MiniVentilator

INSTALLATION INSTRUCTIONS

MV75-2ERV
FEBRUARY 27, 2019
SUPERSEDES 07-16-18

ENERGY RECOVERY WHEEL

INSTALLATION INSTRUCTIONS FOR MINI VENTILATOR (MV) WITH FACTORY INSTALLED OPTIONS (LOW AMBIENT, ROTATION SENSOR AND CLIMATE SMART [PATENT PENDING]) USED AS A STAND ALONE OR WITH SPLIT SYSTEMS UNITS

AHRI CERTIFIED™ www.ahridirectory.org

Energy recovery COMPONENT certified to the AHRI Air-to-Air Energy Recovery Ventilation Equipment Certification Program in accordance with AHRI Standard 1060-2000. Actual performance in packaged equipment may vary.

C ETL LISTED US Intertek

ETL Certified per UL 1995 and CSA 22.2

I - Shipping And Packing List

Package 1 of 1 contains:

1 - Mini Ventilator Assembly

II - Shipping Damage

Check unit for shipping damage. Receiving party should contact last carrier immediately if shipping damage is found.

III - General

These instructions are intended as a general guide and do not supersede local codes in any way. Authorities having jurisdiction should be consulted before installation.

⚠ CAUTION

Danger of sharp metallic edges. Can cause injury. Take care when servicing unit to avoid accidental contact with sharp edges.

⚠ WARNING

Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

Table Of Contents

MV-250 / 450 / 750 / 1500 - See Figure 1

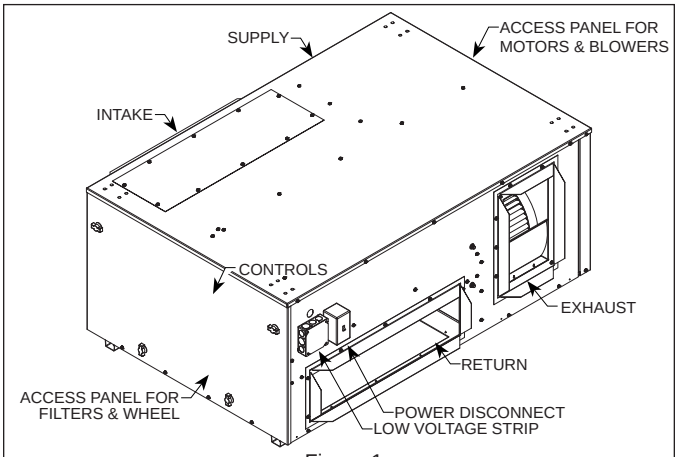


Figure 1

MiniVent Dimensions - See Figure 2

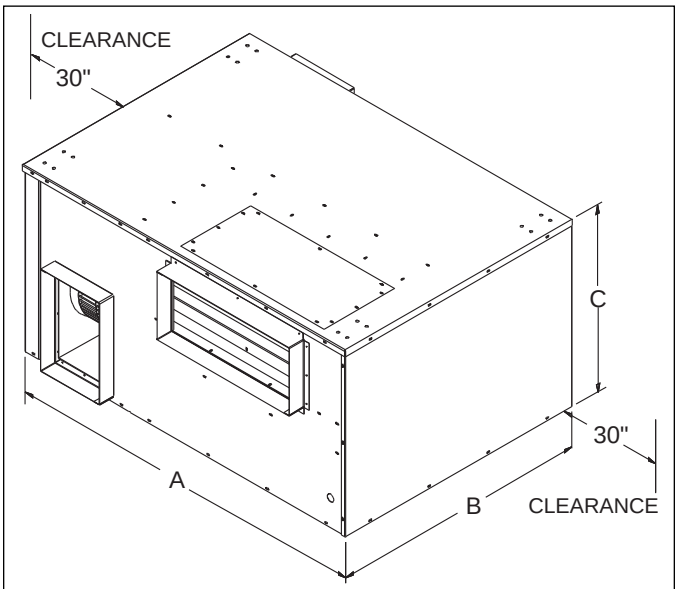


Figure 2

Unit	A	B	C
MV250	40.00	29.00	18.00
MV450	40.00	29.00	18.00
MV750	47.00	31.00	22.00
MV1500	54.30	36.00	22.00

IV - Electrical Requirements (Code)

When installed, the unit must be electrically wired and grounded in accordance with local codes or, in the absence of local codes, with the current National Electric Code, ANSI/NFPA No. 70.

V - Application

Mini ventilators are used as a stand alone indoor option for energy recovery ventilators used in light commercial applications. These ventilators conserve energy by transferring humidity and heat energy across two opposing air streams using a rotary heat exchanger (the energy recovery wheel). This process works in the summer by rejecting the heat energy from incoming intake

air and in the winter by conserving the heat energy from the exhaust air, allowing outdoor ventilation rates to be increased by factors of three or more without additional energy penalty or increase in size of the heating or air conditioning systems.

VI - Rigging Unit For Lifting

1. Maximum weight of unit is:

Model#	MV250	MV450	MV750	MV1500
Net Weight	195	195	225	243
Ship Weight	215	215	261	278

2. Remove MiniVent from carton.
3. All panels must be in place for rigging.
4. Lift unit into place with a winch or jack.

VII - Installation

A - Location

When choosing a location to mount the MiniVent take into consideration ductwork layout as well as access for future filter changes and wheel cleaning, a minimum of 30' clearance should be provided for either access panel. **See Figure 2** on **Page 2** for dimensions.

These MiniVent units can be mounted on a shelf using optional floor vibration isolators or on the floor of a mechanical room, but normal installation is hanging from the 4 corners using an accessory hanging kit and optional ceiling vibration isolators or supported from underneath using a truss built out of unistrut. The maximum weight of a MiniVent is less than 275 lbs so the use of metal strap to hang the unit is acceptable though using ⅜" all thread is preferable. When hanging the unit be sure to take into account the need to provide access for filter replacement and wheel removal on the front access panel , and blower balancing or removal through the rear access panel (30" each).

