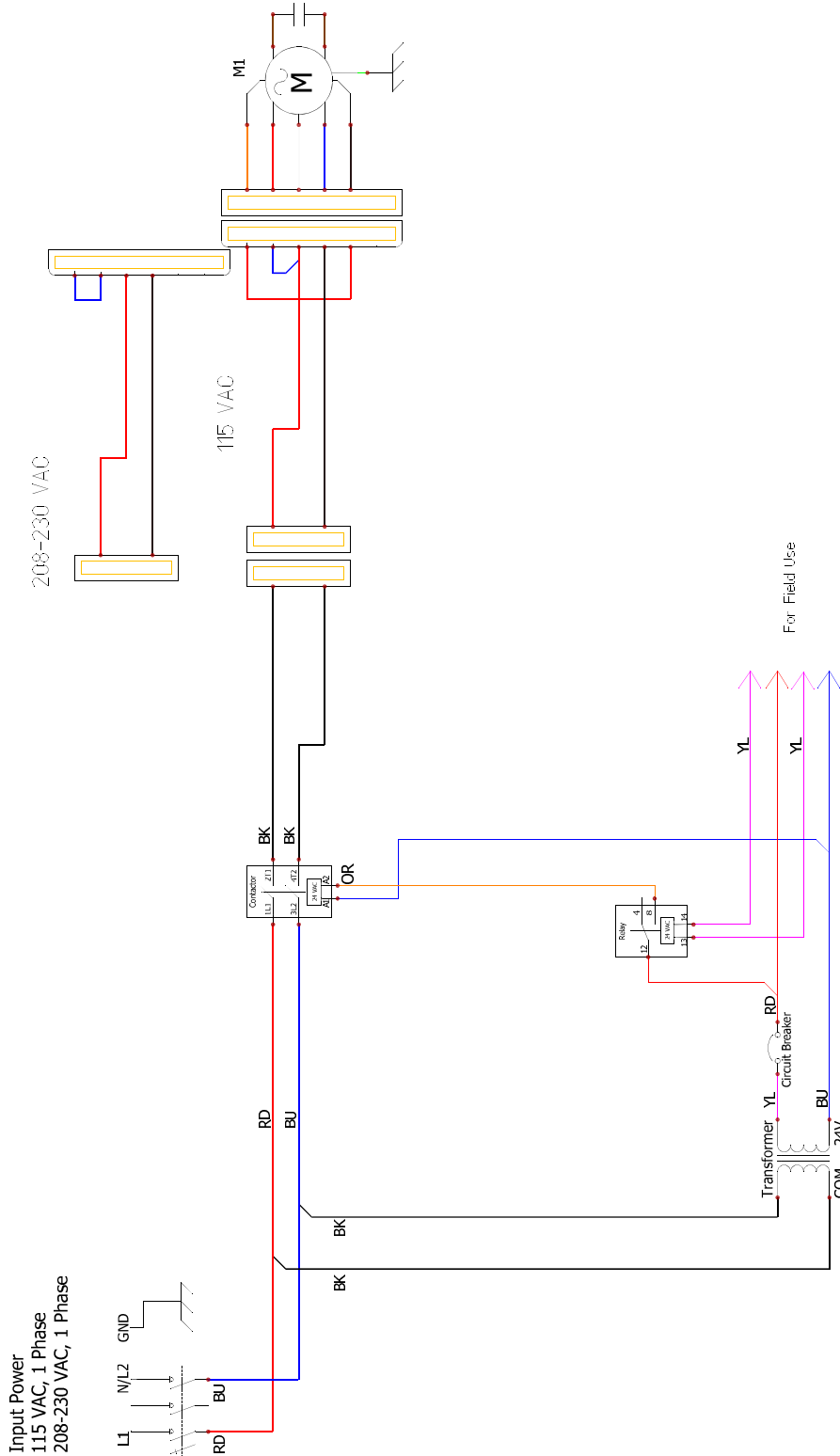


INSTALLATION

WIRING SCHEMATICS

TRC500 P1 SINGLE PHASE UNIT - STANDARD



ERV TRC500

INSTALLATION

**INSTALLATION
INSTRUCTION**

CAUTION

The TRC500 weighs approximately 135 lbs. It is the installer's responsibility to make sure that the screws or bolts used for securing the units are properly selected for the loads and substrates involved. Secure the TRC500 so that it cannot fall or tip in the event of accident, structural failure or earthquake.

