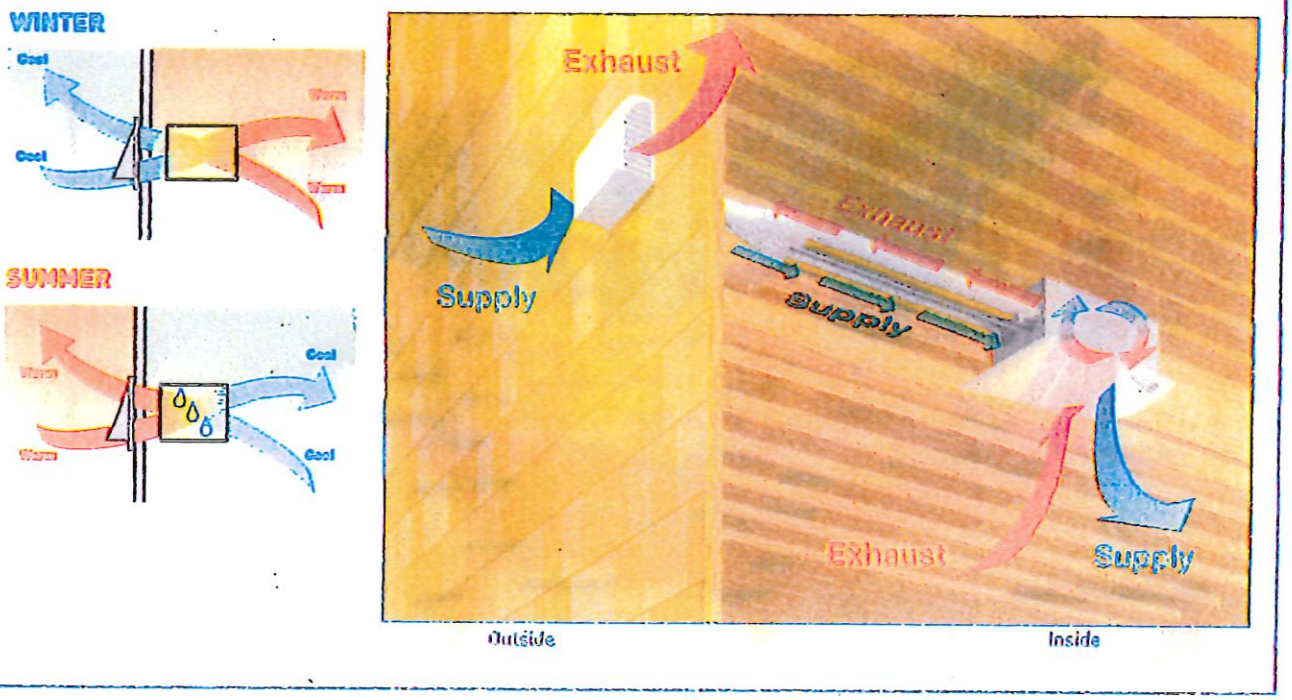
FOUR BEDROOMS at 2200 SQ. FT.

Master Bedroom (7.5 CFM x 2)	=	15 CFM
Other 3 Bedrooms (7.5 CFM each)	=	22.5 CFM
2200 SQ. FT. x .01	=	22 CFM
Total		**59.5 CFM**

Use 2 WhisperComfort or 1 WhisperComfort and 1 WhisperGreen®*

* WhisperGreen® are Panasonic exhaust fans with variable speed DC motor and built-in controls, ideal for both bathroom intermittent ventilation and whole house continuous run ventilation.

Balanced Ventilation With Spot ERV



[illegible]

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WhisperComfort has two 2-speed CFM settings

	High	Low
Setting 1	20 CFM	10 CFM
Setting 2	40 CFM	20 CFM factory preset

The factory setting is 40/20 CFM. To change to optional 20/10 CFM setting, move the plug connector located in the junction box to the 20 CFM side of receptacle. This step must be completed prior to installation.

[illegible]

WhisperComfort operates in an on/off and high/low mode. When the switch is turned off, the unit does not operate. When the switch is turned on, the unit will operate at the high or low mode. A duplex switch, designed for a single gang box, may be selected for switch operation. Switch labels are provided for convenience to attach to the selected switches.

Panasonic offers the FV-WCSW21-W/A(White/Almond) 2 function switch as part of the WhisperControl product line. This commercial grade on/off multiswitch can be used with the ERV, includes a designer wall plate and carries a 2-year limited warranty. This switch is sold separately.

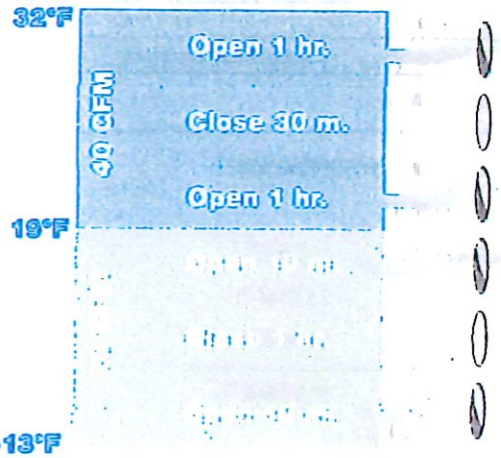
ON	OFF
HI	LO

Switch sold separately.