B - Orientation

Orientation of the MiniVent is important for maximizing airflow, to understand the duct connections it is best to separate the MiniVent into 4 sectors, with fresh air intake and fresh air supply on one side and return air intake and return air exhaust on the other. The fresh air intake can either be mounted horizontally or vertically, connected to the top of the unit, by switching the duct collar and cover panel attached using ⅝" screws. Similarly the return air intake can be mounted on the side or bottom of the unit **See Figure 3.**

Connect ductwork to proper sectors of the MiniVent attaching with ¼" screws, use tape to seal seams. **See Figure 3.**

C - Wiring

A 30 Amp single phase power Disconnect switch is provided attached to every Minivent unit that must be field wired into the MiniVent's fused high voltage distribution block. ½" and ¾" knockouts are available on the top and

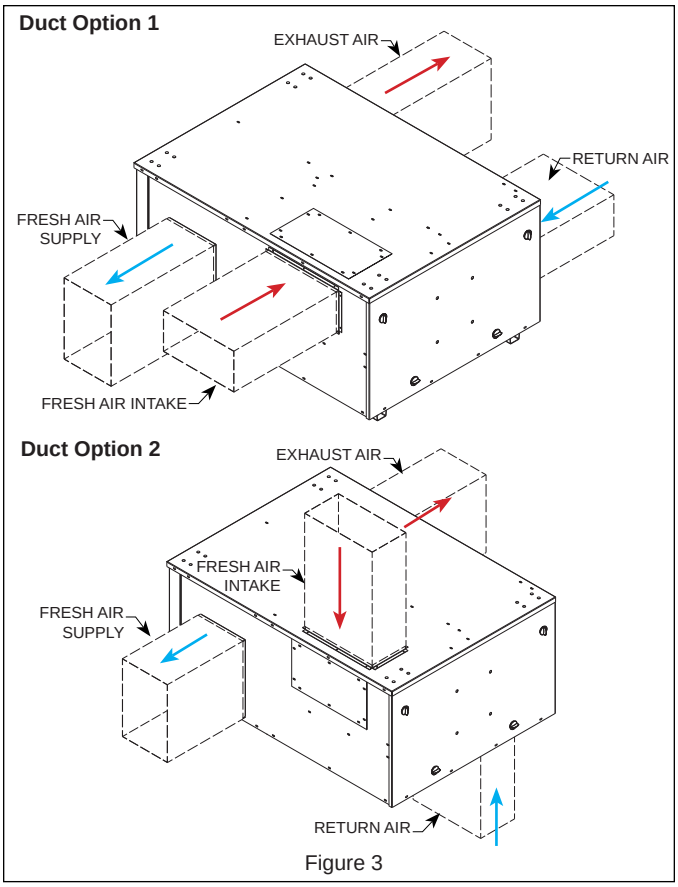


Figure 3

bottom of the disconnect for the line wiring, load wiring should be run through the back of the disconnect to the MiniVent's fused high Voltage distribution block.

High Voltage:

115V/ 208V/230V: Connect high voltage wires to L1 (hot) and L2 (common) on the disconnect switch, Connect the ground to the green grounding nut. Connect T1 in the disconnect to L1 on the High Voltage distribution block in the MiniVent's controls section, connect L2 to T2 in the same manor, connect the green grounding nut to the ground lug inside the controls section.

208/230V: Check voltage into the unit and adjust the voltage input to the transformer from 230V to 208V if necessary by switching wires at the transformer. **See Wiring Diagrams on Pages 10-11.**

460V: A step down transformer (PT# 300000425) is available as an option in 460 volt applications. The 3 Va transformer steps power down from 460 volts to 110 volts and should be installed external to the MiniVent (after the power disconnect switch) and wires run in field provided conduit to the high voltage distribution block. When using this option the disconnect switch can be moved exposing the ½" hole behind it providing access to the Controls section. **See Wiring Diagrams Pages 10-11.**

Low Voltage:

The MiniVent can be controlled by any dry contact closure like a switch, a CO2 sensor with relay or a timer with all of the factory jumpers installed. By removing the Jumpers between terminals 2 & 3 and 3 & 7 on the TB-38 terminal strip external controls can operate each blower and the wheel individually.

The TB-38 terminal strip is located in a 2 gang box external to the Minivent (located next to the power disconnect switch).

Standard Units: Pass low voltage wire through a knockout and connect R to terminal #1 of TB-38 terminal block and G to terminal #3. Factory installed jumpers between terminals 2, 3 and 7 will engage all motors at once. **See Wiring Diagrams on Page 10 and Figure 4.**

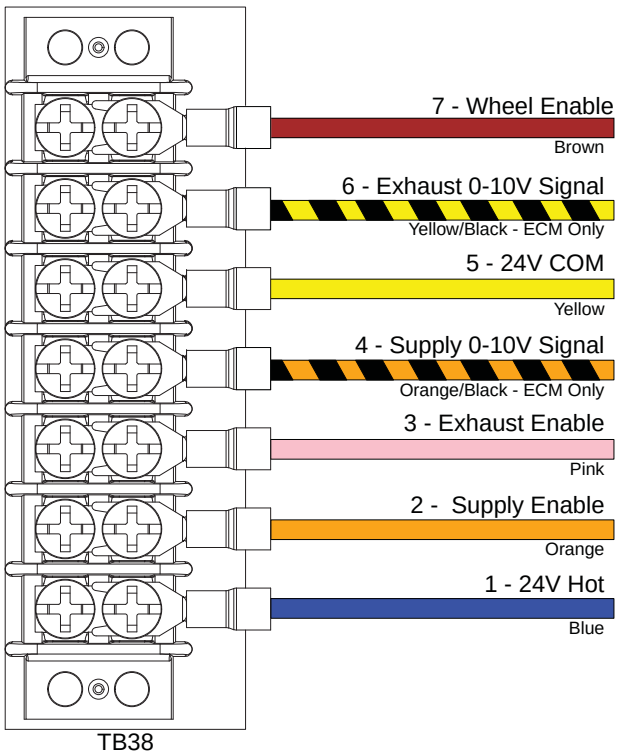


Figure 4

ECM Units: Pass low voltage wiring through a knockout and connect R to terminal T#1 on TB-38 terminal block, connect G to terminal T#3. The default wiring for ECM units is 2 speed operation with the unit factory wired for low speed. To change to high speed move the blue wires (BL-25 & BL-30) from terminal 1 to terminal 2 on the speed selection terminals in the blower compartment (TB39 & TB40). See Wiring Diagram on Page 10. To use the ECMs to modulate speed the 24v speed selection wires BL-25 & BL-30) first need to removed either at TB39 & TB40 in the blower section or relays K163 & K164 pin #4 in the controls section. Terminals 4-6 on TB38 are for speed selection. To control both blowers in unison wire the 0-10vdc control signal to terminals 4 (10vdc+) and 5 (10vdc com) and add a jumper between terminals 4 & 6. If the blowers are controlled independently then wire the exhaust blower signal to terminals 5 & 6 and the supply signal to terminals 4 & 5, **See Wiring Diagram on Page 10 and Figure 4. See Adjusting Blower Speed in Section IX - System Check** for further balancing information.

VIII - Operation
A - How It Works

The unit contains an energy recovery wheel (ERW) that is a revolutionary concept in rotary air-to-air heat exchangers. Designed as a packaged unit for ease of installation and maintenance, only the connection of electrical power is required to make the system operational.