CAUTION

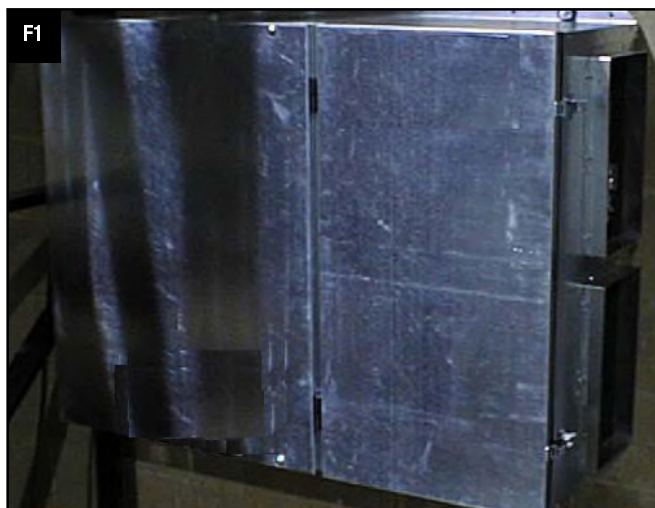
Do not stand on the unit. Do not stack or store items on the unit when installed.

To avoid motor bearing damage and noisy and/or unbalanced blowers, keep drywall spray, construction dust, etc., out of unit.

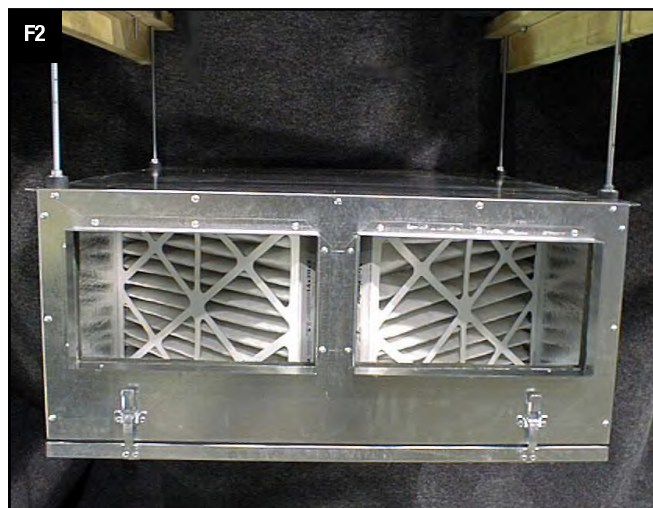
MOUNTING THE UNIT

1. The TRC500 has integral flanges for mounting to a wall (Figure 1) or hanging from a ceiling (Figure 2).
2. Please note that the threaded rod, bolts, nuts, or other fasteners are not included. If hanger bolts or threaded rod are used each must be capable of carrying the weight of the unit and must be no less than 3/8" diameter.
3. Figures 3 and 4 show the rubber door keepers. In order to remove doors these keepers must be removed.

See drawing below for examples of some common installation approaches:



Unit mounted to wall using integral mounting flanges.



Unit hung from ceiling using integral mounting flanges.

INSTALLATION

INSTALLATION INSTRUCTION



Rubber Door Keeper installed on Blower Access (large) Door.



Rubber Door Keeper installed on Filter Access (small) Door.

ACCESSORIES

These ERVs may be ordered with factory-installed features including Electronically Commutated Motors. Consult the supplemental Installation and Operation Manual(s) for these features if supplied.

