

ENERGY RECOVERY VENTILATOR		
MARK NUMBER	ERV-1 105 CFM	ERV-2
SYSTEM	DWELLING UNIT	CORRIDOR
CFM	85/105 CFM	40 CFM
CORE TYPE	MEDIA MEMBRANE	ENTHALPY PLATE
CONTROL	* CONTINUOUS	
HEAT	NONE	--
VOLTS-PHASE	120/1	120/1
AMP RATING	0.9	0.15
ESP (*H2O)	0.20	0.1
EFFICIENCY @64CFM & 95F	68%	36%
WATTS **	103	154/60
WEIGHT	40 LBS	40 LBS
BASIS OF DESIGN	BROAN** ERV5100S	PANASONIC FV-04VE1

\* PROVIDE V620W, 20 MINUTE PUSH BUTTON TIMER, PROVIDES HIGH SPEED VENTILATION. UNIT TO RUN AT 65 CFM CONTINUOUS, AND 105 CFM IN BOOST MODE.  
\*\* ELECTRICAL DATA LISTED FOR REFERENCE ONLY. COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

Duct Pressure Drop Calcs (worst case unit)									
Size inches	cfm	Length ft	# Elbows	Pressure Elbows inches/h20	Termination Fittings(h20)	Total Eq Friction Length in/100'	Total Pressure Drop of Eq Length "H20	Total with "H20	Fittings "H20
4	---	0	0	0	0.08	0	0.4	0	0.09
6	ERV 105	70	10	0.010	0.2	70	0.1	0.07	0.372
6	ERV	65	70	10	0.004	0.15	70	0.038	0.216
8		0	0	0	0	0	0.4	0	0

Fittings pressure Loss									
Duct size inches	CFM	Velocity ft/min	Fitting coefficient	Pressure in/h20	Eq length of elbow (Reference)				
4	0	0	0.57	0	0				
6	105	534.7606	0.57	0.010162	10.16222094				
6	65	331.0423	0.57	0.003894	10.24833138				
8	0	0	0.57	0	0				

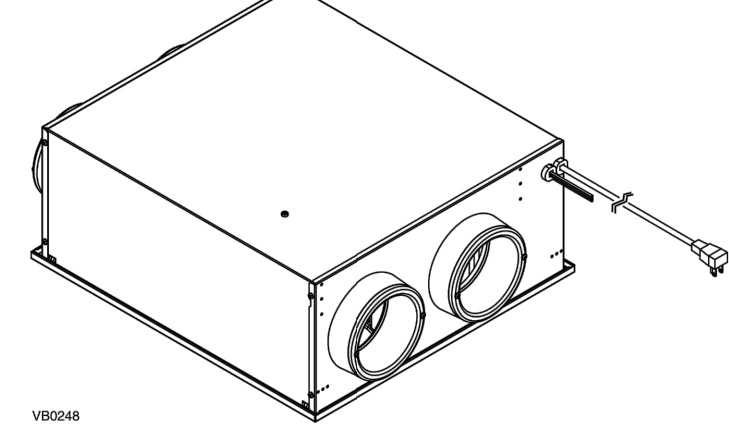
**EQUIPMENT CAPACITY VERIFICATION**  
THE ERV IS RATED FOR 105 CFM AT 0.4" OF STATIC - DESIGN CONDITION OF WORST CASE UNIT IS 0.372"(HIGH SPEED) & 0.216" (LOW SPEED). MINIMUM REQUIRED VENTILATION FOR THE TWO BEDROOM UNIT IS 60 CFM AND A ONE BEDROOM IS 45 CFM.  
MINIMUM EXH CFM FOR A 1 BATHROOM UNIT IS 45 CFM AND A TWO BATHROOM UNIT IS 65 CFM. THE ERV FOR ALL UNITS WILL OPERATE AT 65 CFM CONTINUOUS AND BOOST TO 105 CFM WITH WALL SWITCH (20 MINUTE TIMER).



FULL SIZE INTEGRAL ACCESS PANEL FOR ERV S-100 UNIT ACCESS DOOR IS ALSO CEILING ACCESS PANEL. UNIT INSTALLED IN A NON-RATED CEILING. ACCESS DOOR CONTAINS FAN CUT-OFF SWITCH (FAN DISCONNECT) TO ALLOW SERVICE OF ERV.



