Technical Publications
Litho U.S.A.

506953-01
3/2014
Supersedes 8/2012

# MSAV® Supply Air Blower VFD Kit

## INSTALLATION INSTRUCTIONS FOR MSAV® (MULTI-STAGE AIR VOLUME) SUPPLY AIR BLOWER VFD KIT USED WITH TAA090 - 240 SERIES UNITS

**⚠ WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause personal injury, loss of life, or damage to property.

Installation and service must be performed by a licensed professional installer (or equivalent) or a service agency.

**⚠ CAUTION**

Physical contact with metal edges and corners while applying excessive force or rapid motion can result in personal injury. Be aware of, and use caution when working near these areas during installation or while servicing this equipment.

## Shipping and Packing List

Check parts for shipping damage; if any damage is found, immediately contact the last shipping carrier. All parts are shipped inside the VFD sheet metal box. Please remove all packaging prior to installation and locate all parts listed below.

**Package 1 of 1 contains the following:**

1 - Mounting bracket, long

1 - Mounting bracket, short

2 - Mounting brackets, 90º, long

2 - Mounting brackets, 90º, short

1 - Economizer control harness (only used with economizer)

1 - Bag assembly that consists of the following:

- 1 - Adapter harness, splice connector, and 8” single wire
- 1 - 24V conversion harness (only used on units without 24VAC terminal on TB1)
- 6 - Large wire nuts
- 3 - Small wire nuts
- 6 - Screws
- 5 - Wire ties

1 - 1/4” diameter metal plug

1 - Wiring diagram (537533-01)

1 - Wiring diagram (537531-01) used on units with the 24VAC terminal on TB1.

1 - Wiring diagram (537532-01) used on units without the 24VAC terminal on TB1.

## Application

**⚠ WARNING**

Electric Shock Hazard. Can cause injury or death.

Line voltage is present at all components on units with single-pole contactors, even when unit is not in operation!

Unit may have multiple power supplies. Disconnect all remote electric power supplies before opening access panel.

Unit must be grounded in accordance with national and local codes.

An externally mounted enclosure houses a variable frequency drive (VFD) and a control that stages the supply air blower airflow. Designed for use on dual-stage split systems ranging from 7.5 to 20 ton capacity (TAA090 – TAA240). The VFD alters the frequency and voltage of the power supply to control blower motor speed and airflow. Split dual-stage systems equipped with this option comply with California Code of Regulations Title 24 and ASHRAE 90.1-2010 Section 6.4.3.10 requirements for staged indoor airflow.

*NOTE - The VFD has an operational range of -40ºF to 125ºF ambient air temperature. Attic temperatures may exceed the 125ºF operating range. If the air handler is installed in an attic the MSAV kit must be mounted remotely away from the air handler in a location where the maximum operating temperature range is not exceeded.*

After the MSAV kit is installed, the supply air blower has two speeds:

1. Low speed for part-load cooling operation.

   *NOTE - Low speed is 66% of high speed.*

2. High speed for full load cooling and all heat modes.

Full speed blower operation is set by adjusting the motor pulley to deliver the desired air volume as with a conventional CAV system.

The ventilation speed is selectable between high and low speed.

*NOTE - Part load airflow in cooling mode on MSAV units should not be set below 220 cfm/nominal full load ton to reduce the risk of evaporator coil freeze-up.*

Lower operating costs are obtained when the blower is operated on lower speeds.

## Dimensions and Weights

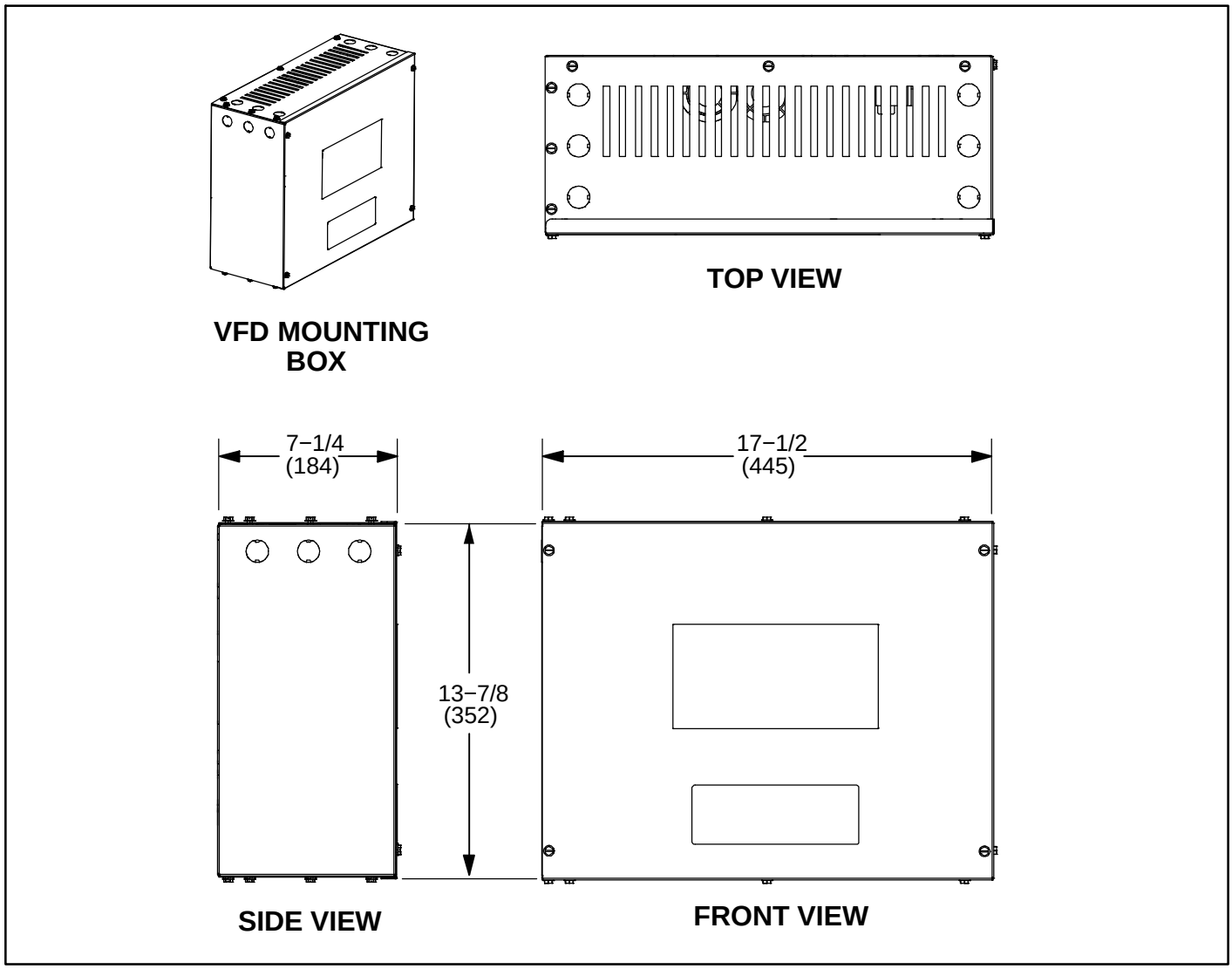



**Figure 1. Dimensions**

**Table 1. Weights**

| Motor Size | Voltage | Model Information | Cat # | Approx. Weight (lbs.) |
|---|---|---|---|---|
| 2HP | 208/240V-3ph | T2MSAV20LM1Y | 92W63 | 23 |
| | 460V-3ph | T2MSAV20LM1G | 92W64 | 23 |
| | 575V-3ph | T2MSAV20LM1J | 92W65 | 24 |
| 3HP | 208/240V-3ph | T2MSAV20LN1Y | 92W66 | 23 |
| | 460V-3ph | T2MSAV20LN1G | 92W67 | 23 |
| | 575V-3ph | T2MSAV20LN1J | 92W68 | 24 |
| 5HP | 208/240V-3ph | T2MSAV20MN1Y | 92W69 | 24 |
| | 460V-3ph | T2MSAV20MN1G | 92W70 | 23 |
| | 575V-3ph | T2MSAV20MN1J | 92W71 | 28 |
| 7.5HP | 208/240V-3ph | T2MSAV20N-1Y | 92W72 | 28 |
| | 460V-3ph | T2MSAV20N-1G | 92W73 | 27 |
| | 575V-3ph | T2MSAV20N-1J | 92W74 | 28 |

## Installation

### MOUNTING AND WIRE ROUTING

There are several possible mounting locations based on your application and installation requirement. The VFD mounting box is configured for the most used configuration (wires exiting left), but can be reconfigured so that wires exit to the right, if needed. The four most common mounting locations are outlined below. If another location is desired, please be sure there is enough wire length to reach the TAA control panel and that the chosen mounting location does not interfere with servicing the unit.

1. **Mounting Option 1, Horizontal Applications**

**Preparation**: Attach the two (2) short 90° brackets to the box as shown.

1.1. Remove the three (3) top and three (3) bottom screws that mount the wrapper to the side.

1.2. Add the brackets so they are flush with the left side of the box, and fasten brackets and wrapper using the same screws that were removed in step 1.1.

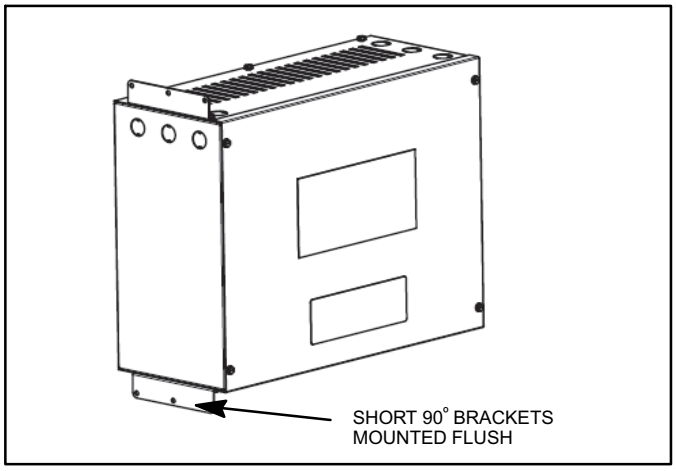



**Figure 2. Horizontal Mounting**

Mount box to the TAA blower coil in location shown using the (6) sheet metal screws provided in kit.

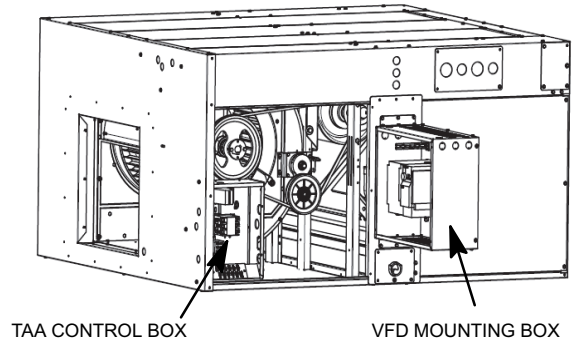



**Figure 3. Mounting VFD Box - Horizontal**

2. **Mounting Option 2, Upflow Applications**

**Preparation**: Attach the one (1) short 90° bracket and one (1) short flat bracket to the box as shown.

2.1. Remove the three (3) top and three (3) bottom screws that mount the wrapper to the side.

2.2. Add the brackets so that the bottom 90° bracket is flush with the left side of the box. The top flat bracket extends out. Fasten brackets and wrapper using the same screws that were removed in step 2.1.

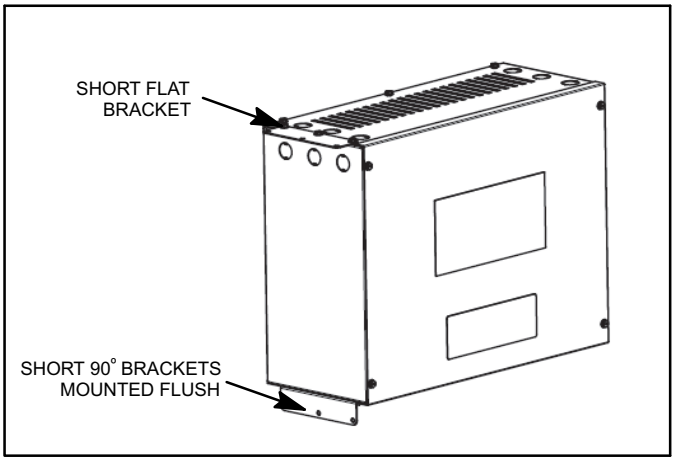



**Figure 4. Upflow Mounting**

Mount box to the TAA blower coil in location shown using the (6) sheet metal screws provided in kit.

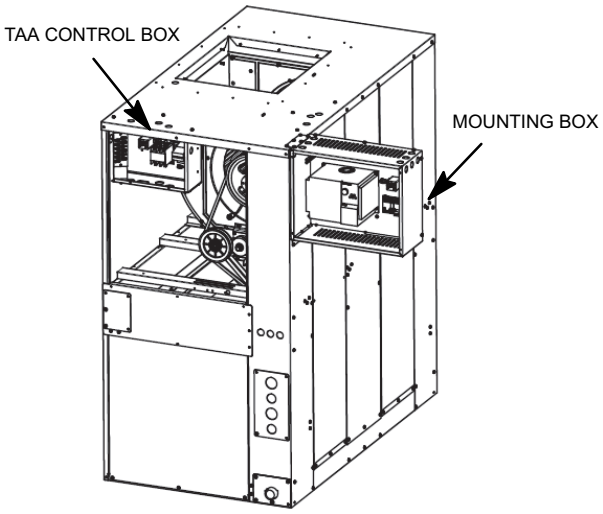



**Figure 5. Mounting VFD Box - Upflow**

3. **Mounting Option 3, Upflow Applications**

**Preparation**: Attach the one (1) long 90° bracket and one (1) long bracket to the box as shown.

3.1. Remove the three (3) top and three (3) bottom screws that mount the wrapper to the rear of the box.

3.2. Add the brackets so that the 90° bracket is on the bottom of the box. Both, the top flat bracket and the bottom bracket extend out. Fasten brackets and wrapper using the same screws that were removed in step 3.1.