When slowly rotating through counter flowing exhaust and fresh air streams the ERW absorbs sensible heat AND latent heat from the warmer air stream in the first half of its rotation and transfers this total energy to the cooler air stream during the second half of this rotating cycle. Rotating at 50-60 RPM, the ERW provides a constant flow of energy from the warmer to the cooler air stream. The large energy transfer surface and laminar flow through the ERW causes this constant flow of recovered energy to represent up to 75% of the difference in total energy contained within the two air streams.

Sensible and latent heat are the two components of total heat, sensible heat is energy contained in dry air and latent heat is the energy contained within the moisture of the air. The latent heat load from the outdoor fresh air on an air conditioning system can often be two to three times that of the sensible heat load and in the winter it is a significant part of a humidification heat load.

During both the summer and the winter, the ERW transfers moisture entirely in the vapor phase. This eliminates wet surfaces that retain dust and promote fungal growth as well as the need for a condensate pan and drain to carry water.

Because it is constantly rotating when in the air stream, the ERW is always being cleaned by air, first in one direction and then the other. Because it is always dry, dust or other particles impinging on the surface during one half

of the cycle are readily removed during the next half of the cycle.

During the heating season, when outdoor air temperatures are below 15°F, it is recommended to use the (optional) low ambient kit.

The frost threshold is the outdoor temperature at which frost will begin to form on the MiniVent wheel. For energy recovery ventilators, the frost threshold is typically below 10°F. Frost threshold is dependent on indoor temperature and humidity. The table shows how the frost threshold temperatures vary depending on indoor conditions.

FROST THRESHOLD TEMPERATURE	
INDOOR RH AT 70°F	**FROST THRESHOLD TEMPERATURE**
20%	0°F
30%	5°F
40%	10°F

Because Mini Ventilators have a low frost threshold, frost control options are not necessary in many climates. Where outdoor temperatures may drop below the frost threshold during the MiniVent operational hours, exhaust only frost control option is available.

B - Sequence of Operation

MV450 / MV750 / MV1500

When terminal number 2 on TB38 is energized with 24v the K164 relay closes engaging the intake motor. When terminal number 3 on TB38 is energized with 24v the K163 relay closes energizing the exhaust blower. When terminal number 7 on TB38 is energized the WHL relay closes engaging the wheel motor. Speed is selected by changing high speed taps on the TB39 and TB40 terminal blocks (in the blower section).

Factory wiring includes a jumper between terminals 2 and 3 and terminals 3 and 7 on TB38. **See Wiring Diagram on Page 10.**

MV450E / MV750E / MV1500E

When terminal number 2 on TB38 is energized with 24v the K164 relay closes powering the Intake ECM motor with high voltage as well as sending a low voltage (24vac) signal to the ECM to engage in low speed. When terminal number 3 on TB38 is energized with 24v the K163 relay closes powering the Exhaust ECM motor with high voltage as well as sending a low voltage (24vac) signal to the ECM to engage in low speed. When terminal number 7 on TB38 is energized the WHL relay closes engaging the wheel motor. Selection between low and high speed is made by removing the Blue wire from terminal 1 on the TB39 and TB40 terminal strips (in the blower section) and moving it to terminal 2. Speed modulation is achieved by removing the 24v speed selection wire from terminal 1 on TB39 and TB40 and using the 2-10 VDC modulation signal connecting to terminals 4-6 on TB38.

The ECMs require a high voltage power source and low voltage signal in order to operate.

MV450X / MV750X / MV1500X

When terminal number 2 on TB38 is energized with 24v the K164 relay closes engaging the intake motor. When terminal number 3 on TB38 is energized with 24v the K163 relay closes energizing the exhaust blower. When terminal number 7 on TB38 is energized the WHL relay closes engaging the wheel motor. Blower Speed is selected by changing high speed taps on the TB39 and TB40 terminal blocks.

Factory wiring includes a jumper between terminals 2 and 3 and terminals 3 and 7 on TB38.

Low Ambient: The Low Ambient kit (LA) has a normally closed relay on a temp sensor located in the exhaust section of the Minivent. When exhaust temperatures go below the factory set 18 deg F the relay opens de-energizing the K164 relay and turning off the Intake blower. The wheel continues to spin and Exhaust blower continues to run pulling warm air through the Minivent defrosting the wheel. When temperature in the exhaust section raises 16 deg the LA relay closes and the Minivent continues normal operation.

Start Stop Jog: The Start Stop Jog is an accessory board located in the controls section with temp or enthalpy sensors in the OA sector of the Minivent. The board is powered by the wheel enable 24 volt signal and has a normally closed relay on it that breaks that signal when the board senses temperatures between 40 and 70 deg turning off the Wheel. The operating window can be adjusted tighter by turning the two 10 turn mini potentiometers on the SSJ board and measuring DC voltage between the High/Com and Low/Com terminals below the potentiometers. During free cool operation the wheel will stop for a 10 minute increment and then turn on for 1 minute to jog the wheel and prevent dirt from building up on the wheel. Testing operation of the board can be done by pressing the “test” button and watching the wheel start spinning when the SSJ is engaged or stop spinning if it is not. **See Figure 9.**

Wheel Rotation Sensor: The Wheel Rotation Sensor is a missing pulse detector that is powered off the wheel enable 24v signal. After powering up the board measures pulses from a sensor mounted on the wheel picking up the field of a magnet mounted to the wheel. A normally closed relay is on the board that opens when the board is powered and pulses aren’t measured for more than 60 seconds. The relay (terminals 6 and 7 on the board) can be field connected to BMS, or an alarm in the building.

IX - System Check

1. Turn off power to the unit
2. Remove access panel, with factory jumpers in place add a jumper to terminals 1 & 3 on the MiniVent.

Blower Data for PSC Motors												
MV250 Cabinet												
External Static Pressure		**0.0**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
CFM	Low	498	479	459	435	411	384	347	307	263	218	175
	High	592	565	530	496	463	431	398	356	311	262	218
MV450 Cabinet												
External Static Pressure		**0.0**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
CFM	Low	656	640	625	609	590	570	552	538	511	477	440
	Medium	729	708	690	671	649	627	605	582	560	530	495
	High	783	765	740	721	700	678	650	622	598	580	560
MV750 Cabinet												
External Static Pressure		**0.0**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
CFM	Low	823	822	821	819	808	790	778	762	755	738	718
	Medium	997	992	985	975	960	940	928	905	884	872	850
	High	1162	1145	1130	1104	1095	1090	1068	1047	1020	998	967

Note: MV1500 is only available with EC Motors. See Page 9 for data.

Table #1

3. Restore power to the unit. Observe that both blower motors and wheel drive motor are running.
4. If supply blower or wheel does not start running check for factory installed jumpers and refer to **Figure 4 on Page 4**.
5. Adjustments to the speed of the motors can be made by changing the input on the multi tap blower motors or by adjusting the optional speed control.

