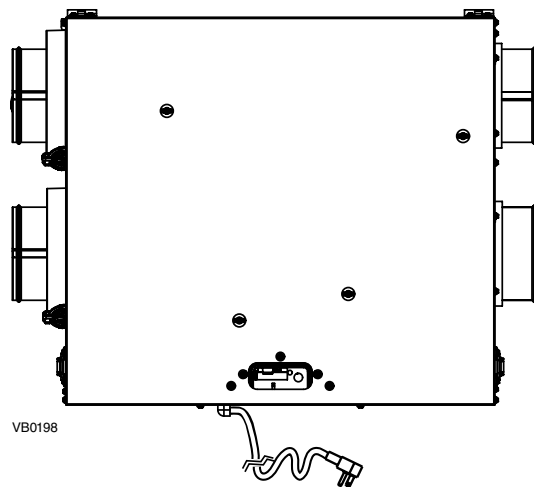




INSTALLATION GUIDE FOR BROAN ERV100S



⚠ RESIDENTIAL USE ONLY ⚠

READ AND SAVE THESE INSTRUCTIONS

Broan-NuTone LLC; Hartford, Wisconsin www.broan-nutone.com 800-558-1711

REGISTER YOUR PRODUCT ONLINE AT: www.broan-nutone.com/register

For additional information - visit www.broan-nutone.com



7 72371 13559 8

22634 rev. L

ABOUT THIS MANUAL

Please take note that this manual uses the following symbols to emphasize particular information:

WARNING

Identifies an instruction which, if not followed, might cause serious personal injuries including possibility of death.

CAUTION

Identifies an instruction which, if not followed, may severely damage the unit and/or its components.

NOTE: Indicates supplementary information needed to fully complete an instruction.

ABOUT THESE UNITS

LIMITATION

For residential (domestic) installation only. Installation work and electrical wiring must be done by a qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction codes and standards.

WARNING

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSON(S) OBSERVE THE FOLLOWING:

1. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer at the address or telephone number listed in the warranty.
2. Before servicing or cleaning the unit, disconnect power cord from electrical outlet.
3. This unit is not designed to provide combustion and/or dilution air for fuel-burning appliances.
4. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
5. Do not use this unit with any solid-state speed control device other than following controls:

MAIN CONTROL	AUXILIARY CONTROLS
VT7W, VT4W OR VT6W	VB20W AND VBATHW

6. This unit must be grounded. The power supply cord has a 3-prong grounding plug for your personal safety. It must be plugged into a mating 3-prong grounding receptacle, grounded in accordance with the national electrical code and local codes and ordinances. Do not remove the ground prong. Do not use an extension cord.
7. Do not install in a cooking area or connect directly to any appliances.
8. Do not use to exhaust hazardous or explosive materials and vapors.
9. When performing installation, servicing or cleaning these units, it is recommended to wear safety glasses and gloves.
10. When applicable local regulation comprise more restrictive installation and/or certification requirements, the aforementioned requirements prevail on those of this document and the installer agrees to conform to these at his own expenses.

CAUTION

1. To avoid premature clogged filters, turn OFF the unit during construction or renovation.
2. Please read specification label on product for further information and requirements.
3. Be sure to duct air outdoor – Do not intake/exhaust air into spaces within walls or ceiling or into attics, crawl spaces, or garage.
4. Intended for residential installation only in accordance with the requirements of NFPA 90B.
5. Do not run any air ducts directly above or closer than 2 ft to any furnace or its supply plenum, boiler, or other heat producing appliance. If a duct has to be connected to the furnace return plenum, it must be connected not closer than 9' 10" from this plenum connection to the furnace.
6. The ductwork is intended to be installed in compliance with all local and national codes that are applicable.
7. When leaving the house for a long period of time (more than two weeks), a responsible person should regularly check if the unit operates adequately.
8. If the ductwork passes through an unconditioned space (e.g.: attic), the unit must operate continuously except when performing maintenance and/or repair. Also, the ambient temperature of the house should never drop below 65°F.
9. Do not make excessive use of fragrance appliances or chemicals since some may damage the unit components material.