**BROAN™ ERV5100**  
Part no. ERV5100S  
65-105 CFM (0.4 in. w.g.)



**THE FRESH AIR SOLUTION FOR SOUTHERN REGIONS**  
The Broan ERV5100 is an effective, balanced ventilation solution designed specifically for homes in southern regions. The ERV5100 provides a continuous supply of fresh air to the home while exhausting stale air and pollutants. Plus it manages excess moisture - making it a centerpiece for tightly-constructed, energy efficient homes in hot and humid or dry climates.

- 65 to 105 CFM at 0.4 in. w.g.
- Energy recovery core recovering up to 51% of the excess moisture and up to 71% of the apparent heat or coolness.
- Built-in humidity sensor limiting the ventilation during periods of excessive outdoor humidity levels contributes to maintain a comfortable living area and mitigate the risks of mold growth.
- Exclusive bracket system providing a faster and easier installation in the ceiling, an attic or in a closet. See the Installation and User guide for more details.
- Integrates with existing forced-air furnace ducting for easy installation but runs independently to limit energy consumption related to ventilation.
- Built-in damper on fresh air supply port to prevent outdoor air infiltration when the unit is turned off.
- Integrated control to easily set the unit at installation.

**REPAIRS AND MAINTENANCE**  
All parts requiring maintenance can be removed in less than 5 minutes allowing easy access for repairs. The PSC motors are permanently lubricated.

**WARRANTY**  
The BROAN™ ERV5100 is protected by a 5-year warranty on parts only. The energy recovery core is covered by a 5-year warranty, with the original proof of purchase.

**Product balancing**  
The ERV5100 is equipped with 2 high static pressure blowers and is factory balanced. Once installed, the ERV5100 will remain balanced (within a 10% total difference between the exhaust and supply airflows) when the static pressure difference between the exhaust and the supply remains below 0.2 in. w.g. No balancing dampers are required when this condition is met.

**Filters**  
- 2 washable filters, 20 PPI  
- MERV 8 optional filters, part V21030.

**Defrosting system**  
Unit performs a negative defrost during 10 minutes every 20 minutes when outdoor temperature is below 14°F, and 10 minutes every 10 minutes below -4°F.

**Energy Recovery Core**  
Material: Polypropylene paper  
Type: Cross flow  
Warranty: 5 years

- Options**
- Broan VTYIK1 Tandem transition (requires an additional backdraft damper, not included)
  - Broan V820W 20-minute push-button control
  - Broan 69V Single-Function Control, Ivory (Dry contact standby switch)
  - Broan 69W Single-Function Control, White (Dry contact standby switch)
  - Broan 634H black exhaust roof cap 6" with backdraft damper and bird screen
  - Broan 643B black exhaust wall cap 6" with backdraft damper and bird screen
  - Broan 641 aluminum exhaust wall cap 6"
  - Broan 641FA aluminum inlet wall cap 6" with bird screen
  - Broan CV6G interior inlet plastic grille 6"
  - Broan CV6L mounting sleeves for inlet grille CV6G
  - Broan CVL6 sleeve with 6" backdraft damper

- Requirements and standards**
- Complies with the UL 1812 requirements regulating the installation of Energy Recovery Ventilators;
  - HVI certified;
  - Airflow and energy recovery performance tested in accordance with CSA C439 standard.