A - Blower Speed Adjustment

MV250/450/750/1500 - Both fresh air and exhaust air blowers are direct drive multi-tap motors. Both blowers are factory set at "high" speed for maximum airflow. To determine air flow setting, external static pressure readings will need to be read across the MiniVent.

B - Air Balancing Adjustment (See Figure 5)

1. Remove plastic plugs in door panels(4 total).
2. With a manometer measure pressure drop [inches of water column] across left half of MiniVent(top and bottom holes in door panel). Unit CFM for 3 speed PMC motors is determined then by referring to **Table #1 on Page 6**
3. Repeat the same process for the right half of MiniVent.
4. System can be balanced by adding dampers to ductwork or by adjusting blower speed.

C - Adjusting Blower Speed

3 Speed PSC Motors: Standard units have 2 terminal blocks available (TB39 for exhaust and TB40 for supply) where the speed taps on the 3 speed motors can be changed. Move the Black wire from terminal #1 to terminal #2 (med) or #3 (low) to lower blower speeds. **See Figure 6.**

An additional 120V (PT# 300000646) or 230V (PT# 300001416) speed control is available to balance each blower within these ranges. The speed control is wired in line on the Black BK-102 or BK-101 wires before the

Figure 5

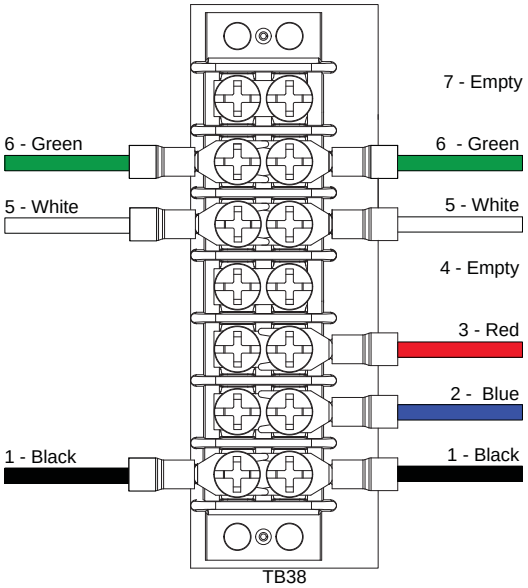


Figure 6

terminal block, and is mounted externally in a 2 gang work box on or near the MiniVent. Speed is reduced by turning the knob counter clockwise until CFM is met. **See Table #1** for balancing data.

Variable Speed ECM Units: MiniVents with electronically controlled motors are shipped with blue (BL-25 and BL-30) wires attached to terminal #1 of TB39 and TB40 in the blower compartment (**See Wiring Diagram on Page 11**) locking the ECM in low speed mode, to switch to high speed move the Blue wires to terminal #2. To use the Variable speed option these blue wires need to be disconnected and 0-10 VDC control wiring should be connected to terminals 4 through 6 detailed in the Low Voltage connections on **Page 4**. **See Wiring Diagrams on Pages 10-11.**

X - Maintenance

1. All motors use pre-lubricated sealed bearings; no further lubrication is necessary.
2. Make visual inspection of filters, motor assemblies and enthalpy wheels rotating bearings during routine maintenance.
3. Filters should be checked periodically and replaced when necessary. Filters are located in front of the MiniVent, in the same access panel as the controls.
4. The MiniVent's enthalpy wheel is positioned on a shaft extended from middle support bar. Annual inspection of the self cleaning wheel is recommended. With power disconnected, remove MiniVent front access panel and unplug [J150 & P150] **(Refer to Wiring Diagrams in this instruction manual).** Then remove wheel cassette from cabinet by sliding assembly out of support tracks in center of unit. Discoloration and staining of wheel segment does not affect its performance. Only excessive buildup of foreign material need be removed. If the segment appears excessively dirty, it should be cleaned to ensure maximum operating efficiency. For heavy dust buildup take wheel cassette outside and blow out with compressed air. If wheel has a greasy buildup thoroughly spray plastic surface with household cleaner or mild detergent and gently rinse with warm water using a soft brush to remove heavier accumulation. Shake excess water from segment and replace in reverse of removal instructions.

A - Wheel Removal (See Figure 7)

1. Remove Filter Access panel to expose wheel.
2. Disconnect wheel electrical harness.
3. Carefully slide the wheel outwards.

B - Filter Removal (See Figure 8)

1. Remove the Filter Access panel to expose filters.
2. Remove the filter pushers.
3. Slide filters outwards.

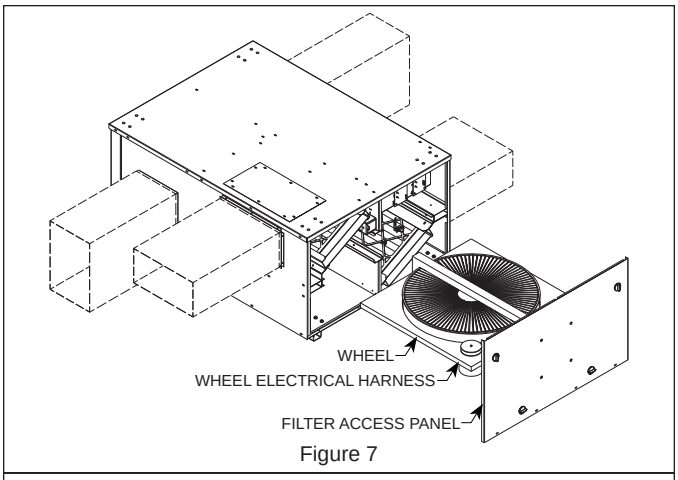


Figure 7

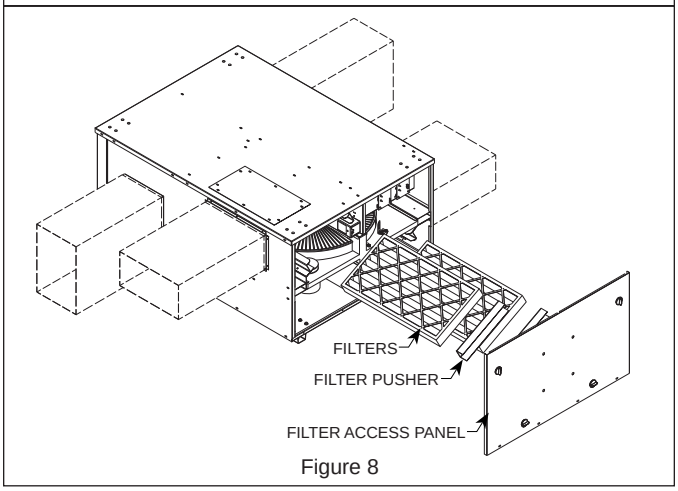


Figure 8

C - Control Box Location

The control box is located in the top right corner of the MiniVent when the Filter Access/ Controls Access Panel is removed. The low voltage terminal connections are on the outside of the unit connected to this section.