TABLE OF CONTENTS

1. TYPICAL INSTALLATIONS	4-5
1.1 FOR HOUSE	4
1.1.1 FULLY DUCTED SYSTEM.....	4
1.1.2 CENTRAL DRAW POINT.....	4
1.1.3 SIMPLIFIED INSTALLATION.....	4
1.2 FOR HIGH-RISE DWELLING	5
1.2.1 FULLY DUCTED SYSTEM	5
1.2.2 CENTRAL DRAW POINT	5
2. INSTALLATION.....	5-11
2.1 INSPECT THE CONTENT OF THE BOX	5
2.2 UNIT PREPARATION	5
2.3 LOCATING THE UNIT	6
2.4 HOW TO HANG THE UNIT	6-7
2.5 PLANNING OF THE DUCTWORK	8
2.6 INSTALLING THE DUCTWORK AND REGISTERS	8-10
2.6.1 FULLY DUCTED SYSTEM.....	8
2.6.2 CENTRAL DRAW POINT.....	9
2.6.3 SIMPLIFIED INSTALLATION.....	9
2.7 CONNECTING THE DUCTS TO THE UNIT.....	10
2.8 INSTALLING 2 EXTERIOR HOODS.....	11
2.9 INSTALLING TANDEM® TRANSITION KIT	11
3. CONTROLS.....	12-14
3.1 BOOTING SEQUENCE	12
3.2 INTEGRATED CONTROL.....	12
3.3 SETTING EXTENDED DEFROST	12
3.4 ELECTRICAL CONNECTION TO WALL CONTROLS	13-14
3.4.1 ELECTRICAL CONNECTION TO VT7W MAIN WALL CONTROL.....	14
3.4.2 ELECTRICAL CONNECTION TO VT4W MAIN WALL CONTROL.....	14
3.4.3 ELECTRICAL CONNECTION TO VT6W MAIN WALL CONTROL.....	14
3.4.4 ELECTRICAL CONNECTION TO OPTIONAL AUXILIARY WALL CONTROLS	14
4. ELECTRICAL CONNECTION TO THE FURNACE	15
5. SPEED SELECTION	15
6. WIRING DIAGRAM	16
7. BALANCING THE UNIT	17
7.1 WHAT YOU NEED TO BALANCE THE UNIT	17
7.2 PRELIMINARY STAGES TO BALANCE THE UNIT	17
7.3 BALANCING PROCEDURE.....	17
8. SERVICE PARTS.....	18
9. TROUBLESHOOTING	19-20

1. TYPICAL INSTALLATIONS

Use the following illustrations as guidelines to help you decide on how the unit will be installed.

All the units should be hung from the joists or ceiling using brackets (included with the unit). If desired, an optional chains and spring kit (part no. V61239, sold separately) can be used instead of brackets.

If required, bathroom fans and a range hood can be used to exhaust stale air. Also, for homes with more than one level, we recommend one exhaust register at the highest level.

There are 3 installation methods: Fully ducted, Central Draw Point and Simplified Installation.

NOTE: A standard 3-prong electrical outlet has to be available within 3 feet of the unit.

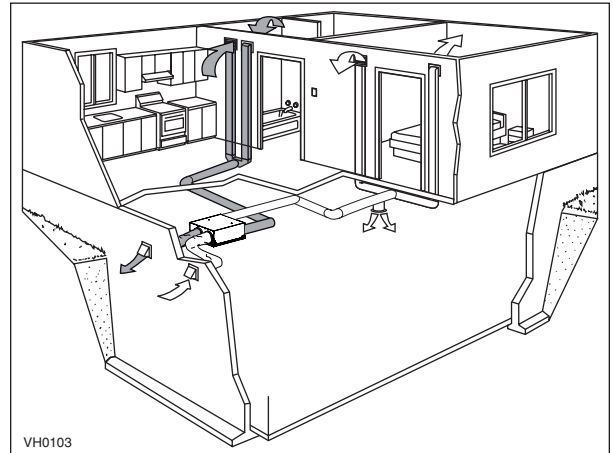
1.1 FOR HOUSE

1.1.1 FULLY DUCTED SYSTEM (PRIMARILY FOR HOMES WITH RADIANT HOT WATER OR ELECTRIC BASEBOARD HEATING)

Stale air coming from the registers located at the highest level of the house is exhausted to the outdoors. Fresh air from outdoors is filtered and supplied by the register located in the lowest liveable level.