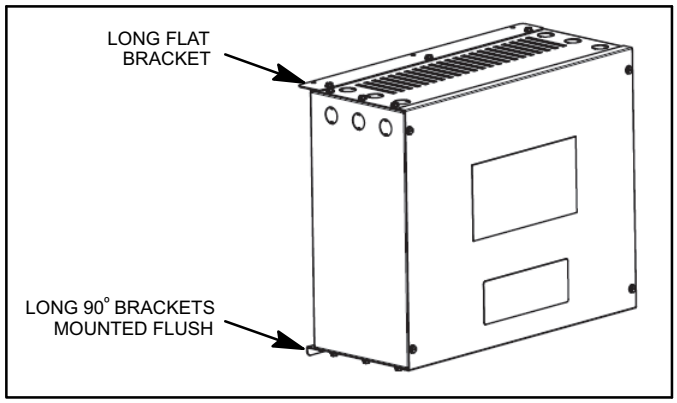



**Figure 6. Upflow Mounting (Surface Mount)**

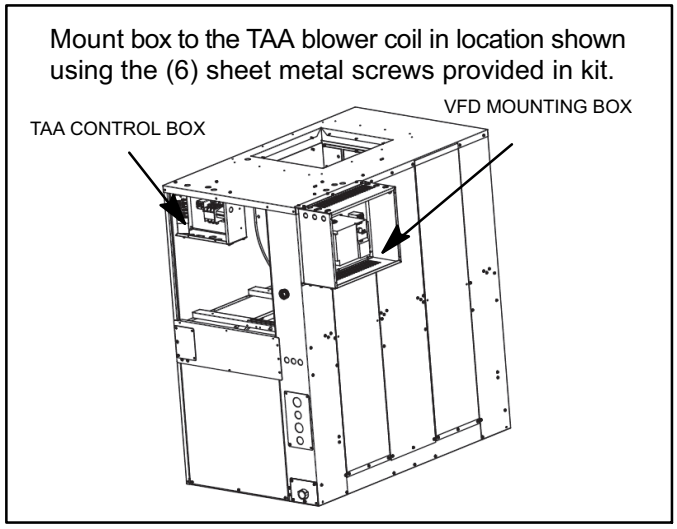



**Figure 7. Mounting VFD Box - Upflow (Surface Mount)**

4. **Mounting Option 4, Upflow Applications with Alternate Control Panel Location**

**Preparation**: Attach the one (1) long 90° bracket and one (1) flat long bracket to the box as shown.

4.1. Remove the three (3) top and three (3) bottom screws that mount the wrapper to the rear of the box.

4.2. Add the brackets so that the 90° bracket is on the bottom of the box. Both, the top flat bracket and the bottom bracket extend out. Fasten brackets and wrapper using the same screws that were removed in step 4.1.

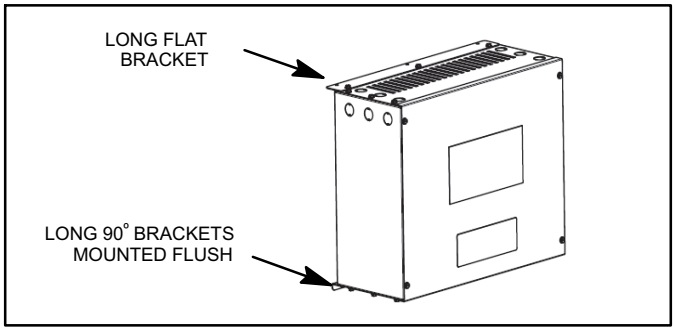



**Figure 8. Upflow Mounting (Surface Mount)**

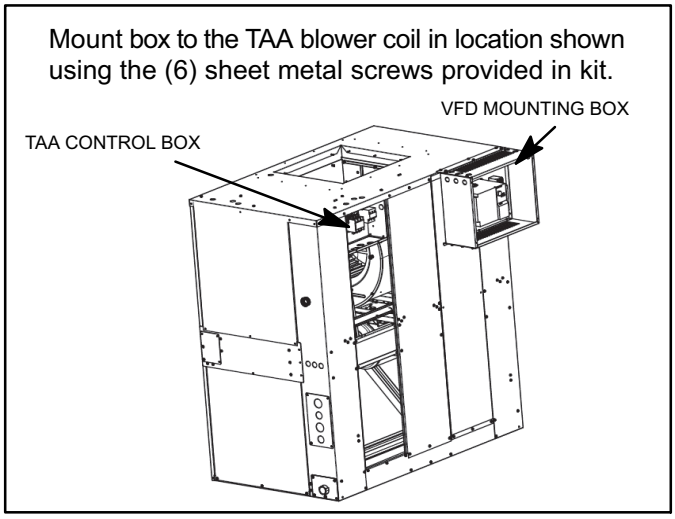



**Figure 9. Mounting VFD Box - Upflow (Surface Mount - Alternate Location)**

## ELECTRICAL CONNECTIONS

**Wire Routing**: Wiring must conform to the current National Electric Code ANSI/NFPA No. 70, or Canadian Electric Code Part I, CSA Standard C22.1, and local building codes.

Separate openings (knock-outs) have been provided for the 24V low voltage control wires, the line voltage wires to the box, and the load voltage wires from the box back to the blower. Refer to the dimension illustration for specific location

All wires are hot stamped for identification and are approx. 8 feet long exiting the VFD mounting box.

Route wires to the TAA control box. Route the 24V low voltage control wires, the line voltage wires to the box, and the load voltage wires from the box back to the blower in three (3) separate metal conduits. **Use metal conduit since it will be serving as the grounding means between the VFD mounting box and the unit.**

*NOTE: When an economizer is used, please refer to page 6 and route the 2-wire economizer harness before you route the VFD control wires. The 2-wire economizer harness has quick connect terminals and may be hard to pull through the conduit if not done first. Do not trim economizer wire harness!*

Leave enough length to make the connections and trim excess wires.

**Low Voltage Connections –** Before proceeding it must be determined whether there is a 24VAC terminal on the TB1 terminal board (see figure10 for location if present). There are two electrical installation sections, one for units with a TB1 24VAC terminal and one without.

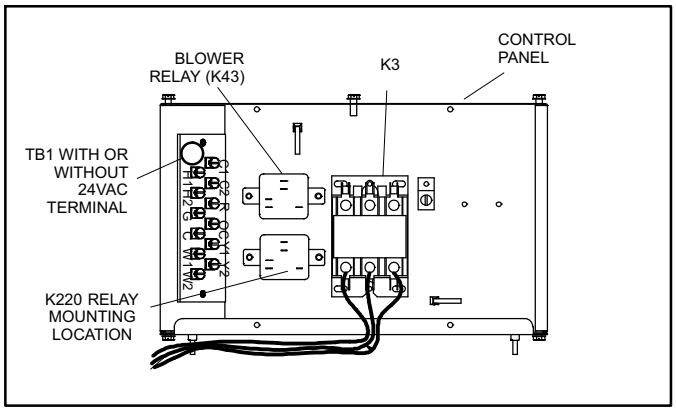



**Figure 10. Typical TAA Control Panel**

5. **Low Voltage Connections – Units with 24VAC Terminal:**

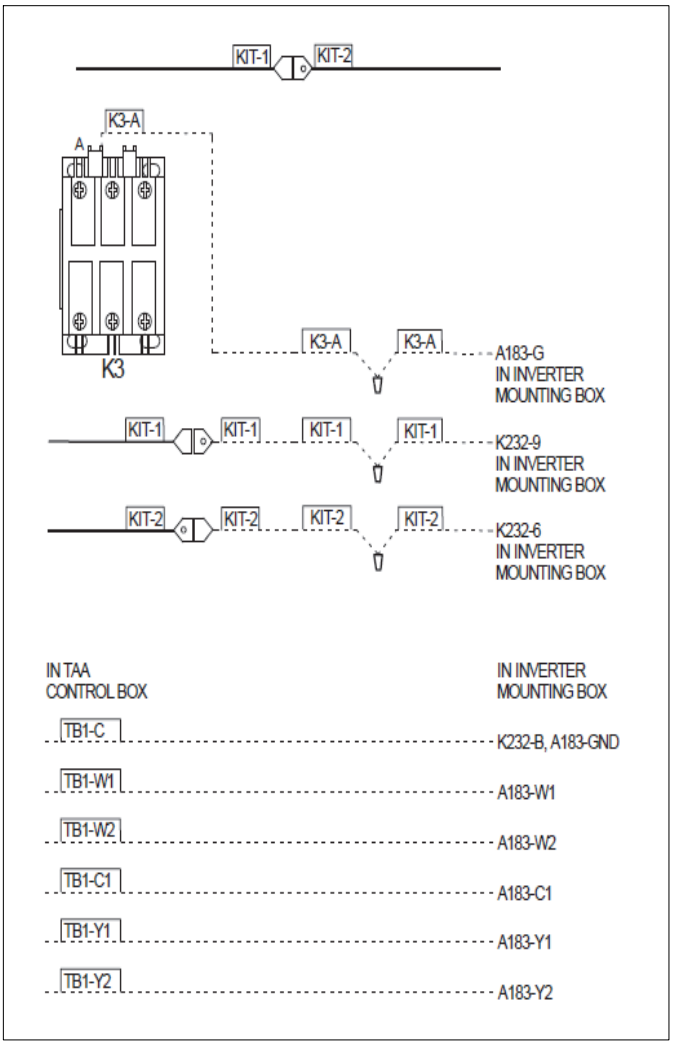



**Figure 11. Low Voltage Connections – Units with 24VAC Terminal**

5.1. Disconnect all power to unit.

5.2. Locate pink wires marked **KIT-1** and **KIT-2** (Quick connect) in the TAA control box and disconnect from each other.

5.3. Make wiring connections according to figure11.

5.4. In the low voltage wire bundle coming from the VFD mounting box, find three wires marked **K3-A, KIT-1, KIT-2** and strip ends.

5.5. Take the short adapter harness shipped with the kit marked **K3-A, KIT-1, KIT-2,** strip ends and using the three small wire nuts, connect to the wires mentioned in step 5.1. Secure wire nut connections with electrical tape (Field supplied).

5.6. Connect the kit harness wire marked **K3-A** to the **K3 blower contactor terminal A**.

5.7. Connect the kit harness wire marked **KIT-1** to the factory wire marked **KIT-1.**

5.8. Connect the kit harness wire marked **KIT-2** to the factory wire marked **KIT-2**.

5.9. Connect remaining low voltage wires to the terminal block **TB1** as shown in figure 11 and as per wire marking. Replace existing wiring diagrams on TAA unit with diagrams provided in kit.

* Use 537531-01 if TB1 has the 24VAC terminal.
* Use 537532-01 if TB1 does not have the 24VAC terminal.

6. **Low Voltage Connections – Units without 24VAC Terminal**

Older units that are not equipped with a 24VAC terminal on the TB1 terminal board require the addition of a harness in order to connect the accessory kit. In addition to the new harness a change to the 24VAC power supply wiring connection must be made. Use the following procedure and figure 12 to make the necessary changes.

6.1. Disconnect all power to unit.

6.2. **Adding the Accessory Connection Harness**

6.2.1. Remove the TB1 terminal board and disconnect the pink wire attached to the **R** terminal on the rear side of the terminal board. Once wire has been removed, connect it to the splice connector provided in kit. Connect the single pink wire provided in kit to the other end of the splice connector.

6.2.2. Connect the 24VAC power supply wire coming from the outdoor unit to the pink wire that was just added to the one side of the splice connector using wire nut provided in kit. Secure wire nut connection with electrical tape (field-provided).

6.2.3. Disconnect the factory wire marked **K43-5** from the **K43** relay and connect to the short kit harness wire marked **K43-5**.

6.2.4. Connect the other short kit harness wires marked **K43-5** to the **K43** relay.

6.2.5. Connect the short kit harness wire marked **TB1-R** to the TB1 terminal board.

6.2.6. Re-attach the TB1 terminal board to the control panel.

6.2.7. Refer to the procedures listed under ***Low Voltage Connections - Units with 24VAC Terminal, section 5*** *to continue the installation process.*

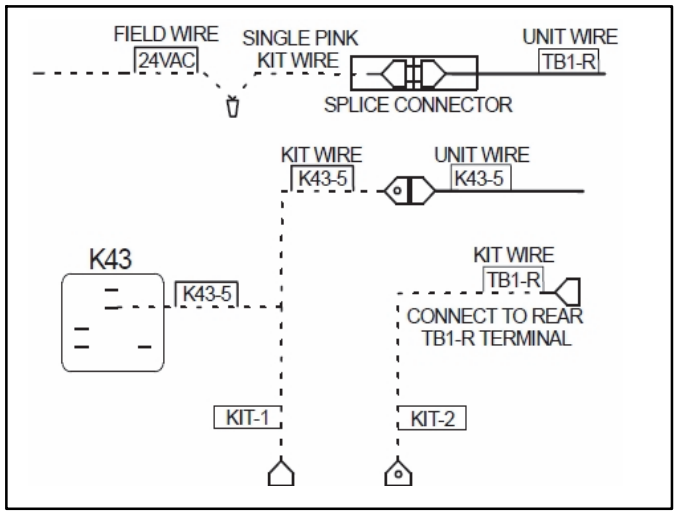



**Figure 12. Units without TB1 24VAC Terminal**

## 7. Units with Standard Economizer

7.1. This kit includes a 2-wire, 20-feet economizer harness needed to connect the VFD control board (A183) with the economizer enthalpy controller (A6).

7.2. Connect the plug of the harness to the VFD board by inserting it into the open 2-position slot of the VFD control board. Make sure the wire marking of the harness wires (**P**, **P1**) is aligned with the board marking (**P**, **P1**). The plug is keyed to only fit into slot one way.

7.3. Route the 2-wire economizer harness with the other low voltage wires to the TAA control panel. From there route the harness to the economizer. Route alongside the harness that is coming from the economizer to the TAA control panel.

7.4. Remove the jumper between **P** and **P1** terminals on the economizer enthalpy controller **A6**. See figure 13.

7.5. Connect the **P** and **P1** wires to the **P** and **P1** terminal on A6 respectively.

7.6. Adjust the minimum position potentiometer (MIN POS) on **A6** to fully open (completely clockwise) and cover hole with the .25” dia. plug provided in kit.