XI - 250X, 450X, 750X, 1500X Package Options

A - Rotation Sensor

The Rotation Sensor is a sensor and logic board that measures pulses generated by the sensor when a magnet placed on the ERW passes. A lack of measured pulses after initial start up results in an alarm. The alarm can be wired into building management hardware or to a thermostat with alarm switch terminals, the 24v alarm signal will warn that the wheel has stopped spinning, but does not otherwise effect operation.

B - Climate Smart – Start Stop Jog (See Figure 9)

Climate Smart is an option that provides a free cooling or economizer mode for the MiniVent. It consists of a control board with temperature and/or enthalpy sensor(s) that stops the enthalpy wheel from spinning (and transferring heat) when temperature conditions are conducive for free cooling. The board will spin the wheel intermittently for 1 minute on 10 minute off intervals to keep dust from building up on the surface.

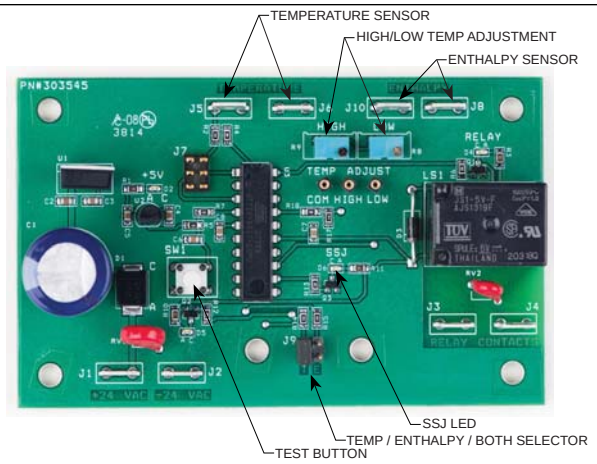


Figure 9

All units shipped with the Start, Stop, Jog option installed have the temperature and enthalpy sensors installed, and the jumper (J9) set to T(Temp). A qualified tech can adjust the setting to E(Enthalpy) only or Temp and Enthalpy by adjusting the jumper (J9).

The factory set points to allow for free cooling during ventilation are 40°F to 70°F, but they can be field adjusted to narrow the band by adjusting two potentiometers while measuring VDC between the Com & High or Com & Low terminals (0 VDC = 40°F, low set point, 5 VDC = 70°F, high set point). Each potentiometer requires 10 full turns to go through the complete range and the following formula: VDC + 0.1429 x (Temp) – 5.7143 can be used to determine the exact temperature.

Operation: There is an LED that shows the unit it powered, a SSJ LED that shows the unit is in start stop jog mode and the relay is open stopping the wheel from spinning. There is also a white test button with LED to put the board into test mode, the controls will not stop the wheel while in test mode letting a technician test the MiniVent no matter what the outdoor temperature conditions are.

C - Low Ambient Kit

Prevents frost buildup on energy recovery wheel by turning off the intake air blower when the discharge air temperature falls to a set level (normally 20°F). Intake blower operation resumes after a 16°F rise above the field adjustable set point.

The frost threshold is the outdoor temperature at which frost will begin to form on the ERV wheel. **See Table 2.** For energy recovery ventilators, the frost is typically below 10°F. Frost threshold is dependent on indoor temperature and humidity. The table shows how the frost threshold temperatures vary depending on indoor conditions.

Because energy recovery ventilators have a low frost threshold, frost control options are not necessary in many climates. The Low Ambient Kit is available for units installed where outdoor temperatures may drop below the frost threshold during the ERV operational hours.

FROST THRESHOLD TEMPERATURE (OA DB)				
INDOOR RH (%)	INDOOR DB TEMPERATURE			
	70°F	72°F	75°F	80°F
20	-14	-13	-11	-8
30	-3	-2	-1	3
40	5	7	9	11
50	13	13	15	18
60	18	19	21	26

Table #2

D - EC Motors

The electronically commutated motor option provides high efficiency DC motors that can be adjusted to operate between two torque ranges or can receive a 0-10 VDC signal to adjust the RPM along the entire torque range. The torque ranges are selected by jumpers in the blower section, and the 0-10 signal wires can be attached at a separate terminal strip in the control section. Modulating the RPM of the motors can be done by field installing a feedback sensor (airflow meter or pressure differential sensor) into the system or by using an external controller connected to BMS.

E - BMS Controls Option (PT # 01FRTMSTAL)

A field installed kit that allows you to import temperature, humidity, CO2, wheel rotation and smoke control info into your BMS. The FAC controller has outputs to control blower enable and speed as well as field installed electric pre heat and motorized damper options. Controllers come preprogrammed and options can be turned on and off using the optional display panel, a bacnet capable BMS, or a Metasys MAP gateway, all wire lengths and sensors are designed to be easily attached to the MiniVent.

F - Remote Display Panel (PT # 300001210)

When using the features of this control kit (frost control, demand ventilation, etc.) but not using a building management system you can interface with the BAS Controls kit by using the optional remote display panel. Plug the display panel com wire into the plug labeled sensor on the bottom of the FAC controller. You will then have access to the controller's points and settings. The Panel can be permanently mounted to the unit or moved from unit to unit on a job.

G - MAP Gateway (PT# 300001418)

The Mobile Access Portal (MAP) Gateway provides a wireless, intuitive, mobile-optimized user interface acting as a WiFi access point to FEC family programmable controllers. Techs can access features of the BAS controller through their mobile device.

H - CO2 Sensor (PT# 01KITCO2)

Used to register CO2 in the space when using a demand ventilation control method. Duct mounted or wall mounted options are available.

I - Motorized Outdoor Air and Exhaust Air Dampers

24V open spring close motorized dampers that are installed over the Outside Air and Exhaust Air openings of the Minvent or Minicore ventilator. The low voltage wiring can be hooked to the supply and exhaust air enable terminals and common of the TB-38 terminal strip (see Fig 3).

J - Dirty Filter Sensors (PT# 01FKTDFS)

A pressure differential sensor and relay that can be wired into the BMS Controls kit or into an analog alarm. Pressure adjustable up to 1.2”wc, pressure sensing tubes are inserted before and after filter rack and alert you when the filters need to be replaced.

K - Speed Controller (PSC) (PT# 01FKTSCM)

A potentiometer used to lower speed on PSC motors after speed tap is selected in order to balance CFM. One needed per motor.

L - Speed Controller (ECM) (PT# 01FKTSME)

A 24V AC 0-10 DC control used to set speed on ECM motors once speed tap is removed in order to balance CFM. One Controller can be used to set two motors at the same speed, or two controls can be used to individually adjust blowers CFM.