Homes with more than one level require at least one exhaust register at the highest level.

See figure at right.

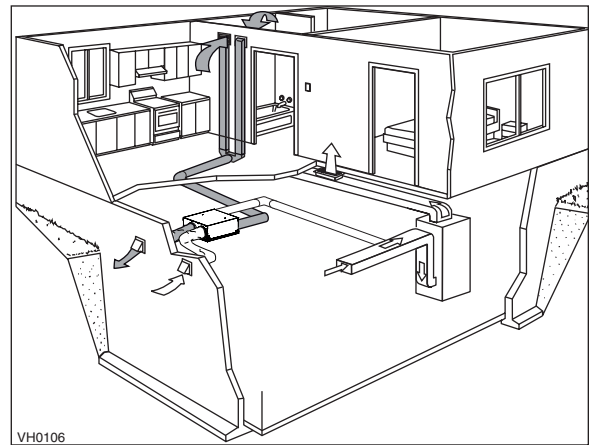


1.1.2 CENTRAL DRAW POINT (CONNECTION TO A FORCED AIR SYSTEM)

Stale air coming from the registers located at the highest level of the house is exhausted to the outdoors. Fresh air from outdoors is filtered and supplied to the return (plenum) or the supply duct of the forced air unit. See figure at right.

For this type of installation, it is not essential that the forced air system blower runs when the unit is in operation, but we recommend it.

NOTE: Home with multiple forced air systems should have one unit on each system.



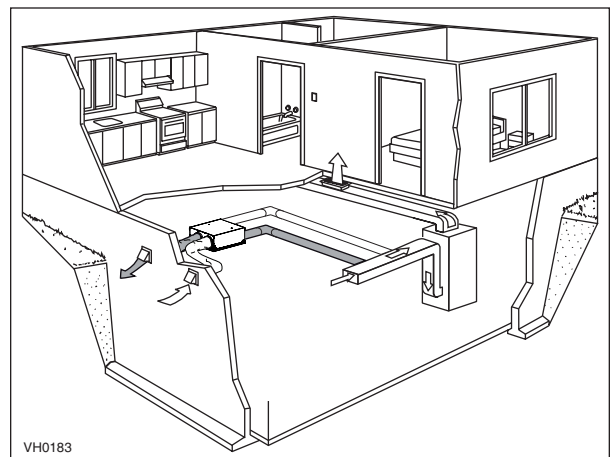
1.1.3 SIMPLIFIED INSTALLATION (CONNECTION TO A FORCED AIR SYSTEM)

Stale air is exhausted to the outdoors. Fresh air from outdoors is filtered and supplied to the return (plenum) or the supply duct of the forced air unit.

See figure at right.

To avoid cross-contamination and achieve the highest efficiencies, the forced air system blower must always be ON.

NOTE: Home with multiple forced air systems should have one unit on each system.



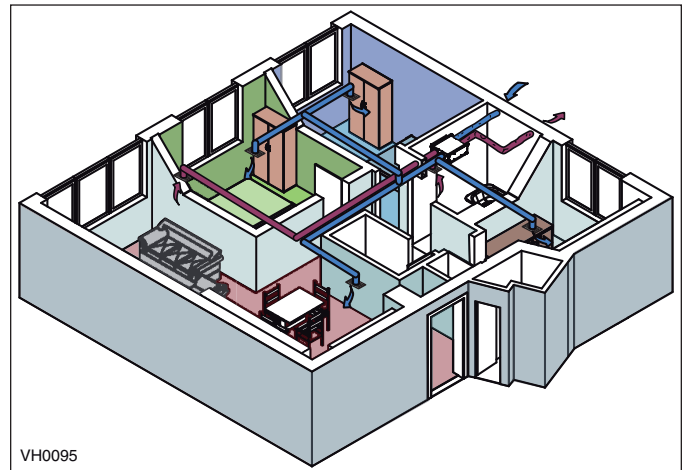
1. TYPICAL INSTALLATIONS (CONT'D)