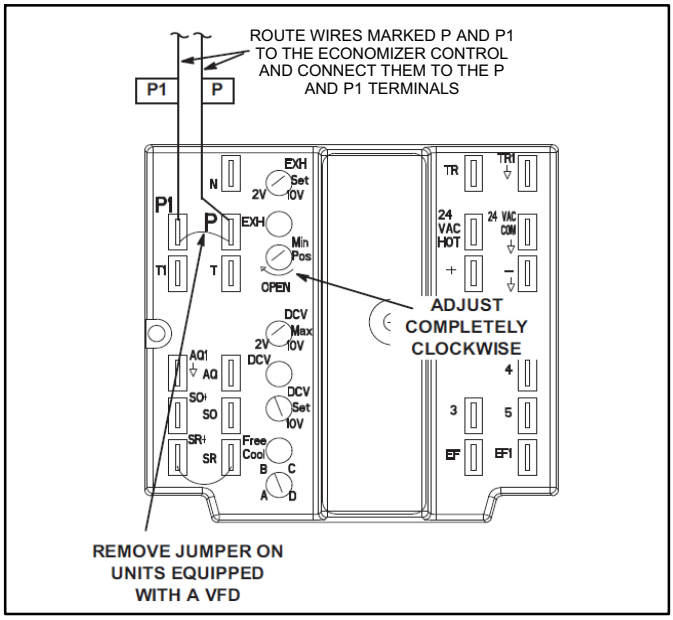



**Figure 13. A6 Enthalpy Control**

## 8. High Voltage Connections

If you install the VFD kit as an add on installation and the TAA blower coil unit has been wired, please disconnect the line voltage wires and the blower motor wires from the K3 blower contactor. Rewire the **line voltage wires** to the high voltage wires going to the VFD marked **A96-R,S,T**. Rewire the blower motor wires to the high voltage wires coming from the VFD marked **A96-U,V,W** using the large wire nuts provided in kit as shown below.

If this is a new install, please connect the incoming line voltage wires to the high voltage wires going to the VFD marked **A96-R,S,T**. Disconnect the blower motor wires and rewire to the high voltage wires coming from the VFD marked **A96-U,V,W** using the large wire nuts provided in kit as shown below.

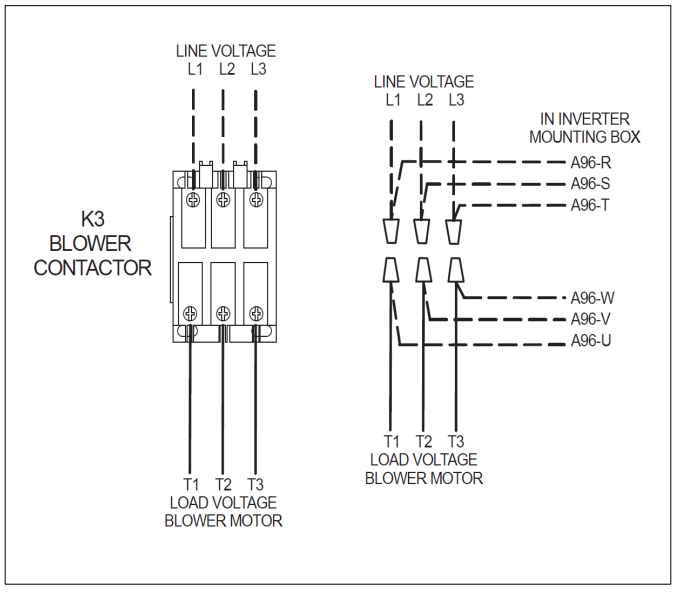



**Figure 14. High Voltage Connections**

## MSAV® Start-Up

### IMPORTANT !

The MSAV® supply air blower VFD kit is factory-set to run the blower at full speed when there is a blower (G) demand without a heating or cooling demand.

**SET MAXIMUM BLOWER CFM**

Use the following procedure to adjust the motor pulley to deliver the full load cooling or heating CFM.

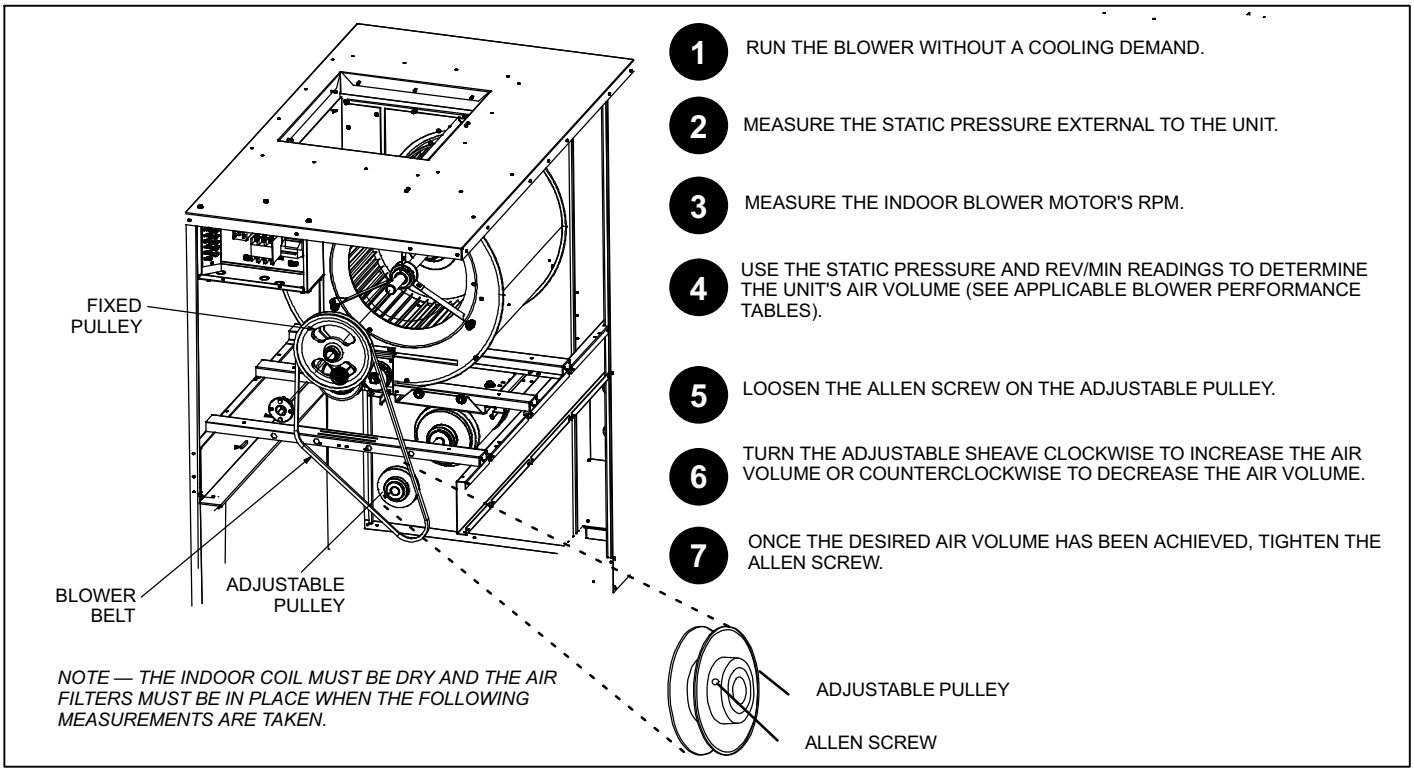



**Figure 15. Typical Air Volume Adjustment Procedure**

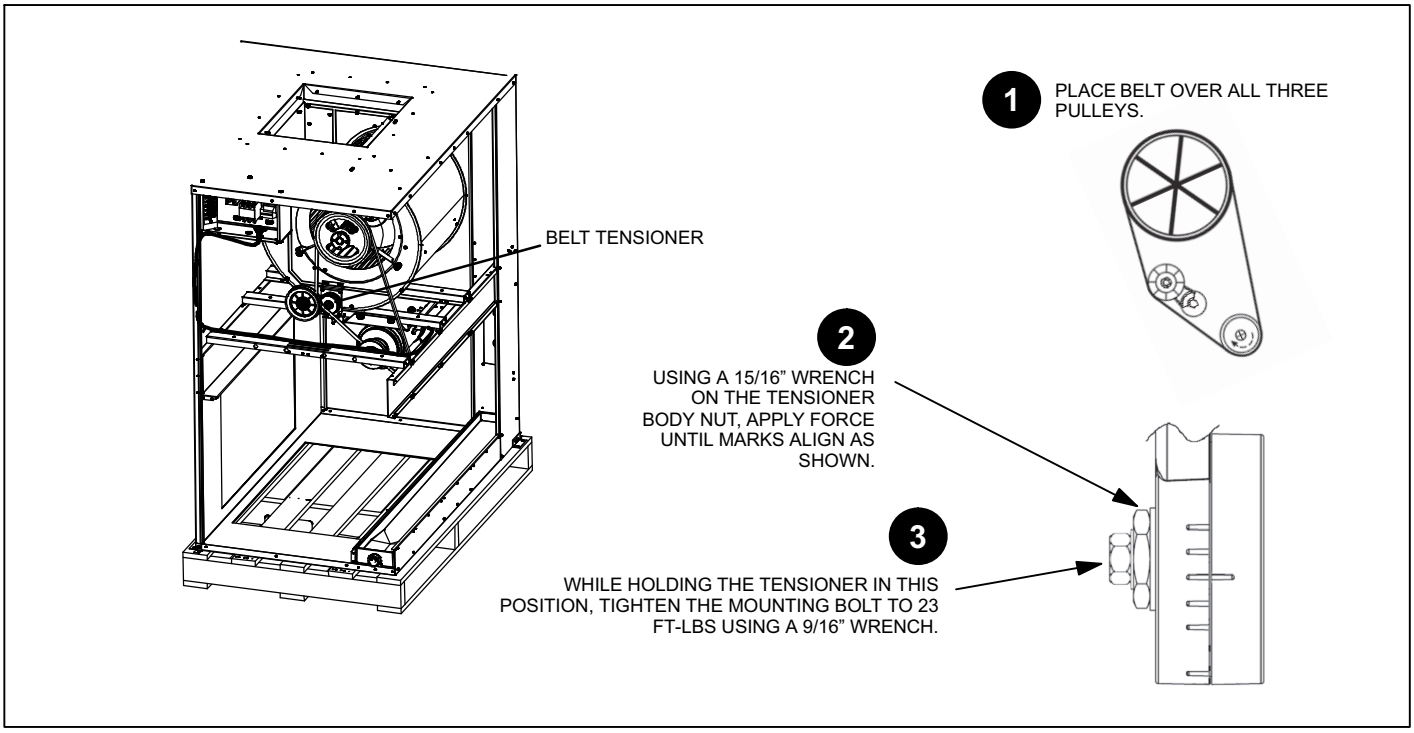



**Figure 16. Typical Blower Belt Tensioner Adjustment Procedure**

## MSAV® Sequence of Operation

1. Ventilation speed is determined by the VENT SPEED switch setting on VFD control board (LO or HI).
2. Blower operates in low speed for mechanical cooling (Y1).
3. Blower operates in high speed for any other mode (free cooling, mechanical cooling Y1+Y2, and heating).
4. Economizer damper minimum position is fully closed in unoccupied mode.

In occupied mode, the economizer damper minimum position is determined by the setting of the two potentiometers on VFD control board.

4.1. LO SPD MIN POS potentiometer sets the minimum position when blower is operating at low speed.

4.2. HI SPD MIN POS potentiometer sets the minimum position when blower is operating at high speed.

## Units With An Optional Economizer

**SET BLOWER SPEED DURING VENTILATION**

To save energy during ventilation, the blower speed can be set to low. This is accomplished by changing the ventilation speed switch on the VFD control board to **LO**. See figure 17.

The following sections describe how to set the economizer minimum damper positions only. For other information please refer to the economizer instructions included with the economizer.

**STANDARD ECONOMIZER MINIMUM POSITION SETTINGS**

Note - AFTER setting minimum positions, set the “VENT SPEED" switch on the VFD control board to the desired speed. See figure 17.

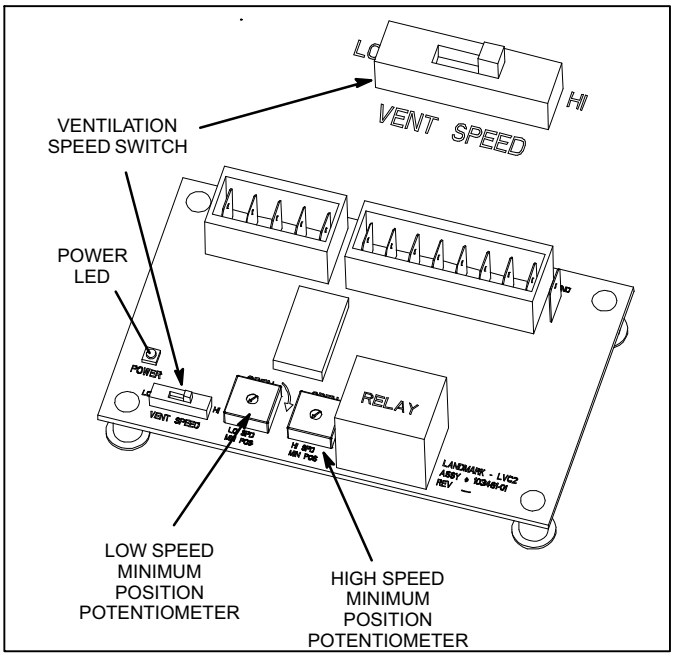



**Figure 17. VFD Control Board**

1. Set thermostat to occupied mode if the feature available. Make sure a jumper is in place between TB1 terminals R and OC when using a thermostat which does not have this feature. See figure 18.