NOTE: Standard TRC500 with single phase original equipment motors are suitable for use with solid state speed control.

Le TRC500 avec moteurs d'équipement d'origine monophasés sont adaptés pour une utilisation avec régulateur de vitesse électronique.

WARNING

Three phase motors are NOT suitable for use with solid state speed control.

Moteurs de trois phase ne convient pas pour utilisation avec régulateur de vitesse électronique.

Single phase ECM motors are NOT suitable for use with solid state speed control. They already have speed control built into the motor electronics.

Moteurs d'une phase de l'ECM ne conviennent pas pour une utilisation avec régulateur de vitesse électronique. Ils ont déjà le contrôle de vitesse intégré dans le moteur électronique.

ERV TRC500

INSTALLATION

INSTALLATION INSTRUCTION

ELECTRICAL SPECIFICATIONS

NOTE: If your unit is equipped with EC Motors, please refer to “EC Motor Manual Supplement” for more detail.

Use conduit, strain reliefs, etc. as required by code to secure the field wiring.

Electrical Options are identified on the Unit Label located near electrical box on the outside of the unit. Find the complete Unit Model Number in the lower left corner of the Unit Label. Use the configuration chart on the page 2 to determine motor power and voltage installed in your TRC500.

WARNING

Danger of Electrical Shock when servicing an installed unit.

ALWAYS DISCONNECT POWER SOURCE BEFORE SERVICING! More than one disconnect switch may be required.

Proper Wiring Size Selection and Wiring Installation are the Responsibility of the Electrical Contractor.

CAUTION

Before bringing power to the unit check unit nameplate to confirm it matches the voltage and phase of the power you are supplying.

Remember that your field connections need to be accessible for inspection.

You must make sure to provide the correct voltage and phase power supply. Installing the incorrect voltage and phase will destroy the motor and possibly lead to injury!

Follow these steps:

1. Confirm the voltage of the power supply matches the unit.
2. Remove both unit access panels, i.e., the larger motor door and small filter door.
3. Remove electrical box cover by removing two or three screws. Connect the units power field wiring to the terminals of the disconnect switch
4. Connect service ground to ground wire pigtail.
5. Connect the control system to the pigtails in the control voltage compartment of the units electrical box. Make sure you are connecting the correct voltage, 24VAC, to the control pigtails. See Control Wiring Schematics.

INSTALLATION

LOW VOLTAGE CONTROL SYSTEM

This ERV is provided with a Class II 24VAC power supply system that operates the unit's contactor for TRC500. The ERV's 24VAC Power Supply can also be used to power the externally-installed controls system: up to 8VA of power is available.

The unit's power supply system includes an isolation relay so you can use external controls whose contact ratings are as low as 50mA (1.2VA). Also, it is possible to operate the isolation relay with 24VAC power from an external source (with proper wiring connections).

A built-in circuit-breaker prevents damage to the transformer and other low-voltage components in the event of a short-circuit or overload. In extreme cases, the transformer itself is designed to fail safely.

SPECIFICATIONS

- Nominal Output Voltage under load: 24VAC
- Typical Output Voltage at no load: 29-31V
- Minimum contact rating for connected control device: (50mA (1.2VA)
- Circuit Breaker Trip Point: 3A

INSTALLATION INSTRUCTION

CAUTION

1. Connect only to components intended for use with 24VAC power.
2. Do not undersize the low-voltage wires connected to this device. Observe the wire length and gauge limits indicated in this manual.
3. Do not overload this unit's 24VAC power supply system. Confirm that the power requirements of devices you connect to this power supply system do not exceed 8VA in total.
4. If an external source of 24VAC power is used to control the unit, consult the wiring schematics and connect the external power only to the specified terminals in order to avoid damaging the unit or external controls. Connect only CLASS II power to the control terminals of this unit.
5. Unit is not equipped to receive analog signals (such as 1-10vdc or 4-20mA).
6. Unit is not equipped to communicate directly with Building Management Systems (such as BACNET, LONWORKS, etc.). However, the unit can be controlled by powered or non-powered contacts operated by any kind of control system.