M - 7 Day Programmable Timer (PT# 01FKT7PT)

A battery operated time clock that mounts in a single gang (light switch) box. A dry contact is used to turn on the MiniVent / MiniCore Ventilator during occupied hours.

N - Motion Sensor (PT # 01FKTMDS)

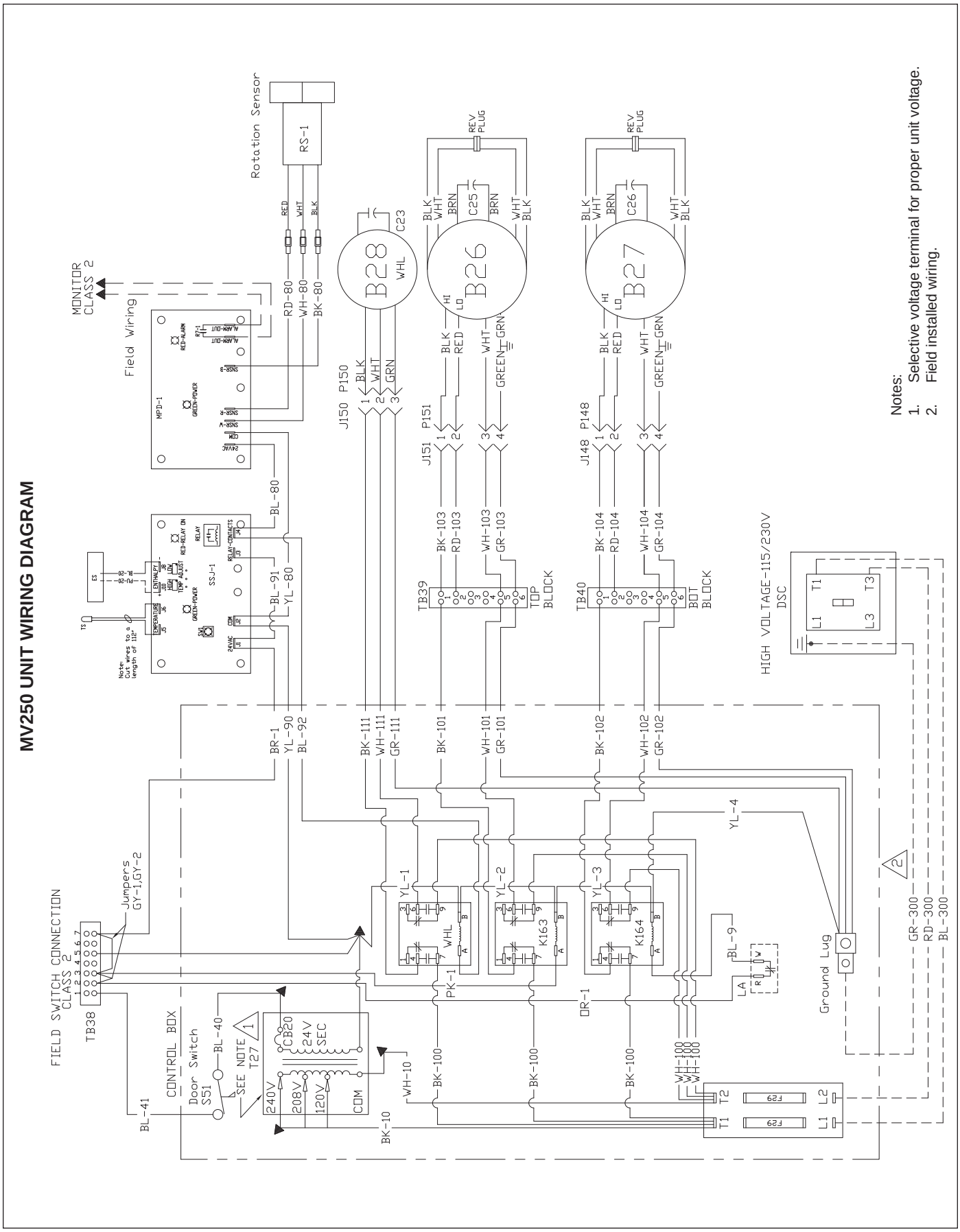
A motion sensor that is mounted in a busy area of the space needing ventilation. A dry contact is used to turn on the MiniVent / MiniCore Ventilator during occupied hours when movement is present.

XII - Balancing Tables

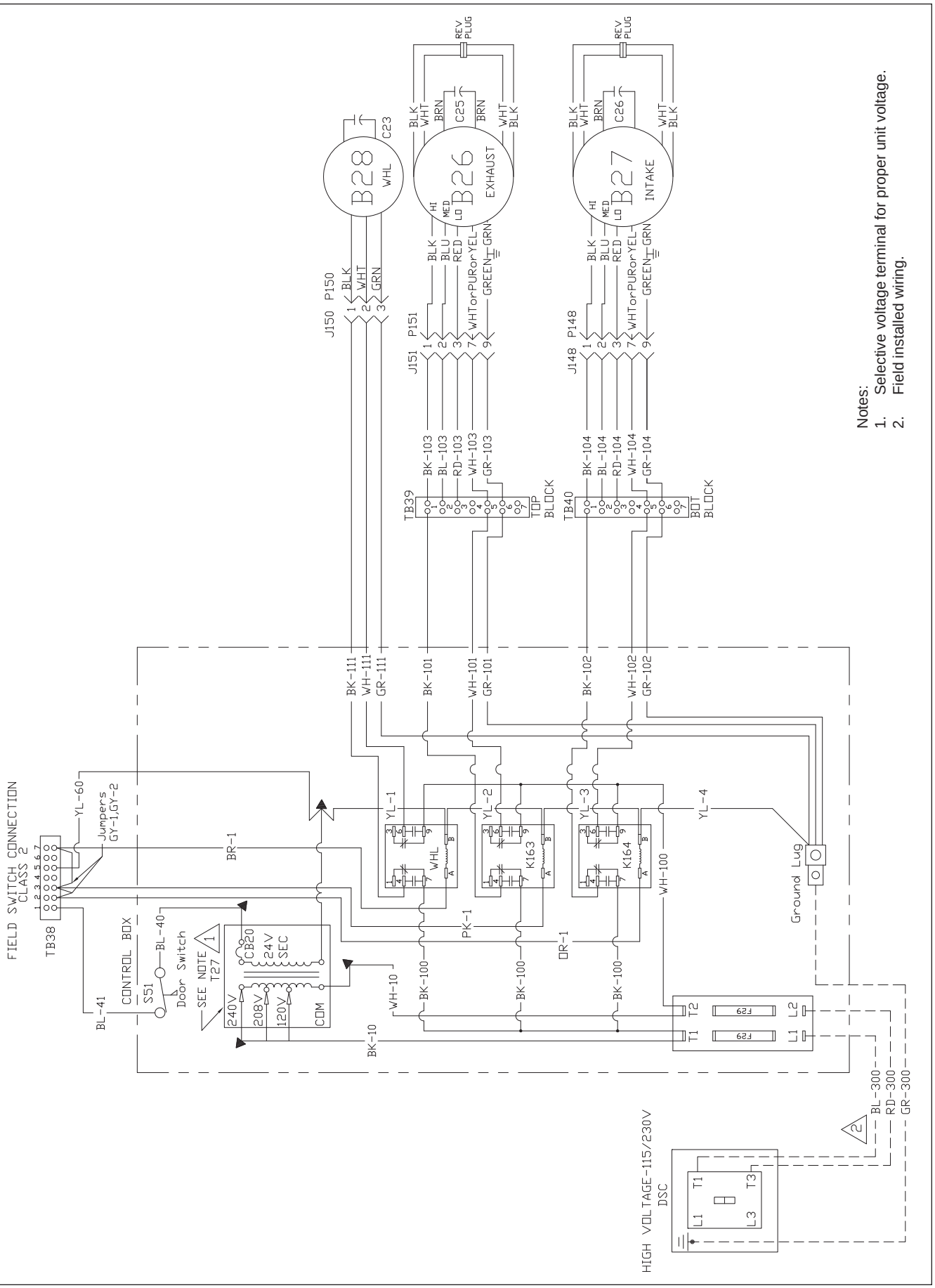
Performance Test for MV1500 with ECM Motor												
Front Exhaust Side												
External Static Pressure (in wc)		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
	Input Voltage (v)											
CFM	2	203										
	3	339	208	20								
	4	549	448	317	105	34						
	5	736	653	568	459	303	128	37				
	6	931	877	800	694	627	544	360	270	155	45	
	7	1154	1108	1045	972	908	843	776	717	641	435	366
	8	1327	1265	1197	1165	1075	1011	959	910	855	787	708
	9	1406	1374	1300	1272	1257	1202	1142	1094	1066	1029	1003
	10	1408	1348	1308	1270	1247	1199	1158	1120	1090	1043	1022