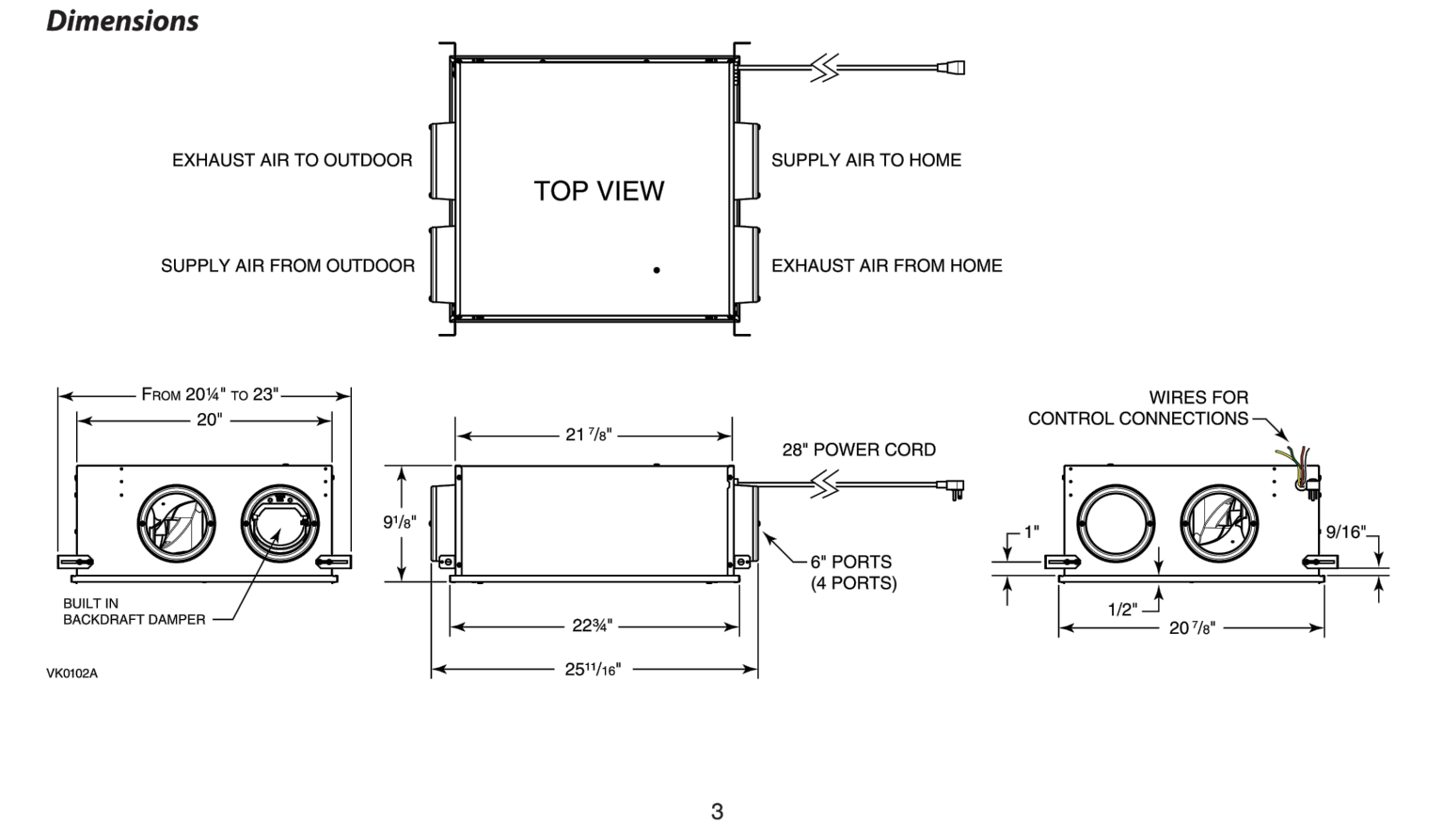
**Noise level**  
0.4 sone @ 105 cfm at grille with 5' of flexible ducting (tested in accordance with ISO 5136 and HVI 915).

**Specifications**  
Model: Broan ERV5100  
Part number: ERV5100S  
Total assembled weight including packaging: 40 lb.  
Energy recovery core:  
Type: Cross flow  
Media membrane: Polypropylene paper with aluminum  
Core filters: 2 washable filters 20 PPI  
Optional MERV 8 filter kit, part no. V21030  
Housing material: galvanized steel 22 ga  
Door and door frame material: White pre-painted steel 20 ga  
Insulation material: Molded Expanded polystyrene, UL certified for Energy recovery ventilators requirements  
Supply and exhaust blower motors:  
- PSC motors  
- Protection type: Thermally protected  
- Lock rotor electronic detection stops unit if motor failed  
Installation brackets included with the unit, allow attic, flush to ceiling and under-ceiling installations. Unit must be installed with the door facing up or downward. No vertical installation allowed.