HOW TO RESET THE 24VAC CIRCUIT BREAKER

If the transformer is subjected to an excessive load or a short circuit, the circuit breaker will trip to prevent the failure of the transformer. When it trips the circuit breaker's button pops up. Shut off the primary-side power to the unit, and remove the excessive load or the short. The circuit breaker can be reset about fifteen seconds after it trips by pressing in the button.

LIMITS OF POWER OUTPUT

If limits on wire gauge and length are observed, you may connect control devices that draw up to 8VA to the blue and red wires. More than one device can be connected as long as total steady-state load does not exceed 8VA.

INSTALLATION NOTES

If primary-side voltage is 230VAC, move black primary-side lead from transformer's "208V" terminal to the transformer's terminal marked "240V" ("230V" in some units). Do not move the black primary-side lead that is connected to the transformer's "COM" terminal.

OBSERVE THESE LIMITS TO WIRE LENGTH AND GAUGE in order to ensure reliable operation of the control system.

Wire Gauge	#22	#20	#18	#16	#14	#12
Circuit Length	100'	150'	250'	400'	700'	1000'
"Circuit Length" is distance from ERV to Control Device.						

ERV TRC500

INSTALLATION

CONTROL WIRING SCHEMATICS

NOTE: The simplified schematics below show only the relevant portions of the low-voltage control circuit in the ERV unit and representational external control approaches. See the complete unit schematics elsewhere in this manual.

CAUTION

Be careful if the external control system provides 24VAC power at its control output: make sure blue and red leads are separately capped and not connected to any other wires.

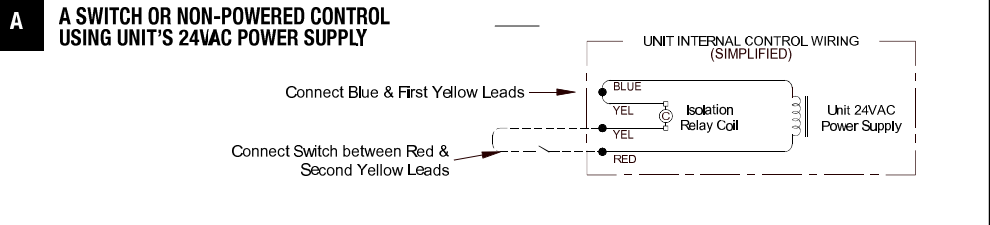
CONTROL WIRING EXAMPLES BY TYPE OF APPLICATION

A. Single 2-wire Control: Use this schematic if the control requires no power to operate and acts like a simple on/off switch. The control must not supply any power to the ERV unit. Connect the blue lead to one yellow lead. Connect the control's contacts to the red lead and the remaining yellow lead.

Control on separate Power Supply, no power present at Control Output:
Wire as shown for the Single 2-wire control.

CAUTION

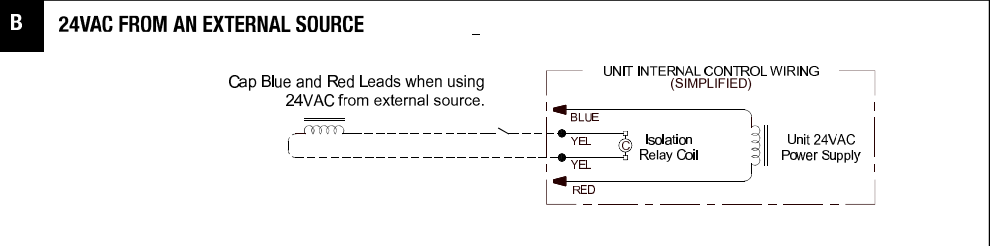
Make sure the control provides no voltage or current at its output terminals.