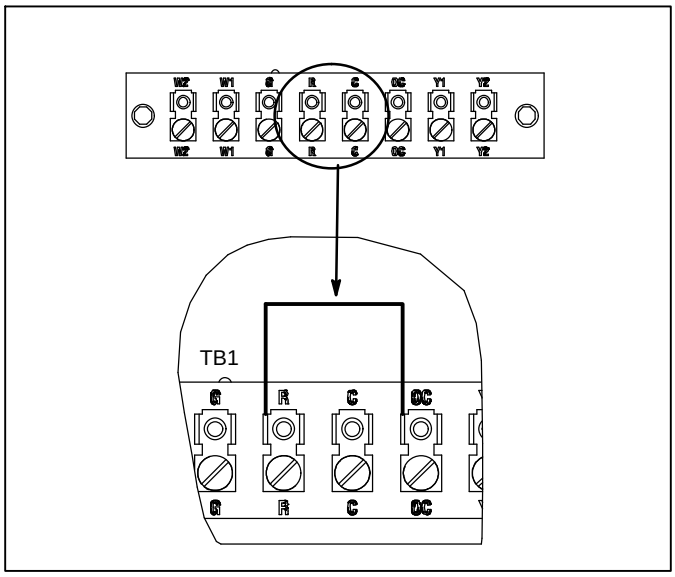
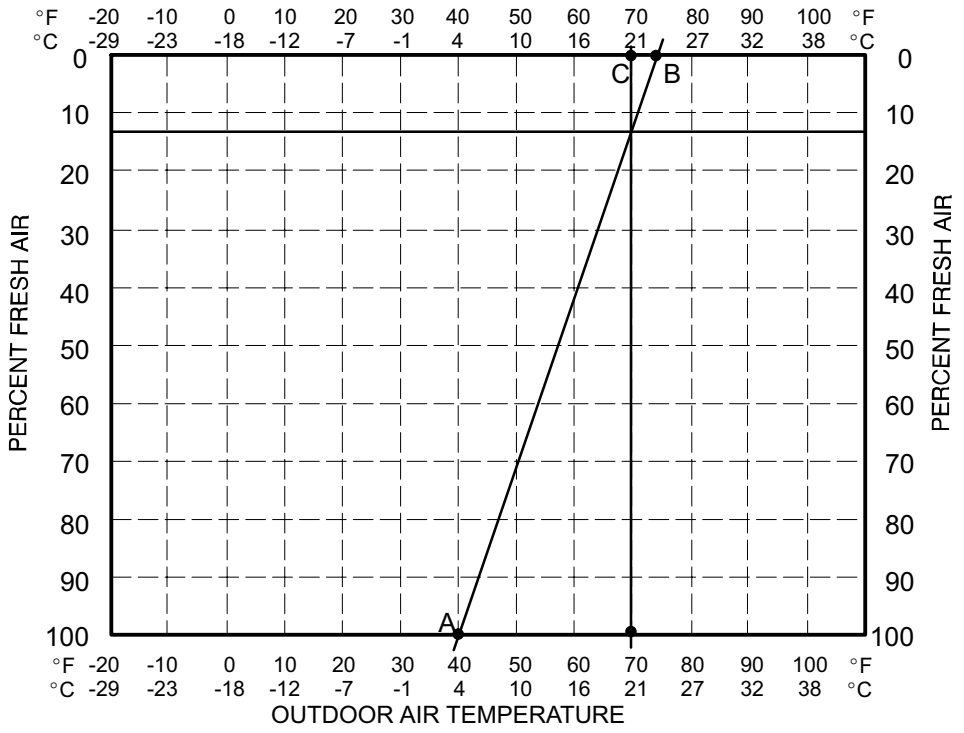



**Figure 18. VFD Control Board**

2. **Minimum damper position setting - Low Speed. Switch the “Vent Speed" switch on the VFD control board to “LO".**
3. Turn on the indoor blower using the thermostat or by placing a jumper between TB1 terminals R and G. The inverter or variable frequency drive (VFD) should display “40.00Hz".
4. Adjust the low speed minimum position potentiometer on the VFD control board to the approximate setting. See chart 1.
5. Measure outdoor air temperature. Mark the point on the bottom line of chart 1 and label the point “A" (40°F, 4°C shown).
6. Measure return air temperature. Mark that point on the top line of chart 1 and label the point “B" (74°F, 23°C shown).
7. Measure mixed air (outdoor and return air) temperature. Mark that point on the top line of chart 1 and label point “C" (70°F, 21°C shown).
8. Draw a straight line between points A and B.
9. Draw a vertical line through point C.
10. Draw a horizontal line where the two lines meet. Read the percent of fresh air intake on the side.
11. Repeat steps 4 through 10 until calculation reads desired fresh air percentage. If fresh air percentage is less than desired, adjust MIN POS SET potentiometer clockwise (further open). If fresh air percentage is more than desired, adjust MIN POS SET potentiometer counterclockwise (less open).
12. **Minimum damper position setting - High Speed. Switch the “Vent Speed" switch on the VFD control board to “HI". The VFD should display “60.00HZ".**
13. Adjust the high speed minimum position potentiometer on the VFD control board to the approximate setting. See chart 1.

14. Measure outdoor air temperature. Mark the point on the bottom line of chart 1 and label the point “A" (40°F4°C shown).
15. Measure return air temperature. Mark that point on the top line of chart 1 and label the point “B" (74°F, 23°C shown).
16. Measure mixed air (outdoor and return air) temperature. Mark that point on the top line of chart and label point “C" (70°F, 21°C shown). 1
17. Draw a straight line between points A and B.
18. Draw a vertical line through point C.
19. Draw a horizontal line where the two lines meet. Read the percent of fresh air intake on the side.
20. Repeat steps 13 through 19 until calculation reads desired fresh air percentage. If fresh air percentage is less than desired, adjust MIN POS SET potentiometer clockwise (further open). If fresh air percentage is more than desired, adjust MIN POS SET potentiometer counterclockwise (less open).
21. *AFTER setting both minimum positions, set the* “VENT SPEED" switch on the VFD control board to the desired speed. See figure 17.

**CHART 1**
**CALCULATE MINIMUM FRESH AIR PERCENTAGE**




**HIGH PERFORMANCE ECONOMIZER MINIMUM POSITION SETTINGS**

*Note - AFTER setting minimum positions, set the “VENT SPEED” switch on the VFD control board to “LO”. See figure 19. Minimum position potentiometers do not function when the unit is equipped with a W7220 economizer control.*

1. Set thermostat to occupied mode if the feature is available. Make sure a jumper is in place between TB1 terminals R and OC when using a thermostat which does not have this feature.
2. **Minimum damper position setting - Low Speed Switch the blower speed setting on the VFD control board to “LO”.**
3. Turn on the indoor blower using the thermostat or by placing a jumper between TB1 terminals R and G. The inverter or variable frequency drive (VFD) should display “40.00Hz”.
4. Navigate to the *“SETPOINTS”* menu and select “*MIN POS L”*. Adjust value (2-10VDC) to the approximate desired fresh air percentage and save the input.

   3.0 VDC - 12% Open Damper
   3.5 VDC - 18% Open Damper
   4.0 VDC - 25% Open Damper
   4.5 VDC - 31% Open Damper
   5.0 VDC - 37% Open Damper
   5.5 VDC - 43% Open Damper
   6.0 VDC - 50% Open Damper

*Note - Damper minimum position can be set lower than traditional minimum air requirements when an IAQ sensor is specified.*

5. Navigate to the “CHECKOUT” menu and select “VMAX-LS”. Press ↵.
6. Display will read “DAMPER VMAX-LS RUN?”. Press ↵.

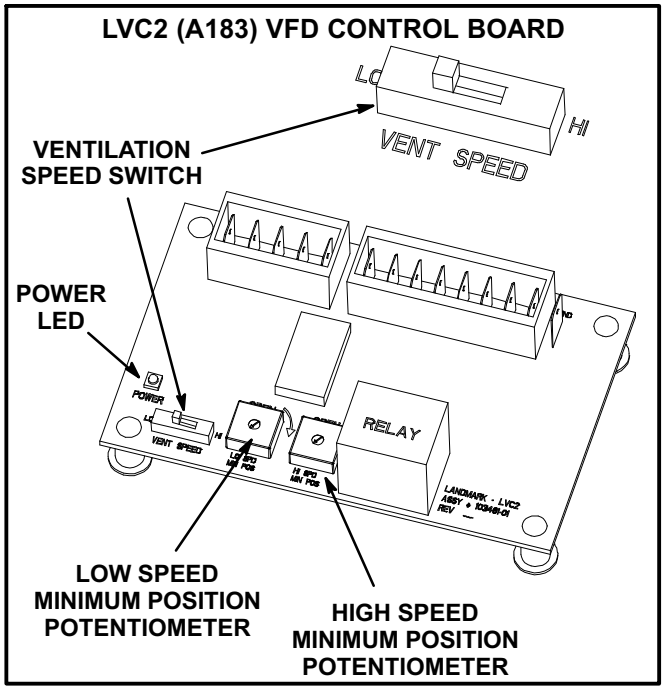



**FIGURE 19**

7. Damper will drive to the setpoint value stored in step 4.
8. Measure outdoor air temperature. Mark the point on the bottom line of chart 1 and label the point "A" (40°F, 4°C shown).
9. Measure return air temperature. Mark that point on the top line of chart 1 and label the point "B" (74°F, 23°C shown).
10. Measure mixed air (outdoor and return air) temperature. Mark that point on the top line of chart 1 and label point "C" (70°F, 21°C shown).
11. Draw a straight line between points A and B.
12. Draw a vertical line through point C.
13. Draw a horizontal line where the two lines meet. Read the percent of fresh air intake on the side.
14. Repeat steps 4 through 13 until calculation reads desired fresh air percentage.

*If fresh air percentage is less than desired, use the A6 keypad to adjust "MIN POS L" values higher (further open). If fresh air percentage is more than desired, adjust "MIN POS L" values lower (less open).*

15. **Minimum damper position setting - High Speed Switch the blower speed setting on the VFD control board to "HI".** The VFD should display "60.00HZ".
16. Navigate to the *"SETPOINTS"* menu and select "*MIN POS H"*. Adjust value (2-10VDC) to the approximate desired fresh air percentage.

3.0 VDC - 12% Open Damper

3.5 VDC - 18% Open Damper

4.0 VDC - 25% Open Damper

4.5 VDC - 31% Open Damper

5.0 VDC - 37% Open Damper

5.5 VDC - 43% Open Damper

6.0 VDC - 50% Open Damper

*Note - Damper minimum position can be set lower than traditional minimum air requirements when an IAQ sensor is specified.*

17. Navigate to the "CHECKOUT" menu and select "VMAX-HS". Press ↵.
18. Display will read "DAMPER VMAX-HS RUN?". Press ↵.
19. Damper will drive to the setpoint value stored in step 16.
20. Measure outdoor air temperature. Mark the point on the bottom line of chart 1 and label the point "A" (40°F, 4°C shown).
21. Measure return air temperature. Mark that point on the top line of chart 1 and label the point "B" (74°F, 23°C shown).
22. Measure mixed air (outdoor and return air) temperature. Mark that point on the top line of chart 1 and label point "C" (70°F, 21°C shown).
23. Draw a straight line between points A and B.
24. Draw a vertical line through point C.
25. Draw a horizontal line where the two lines meet. Read the percent of fresh air intake on the side.
26. Repeat steps 16 through 25 until calculation reads desired fresh air percentage.

If fresh air percentage is less than desired, use the A6 keypad to adjust *"MIN POS H"* values higher (further open). If fresh air percentage is more than desired, adjust *"MIN POS H"* values lower (less open).

27. **Set the "VENT SPEED" switch on the VFD control board to "LO".**

**DEMAND CONTROL VENTILATION (DCV)**

When a 2-10VDC $CO_2$ sensor is wired to the controller (leads provided), the *DCV SET, VENT MIN*, and *VENT MAX* parameters will appear under *"SETPOINTS"* menu. Navigate to the *"SETPOINTS"* menu to adjust setpoints as desired. Refer to the Honeywell manual provided for more details.

## High Performance Economizer - Sequence of Operation

Refer to tables 2 or 3.

When the outdoor air is suitable and a thermostat demand calls for 1st. stage cooling (Y1), the economizer will modulate the dampers between the minimum and fully open positions to maintain a 55°F (12.8°C) mixed air temperature. When there is an increased thermostat demand for second stage cooling (Y2), the economizer damper opens 100% and the economizer controller (A6) will bring on the compressor. At that point, K8 relay will switch from the R1 mixed air sensor to R51 resistor allowing the economizer damper to stay open 100%. The damper will stay open 100% with the compressor running simultaneously until Y2 demand is met.

*NOTE – Because of the sensor location, the mixed air temperature displayed on the economizer controller (A6) is only true when no mechanical cooling or heating is initiated. During mechanical cooling (compressor running), the MA temperature displayed will be the temperature equivalent of the fixed resistor and not the actual MA temperature.*

### *TROUBLESHOOTING, ALARMS AND CHECKOUT TESTS*

Refer to the Honeywell manual provided for details.

**TABLE 2**
**ECONOMIZER OPERATION - NO DCV ($CO_2$ SENSOR, 2-SPEED SUPPLY FAN)**

| DCV | OA Good to Economize? | Y1-I | Y2-I | Fan Speed | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| None | No | Off | Off | Low | 0-v/Off | 0-v/Off | MIN POS L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | MIN POS L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | MIN POS H | Closed |
| None | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | MIN POS L | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | MIN POS L to Full-Open | Closed to Full-Open |
| | | On | On | High | Delay (b) 24-v/On | 0-v/Off | Full-Open | Full-Open |

(b) With 2SP FAN DELAY (Advance Setup Menu), when in the economizing mode, there is a delay for the high speed fan to try to satisfy the call for second-stage cooling by turning on the fan to high and opening the OA dampers to 100% before the first-stage mechanical cooling is enabled.

**TABLE 3**
**ECONOMIZER OPERATION - WITH DCV ($CO_2$ SENSOR, 2-SPEED SUPPLY FAN)**

| DCV | OA Good to Economize? | Y1-I | Y2-I | Fan Speed | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| Below set | No | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | VENTMIN L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN H | Closed |
| | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | VENTMIN L to Full-Open | Closed to Full-Open |
| | | On | On | High | Delay (b) 24-v/On | 0-v/Off | Full-Open | Full-Open |
| Above set | No | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN H to VENTMAX H | Closed |
| | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | VENTMIN L to Full-Open | Closed to Full-Open |
| | | On | On | High | Delay (b) 24-v/On | 0-v/Off | Full-Open | Full-Open |

(b) With 2SP FAN DELAY (Advance Setup Menu), when in the economizing mode, there is a delay for the high speed fan to try to satisfy the call for second-stage cooling by turning on the fan to high and opening the OA dampers to 100% before the first-stage mechanical cooling is enabled.

