MDM McDANIEL METALS HVAC ACCS. ESTD. 1982

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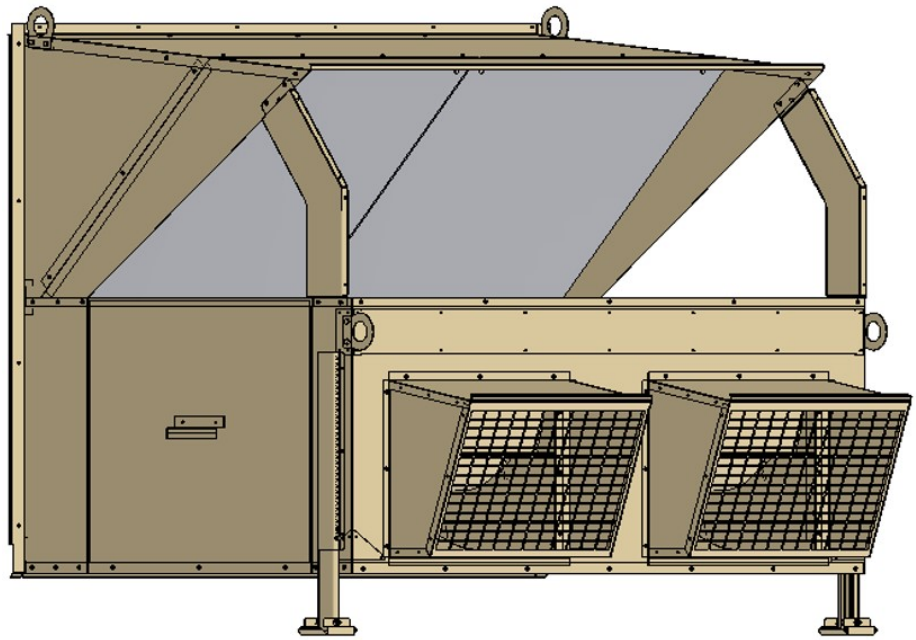
145-DK-14*

MODULATING DOWNFLOW POWER EXHAUST, FITS DAIKIN DB*/DR*/DF*180-300, SANDSTONE BEIGE

0270L02556



SEQUENCE OF OPERATION – HONEYWELL JADE

This sequence assumes employment of a single enthalpy economizer using a two-stage thermostat.

1. A call for cooling comes from a room thermostat.
2. The enthalpy sensor determines if the atmospheric conditions are conducive for using outside air for cooling. If YES, the fresh air damper section of the economizer begins to open.
3. The EXH SET potentiometer should be set such that when the fresh air dampers are open approximately 70% of their full open capacity, EXH1 is energized and the modulating power exhaust control system is energized.
4. A pressure transducer contained within the power exhaust control system will measure building static pressure, and if this pressure is greater than a predetermined setpoint programmed within the motor Variable Frequency Drive (VFD), the VFD will energize the blower motor and regulate its speed to drive the building static pressure back down to its setpoint. The pressure transducer can regulate building static pressure between 0.0 – 0.1" water column (W.C.), and the setpoint is factory programmed at 0.02" W.C. These instructions contain a procedure for altering the setpoint by field personnel.
5. When the dampers modulate below the 70% open position due to a satisfied thermostat or atmospheric conditions, the power exhaust disengages immediately.

INSTALLATION WITH ECONOMIZER

1. Open carton and inspect contents for shortages and damage.
2. Per Figure 1, attach (2) exhaust hoods to cabinet using 18X provided sheet metals screws.
3. Using suitable rigging equipment and the four lifting eyes, lift the power exhaust to its installation location.
4. Verify the control box is located on the correct side, otherwise move it to the other side of the cabinet, which has pre-cut mounting holes.
5. Turn off main disconnect power to the rooftop unit. Also verify it has enough load capacity to additionally power this power exhaust.
6. If the economizer is already fully installed, remove the economizer hood, and discard. If a new installation, do not install the economizer hood, but install the economizer per its provided instructions.
7. Remove the filter and horizontal access panels.
8. Slide the support legs through the guides, and suitably block up the power exhaust to align it with the rooftop unit opening. See Figure 2.
9. Remove the power exhaust cabinet door and locate the high voltage power wires and low voltage control signal wires. See Figure 3.
10. Feed the line voltage and low voltage wires through the knockouts provided in the economizer, per Figure 4.
11. Attach the power exhaust flanges to the economizer with (14) screws, and shim legs to suit fit-up.