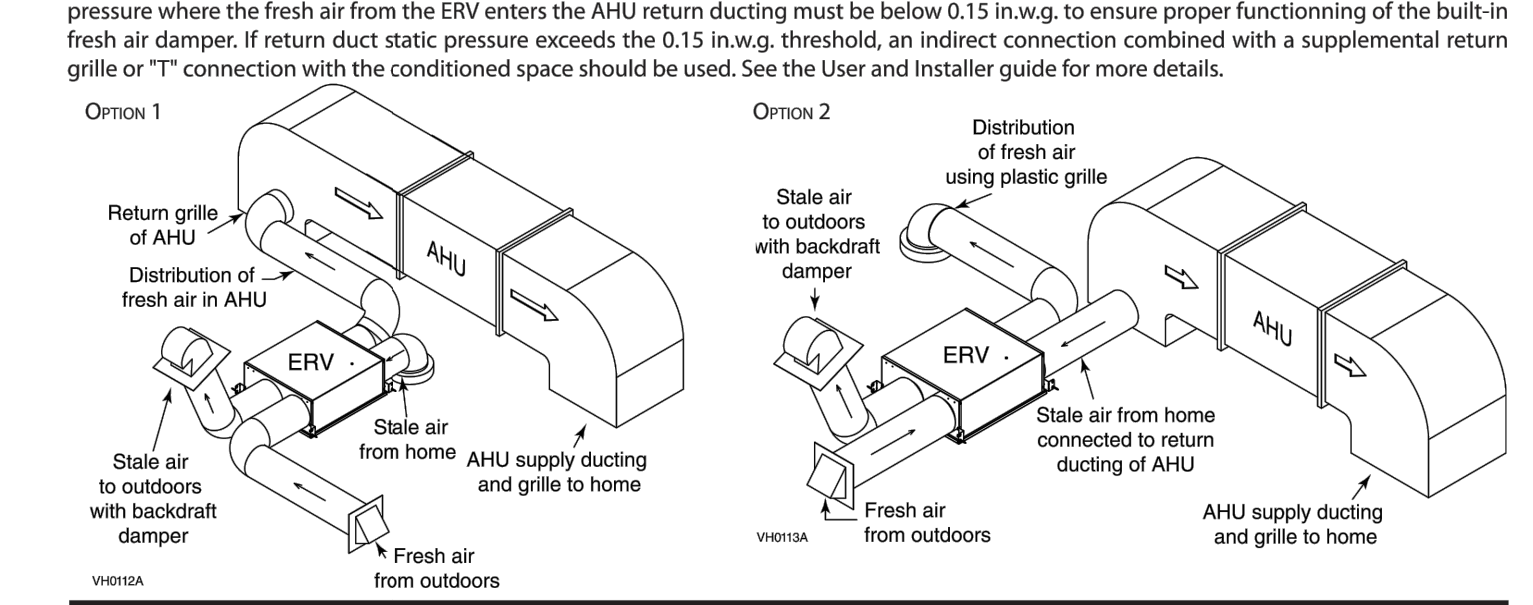
**Unit electrical characteristics**

- Power cord 28" with 3-prong plug
- Volts: 120
- Frequency: 60 Hz
- Amps: 0.9
- Watts: 103