## Blower Performance

### TA 090 BLOWER PERFORMANCE

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.1 | | 0.2 | | 0.3 | | 0.4 | | 0.5 | | 0.6 | | 0.7 | | 0.8 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 1600 | 430 | 0.52 | 485 | 0.62 | 539 | 0.71 | 590 | 0.77 | 636 | 0.83 | 680 | 0.88 | 721 | 0.94 | 758 | 0.99 |
| 1700 | 439 | 0.55 | 494 | 0.65 | 548 | 0.74 | 599 | 0.80 | 645 | 0.86 | 688 | 0.91 | 729 | 0.97 | 766 | 1.03 |
| 1800 | 448 | 0.58 | 503 | 0.68 | 558 | 0.77 | 608 | 0.83 | 654 | 0.89 | 697 | 0.95 | 737 | 1.01 | 774 | 1.08 |
| 1900 | 457 | 0.62 | 513 | 0.72 | 567 | 0.80 | 617 | 0.86 | 663 | 0.93 | 705 | 0.99 | 745 | 1.06 | 781 | 1.12 |
| 2000 | 467 | 0.65 | 523 | 0.75 | 577 | 0.83 | 627 | 0.90 | 672 | 0.96 | 714 | 1.03 | 753 | 1.10 | 789 | 1.17 |
| 2100 | 477 | 0.68 | 533 | 0.78 | 587 | 0.86 | 637 | 0.93 | 681 | 1.00 | 723 | 1.08 | 762 | 1.15 | 797 | 1.22 |
| 2200 | 487 | 0.72 | 543 | 0.82 | 597 | 0.90 | 646 | 0.97 | 691 | 1.05 | 732 | 1.12 | 770 | 1.20 | 805 | 1.27 |
| 2300 | 497 | 0.75 | 554 | 0.85 | 608 | 0.94 | 657 | 1.01 | 700 | 1.09 | 741 | 1.17 | 779 | 1.25 | 813 | 1.32 |
| 2400 | 508 | 0.79 | 565 | 0.89 | 619 | 0.98 | 667 | 1.06 | 710 | 1.14 | 750 | 1.23 | 787 | 1.30 | 822 | 1.38 |
| 2500 | 519 | 0.83 | 577 | 0.94 | 630 | 1.02 | 677 | 1.10 | 720 | 1.19 | 759 | 1.28 | 796 | 1.36 | 830 | 1.43 |
| 2600 | 531 | 0.87 | 588 | 0.98 | 641 | 1.07 | 688 | 1.16 | 729 | 1.25 | 769 | 1.34 | 805 | 1.42 | 839 | 1.49 |
| 2700 | 543 | 0.92 | 600 | 1.03 | 653 | 1.12 | 698 | 1.21 | 739 | 1.31 | 778 | 1.40 | 814 | 1.48 | 848 | 1.55 |
| 2800 | 555 | 0.97 | 613 | 1.08 | 664 | 1.17 | 709 | 1.27 | 749 | 1.37 | 788 | 1.46 | 824 | 1.54 | 857 | 1.62 |
| 2900 | 568 | 1.02 | 625 | 1.13 | 676 | 1.22 | 719 | 1.32 | 759 | 1.43 | 797 | 1.52 | 833 | 1.60 | 866 | 1.68 |
| 3000 | 581 | 1.07 | 638 | 1.18 | 687 | 1.28 | 730 | 1.39 | 769 | 1.49 | 807 | 1.58 | 842 | 1.67 | 875 | 1.75 |
| 3100 | 595 | 1.12 | 651 | 1.24 | 699 | 1.34 | 740 | 1.45 | 779 | 1.56 | 817 | 1.65 | 852 | 1.73 | 883 | 1.82 |
| 3200 | 609 | 1.18 | 664 | 1.30 | 710 | 1.41 | 751 | 1.52 | 789 | 1.63 | 827 | 1.72 | 861 | 1.80 | 892 | 1.89 |
| 3300 | 624 | 1.24 | 677 | 1.36 | 722 | 1.48 | 761 | 1.59 | 799 | 1.70 | 836 | 1.79 | 870 | 1.88 | 901 | 1.97 |
| 3400 | 639 | 1.30 | 690 | 1.43 | 733 | 1.55 | 772 | 1.67 | 810 | 1.77 | 846 | 1.86 | 879 | 1.95 | 909 | 2.05 |
| 3500 | 653 | 1.37 | 703 | 1.50 | 745 | 1.62 | 782 | 1.75 | 820 | 1.85 | 856 | 1.94 | 888 | 2.03 | 917 | 2.14 |
| 3600 | 668 | 1.44 | 715 | 1.57 | 756 | 1.70 | 793 | 1.83 | 830 | 1.93 | 865 | 2.02 | 897 | 2.12 | 925 | 2.24 |

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.9 | | 1.0 | | 1.1 | | 1.2 | | 1.3 | | 1.4 | | 1.5 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 1600 | 793 | 1.05 | 826 | 1.1 | 859 | 1.15 | 891 | 1.21 | 923 | 1.27 | 952 | 1.34 | 981 | 1.42 |
| 1700 | 800 | 1.09 | 833 | 1.15 | 866 | 1.20 | 899 | 1.26 | 930 | 1.33 | 959 | 1.40 | 987 | 1.48 |
| 1800 | 807 | 1.13 | 840 | 1.19 | 873 | 1.25 | 906 | 1.31 | 936 | 1.38 | 966 | 1.46 | 994 | 1.54 |
| 1900 | 815 | 1.18 | 848 | 1.24 | 881 | 1.30 | 913 | 1.36 | 943 | 1.44 | 972 | 1.52 | 1000 | 1.60 |
| 2000 | 823 | 1.23 | 856 | 1.29 | 889 | 1.35 | 921 | 1.42 | 951 | 1.50 | 979 | 1.58 | 1007 | 1.67 |
| 2100 | 830 | 1.28 | 863 | 1.34 | 896 | 1.40 | 928 | 1.48 | 958 | 1.56 | 986 | 1.65 | 1013 | 1.74 |
| 2200 | 838 | 1.33 | 871 | 1.39 | 904 | 1.46 | 935 | 1.54 | 965 | 1.63 | 993 | 1.72 | 1020 | 1.81 |
| 2300 | 846 | 1.39 | 880 | 1.45 | 912 | 1.52 | 943 | 1.61 | 972 | 1.70 | 999 | 1.79 | 1026 | 1.88 |
| 2400 | 855 | 1.44 | 888 | 1.51 | 920 | 1.59 | 950 | 1.67 | 979 | 1.77 | 1006 | 1.86 | 1033 | 1.96 |
| 2500 | 863 | 1.50 | 896 | 1.57 | 928 | 1.65 | 958 | 1.74 | 986 | 1.84 | 1013 | 1.94 | 1039 | 2.04 |
| 2600 | 872 | 1.56 | 904 | 1.64 | 936 | 1.72 | 965 | 1.82 | 993 | 1.92 | 1019 | 2.02 | 1045 | 2.12 |
| 2700 | 880 | 1.62 | 913 | 1.70 | 943 | 1.79 | 972 | 1.89 | 1000 | 2.00 | 1026 | 2.10 | 1052 | 2.20 |
| 2800 | 889 | 1.69 | 921 | 1.77 | 951 | 1.87 | 979 | 1.97 | 1006 | 2.08 | 1033 | 2.18 | 1058 | 2.29 |
| 2900 | 898 | 1.76 | 929 | 1.85 | 959 | 1.95 | 987 | 2.05 | 1013 | 2.16 | 1039 | 2.26 | 1064 | 2.37 |
| 3000 | 906 | 1.83 | 937 | 1.93 | 966 | 2.03 | 994 | 2.13 | 1020 | 2.24 | 1046 | 2.35 | 1070 | 2.46 |
| 3100 | 914 | 1.91 | 944 | 2.01 | 973 | 2.11 | 1001 | 2.22 | 1027 | 2.33 | 1052 | 2.44 | 1077 | 2.55 |
| 3200 | 922 | 1.99 | 952 | 2.09 | 980 | 2.20 | 1008 | 2.30 | 1033 | 2.41 | 1058 | 2.53 | 1083 | 2.64 |
| 3300 | 930 | 2.07 | 959 | 2.18 | 987 | 2.29 | 1014 | 2.39 | 1040 | 2.50 | 1065 | 2.62 | 1089 | 2.73 |
| 3400 | 938 | 2.16 | 966 | 2.27 | 994 | 2.38 | 1021 | 2.49 | 1046 | 2.60 | 1071 | 2.71 | 1095 | 2.83 |
| 3500 | 945 | 2.26 | 973 | 2.37 | 1001 | 2.48 | 1028 | 2.58 | 1053 | 2.69 | 1077 | 2.81 | 1101 | 2.93 |
| 3600 | 953 | 2.35 | 980 | 2.47 | 1008 | 2.58 | 1034 | 2.68 | 1059 | 2.79 | 1084 | 2.91 | 1107 | 3.03 |

## TA 120 BLOWER PERFORMANCE

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.1 | | 0.2 | | 0.3 | | 0.4 | | 0.5 | | 0.6 | | 0.7 | | 0.8 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 2200 | 428 | 0.09 | 463 | 0.2 | 501 | 0.32 | 541 | 0.45 | 585 | 0.60 | 632 | 0.75 | 674 | 0.84 | 712 | 0.88 |
| 2400 | 441 | 0.19 | 476 | 0.29 | 513 | 0.41 | 553 | 0.54 | 596 | 0.68 | 642 | 0.82 | 681 | 0.9 | 715 | 0.94 |
| 2600 | 455 | 0.29 | 489 | 0.39 | 525 | 0.50 | 565 | 0.63 | 608 | 0.77 | 654 | 0.90 | 687 | 0.96 | 720 | 1.01 |
| 2800 | 469 | 0.40 | 502 | 0.49 | 538 | 0.60 | 577 | 0.72 | 621 | 0.85 | 667 | 0.99 | 693 | 1.03 | 727 | 1.09 |
| 3000 | 484 | 0.51 | 516 | 0.60 | 552 | 0.70 | 591 | 0.82 | 635 | 0.95 | 677 | 1.07 | 699 | 1.10 | 736 | 1.18 |
| 3200 | 499 | 0.62 | 531 | 0.70 | 566 | 0.80 | 606 | 0.92 | 651 | 1.06 | 684 | 1.15 | 707 | 1.18 | 746 | 1.28 |
| 3400 | 514 | 0.73 | 546 | 0.81 | 582 | 0.91 | 622 | 1.03 | 667 | 1.17 | 690 | 1.22 | 717 | 1.28 | 758 | 1.40 |
| 3600 | 529 | 0.84 | 562 | 0.93 | 598 | 1.03 | 639 | 1.15 | 679 | 1.28 | 697 | 1.31 | 730 | 1.40 | 772 | 1.52 |
| 3800 | 545 | 0.96 | 579 | 1.05 | 616 | 1.15 | 658 | 1.28 | 686 | 1.37 | 706 | 1.41 | 745 | 1.53 | 786 | 1.65 |
| 4000 | 562 | 1.09 | 596 | 1.18 | 634 | 1.29 | 674 | 1.41 | 693 | 1.46 | 720 | 1.54 | 761 | 1.67 | 802 | 1.79 |
| 4200 | 580 | 1.23 | 615 | 1.31 | 654 | 1.42 | 684 | 1.52 | 702 | 1.57 | 737 | 1.69 | 778 | 1.82 | 819 | 1.94 |
| 4400 | 600 | 1.37 | 635 | 1.45 | 672 | 1.56 | 691 | 1.62 | 717 | 1.72 | 756 | 1.86 | 796 | 1.98 | 836 | 2.09 |
| 4600 | 619 | 1.51 | 655 | 1.59 | 683 | 1.68 | 702 | 1.76 | 736 | 1.89 | 775 | 2.02 | 814 | 2.13 | 853 | 2.24 |
| 4800 | 639 | 1.65 | 673 | 1.73 | 692 | 1.81 | 719 | 1.93 | 757 | 2.08 | 795 | 2.19 | 832 | 2.30 | 871 | 2.40 |
| 5000 | 659 | 1.78 | 685 | 1.87 | 706 | 1.97 | 740 | 2.12 | 778 | 2.26 | 814 | 2.37 | 851 | 2.46 | 889 | 2.56 |

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.9 | | 1.0 | | 1.1 | | 1.2 | | 1.3 | | 1.4 | | 1.5 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 2200 | 751 | 0.96 | 795 | 1.08 | 839 | 1.21 | 884 | 1.34 | 928 | 1.48 | 971 | 1.61 | 1014 | 1.73 |
| 2400 | 755 | 1.03 | 801 | 1.16 | 847 | 1.29 | 892 | 1.43 | 936 | 1.56 | 981 | 1.70 | 1024 | 1.83 |
| 2600 | 762 | 1.11 | 808 | 1.24 | 855 | 1.38 | 901 | 1.52 | 946 | 1.65 | 990 | 1.79 | 1034 | 1.92 |
| 2800 | 770 | 1.20 | 816 | 1.33 | 863 | 1.47 | 910 | 1.61 | 955 | 1.75 | 1000 | 1.88 | 1044 | 2.01 |
| 3000 | 779 | 1.29 | 826 | 1.42 | 873 | 1.56 | 919 | 1.70 | 964 | 1.84 | 1009 | 1.98 | 1054 | 2.11 |
| 3200 | 790 | 1.40 | 836 | 1.53 | 882 | 1.66 | 929 | 1.80 | 974 | 1.94 | 1019 | 2.07 | 1063 | 2.21 |
| 3400 | 802 | 1.51 | 847 | 1.64 | 893 | 1.77 | 938 | 1.91 | 983 | 2.04 | 1028 | 2.17 | 1072 | 2.31 |
| 3600 | 815 | 1.64 | 859 | 1.76 | 904 | 1.89 | 949 | 2.03 | 993 | 2.16 | 1037 | 2.29 | 1080 | 2.42 |
| 3800 | 829 | 1.77 | 873 | 1.90 | 917 | 2.03 | 961 | 2.16 | 1005 | 2.29 | 1048 | 2.42 | 1090 | 2.55 |
| 4000 | 845 | 1.91 | 888 | 2.04 | 932 | 2.17 | 975 | 2.31 | 1018 | 2.43 | 1060 | 2.56 | 1102 | 2.69 |
| 4200 | 861 | 2.06 | 904 | 2.19 | 948 | 2.32 | 990 | 2.46 | 1033 | 2.59 | 1074 | 2.71 | 1116 | 2.84 |
| 4400 | 878 | 2.21 | 921 | 2.34 | 963 | 2.47 | 1006 | 2.60 | 1048 | 2.73 | 1089 | 2.86 | 1130 | 2.98 |
| 4600 | 894 | 2.36 | 936 | 2.49 | 979 | 2.61 | 1021 | 2.74 | 1063 | 2.87 | 1104 | 3.00 | 1145 | 3.12 |
| 4800 | 911 | 2.51 | 953 | 2.63 | 995 | 2.76 | 1036 | 2.88 | 1078 | 3.01 | 1119 | 3.13 | 1161 | 3.26 |
| 5000 | 928 | 2.67 | 969 | 2.78 | 1011 | 2.90 | 1052 | 3.03 | 1094 | 3.15 | 1135 | 3.27 | 1176 | 3.40 |