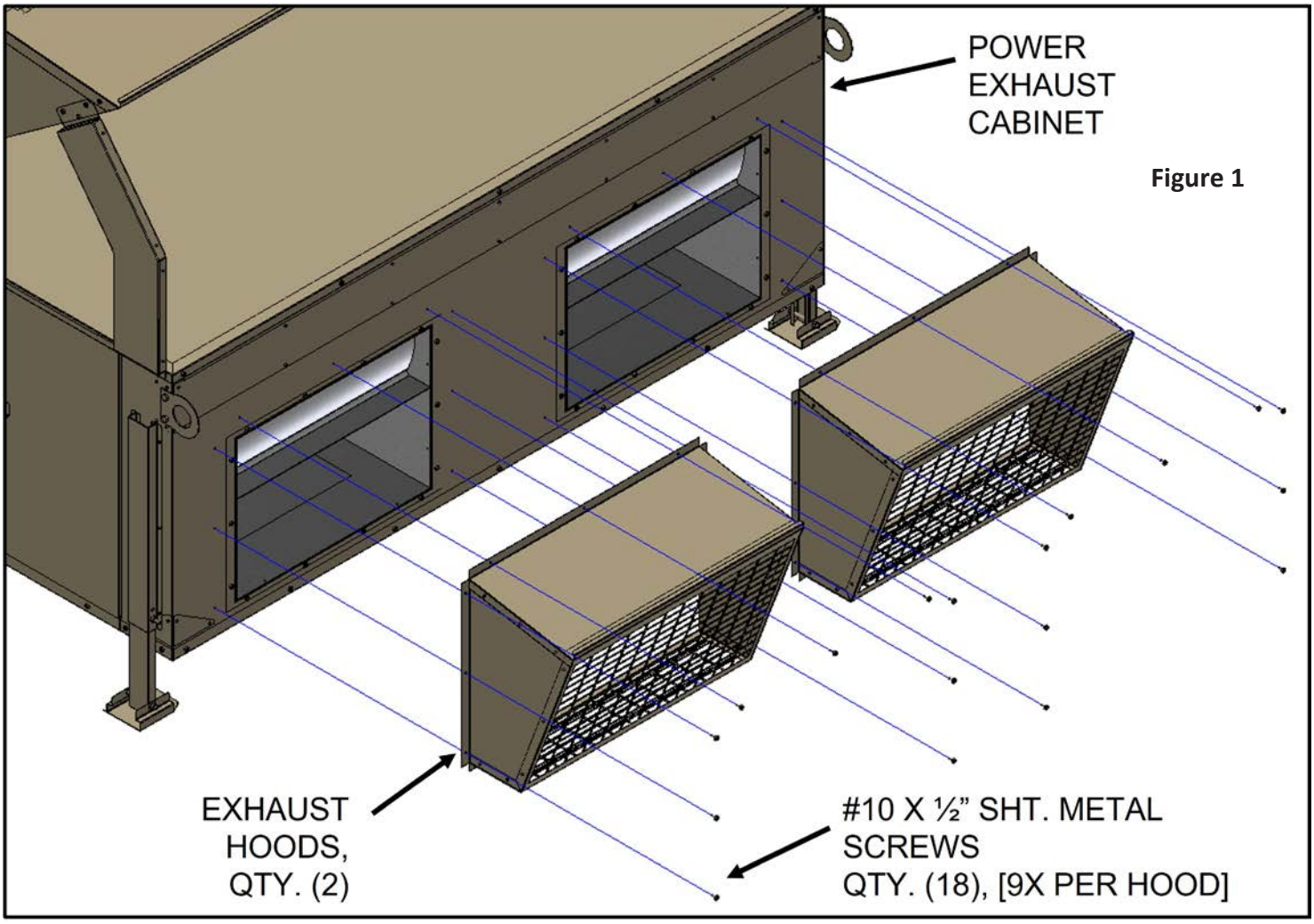


Figure 1

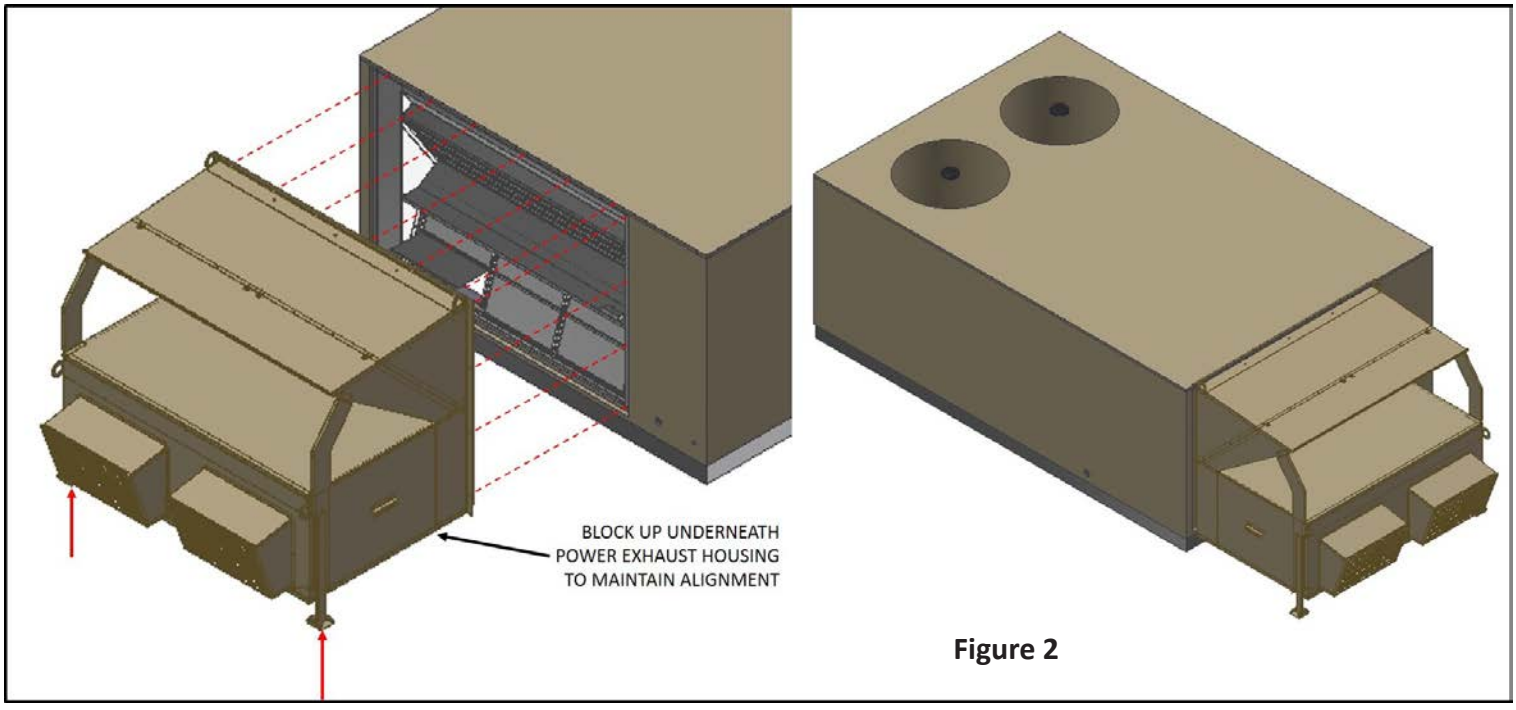


Figure 2

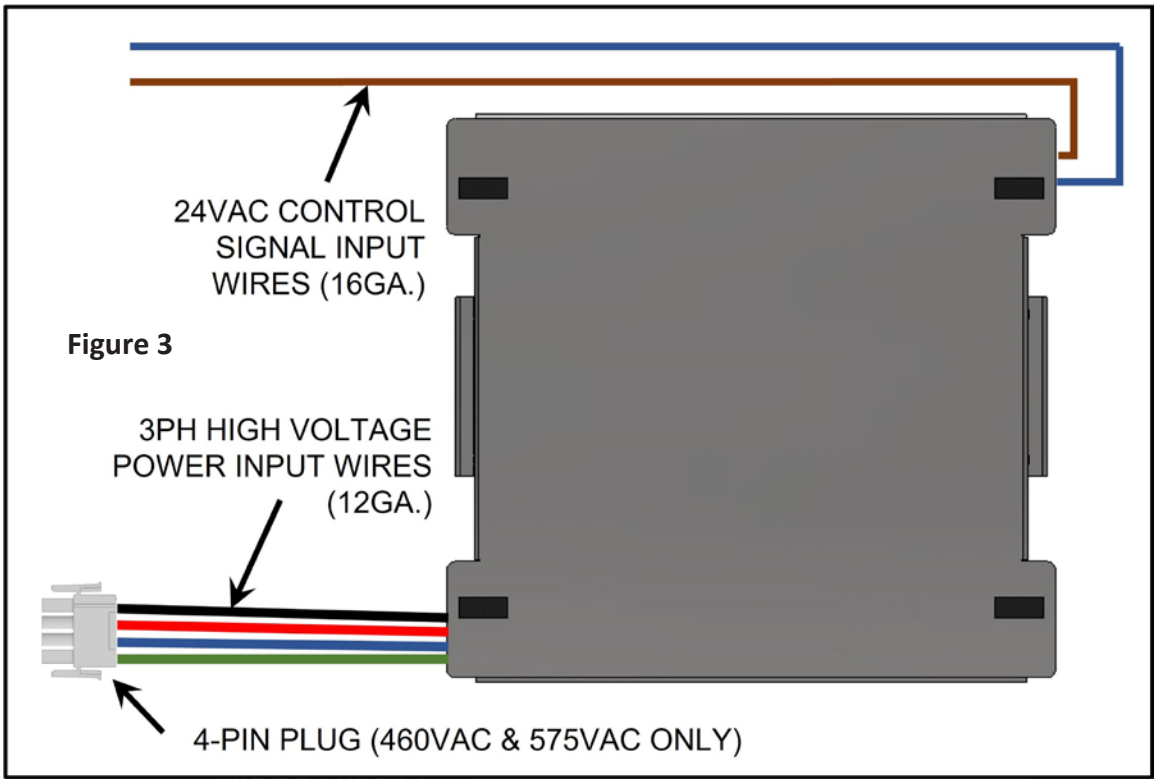


Figure 3

Figure 4
(Remove the bushing, cut it in one place, twist it to fit the control & power wires into it, then re-insert it into the economizer hole)

INSTALLATION WITH ECONOMIZER (cont.'d)

12. Attach the low voltage wires to 'EXH1' and 'C' of the 7220 Jade control module on the economizer, using the provided connectors per Figures 5 & 6.
    NOTE: For a DDC Controller application, remove the control harness spade terminals from the relay coil in Figure 5, and discard the harness & Jade side connectors. Connect the DDC Economizer 'Power Exhaust' control wires to the same terminals on this relay.
13. For 460VAC & 575VAC installations, plug the 4-pin male power plug into the female power plug located in the return cavity of the rooftop unit. For a 208-230VAC installation, terminate the BLACK, RED & BLUE power wires directly to the power block located in the rooftop unit, & connect the GREEN wire to a suitable 'earthed' ground.
14. On the Jade controller, set the position at which the exhaust will be ready to energize under the SETPOINTS menu.
15. The installer will be responsible for providing Clear Vinyl Tubing, 5/16" O.D. X 3/16" I.D. (Parker P/N PV53-1 or equal), to connect from the High Pressure hose barb on the side of the control box, to a predetermined location of where the building static pressure will be measured from. Typically, this would be a wall plate mounted in a centrally located pick-up location, away from drafts. Connect per Figure 7.
16. Reinstall the filter and horizontal access panels.