Rear Supply Side												
External Static Pressure (in wc)		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
	Input Voltage (v)											
CFM	2	181										
	3	364	198	39								
	4	580	465	296	121	34						
	5	803	755	679	541	342	191	91	40			
	6	990	917	881	785	692	547	360	211	136	54	
	7	1194	1152	1166	1067	981	896	829	737	578	404	252
	8	1365	1336	1309	1250	1214	1149	1058	1008	937	852	763
	9	1408	1405	1328	1349	1320	1253	1222	1181	1136	1085	1047
	10	1424	1408	1377	1349	1312	1271	1211	1201	1133	1100	1066

XIII - Wiring Diagrams

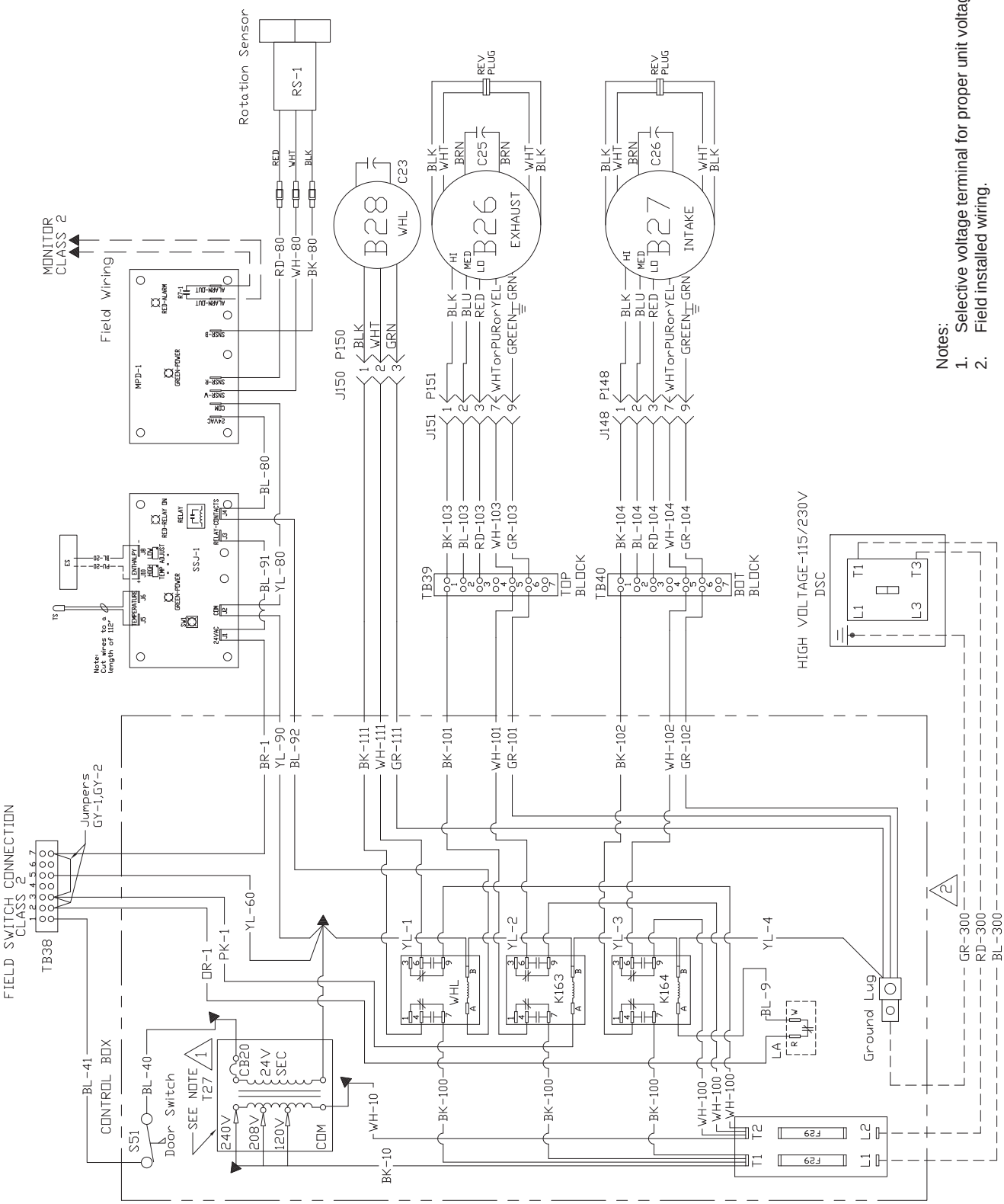


MV45001 / MV75001 / MV150001 UNIT WIRING DIAGRAM



Notes:
1. Selective voltage terminal for proper unit voltage.
2. Field installed wiring.