B. Control Sending 24VAC "On" Signal (from an external power source) to ERV: Make sure the blue and red leads are separately capped and not connected to any other wires. Now you safely can apply 24VAC to the two yellow leads to operate the ERV's isolation relay.

CAUTION

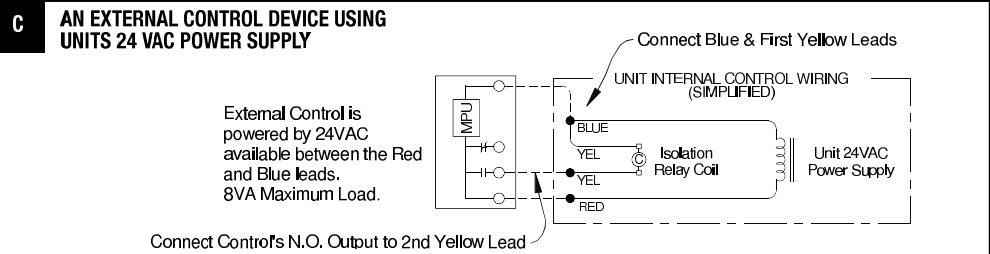
Supply only 24VAC (not VDC) from a Class II Power Source.



C. Control operating on Unit's 24VAC Power Supply: 24VAC power is available at the blue and red leads. Connect one of the yellow leads to the blue lead. Connect the switched output of the Control to the red lead to operate the ERV's isolation relay.

CAUTION

External control system should not draw more than 8VA.



START-UP

EQUIPMENT REQUIRED

- A magnehelic gauge or other device capable of measuring 0 to 1.0 in. water of differential pressure.
- 2 pieces of natural rubber latex tubing, 1/8" ID, 1/16" Wall works the best.

NOTE: Be sure to remove cap from pressure port before inserting tubing. Insure tubing is well seated in pressure ports.

NOTE: The tubing should extend in the pressure port approx. 1 inch.

MEASURING AIR FLOW

CROSS CORE STATIC PRESSURE MEASUREMENT INSTRUCTIONS

The individual differential static pressures (DP) are measured using the installed pressure ports located in the front of the units core access doors.

NOTE: These ports are carefully located on the unit to give the most accurate airflow measurement. Do not relocate pressure ports.

- To read SCFM of Fresh Air (FA) install the "high" pressure side (+) of your measuring device to the Outside Air (OA) port and the "low" pressure side (-) to the Fresh Air (FA) port.
- To read SCFM of Room Air (RA) install the "high" pressure side (+) of your measuring device to the Room Air (RA) port and the "low" pressure side (-) to the Exhaust Air (EA) port.
- Use the reading displayed on your measurement device to cross reference the CFM output using the conversion chart.

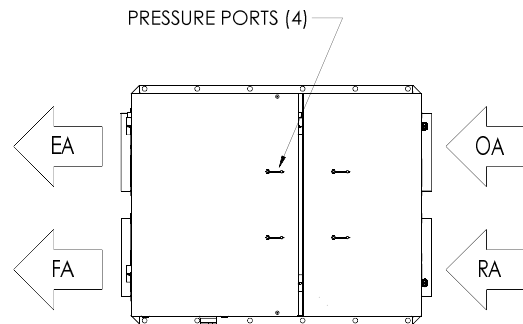
NOTE: Be sure to replace cap into pressure port when airflow measuring is completed.

NOTE: For best performance the airflow rate for both the Fresh Air and the Exhaust Air should be roughly equal ("balanced"). In some facilities a slight positive or negative pressure in the building is desired. RenewAire energy recovery ventilators can generally operate with a flow imbalance of up to 20% without significant loss in energy recovery efficiency.

CAUTION

Make sure clean filters are installed before balancing air flow. Dirty or clogged filters reduce airflow through the unit.