Frost Prevention Mode

WhisperComfort incorporates built-in frost prevention technology to avoid core freeze up.

- Above 32°F both exhaust and supply are fully functional
- From 32°F to 20°F the mechanical damper on the supply air closes for 30 minutes, then opens 1 hour at the set high/low mode. The cycle repeats itself to avoid core freeze up. (Exhaust only 30 minutes per 90-minute cycle)
- Below 20°F the mechanical damper on the supply air remains closed for 1 hour and opens 10 minutes at low mode. After 10 minutes the cycle will repeat or change if the temperature has risen above 20°F. (Exhaust only 60 minutes per 80-minute cycle)



INSTALLATION

Mounting
WhisperComfort is UL listed for ceiling or wall mount installation. It measures 14" wide and fits between joists 16" on center. Adjustable brackets and screws are provided to secure the unit to the joist on 4 corners.

Wiring
Power consumption is 23 Watts at 40 CFM with a power rating of 120/60 V/Hz. Bring house power to the unit junction box and use 3 wires to connect the 2 switches.

Duct
Insulated 4" duct is recommended. For cold climates, this will help avoid condensation build up. And for warm climates, this will help reduce heat transfer to supply air.

In order to reduce unnecessary airflow resistance, duct should be stretched straight and braced to avoid sagging. Assure that all duct connections are completely secured with duct tape and/or duct mastic material.

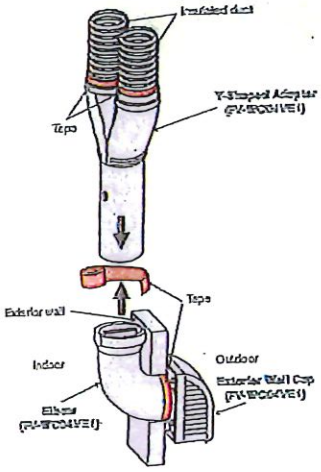
Termination/Supply Device
The supply device will need to have the back draft damper removed and replaced with a screen to prevent insects and small animals from nesting.

The termination and supply devices should be placed a minimum of 3-feet apart. If placed closer than 3-feet, then the angle of each device should be mounted at 45-degrees in opposite directions.

OPTIONAL ACCESSORIES

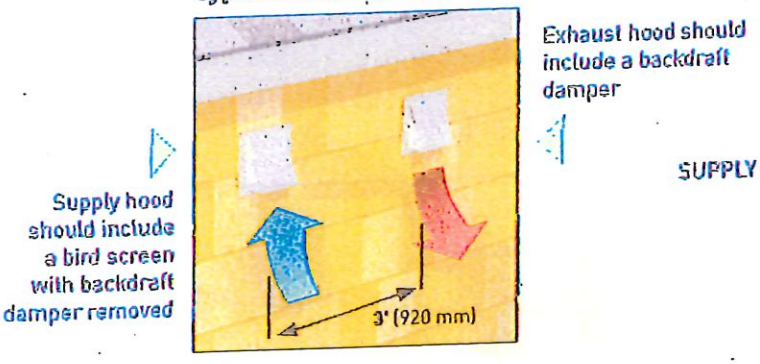
Exterior Wall Cap
Unlike previous installations where two wall caps were required, WhisperComfort's FV-WC04VE1 polypropylene wall cap accessory with styrofoam adaptor conveniently allows both exhaust (from the right) and supply (from the left) airflow through a 5.5"-5.75" hole in the building envelope. The dividers inside the bottom portion of the unique Y shape chamber and the new wall cap help prevent cross contamination.

To achieve optimum performance and air flow momentum, allow a 2-3 foot straight run of flex duct out of the unit before the first 90 degree bend. If you connect the ERV unit directly to the Y shaped adapter of the exterior wall cap, you can skip this step.

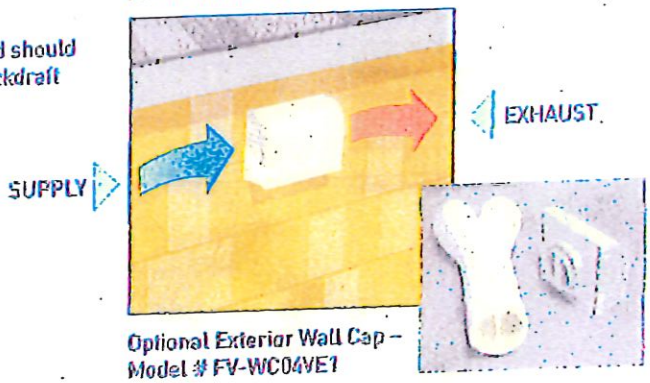


Elbow
Whisper Comfort's FV-EB04VE1 styrofoam elbow accessory connects to the Y shaped adapter of the exterior wall cap to help simplify wall installation. The elbow also features double chambers for exhaust and supply air to help prevent cross contamination.