## TA 150 BLOWER PERFORMANCE

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.1 | | 0.2 | | 0.3 | | 0.4 | | 0.5 | | 0.6 | | 0.7 | | 0.8 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| **2800** | 500 | 0.49 | 537 | 0.59 | 578 | 0.72 | 622 | 0.86 | 668 | 0.99 | 694 | 1.03 | 729 | 1.10 | 771 | 1.20 |
| **3000** | 519 | 0.60 | 556 | 0.71 | 597 | 0.83 | 642 | 0.97 | 681 | 1.08 | 704 | 1.11 | 743 | 1.20 | 785 | 1.30 |
| **3200** | 538 | 0.71 | 576 | 0.82 | 618 | 0.95 | 663 | 1.10 | 690 | 1.15 | 717 | 1.21 | 758 | 1.31 | 800 | 1.42 |
| **3400** | 558 | 0.83 | 597 | 0.95 | 640 | 1.09 | 680 | 1.21 | 698 | 1.24 | 734 | 1.33 | 776 | 1.44 | 818 | 1.55 |
| **3600** | 579 | 0.97 | 620 | 1.09 | 664 | 1.23 | 689 | 1.30 | 712 | 1.35 | 753 | 1.47 | 795 | 1.58 | 837 | 1.69 |
| **3800** | 602 | 1.11 | 644 | 1.24 | 681 | 1.35 | 698 | 1.39 | 731 | 1.49 | 773 | 1.61 | 815 | 1.72 | 857 | 1.84 |
| **4000** | 627 | 1.26 | 669 | 1.39 | 690 | 1.45 | 714 | 1.52 | 754 | 1.65 | 795 | 1.76 | 835 | 1.87 | 877 | 1.98 |
| **4200** | 653 | 1.42 | 684 | 1.52 | 701 | 1.57 | 736 | 1.69 | 777 | 1.82 | 816 | 1.92 | 856 | 2.02 | 897 | 2.13 |
| **4400** | 676 | 1.57 | 694 | 1.63 | 721 | 1.73 | 761 | 1.87 | 800 | 1.99 | 838 | 2.08 | 877 | 2.18 | 917 | 2.28 |
| **4600** | 688 | 1.70 | 710 | 1.79 | 747 | 1.93 | 787 | 2.06 | 823 | 2.16 | 860 | 2.24 | 898 | 2.33 | 938 | 2.43 |
| **4800** | 702 | 1.85 | 735 | 1.99 | 774 | 2.14 | 812 | 2.25 | 846 | 2.32 | 882 | 2.40 | 920 | 2.49 | 959 | 2.58 |
| **5000** | 725 | 2.06 | 763 | 2.21 | 801 | 2.34 | 837 | 2.44 | 869 | 2.49 | 903 | 2.55 | 941 | 2.64 | 979 | 2.73 |
| **5200** | 754 | 2.30 | 791 | 2.43 | 828 | 2.55 | 862 | 2.63 | 891 | 2.66 | 925 | 2.71 | 962 | 2.79 | 1000 | 2.88 |
| **5400** | 783 | 2.53 | 819 | 2.65 | 855 | 2.75 | 887 | 2.82 | 913 | 2.82 | 946 | 2.86 | 983 | 2.95 | 1021 | 3.03 |
| **5600** | 810 | 2.74 | 845 | 2.85 | 881 | 2.95 | 912 | 3.01 | 935 | 2.98 | 967 | 3.01 | 1004 | 3.10 | 1041 | 3.19 |
| **5800** | 835 | 2.95 | 871 | 3.05 | 906 | 3.15 | 936 | 3.19 | 957 | 3.14 | 987 | 3.16 | 1024 | 3.25 | 1062 | 3.34 |
| **6000** | 860 | 3.14 | 896 | 3.25 | 931 | 3.35 | 960 | 3.37 | 978 | 3.30 | 1008 | 3.31 | 1045 | 3.40 | 1083 | 3.48 |

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| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.9 | | 1.0 | | 1.1 | | 1.2 | | 1.3 | | 1.4 | | 1.5 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| **2800** | 815 | 1.31 | 862 | 1.43 | 908 | 1.56 | 954 | 1.68 | 999 | 1.81 | 1043 | 1.93 | 1087 | 2.05 |
| **3000** | 829 | 1.41 | 875 | 1.53 | 921 | 1.66 | 966 | 1.78 | 1011 | 1.91 | 1056 | 2.03 | 1100 | 2.15 |
| **3200** | 844 | 1.53 | 889 | 1.65 | 934 | 1.77 | 979 | 1.89 | 1024 | 2.01 | 1067 | 2.14 | 1111 | 2.26 |
| **3400** | 862 | 1.66 | 906 | 1.78 | 950 | 1.90 | 994 | 2.02 | 1038 | 2.14 | 1081 | 2.26 | 1124 | 2.38 |
| **3600** | 881 | 1.81 | 925 | 1.93 | 968 | 2.05 | 1011 | 2.17 | 1054 | 2.29 | 1097 | 2.41 | 1139 | 2.53 |
| **3800** | 900 | 1.96 | 944 | 2.08 | 987 | 2.20 | 1030 | 2.32 | 1072 | 2.44 | 1114 | 2.56 | 1156 | 2.67 |
| **4000** | 920 | 2.10 | 963 | 2.22 | 1006 | 2.34 | 1048 | 2.46 | 1091 | 2.58 | 1133 | 2.69 | 1174 | 2.81 |
| **4200** | 939 | 2.24 | 982 | 2.36 | 1024 | 2.48 | 1067 | 2.59 | 1109 | 2.71 | 1151 | 2.83 | 1193 | 2.95 |
| **4400** | 959 | 2.39 | 1001 | 2.50 | 1043 | 2.61 | 1085 | 2.73 | 1127 | 2.85 | 1169 | 2.96 | 1211 | 3.08 |
| **4600** | 979 | 2.53 | 1020 | 2.64 | 1062 | 2.76 | 1104 | 2.87 | 1146 | 2.99 | 1188 | 3.10 | 1230 | 3.22 |
| **4800** | 999 | 2.68 | 1040 | 2.79 | 1082 | 2.90 | 1123 | 3.01 | 1165 | 3.12 | 1207 | 3.24 | 1248 | 3.35 |
| **5000** | 1019 | 2.83 | 1060 | 2.93 | 1101 | 3.04 | 1142 | 3.15 | 1184 | 3.26 | 1226 | 3.38 | 1267 | 3.49 |
| **5200** | 1040 | 2.98 | 1080 | 3.08 | 1121 | 3.19 | 1162 | 3.29 | 1203 | 3.41 | 1245 | 3.52 | 1286 | 3.63 |
| **5400** | 1060 | 3.13 | 1100 | 3.23 | 1140 | 3.33 | 1181 | 3.44 | 1222 | 3.55 | 1264 | 3.66 | 1305 | 3.77 |
| **5600** | 1080 | 3.28 | 1120 | 3.37 | 1160 | 3.48 | 1201 | 3.58 | 1242 | 3.69 | 1283 | 3.80 | 1324 | 3.91 |
| **5800** | 1101 | 3.43 | 1140 | 3.52 | 1180 | 3.62 | 1220 | 3.72 | 1261 | 3.83 | 1302 | 3.94 | 1343 | 4.05 |
| **6000** | 1121 | 3.57 | 1160 | 3.67 | 1200 | 3.77 | 1240 | 3.87 | 1280 | 3.97 | 1321 | 4.08 | 1362 | 4.19 |

## TA 180 BLOWER PERFORMANCE

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.1 | | 0.2 | | 0.3 | | 0.4 | | 0.5 | | 0.6 | | 0.7 | | 0.8 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 3400 | 393 | 0.60 | 439 | 0.81 | 486 | 1.00 | 533 | 1.16 | 579 | 1.28 | 624 | 1.41 | 667 | 1.56 | 708 | 1.71 |
| 3600 | 398 | 0.66 | 444 | 0.87 | 491 | 1.06 | 538 | 1.21 | 583 | 1.33 | 628 | 1.47 | 671 | 1.62 | 711 | 1.79 |
| 3800 | 403 | 0.72 | 449 | 0.92 | 496 | 1.11 | 542 | 1.26 | 587 | 1.39 | 632 | 1.53 | 675 | 1.69 | 715 | 1.86 |
| 4000 | 408 | 0.78 | 454 | 0.98 | 501 | 1.17 | 547 | 1.32 | 592 | 1.45 | 636 | 1.60 | 679 | 1.76 | 718 | 1.94 |
| 4200 | 413 | 0.84 | 459 | 1.04 | 506 | 1.23 | 552 | 1.38 | 597 | 1.52 | 641 | 1.67 | 683 | 1.84 | 722 | 2.03 |
| 4400 | 419 | 0.90 | 465 | 1.10 | 512 | 1.29 | 558 | 1.44 | 602 | 1.58 | 645 | 1.74 | 687 | 1.92 | 726 | 2.12 |
| 4600 | 424 | 0.97 | 470 | 1.17 | 517 | 1.35 | 563 | 1.50 | 607 | 1.65 | 651 | 1.82 | 692 | 2.01 | 730 | 2.21 |
| 4800 | 430 | 1.03 | 476 | 1.23 | 523 | 1.42 | 569 | 1.57 | 613 | 1.73 | 656 | 1.90 | 697 | 2.10 | 735 | 2.31 |
| 5000 | 436 | 1.09 | 482 | 1.30 | 530 | 1.49 | 575 | 1.64 | 619 | 1.81 | 661 | 1.99 | 702 | 2.19 | 739 | 2.42 |
| 5200 | 442 | 1.15 | 489 | 1.37 | 536 | 1.56 | 582 | 1.72 | 625 | 1.89 | 667 | 2.08 | 707 | 2.29 | 744 | 2.52 |
| 5400 | 448 | 1.21 | 495 | 1.44 | 543 | 1.64 | 588 | 1.80 | 631 | 1.98 | 673 | 2.18 | 712 | 2.40 | 749 | 2.63 |
| 5600 | 454 | 1.28 | 502 | 1.52 | 550 | 1.72 | 595 | 1.89 | 638 | 2.08 | 679 | 2.28 | 718 | 2.51 | 754 | 2.75 |
| 5800 | 460 | 1.35 | 510 | 1.60 | 558 | 1.80 | 602 | 1.98 | 645 | 2.18 | 686 | 2.39 | 724 | 2.62 | 759 | 2.87 |
| 6000 | 467 | 1.43 | 517 | 1.68 | 566 | 1.89 | 610 | 2.07 | 652 | 2.28 | 692 | 2.50 | 729 | 2.74 | 764 | 2.99 |
| 6200 | 475 | 1.51 | 526 | 1.78 | 574 | 1.98 | 617 | 2.17 | 659 | 2.39 | 699 | 2.61 | 735 | 2.86 | 770 | 3.12 |
| 6400 | 483 | 1.60 | 534 | 1.87 | 582 | 2.08 | 625 | 2.28 | 666 | 2.50 | 705 | 2.73 | 741 | 2.99 | 775 | 3.25 |
| 6600 | 491 | 1.70 | 544 | 1.97 | 591 | 2.18 | 633 | 2.39 | 674 | 2.62 | 712 | 2.86 | 747 | 3.12 | 781 | 3.38 |
| 6800 | 501 | 1.81 | 553 | 2.08 | 600 | 2.29 | 642 | 2.51 | 682 | 2.74 | 719 | 2.99 | 753 | 3.26 | 786 | 3.52 |
| 7000 | 511 | 1.92 | 563 | 2.19 | 609 | 2.40 | 650 | 2.63 | 689 | 2.87 | 725 | 3.13 | 759 | 3.40 | 792 | 3.66 |
| 7200 | 521 | 2.04 | 573 | 2.30 | 618 | 2.52 | 659 | 2.76 | 697 | 3.01 | 732 | 3.27 | 765 | 3.54 | 798 | 3.80 |

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.9 | | 1.0 | | 1.1 | | 1.2 | | 1.3 | | 1.4 | | 1.5 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 3400 | 746 | 1.87 | 783 | 2.02 | 819 | 2.16 | 857 | 2.31 | 897 | 2.48 | 936 | 2.65 | 976 | 2.83 |
| 3600 | 749 | 1.95 | 786 | 2.11 | 822 | 2.26 | 860 | 2.42 | 900 | 2.58 | 939 | 2.76 | 979 | 2.93 |
| 3800 | 752 | 2.04 | 789 | 2.21 | 825 | 2.36 | 863 | 2.52 | 903 | 2.69 | 943 | 2.86 | 983 | 3.04 |
| 4000 | 756 | 2.13 | 792 | 2.30 | 829 | 2.47 | 867 | 2.63 | 906 | 2.80 | 946 | 2.97 | 986 | 3.15 |
| 4200 | 759 | 2.22 | 795 | 2.40 | 832 | 2.57 | 870 | 2.74 | 910 | 2.91 | 950 | 3.08 | 990 | 3.26 |
| 4400 | 763 | 2.32 | 799 | 2.51 | 836 | 2.68 | 874 | 2.85 | 913 | 3.02 | 953 | 3.19 | 993 | 3.37 |
| 4600 | 767 | 2.42 | 803 | 2.61 | 840 | 2.79 | 878 | 2.96 | 917 | 3.13 | 957 | 3.31 | 997 | 3.48 |
| 4800 | 771 | 2.53 | 807 | 2.72 | 844 | 2.91 | 882 | 3.08 | 921 | 3.25 | 961 | 3.42 | 1001 | 3.59 |
| 5000 | 775 | 2.63 | 811 | 2.84 | 848 | 3.02 | 886 | 3.20 | 925 | 3.37 | 965 | 3.54 | 1005 | 3.71 |
| 5200 | 780 | 2.75 | 815 | 2.95 | 852 | 3.14 | 890 | 3.32 | 929 | 3.49 | 969 | 3.67 | 1009 | 3.84 |
| 5400 | 784 | 2.86 | 820 | 3.07 | 857 | 3.26 | 895 | 3.44 | 934 | 3.62 | 974 | 3.80 | 1014 | 3.97 |
| 5600 | 789 | 2.98 | 824 | 3.19 | 861 | 3.38 | 900 | 3.57 | 939 | 3.75 | 978 | 3.93 | 1018 | 4.11 |
| 5800 | 794 | 3.10 | 829 | 3.32 | 866 | 3.51 | 905 | 3.70 | 944 | 3.88 | 983 | 4.07 | 1023 | 4.25 |
| 6000 | 799 | 3.23 | 834 | 3.44 | 871 | 3.64 | 910 | 3.83 | 949 | 4.02 | 988 | 4.21 | 1028 | 4.40 |
| 6200 | 804 | 3.36 | 839 | 3.57 | 876 | 3.77 | 915 | 3.97 | 954 | 4.16 | 994 | 4.35 | 1033 | 4.55 |
| 6400 | 809 | 3.49 | 844 | 3.70 | 881 | 3.90 | 920 | 4.10 | 960 | 4.30 | 999 | 4.50 | 1039 | 4.70 |
| 6600 | 815 | 3.62 | 850 | 3.83 | 887 | 4.04 | 926 | 4.24 | 965 | 4.45 | 1005 | 4.65 | 1044 | 4.85 |
| 6800 | 820 | 3.76 | 855 | 3.97 | 892 | 4.18 | 931 | 4.39 | 971 | 4.59 | 1011 | 4.80 | 1050 | 5.01 |
| 7000 | 826 | 3.89 | 861 | 4.11 | 898 | 4.32 | 937 | 4.53 | 977 | 4.74 | 1016 | 4.95 | 1056 | 5.16 |
| 7200 | 831 | 4.03 | 866 | 4.25 | 904 | 4.46 | 943 | 4.67 | 982 | 4.89 | 1022 | 5.10 | 1062 | 5.32 |