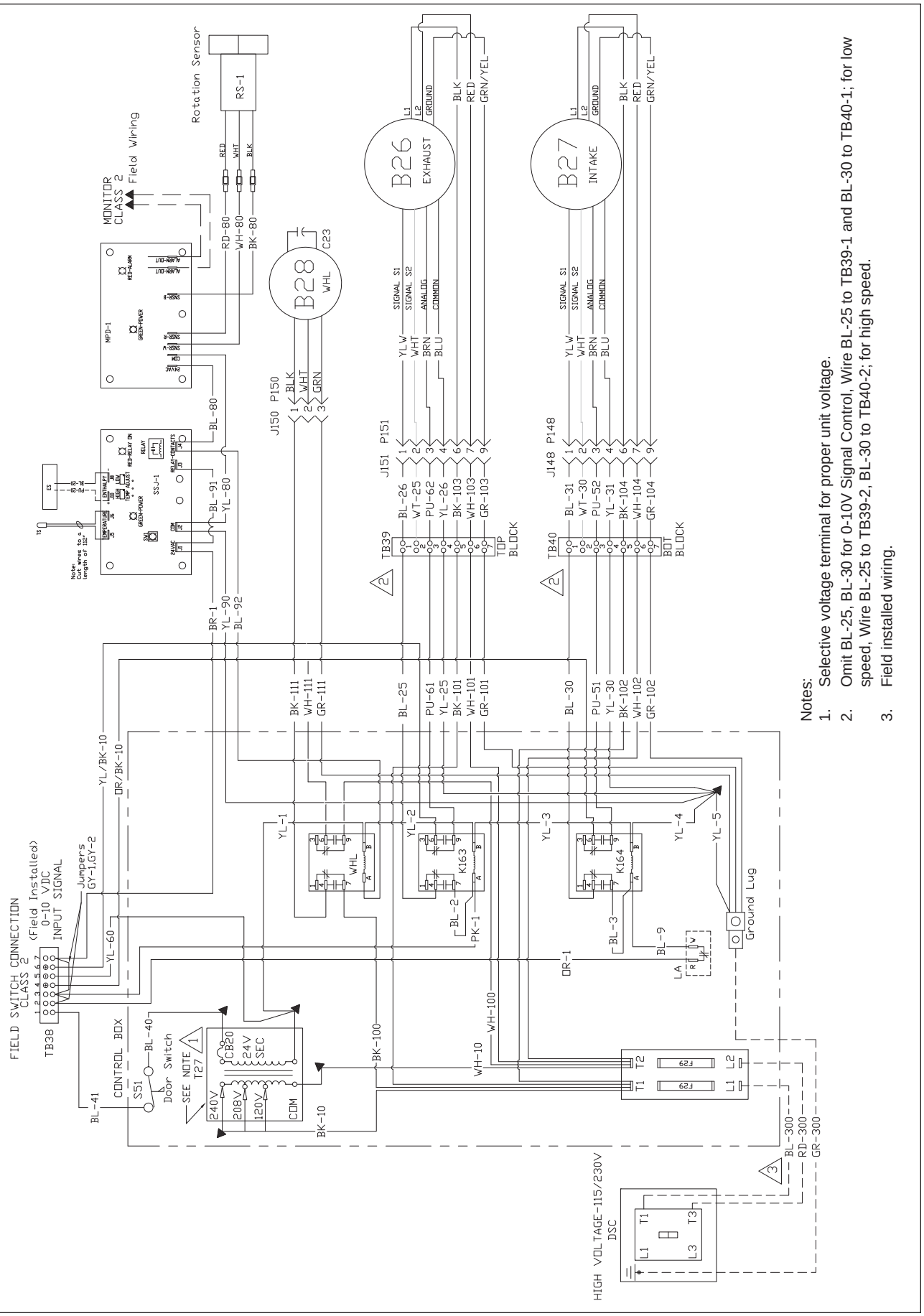
MV45002 / MV75002 / MV150002 UNIT WIRING DIAGRAM



Notes:

1. Selective voltage terminal for proper unit voltage.
2. Field installed wiring.

MV450E / MV750E / MV1500E UNIT WIRING DIAGRAM



Notes:

1. Selective voltage terminal for proper unit voltage.
2. Omit BL-25, BL-30 for 0-10V Signal Control, Wire BL-25 to TB39-1 and BL-30 to TB40-1; for low speed, Wire BL-25 to TB39-2, BL-30 to TB40-2; for high speed.
3. Field installed wiring.

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XIV - START UP INFORMATION SHEET

VOLTAGE - UMV UNIT

Incoming Voltage L1-L2_____ Running Voltage L1-L2_____ Secondary Voltage_____

AMPERAGE - MV MOTORS

Intake Motor: Nominal HP_____ Rated Amps_____ Running Amps_____

Exhaust Motor: Nominal HP_____ Rated Amps_____ Running Amps_____

Wheel Motor: Nominal HP_____ Rated Amps_____ Running Amps_____

AIRFLOW

Intake Design CFM_____ Pressure Drop_____ Calculated CFM_____

Exhaust Design CFM_____ Pressure Drop_____ Calculated CFM_____

Amb. db Temp_____ Return Air db Temp*_____ Tempered Air db Temp*_____

Amb. wb Temp_____ Return Air wb Temp*_____ Tempered Air wbTemp*_____

*** Measure after 15 minutes of run time**

INSTALLATION CHECK LIST

MiniVent Model #_____ Serial # _____

Owner_____ Owner Phone #_____

Owner Address _____

Installing Contractor_____ Start Up Mechanic_____

- ❑ Inspect the unit for transit damage and report any damage on the carrier's freight bill.
- ❑ Check model number to insure it matches the job requirements.
- ❑ Install field accessories and unit adapter panels as required. Follow accessory and unit installation manuals.
- ❑ Verify field wiring, including the wiring to any accessories.
- ❑ Check all multi-tap transformers, to insure they are set to the proper incoming voltage.
- ❑ Verify blower wheels are centered. Realign if needed.
- ❑ Prior to energizing the unit, inspect all the electrical connections.
- ❑ Power the unit. Bump the motor relay to check rotation. If blower motor fans are running backwards, de-energize power to the unit, then swap reversing plug on motors to change direction. Re-check.
- ❑ Perform all start up procedures outlined in the installation manual shipped with the unit.
- ❑ Fill in the Start Up Information as outlined on the opposite side of this sheet.
- ❑ Provide owner with information packet. Explain the thermostat and unit operation.

Maintenance Log						
Date	**Technician**	**Changed Filter**	**Checked Supply Blower**	**Checked Return Blower**	**Checked Wheel**	**Notes**