Typical Wall Cap Installation



Alternative Panasonic Solution

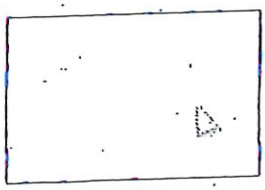


Optional Exterior Wall Cap – Model # FV-WC04VE1

MAINTENANCE (Cleaning)

Maintenance instructions can be found in the Operating Manual.

Grille
Follow the Operating Manual to remove the grille from the unit. Next, remove the filter from the inside louver of the grille. Never use gasoline, benzene, thinner or any other chemicals when cleaning the grille or ERV unit. Do not wash grille in a dishwasher which may cause it to deform. Instead, use light dish soap.

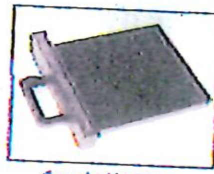


Grille

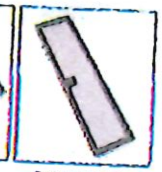
Exchange Capillary Core
Whisper Comfort's unique core is made from a paper-like material and should never be washed or submerged in water. To clean, vacuum with a soft brush attachment. To clean, use vacuum suction with a soft brush attachment. Do not use a vacuum to blow air through the ERV core as that may damage the core.

Filters

WhisperComfort has two air filters. One filter is located on the inside louver of the grille. The second filter is located in the unit held by a bracket with a handle. Pull the handle to remove the filter bracket and remove the filter from the bracket. Both filters should be vacuumed with a soft brush attachment.



Supply Air Filter



Exhaust Air Filter

Exchange Capillary Core

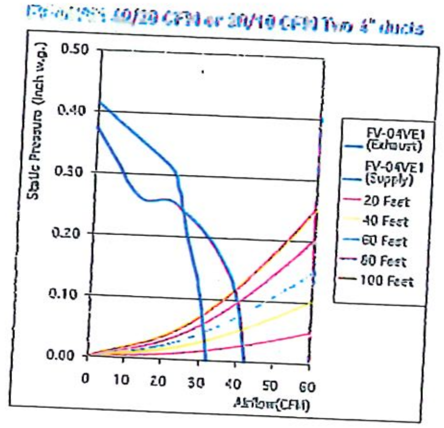
[illegible]

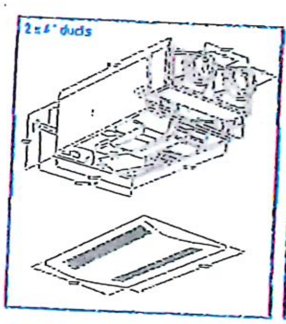
- Rust-proof paint treatment on galvanized housing
- Thermal fuse protection
- Meets Washington State Ventilation and Indoor Air Quality code and ASHRAE 62.2 - 2010
- 3 Year Warranty

Specifications		[illegible]		
		[illegible]	[illegible]	[illegible]
Characteristics	Static Pressure (Inches w.g.)	[illegible]	[illegible]	[illegible]
	Air Volume Exhaust (CFM)	[illegible]	[illegible]	10
	Air Volume Supply (CFM)	[illegible]	[illegible]	10
	Noise (sones)	[illegible]	[illegible]	[illegible]
	Power Consumption (Watts)	[illegible]	21	17
	Speed	1478	1202	[illegible]
	Current	0.15	[illegible]	[illegible]
	Power Rating (V/Hz)	[illegible]		
[illegible]	[illegible]	[illegible]		
	[illegible]	[illegible]		
	Thermal Fuse Protection	[illegible]		
	[illegible]	[illegible]		
Apparent Sensible Effectiveness	Heating [illegible]	[illegible]		
Total Recovery Efficiency	Cooling [illegible]	[illegible]		

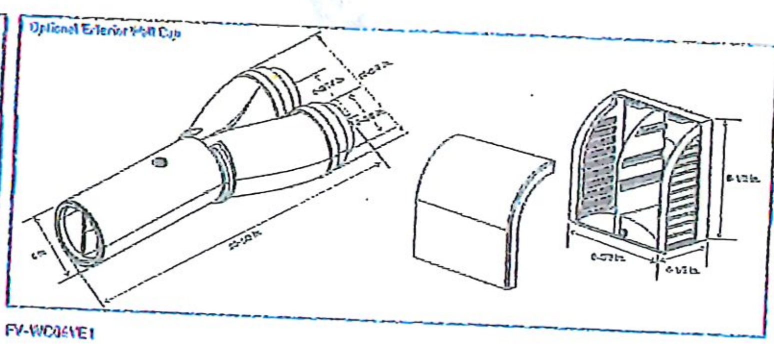
Note: CFM and sones are tested in accordance with HVI testing standards. Energy efficiency is tested in accordance with CSA-C439 standard.

N/A=not applicable
w.g.=water gauge
S.P.=static pressure

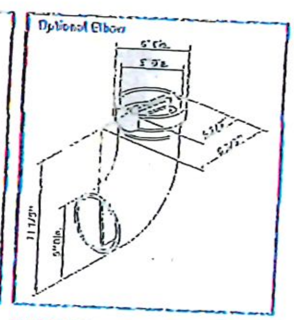




FV-04VE1



FV-WC04VE1



FV-EB04VE1

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