1.2 FOR HIGH-RISE DWELLING

1.2.1 FULLY DUCTED SYSTEM (PRIMARYLY FOR HOMES WITH RADIANT HOT WATER OR ELECTRIC BASEBOARD HEATING)

Stale air coming from the registers located in bathrooms and kitchen is exhausted to the outdoors. Fresh air from outdoors is filtered and supplied by the registers located in bedrooms and living room.

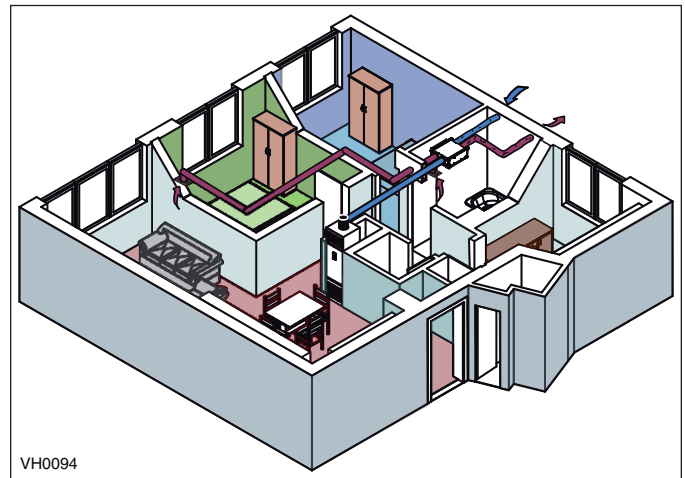
See figure at right.



1.2.2 CENTRAL DRAW POINT (CONNECTION TO A FAN-COIL SYSTEM)

Stale air coming from the registers located in bathrooms and kitchen is exhausted to the outdoors. Fresh air from outdoors is filtered and supplied to the supply duct of the fan-coil system unit. See figure at right.

For this type of installation, it is not essential that the fan-coil system blower runs when the unit is in operation, but we recommend it.



2. INSTALLATION

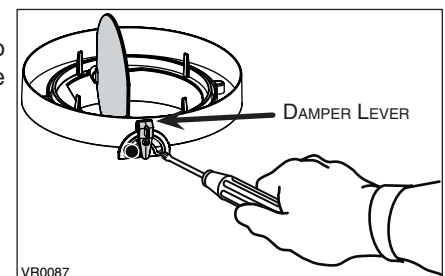
2.1 INSPECT THE CONTENTS OF THE BOX

- Inspect the exterior of the unit for shipping damage. Ensure that there is no damage to the door, door hinges, power cord, etc.
- Open the unit door and inspect the interior of the unit for damage. Ensure that energy recovery core, core filters, insulation, dampers, etc. are all intact.

2.2 UNIT PREPARATION

All units are equipped with 2 ports having integrated balancing damper (Fresh air to building and Exhaust air to outdoors ports). Before installing the unit, check if these 2 ports are in wide open position. If not, proceed as follow:

- ❶ Loosen the damper lever locking screw.
- ❷ Use the damper lever to open the damper.
- ❸ Lock the damper in position by tightening the locking screw.



CAUTION

When loosening or tightening the damper lever locking screw, never use an electric screwdriver or drill, use a standard screwdriver.



2. INSTALLATION (CONT'D)

2.3 LOCATING THE UNIT

Choose an appropriate location for the unit.

- Within an area of the house where **the ambient temperature is kept between 65°F and 104°F.**
- So as to provide easy access to the interior of the unit, for quarterly and annual maintenance.
- Close to an exterior wall, so as to limit the length of the insulated flexible duct to and from the unit.
- Away from hot chimneys and other fire hazards.
- Allow for a power source within 3 feet (standard 3-prong grounding outlet).