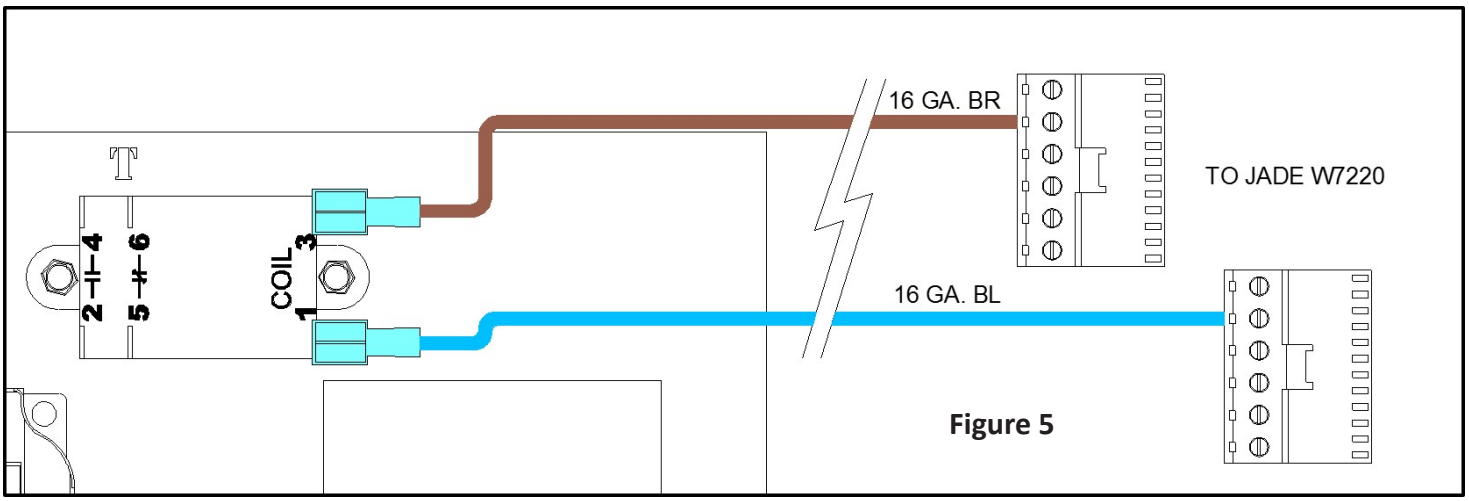


Figure 5

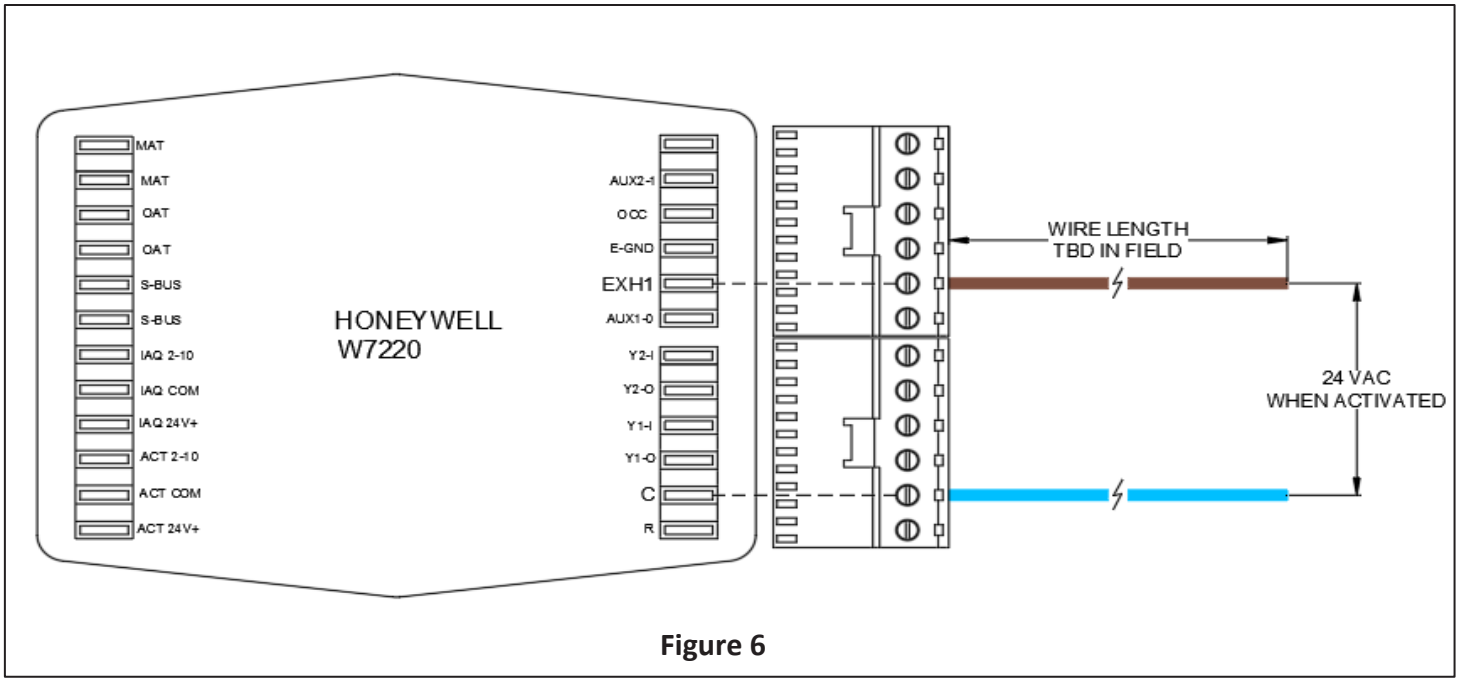


Figure 6

INSTALLATION WITH ECONOMIZER (cont'd)

17. Turn on main disconnect power. The GA500 Vector Drive Digital Operator (digital display) should illuminate after a few seconds. However, the power exhaust blower motor will not operate unless it receives both a 24VAC signal from the Jade controller AND the building static pressure is at least the factory-default setpoint of 0.02" W.C.
18. If the blower motors start, check for proper rotation of each motor by determining air is being exhausted through the exhaust