AIRFLOW DIAGRAM TRC500



DIFFERENTIAL STATIC ACROSS CORE DSP VS. CFM

TRC500	DP (H ₂ O)	DSP	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
	Fresh Air (FA)	CFM	190	230	275	315	360	400	445	485	530	570
	Room Air (RA)	CFM	190	230	275	315	360	400	445	485	530	570

ERV TRC500

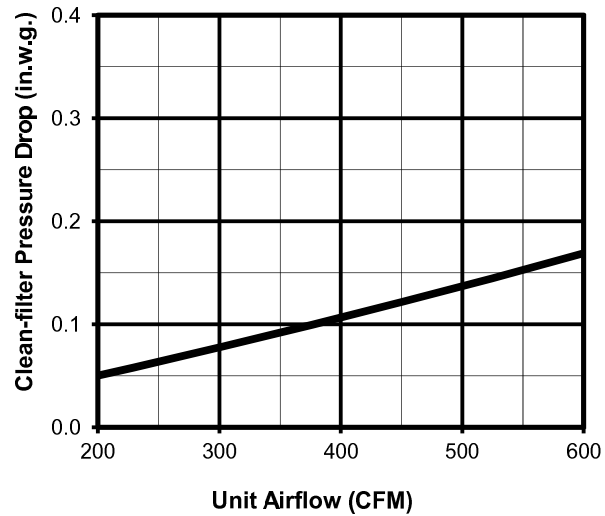
START-UP

MEASURING AIR FLOW

FILTER SPECIFICATIONS

- (2) 14" x 20" x 2" (nominal) pleated filters. Actual size: 13.5" x 19.5" x 1.75"
- Unit shipped with MERV-8 Filters. Minimum recommended effectiveness: MERV-6

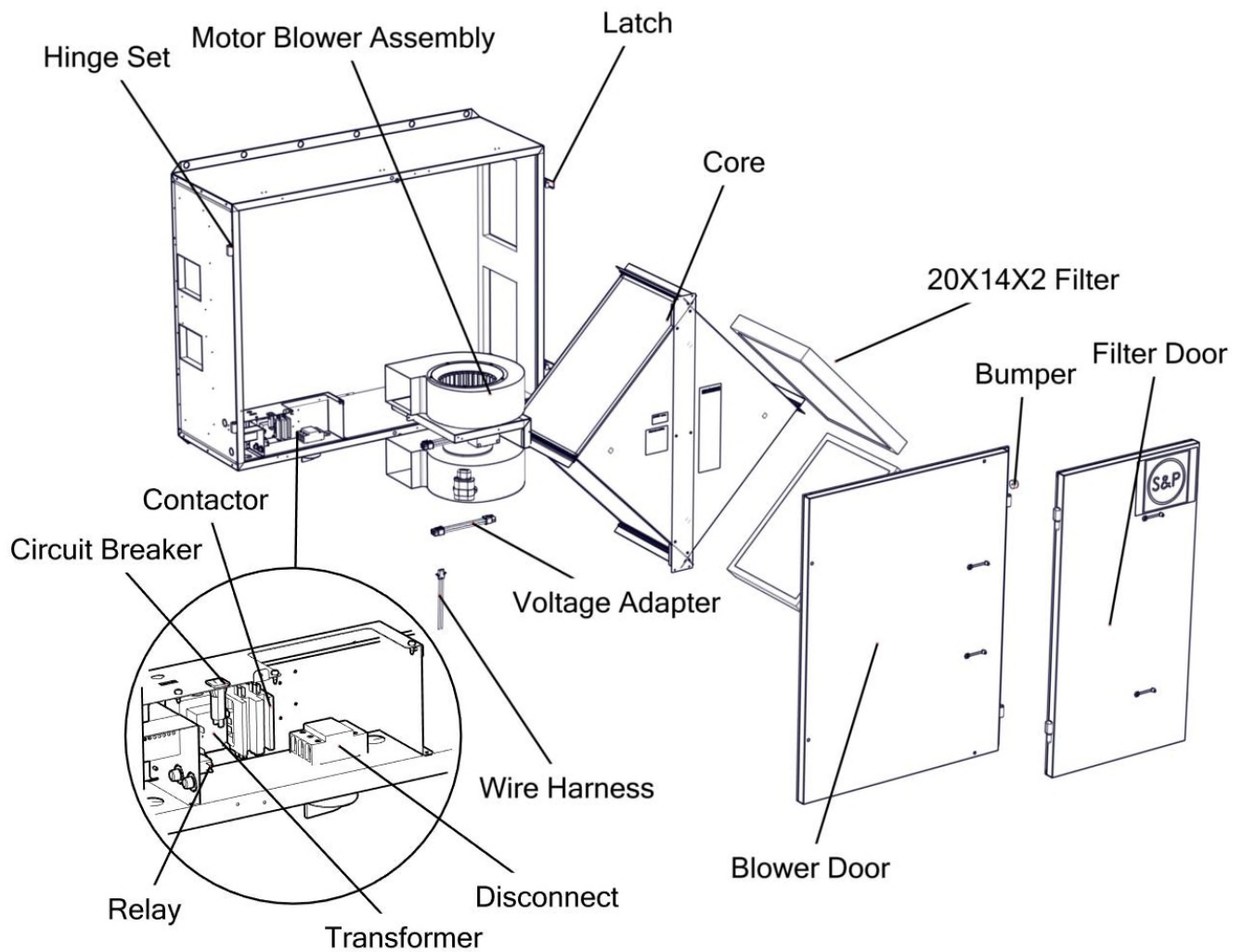
INITIAL PRESSURE DROP OF MERV 8 FILTERS SUPPLIED WITH THIS UNIT.