2.4 HOW TO HANG THE UNIT

⚠ WARNING

Never handle the unit using its ports; hold the unit by its sides.

Hang the unit using 2 included brackets. See below.

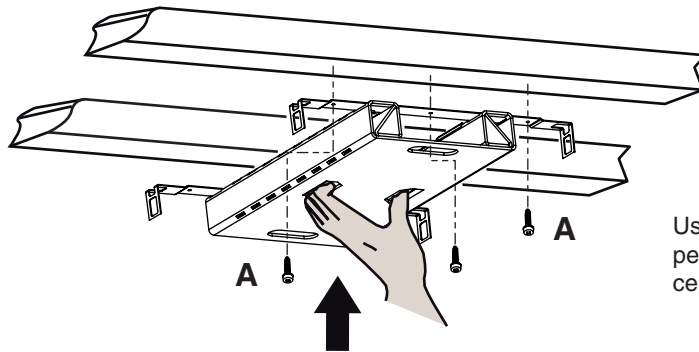
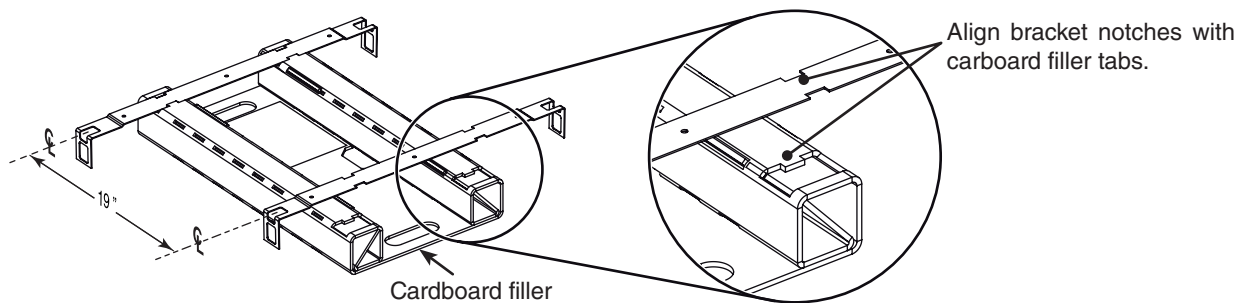
⚠ WARNING

To ensure occupants safety, ensure the brackets are mounted to solid surface (e.g.: concrete ceiling, joists).

CAUTION

The included screws are for wood joist only; do not use them to secure brackets to concrete ceiling or metal joists.

- 1 Mount brackets to ceiling or joists. To ease the brackets location, use the template printed on the cardboard filler located in the unit box. See below.



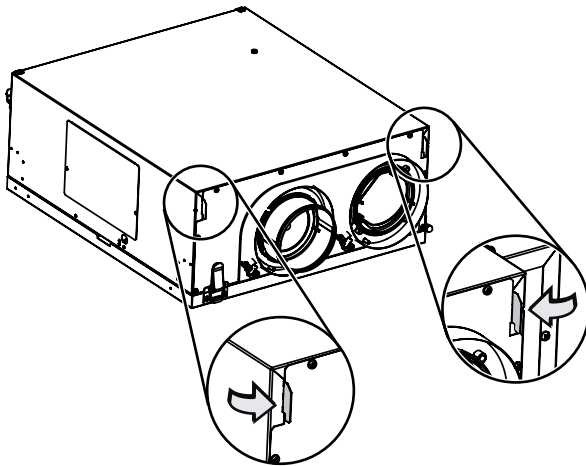
Use at least 2 end screws (A) (or nails) per bracket to secure them to the joists or ceiling; the center one is optional.