Low voltage connections for optional controls energized by unit



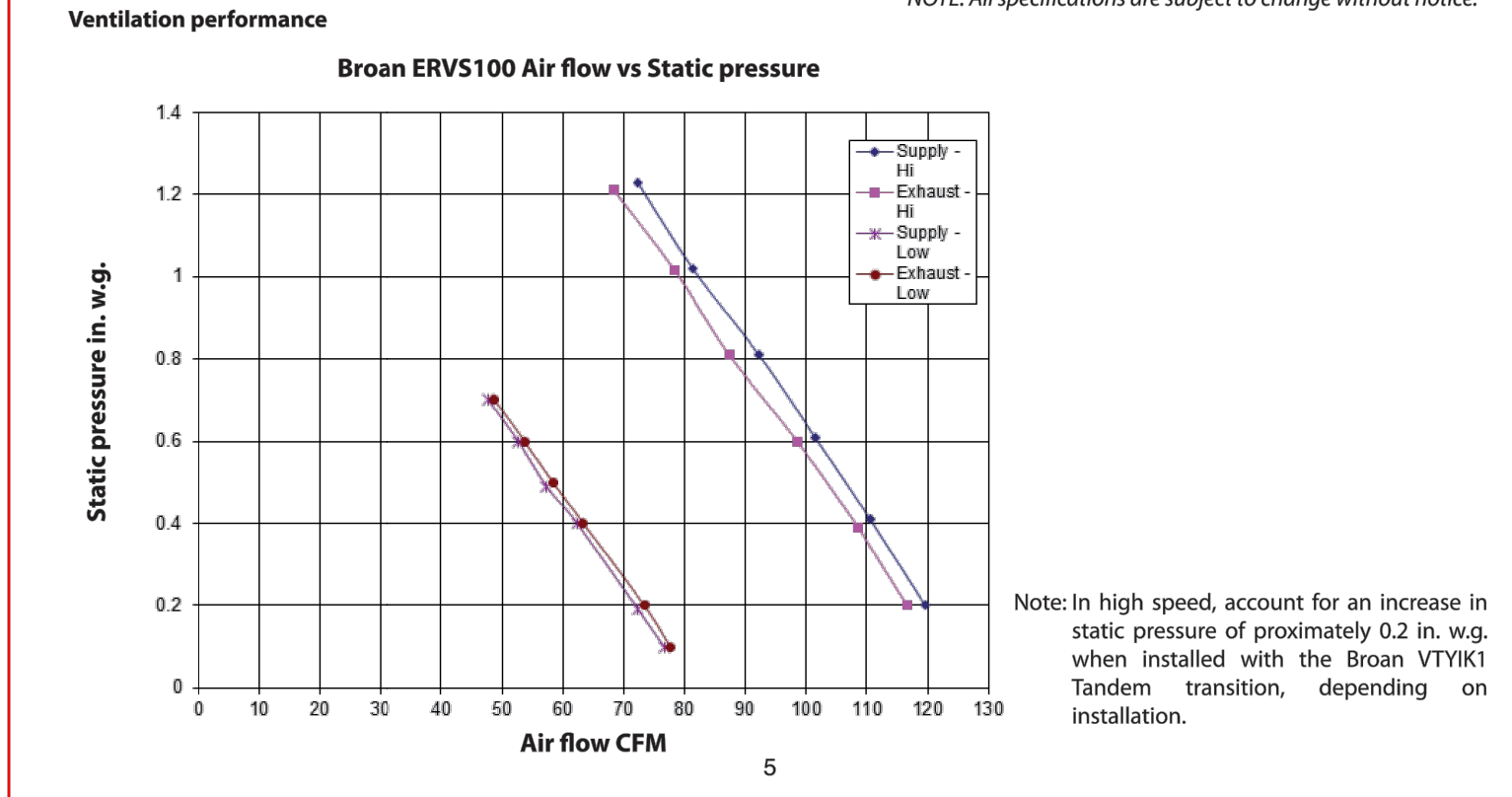
**Combining with an AHU**  
Recommended configurations  
Option 1 - When the distribution of fresh air from the ERV is connected to the return of an AHU (such as in the image below, on the left), static pressure where the fresh air from the ERV enters the AHU return ducting must be below 0.15 in.w.g. to ensure proper functioning of the built-in fresh air damper. If return duct static pressure exceeds the 0.15 in.w.g. threshold, an indirect connection combined with a supplemental return grille or "T" connection with the conditioned space should be used. See the User and Installer guide for more details.