## TA 240 BLOWER PERFORMANCE

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.1 | | 0.2 | | 0.3 | | 0.4 | | 0.5 | | 0.6 | | 0.7 | | 0.8 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| **4400** | 449 | 1.05 | 493 | 1.22 | 539 | 1.38 | 584 | 1.52 | 628 | 1.68 | 670 | 1.85 | 711 | 2.04 | 748 | 2.24 |
| **4600** | 456 | 1.11 | 501 | 1.29 | 546 | 1.45 | 591 | 1.60 | 635 | 1.76 | 677 | 1.94 | 717 | 2.14 | 754 | 2.35 |
| **4800** | 463 | 1.17 | 509 | 1.36 | 554 | 1.53 | 599 | 1.68 | 642 | 1.85 | 684 | 2.03 | 723 | 2.24 | 760 | 2.46 |
| **5000** | 471 | 1.24 | 517 | 1.44 | 563 | 1.60 | 607 | 1.76 | 650 | 1.94 | 691 | 2.14 | 729 | 2.35 | 766 | 2.58 |
| **5200** | 479 | 1.32 | 525 | 1.52 | 571 | 1.69 | 615 | 1.85 | 657 | 2.04 | 698 | 2.24 | 736 | 2.47 | 772 | 2.70 |
| **5400** | 487 | 1.40 | 534 | 1.60 | 580 | 1.77 | 623 | 1.95 | 665 | 2.14 | 705 | 2.36 | 743 | 2.59 | 778 | 2.82 |
| **5600** | 496 | 1.48 | 544 | 1.69 | 589 | 1.87 | 632 | 2.05 | 674 | 2.25 | 713 | 2.48 | 749 | 2.72 | 785 | 2.95 |
| **5800** | 506 | 1.58 | 554 | 1.79 | 599 | 1.96 | 641 | 2.16 | 682 | 2.37 | 720 | 2.60 | 756 | 2.85 | 791 | 3.08 |
| **6000** | 516 | 1.68 | 564 | 1.89 | 608 | 2.07 | 650 | 2.27 | 691 | 2.49 | 728 | 2.73 | 763 | 2.98 | 798 | 3.22 |
| **6200** | 527 | 1.78 | 574 | 1.99 | 618 | 2.18 | 660 | 2.39 | 699 | 2.62 | 736 | 2.87 | 771 | 3.12 | 805 | 3.36 |
| **6400** | 538 | 1.89 | 585 | 2.09 | 628 | 2.29 | 669 | 2.51 | 708 | 2.75 | 743 | 3.01 | 778 | 3.26 | 812 | 3.50 |
| **6600** | 550 | 2.00 | 596 | 2.21 | 638 | 2.41 | 679 | 2.64 | 716 | 2.89 | 751 | 3.15 | 785 | 3.41 | 819 | 3.65 |
| **6800** | 562 | 2.12 | 607 | 2.33 | 649 | 2.54 | 688 | 2.78 | 725 | 3.04 | 759 | 3.30 | 793 | 3.56 | 826 | 3.79 |
| **7000** | 574 | 2.24 | 619 | 2.45 | 659 | 2.68 | 698 | 2.93 | 733 | 3.19 | 767 | 3.46 | 800 | 3.71 | 834 | 3.95 |
| **7200** | 587 | 2.36 | 630 | 2.59 | 670 | 2.83 | 707 | 3.08 | 742 | 3.34 | 775 | 3.61 | 808 | 3.87 | 841 | 4.10 |
| **7400** | 600 | 2.50 | 642 | 2.73 | 680 | 2.98 | 717 | 3.23 | 750 | 3.50 | 783 | 3.77 | 815 | 4.03 | 849 | 4.25 |
| **7600** | 612 | 2.64 | 653 | 2.88 | 691 | 3.13 | 726 | 3.40 | 759 | 3.67 | 791 | 3.94 | 823 | 4.19 | 856 | 4.41 |
| **7800** | 625 | 2.79 | 664 | 3.03 | 701 | 3.29 | 735 | 3.56 | 767 | 3.84 | 799 | 4.10 | 831 | 4.35 | 864 | 4.56 |
| **8000** | 638 | 2.94 | 676 | 3.20 | 711 | 3.46 | 744 | 3.73 | 776 | 4.01 | 807 | 4.27 | 839 | 4.51 | 872 | 4.72 |
| **8200** | 650 | 3.11 | 687 | 3.36 | 721 | 3.63 | 753 | 3.91 | 784 | 4.18 | 815 | 4.44 | 847 | 4.67 | 880 | 4.88 |
| **8400** | 662 | 3.27 | 698 | 3.54 | 731 | 3.81 | 762 | 4.08 | 793 | 4.36 | 823 | 4.61 | 855 | 4.84 | 888 | 5.04 |
| **8600** | 674 | 3.45 | 708 | 3.72 | 740 | 3.99 | 771 | 4.26 | 801 | 4.54 | 832 | 4.79 | 863 | 5.00 | 896 | 5.20 |
| **8800** | 685 | 3.63 | 719 | 3.90 | 750 | 4.17 | 780 | 4.45 | 809 | 4.72 | 840 | 4.96 | 871 | 5.17 | 904 | 5.36 |
| **9000** | 697 | 3.81 | 729 | 4.09 | 759 | 4.36 | 788 | 4.63 | 818 | 4.90 | 848 | 5.13 | 880 | 5.34 | 913 | 5.52 |
| **9200** | 708 | 4.00 | 739 | 4.28 | 768 | 4.55 | 797 | 4.82 | 826 | 5.08 | 857 | 5.30 | 888 | 5.50 | 921 | 5.69 |
| **9400** | 718 | 4.20 | 748 | 4.47 | 777 | 4.74 | 806 | 5.01 | 835 | 5.26 | 865 | 5.48 | 897 | 5.67 | 929 | 5.85 |
| **9600** | 729 | 4.39 | 758 | 4.67 | 786 | 4.94 | 814 | 5.20 | 843 | 5.44 | 874 | 5.65 | 905 | 5.84 | 938 | 6.01 |

| Air Volume cfm | STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.9 | | 1.0 | | 1.1 | | 1.2 | | 1.3 | | 1.4 | | 1.5 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| **4400** | 785 | 2.44 | 821 | 2.61 | 858 | 2.78 | 897 | 2.93 | 936 | 3.09 | 977 | 3.24 | 1017 | 3.40 |
| **4600** | 790 | 2.55 | 826 | 2.73 | 864 | 2.90 | 902 | 3.06 | 942 | 3.21 | 982 | 3.37 | 1022 | 3.53 |
| **4800** | 796 | 2.66 | 832 | 2.85 | 869 | 3.02 | 908 | 3.18 | 948 | 3.34 | 988 | 3.50 | 1028 | 3.66 |
| **5000** | 801 | 2.79 | 837 | 2.97 | 875 | 3.14 | 914 | 3.31 | 954 | 3.48 | 994 | 3.64 | 1034 | 3.81 |
| **5200** | 807 | 2.91 | 843 | 3.10 | 881 | 3.27 | 920 | 3.45 | 960 | 3.62 | 1000 | 3.79 | 1040 | 3.96 |
| **5400** | 813 | 3.04 | 850 | 3.23 | 888 | 3.41 | 927 | 3.58 | 967 | 3.76 | 1007 | 3.94 | 1047 | 4.11 |
| **5600** | 820 | 3.17 | 856 | 3.36 | 894 | 3.54 | 934 | 3.73 | 974 | 3.91 | 1014 | 4.09 | 1053 | 4.27 |
| **5800** | 826 | 3.30 | 863 | 3.49 | 901 | 3.68 | 941 | 3.87 | 981 | 4.06 | 1021 | 4.24 | 1060 | 4.43 |
| **6000** | 833 | 3.43 | 869 | 3.63 | 908 | 3.82 | 948 | 4.01 | 988 | 4.21 | 1028 | 4.40 | 1068 | 4.59 |
| **6200** | 840 | 3.57 | 876 | 3.77 | 915 | 3.96 | 955 | 4.16 | 995 | 4.36 | 1035 | 4.55 | 1075 | 4.75 |
| **6400** | 847 | 3.71 | 883 | 3.91 | 922 | 4.11 | 962 | 4.31 | 1002 | 4.51 | 1042 | 4.71 | 1082 | 4.91 |
| **6600** | 854 | 3.86 | 890 | 4.06 | 929 | 4.25 | 969 | 4.45 | 1009 | 4.66 | 1049 | 4.86 | 1089 | 5.06 |
| **6800** | 861 | 4.00 | 898 | 4.20 | 936 | 4.40 | 976 | 4.60 | 1016 | 4.80 | 1056 | 5.00 | 1096 | 5.20 |
| **7000** | 868 | 4.15 | 905 | 4.35 | 943 | 4.54 | 983 | 4.74 | 1023 | 4.94 | 1063 | 5.14 | 1103 | 5.34 |
| **7200** | 876 | 4.30 | 912 | 4.50 | 950 | 4.69 | 990 | 4.88 | 1030 | 5.08 | 1070 | 5.28 | 1110 | 5.48 |
| **7400** | 883 | 4.45 | 920 | 4.64 | 958 | 4.83 | 997 | 5.03 | 1037 | 5.22 | 1077 | 5.42 | 1117 | 5.62 |
| **7600** | 891 | 4.61 | 927 | 4.79 | 965 | 4.98 | 1004 | 5.17 | 1044 | 5.37 | 1084 | 5.56 | 1124 | 5.76 |
| **7800** | 899 | 4.76 | 935 | 4.95 | 973 | 5.13 | 1012 | 5.32 | 1051 | 5.51 | 1091 | 5.71 | 1131 | 5.90 |
| **8000** | 907 | 4.91 | 943 | 5.10 | 980 | 5.28 | 1019 | 5.47 | 1059 | 5.66 | 1098 | 5.85 | 1138 | 6.04 |
| **8200** | 914 | 5.07 | 950 | 5.25 | 988 | 5.43 | 1027 | 5.62 | 1066 | 5.80 | 1106 | 5.99 | 1145 | 6.18 |
| **8400** | 922 | 5.23 | 958 | 5.41 | 996 | 5.58 | 1034 | 5.77 | 1073 | 5.95 | 1113 | 6.14 | 1153 | 6.33 |
| **8600** | 930 | 5.38 | 966 | 5.56 | 1003 | 5.74 | 1042 | 5.92 | 1081 | 6.10 | 1120 | 6.28 | 1160 | 6.47 |
| **8800** | 938 | 5.54 | 974 | 5.71 | 1011 | 5.89 | 1049 | 6.07 | 1088 | 6.25 | 1128 | 6.43 | 1167 | 6.62 |
| **9000** | 947 | 5.70 | 982 | 5.87 | 1019 | 6.04 | 1057 | 6.22 | 1096 | 6.40 | 1135 | 6.58 | 1175 | 6.76 |
| **9200** | 955 | 5.86 | 990 | 6.03 | 1027 | 6.20 | 1065 | 6.37 | 1104 | 6.54 | 1143 | 6.72 | 1182 | 6.91 |
| **9400** | 963 | 6.02 | 998 | 6.18 | 1035 | 6.35 | 1073 | 6.52 | 1111 | 6.69 | 1150 | 6.87 | 1190 | 7.05 |
| **9600** | 971 | 6.18 | 1007 | 6.34 | 1043 | 6.50 | 1081 | 6.67 | 1119 | 6.84 | 1158 | 7.02 | 1197 | 7.20 |