VO0259A

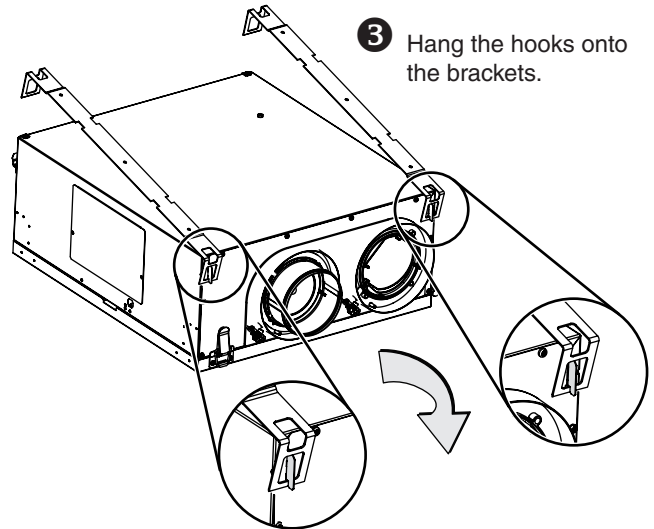
2. INSTALLATION (CONT'D)

2.4 HOW TO HANG THE UNIT (CONT'D)

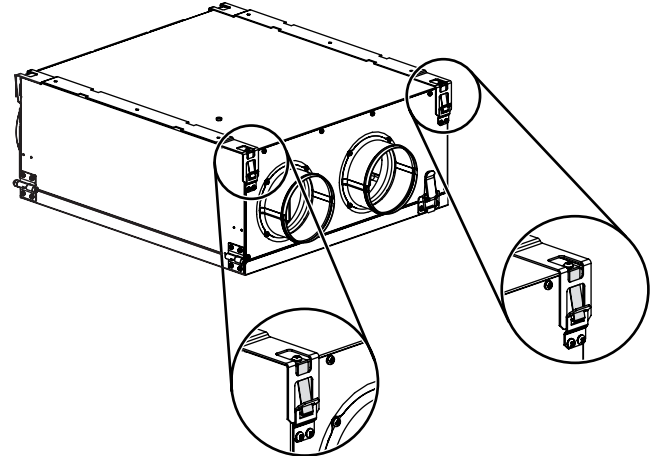
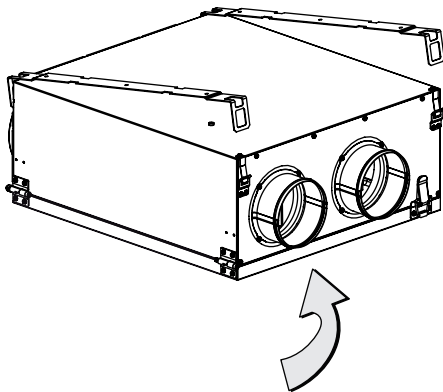
- 2 Bend 90° integrated hooks (2 places).



- 3 Hang the hooks onto the brackets.



- 4 Clip the other side of unit onto the brackets (2 places).



VD0367

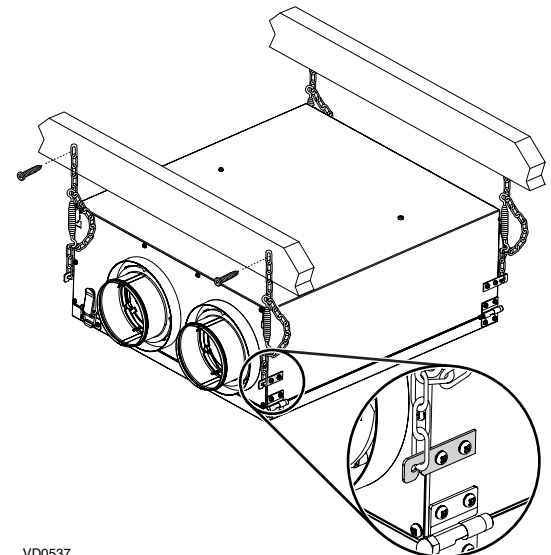
⚠ WARNING

Ensure the unit is completely held by the brackets before continuing the installation.

NOTE: The unit can also be hung using 4 hooks (shaded part in illustration at right), chains, springs and screws (kit sold separately, part no. V61239).

CAUTION

Make sure the unit is level.