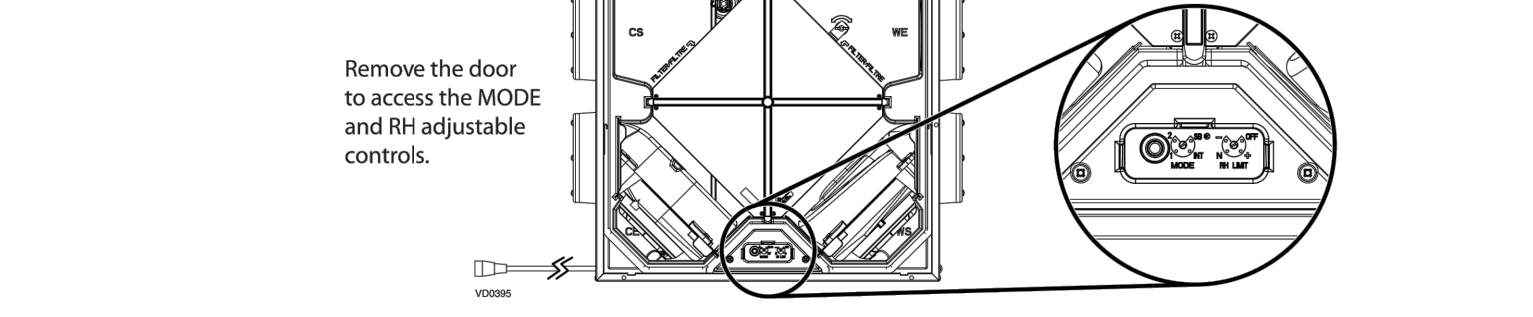
**Energy performance ERV5100**

Supply Temperature	Net Air Flow	Power Consumed	Sensible Recovery Efficiency	Adjusted Sensible Recovery Efficiency	Apparent Sensible Effectiveness*	Latent Recovery Moisture Transfer†	Total Recovery Efficiency	Adjusted Total Recovery Efficiency
°F	CFM	Watts	%	%	%	%	%	%
95	64	46	64	68	62	45	48	51
95	106	103	64	68	55	35	38	41
32	64	46	64	68	71	51	51	51
32	106	103	57	63	67	42	42	42

\* Data not certified by HVI.  
† NOTE: All specifications are subject to change without notice.



**Mode and RH Adjustable Controls Location**



**Relative humidity limit**  
The ERV5100 monitors the outdoor air conditions (temperature and humidity level) every 10 minutes with a built-in sensor. When the outdoor conditions are above the set limits, the unit will limit the ventilation to 10 minutes per hour and come back to its previous setting when the conditions get back to the set limit. The accepted RH limit varies in function of the outdoor conditions and can be adjusted to 4 different positions:

Position	Description	Outdoor temp. <73°F	Outdoor temp. ≥73°F
OFF	Relative humidity limit is deactivated.	-	-
+	Higher relative humidity limit.	Up to 60%	Up to 80%**
N	Factory set relative humidity limit.	Up to 55%	Up to 75%**
-	Lower relative humidity limit.	Up to 50%	70%**

\* The RH limit of distributed air is calculated at 75°F.  
\*\* When the outdoor temperature is equal or above 73°F, the maximum relative humidity level accepted is higher considering that the air conditioning will partly dehumidify the incoming fresh air after it is distributed and mixed with the conditioned indoor air.