MAINTENANCE

SERVICE PARTS

TRC500



ERV TRC500

MAINTENANCE

REQUIREMENTS

CAUTION

DO NOT WASH THE ENERGY EXCHANGE CORE.

Keep it away from water or fire to avoid damaging it. Always handle the core carefully.

WARNING

Danger of injury from un-guarded blower in unit. Disconnect power to unit before opening door. Danger of injury if unit starts unexpectedly. Switch power off at service disconnect. Lock-out/tag-out the disconnect.

Keep your ERV performing at its best by cleaning it as described below:

TO CLEAN THE ENERGY EXCHANGE ELEMENT

Vacuum the face of the energy exchange element yearly. Dust collects only on the entering face of the energy exchange element, right where the filter sits. The interior of the energy exchange element stays clean even if the element faces are dust covered.

1. Remove the filters (see below)
2. Vacuum the exposed faces of the energy exchange element with a soft brush attachment
3. Vacuum out dust from the rest of the unit case
4. Install new filters

INSPECT AND CHANGE THE FILTERS REGULARLY.

Inspect and/or replace filters every two or three months when the TRC500 is in regular use, or as needed. Filters must be used or the energy exchange core will become blocked by dust and the unit will not do its job. In extreme cases components may be damaged.

1. To access the filters unlatch the access doors. The access doors may be removed.
2. Pull the dirty filters out and replace with new filters.

NOTE: The filters supplied in the unit are usually able to keep the energy exchange core clear for several months. Finer filters can be used but must be cleaned more often. If using finer filters, their increased resistance to flow must be allowed for in the system design.

MOTOR MAINTENANCE

The motor needs no lubrication. If necessary vacuum clean the blower wheels at the same time you clean the face of the energy exchange element (annually).

WARNING

RISK OF INJURY OR DAMAGE.

Motor may have a manual reset thermal protector. Disconnect power before servicing or resetting motor thermal protector. Use caution, motor may be hot. Allow the motor to cool before resetting the thermal protector.

If the motor thermal protector tripped, correct the issue that caused the motor to overheat (e.g. over motor rated amperage or locked rotor).

If the motor has a manual reset thermal protector, the red thermal protector reset button is located on the motor body, on or near the lead end of the motor. If the button does not reset, the motor may still be too hot. Allow the motor to fully cool to reset the thermal protector, you should feel or hear a click when the thermal protector resets while pushing the reset button.