VD0537

2. INSTALLATION (CONT'D)

2.5 PLANNING OF THE DUCTWORK

- Keep it simple. Plan for a minimum of bends and joints.
- Keep the length of insulated ducts to a minimum.
- Do not ventilate crawl spaces or cold rooms. Do not attempt to recover the exhaust air from a dryer or a range hood. This would cause clogging of the filters and recovery module.
- If the house has two floors or more, be sure to plan for at least one exhaust register on the highest lived-in level.

2.6 INSTALLING THE DUCTWORK AND REGISTERS

⚠ WARNING

Never install a stale air exhaust register in a closed room where a combustion device operates, such as a gas furnace, a gas water heater or a fireplace.

2.6.1 FULLY DUCTED SYSTEM (AS ILLUSTRATED IN SECTIONS 1.1.1 AND 1.2.1)

Stale air exhaust ductwork:

- Install the stale air exhaust registers where the contaminants are produced: kitchen, living room, etc. Position the registers as far from the stairway as possible and in such a way that the air circulates in all the lived-in spaces in the house.
- If a register is installed in the kitchen, it must be located at least 4 feet from the range.
- Install the registers 6 to 12 inches from the ceiling on an interior wall OR install them in the ceiling.

Fresh air distribution ductwork:

- Install the fresh air distribution registers in bedrooms, dining rooms, living room and basement.
- Keep in mind that the fresh air registers must be located as far as possible from the stale air registers.
- Install the registers in the ceiling OR 6 to 12 inches from the ceiling on an interior wall.
- If a register must be floor installed, direct the airflow up the wall.

2. INSTALLATION (CONT'D)

2.6 INSTALLING THE DUCTWORK AND REGISTERS (CONT'D)

2.6.2 CENTRAL DRAW POINT SYSTEM (AS ILLUSTRATED IN SECTIONS 1.1.2 AND 1.2.2)

Stale air exhaust ductwork:

Same as for Fully Ducted System, described on point 2.6.1

Fresh air distribution ductwork:

⚠ WARNING

When performing duct connections, always use approved tools and materials. Respect all corresponding laws and safety regulations. Please refer to your local building code.

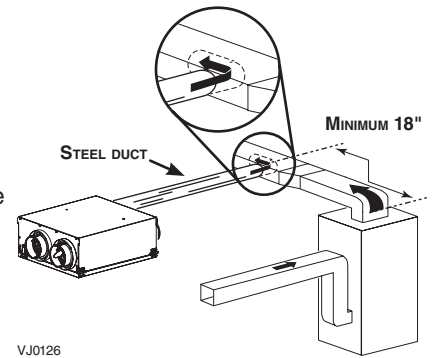
CAUTION

When performing duct connections to the furnace supply duct, this duct must be sized to support the additional airflow produced by the ERV. Also, use a steel duct.

There is one method for connecting the unit to the furnace/air handler:

Supply side connection

- Cut an opening into the furnace supply duct at least 18 inches from the furnace/air handler.
- Connect this opening to the **Fresh air to building** port of the ERV (use steel duct, see figure at right).
- Make sure the ERV duct forms an elbow inside the furnace/air handler ductwork.
- If desired, interlock (synchronize) the furnace/air handler blower operation (see Section 4).



2.6.3 SIMPLIFIED INSTALLATION (AS ILLUSTRATED IN SECTION 1.1.3)

⚠ WARNING

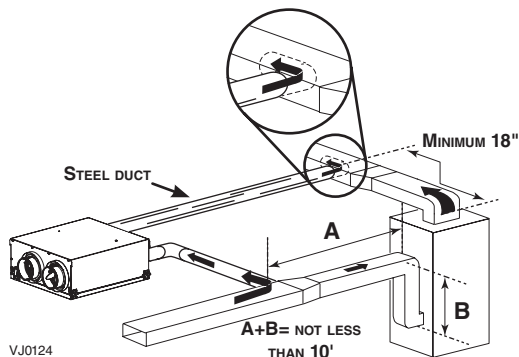
When performing duct connections, always use approved tools and materials. Respect all corresponding laws and safety regulations. Please refer to your local building code.