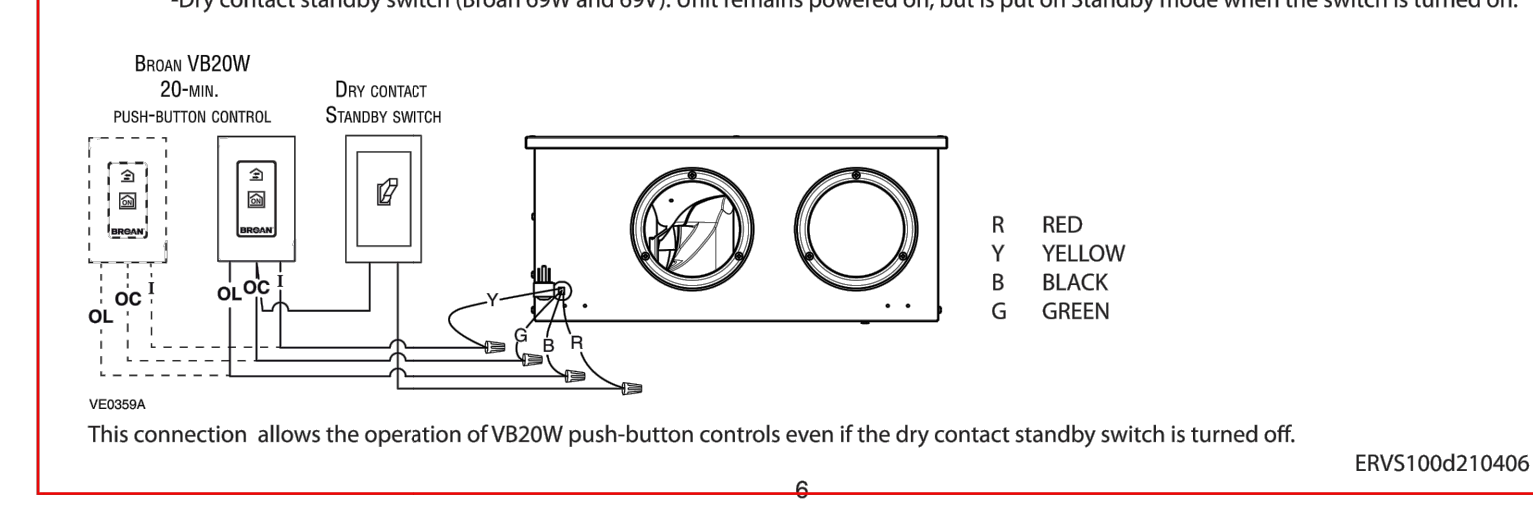
**Control Ventilation modes**

SB*	MODE	DESCRIPTION
SB*	Standby	Unit is off. Unit can be activated in high speed by the V820W 20-minute push-button control, if applicable.
INT	Intermittent	Unit works 20 minutes per hour in low speed. Unit can be activated in high speed by the V820W 20-minute push-button control, if applicable.
1	Low Speed	Unit runs at 65 cfm. Unit can be activated in high speed by V820W 20-minute push-button, if applicable.
2	High Speed	Unit runs at 105 cfm. Unit can be activated in high speed by the V820W 20-minute push-button control, if applicable.

\* Factory setting

**Optional controls wiring**

- Broan V820W 20-minute push-button control: Activates 105 cfm speed in all ventilation modes (recommended when the unit exhausts from a bathroom).
- Dry contact standby switch (Broan 69W and 69V): Unit remains powered on, but is put on Standby mode when the switch is turned on.



**System No. W-L-8110**

Classified by Underwriters Laboratories, Inc. U.L. 1479 and CANULC S115	ANSI/UL 1479 (ASTM E814)	CANULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr	FT Rating — 0 Hr	FT Rating — 0 Hr
	FH Ratings — 1 and 2 Hr (See Item 1)	FH Ratings — 1 and 2 Hr (See Item 1)
	FTM Rating — 0 Hr	FTM Rating — 0 Hr

**SECTION A-A**

- Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described within the individual U300, U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
  - Stud — Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
  - Gypsum Board — Nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is in (127 mm).
- The hourly F, FH Rating of the firestop system is dependent upon the hourly rating of the wall in which it is installed.
- Air Conditioning (AC) Line Set — AC line set consists of max two pipes or tubes (Item 2A), tubing insulation (Item 2B) and a thermostat cable (Item 2C). The AC line sets shall be rigidly supported on both sides of the wall assembly.
  - Metallic Penetrants — A max two of pipes or tubes to be installed in each AC line set. The following types and sizes of through penetrants may be used:
    - Steel Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
    - Iron Pipe — Nom 3/4 in. (19 mm) diam (or smaller), cast or ductile iron pipe.
    - Copper Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Regular (or heavier) copper pipe.
  - Copper Tube — Nom 3/8 in. (9.5 mm) diam (or smaller) Type L (or heavier) copper tube.
- Tube Insulation - Plasticaf — Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (ABIPVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on one max 3/4 in. (19 mm) diam pipe or tube in each AC line set. The space between the insulated and uninsulated pipes or tubes shall be in. (point contact). See Plasticaf (DMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94VA may be used.
- Cable — One 4 pair Nom. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials may be installed with each AC line set.