## Wiring Diagrams

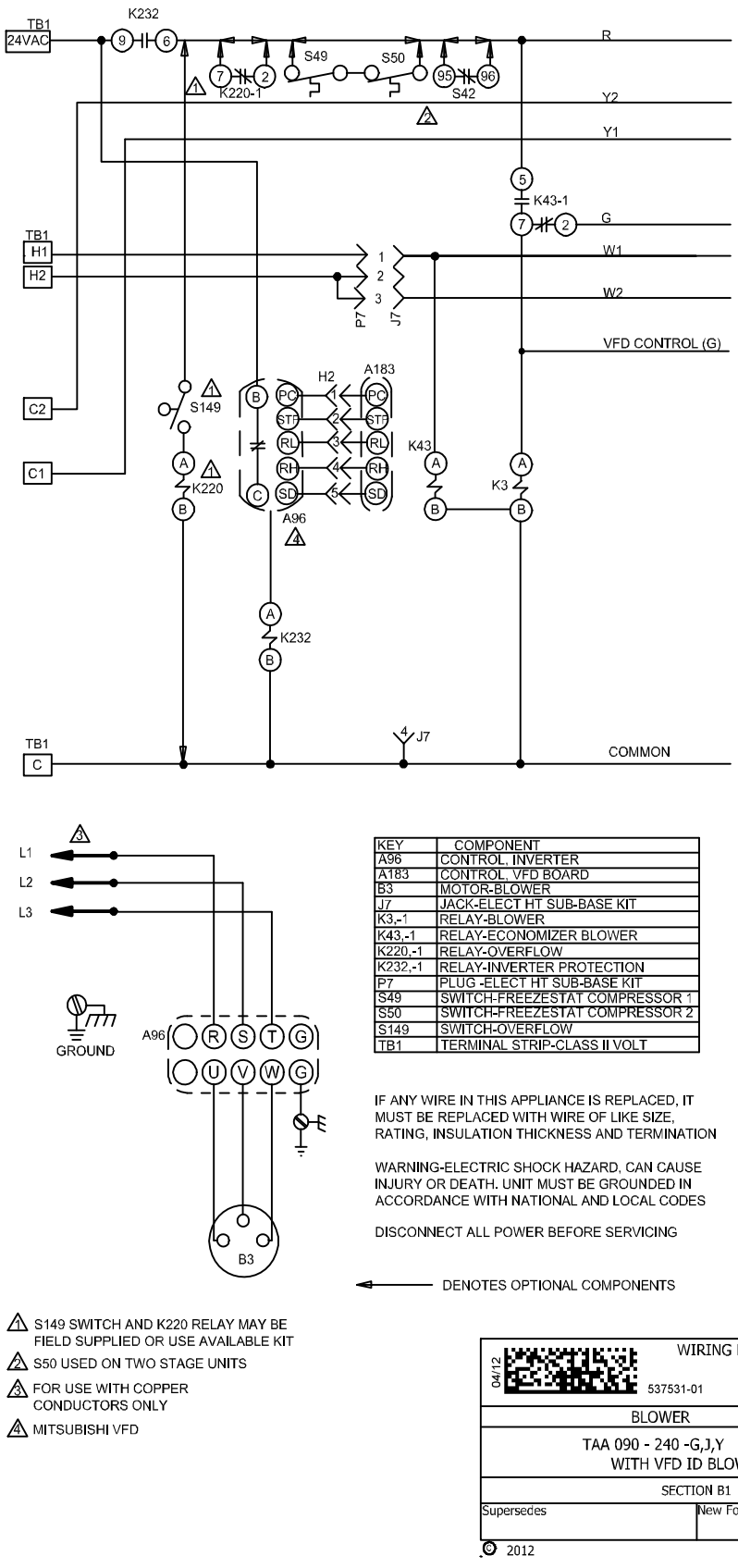
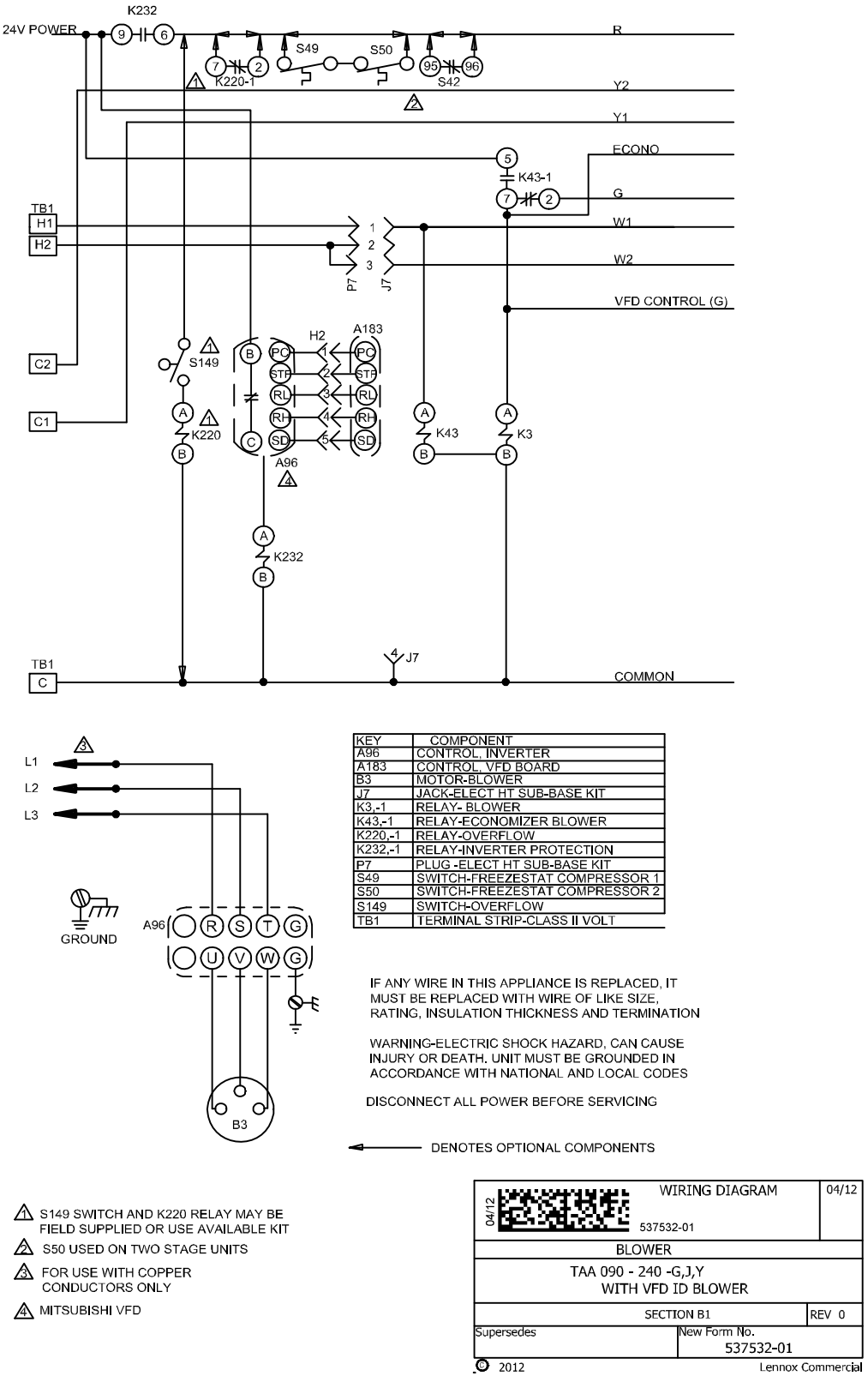



**Figure 20. TAA090 - 240 G, J, Y with VFD ID Blower (with 24VAC on TB1 Terminal)**




| KEY | COMPONENT |
|---|---|
| A96 | CONTROL, INVERTER |
| A183 | CONTROL, VFD BOARD |
| B3 | MOTOR-BLOWER |
| J7 | JACK-ELECT HT SUB-BASE KIT |
| K3,-1 | RELAY- BLOWER |
| K43,-1 | RELAY-ECONOMIZER BLOWER |
| K220,-1 | RELAY-OVERFLOW |
| K232,-1 | RELAY-INVERTER PROTECTION |
| P7 | PLUG -ELECT HT SUB-BASE KIT |
| S49 | SWITCH-FREEZESTAT COMPRESSOR 1 |
| S50 | SWITCH-FREEZESTAT COMPRESSOR 2 |
| S149 | SWITCH-OVERFLOW |
| TB1 | TERMINAL STRIP-CLASS II VOLT |

IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING, INSULATION THICKNESS AND TERMINATION

WARNING-ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES

DISCONNECT ALL POWER BEFORE SERVICING

1. S149 SWITCH AND K220 RELAY MAY BE FIELD SUPPLIED OR USE AVAILABLE KIT
2. S50 USED ON TWO STAGE UNITS
3. FOR USE WITH COPPER CONDUCTORS ONLY
4. MITSUBISHI VFD

| | | |
|---|---|---|
| 04/12 | WIRING DIAGRAM<br>537532-01 | 04/12 |
| BLOWER | | |
| TAA 090 - 240 -G,J,Y<br>WITH VFD ID BLOWER | | |
| SECTION B1 | | REV 0 |
| Supersedes | New Form No.<br>537532-01 | |

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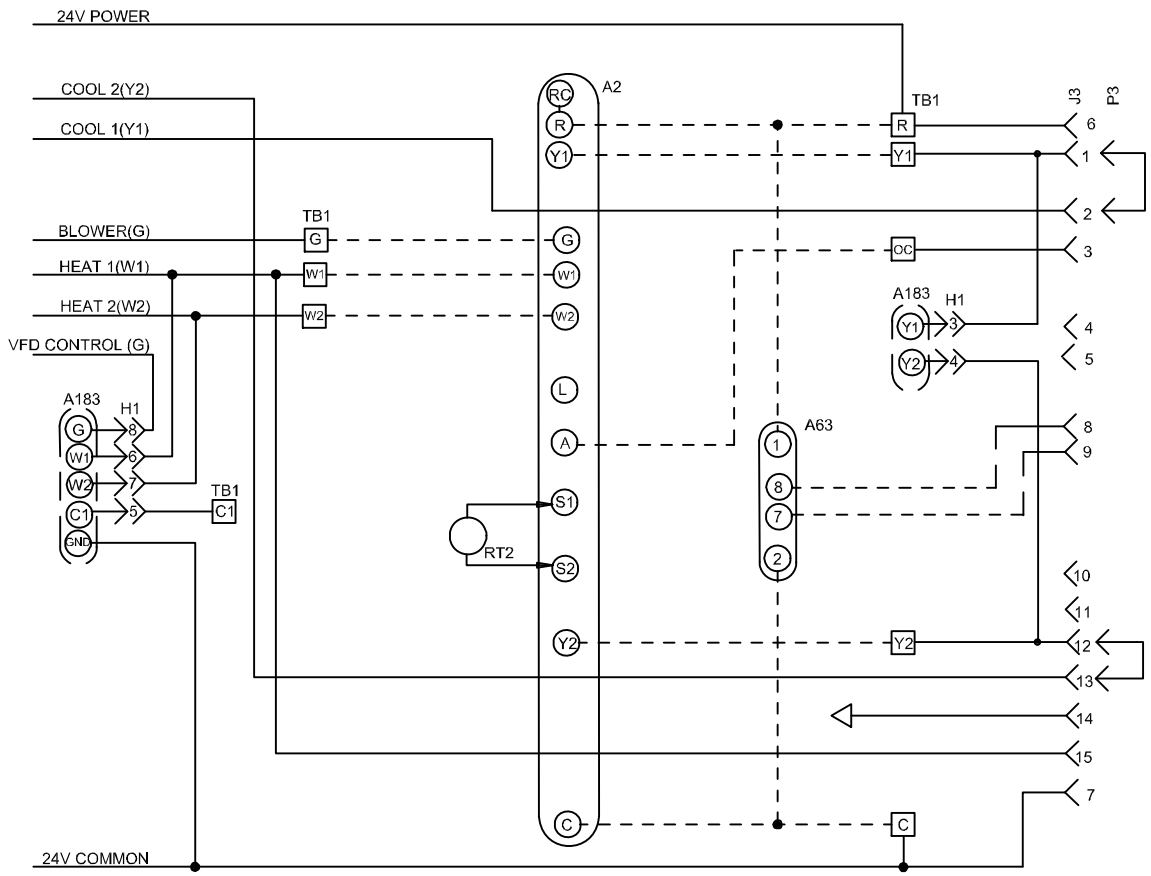
**Figure 21. TAA090 - 240 G, J, Y with VFD ID Blower (without 24VAC on TB1 Terminal)**




| KEY | COMPONENT |
|---|---|
| A2 | SENSOR-ELECTRONIC |
| A63 | SENSOR-CO2 |
| J3 | JACK-UNIT ECONOMIZER |
| P3 | PLUG-LESS ECONOMIZER |
| RT2 | SENSOR-REMOTE |
| TB1 | TERMINAL STRIP-CLASS II VOLTAGE |

1. THERMOSTAT SUPPLIED BY USER
2. REMOVE P3 WHEN ECONOMIZER IS USED
3. J3 MAXIMUM LOAD 20VA 24VAC CLASS II

DESIGNATES OPTIONAL WIRING
CLASS II FIELD WIRING

| | | |
|---|---|---|
| 03/14 | WIRING DIAGRAM<br>537533-01 | 03/14 |
| ACCESSORIES | | |
| TOUCHSCREEN THERMOSTAT<br>TSA, TPA UNITS WITH VFD ID BLOWER | | |
| SECTION C | | REV. 1 |
| Supersedes<br>535, 775W | New Form No.<br>537533-01 | |

**Figure 22. Touch Screen Thermostat - TSA and TPA Units with VFD ID Blower**

## TROUBLESHOOT VFD CONTROL BOARD (A183)

Refer to wiring diagrams located at the end of this instruction.

1. Inspect the VFD control board for damaged components. Replace the control board if damaged components are found.
2. Check all wire connections to VFD control board; secure if loose.
3. Check for 24VAC signal at the thermostat blower input (G to GND terminal).

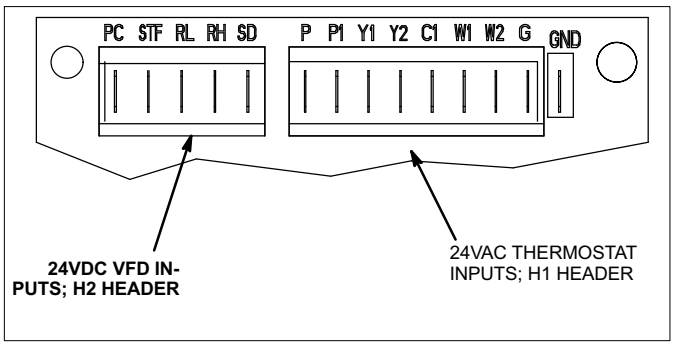



**Figure 23. VFD Control Board Terminal Designations**

4. If there is no thermostat signal, troubleshoot back toward the thermostat.
5. Check the power LED on the board. See figure 17.
6. If the power LED is not on, check voltage between VFD control board terminals PC (H2-1) and SD (H2-5). Voltage should read 24VDC.
7. If voltage does not read 24VDC, disconnect the H2 header from the VFD control board inputs terminal block (to make sure the VFD control board is not shorting 24VDC supply from the inverter). Measure the voltage between the end terminals on the H2 header. If 24VDC is present, replace the VFD control board . If no voltage is read, troubleshoot the VFD.
8. When VFD control board 24VAC thermostat blower (G) input and 24VDC power are present, check the VFD control board low and high speed outputs. The VFD control board uses inverse logic to enable the blower; 1VDC will be read at the enabled blower speed terminal. See table 4.
9. If all inputs are correct and the unit still does not operate as intended, replace VFD control board.

**Table 4. VFD Control Board Blower Output**

| Output Terminals | Voltage | Blower Operation |
|---|---|---|
| RL-SD | 1VDC | Low Speed |
| RH-SD | 24VDC | |
| RL-SD | 24VDC | High Speed |
| RH-SD | 1VDC | |
| RL-SD | 1VDC | Illegal State (replace board) |
| RH-SD | 1VDC | |
| RL-SD | 24VDC | Blower Off (replace board) |
| RH-SD | 24VDC | |