CAUTION

When performing duct connections to the furnace supply duct, this duct must be sized to support the additional airflow produced by the ERV. Also, use a steel duct. For a Return-Return installation, the furnace blower must be in operation when the ERV is in operation.

There is one method for connecting the unit to the furnace/air handler:

Supply-return connection



Stale air intake:

- Cut an opening into the furnace/air handler return duct not less than 10 feet from the furnace/air handler (**A+B**).
- Connect this opening to the **Exhaust air from building** port of the ERV.

Fresh air distribution:

- Same instructions as Supply side connection, Section 2.6.2.

NOTE: It is not essential to synchronize the furnace blower operation with the unit operation, but we recommend it.

2. INSTALLATION (CONT'D)

2.7 CONNECTING THE DUCTS TO THE UNIT

NOTE: All units ports were created to be connected to ducts having a minimum of 5" diameter, but if need be, they can be connected to bigger sized ducts by using an appropriate transition (e.g.: 5" diameter to 6" diameter transition).

Insulated flexible ducts:

CAUTION

Make sure the balancing dampers are set to wide open position before connecting the ducts to the ports. Also, the ductwork connecting Fresh air to building and Exhaust air to outdoors ports with exterior hood(s) must be made of insulated ducts, all way long.

All units have both Fresh air to building and Exhaust air to outdoors ports equipped with integrated balancing damper. Prior to install the insulated flexible ducts on, ensure these both ports have their dampers set to wide open position (See Section 2.2)

CAUTION

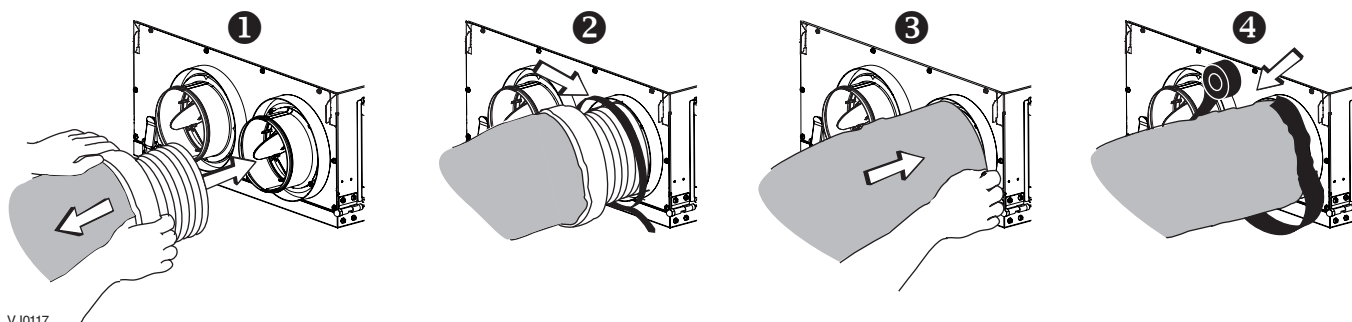
If ducts have to go through an unconditioned space (e.g.: attic), always use insulated ducts.

Use the following procedure for connecting the insulated flexible ducts to the port of the unit (**Exhaust air to outdoors** and **Fresh air from outdoors** ports).

- 1 Pull back the insulation to expose the flexible duct.
- 2 Attach the flexible duct to the port using tie wrap.
- 3 Pull the insulation over the joint and tuck in between the inner and outer rings of the double collar, then pull down the vapor barrier (shaded part in illustrations below) over the insulation and tuck in between the inner and outer rings.
- 4 Apply duct tape to the joint (outer ring and vapor barrier) making an airtight seal. Avoid compressing the insulation when pulling the tape tightly around the joint. Compressed insulation loses its R value and causes water dripping due to condensation on the exterior surface of the duct.

CAUTION

Make sure the vapor barrier on the insulated ducts does not tear during installation to avoid condensation within the ducts.



Rigid ducts:

CAUTION

Do not use screws to connect the rigid ducts to the ports.

Use a small length (6" length) of flexible duct to connect the rigid duct to the ports in order to avoid vibration transmissions. Use tie-wraps to perform connections, then seal with duct tape.