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**System No. W-L-8110**

- Firestop Device\* — Firestop device consists of a composite steel tube with flanges and gasketing material. Device slid into wall such that ends project an equal distance from the approximate centerline of the wall assembly. Device flanges are spun coolwires onto device threads, over gasketing material laying tightly to both sides of wall. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (25 mm).
- HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — CFS-SL SK 4" Firestop Sleeve
- F. Fill, Void or Cavity Material\* — Plug — Nom 4 in. (102 mm) plug sized for the firestop device (Item 3) friction fit within the sleeve flush with the end of the sleeve on both sides of the wall assembly. Plug cut to fit around the inset and installed tightly within the sleeve.
- HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — CFS-PL Firestop Plug

\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

**SECTION A-A**

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**System No. W-L-8081**

Classified by Underwriters Laboratories, Inc. U.L. 1479 and CANULC S115	ANSI/UL 1479 (ASTM E814)	CANULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr (See Item 1)	FT Rating — 0 and 1 Hr (See Item 1)	FT Rating — 0 and 1 Hr (See Item 1)
	FH Rating — 1 and 2 Hr (See Item 1)	FH Rating — 1 and 2 Hr (See Item 1)
	FTM Rating — 0 and 1 Hr (See Item 1)	FTM Rating — 0 and 1 Hr (See Item 1)

- Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
  - Stud — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
  - Gypsum Board\* — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 6 in. (152 mm).
- The hourly F, FH Rating of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T, FT, FTH Ratings of the firestop system are 0 hr for 1 hr fire rated wall assemblies and 1 hr for 2 hr fire rated wall assemblies.
- Air Conditioning (AC) Line Set — Max of three AC line sets bundled within the opening. Each line set consists of one metallic pipe, one insulated metallic pipe and one electrical cable. The aggregate cross-sectional area of the penetrants does not exceed 84 percent of the cross-sectional area of the wall opening. The annular space between the penetrants and the periphery of the opening shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). Penetrants to be rigidly supported on both sides of wall assembly.
  - Steel Pipe — Nom 1 in. (25 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - Iron Pipe — Nom 1 in. (25 mm) diam (or smaller) cast or ductile iron pipe.
  - Copper Pipe — Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper pipe or Regular (or heavier) copper pipe.
  - Copper Pipe or Tube — Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper pipe or Regular (or heavier) copper pipe.

**SECTION A-A**

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**System No. W-L-8081**

- 2B. Cables — Max 4 pair No. 18 AWG (or smaller) thermostat cable with PVC insulation and jacket.
- 2C. Pipe Covering — The following pipe covering shall be used with the metallic pipes (Types 2A, 2B and 2D only) having a nom diam greater than 1/2 in. (13 mm).
  - Tube Insulation - Plasticaf — Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (ABIPVC) flexible foam furnished in the form of tubing. See Plasticaf (DMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the sleeve specifications and having a UL 94 Flammability Classification of 94-VA may be used.
3. Firestop System — The details of the firestop system shall be as follows:
  - Fill, Void or Cavity Material\* — Sealant — Mn 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Fill material forced into grouped penetrant interstices to max extent possible within opening.
  - HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — F5-ONE Sealant or F5-ONE MAX Maximum Sealant
  - Fill, Void or Cavity Material\* — Wrap Strip — Nom 3/16 in. (5 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. Wrap strip is continuously wrapped around the outer circumference of bundled penetrants two times with ends butted and held in place with tape. Wrap strip installed flush with both surfaces of wall assembly.
  - HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — CP648-E-W251-3/4" Wrap Strip
  - Steel Collar — Steel collar fabricated from coils of prenat min 0.019 in. (0.41 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be min 1/4 in. (6.4 mm) deep with 1 in. (25 mm) wide by 1 in. (25 mm) long anchor tabs on 3/4 in. (44 mm) centers for securement to both surfaces of wall. In addition, collars contain preformed retainer tabs 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, located opposite the anchor tabs. Collar shall be tightly wrapped over the wrap strip, overlapping min 1 in. (25 mm) at seam and compressed with a min 1/2 in. (13 mm) wide by 0.028 in. (0.71 mm) thick stainless steel band at collar mid-height. Every other anchor tab of collar secured to surface of wall with min 1-1/2 in. (38 mm) long drywall or laminate screws with min 3/4 in. (19 mm) steel washers.

\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

# Bearing the UL Recognized Component Marking

**SECTION A-A**

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