hoods. The correct motor forward direction is as shown in Figure 8, when facing the motor from the pulley side.
19. To reverse direction of a motor, turn off the main disconnect power, and swap any TWO power legs (L1, L2 or L3) of either motor overload in the control box.
20. Turn the main disconnect power back on and verify proper blower motor rotation.
21. If the blower motors did not start up, verify 24VAC at the coil of the control box relay, terminals 1 and 3, per Figure 5. If there is no 24VAC, go the next step.
22. Remove the horizontal access panel.

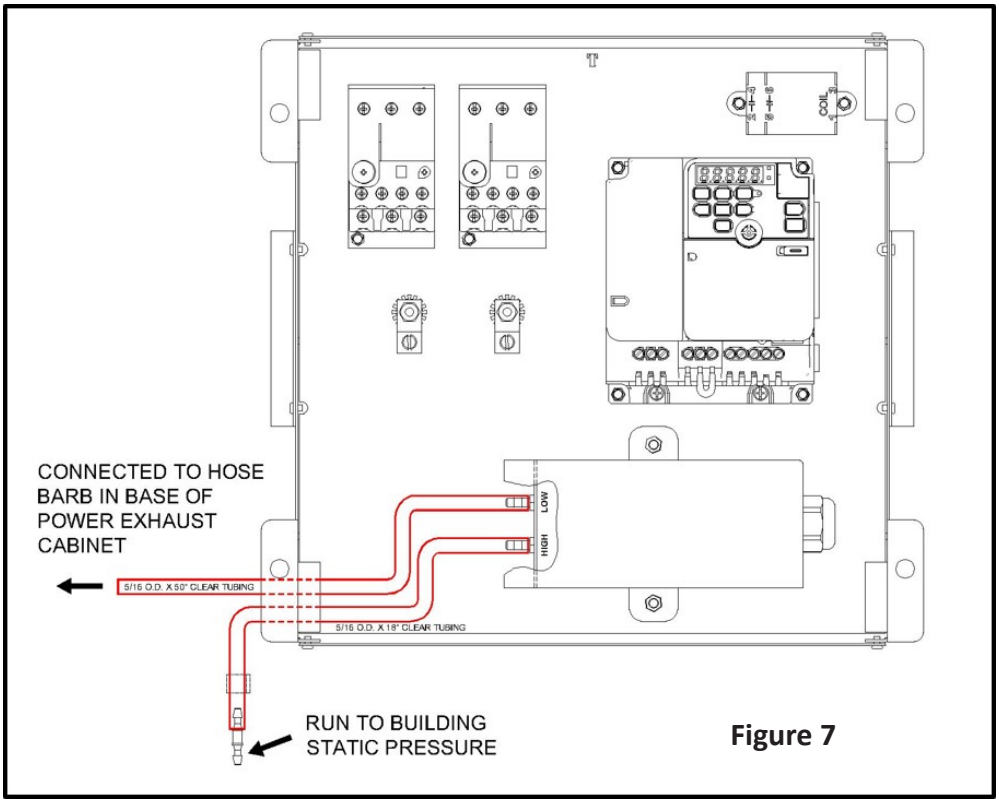


Figure 7

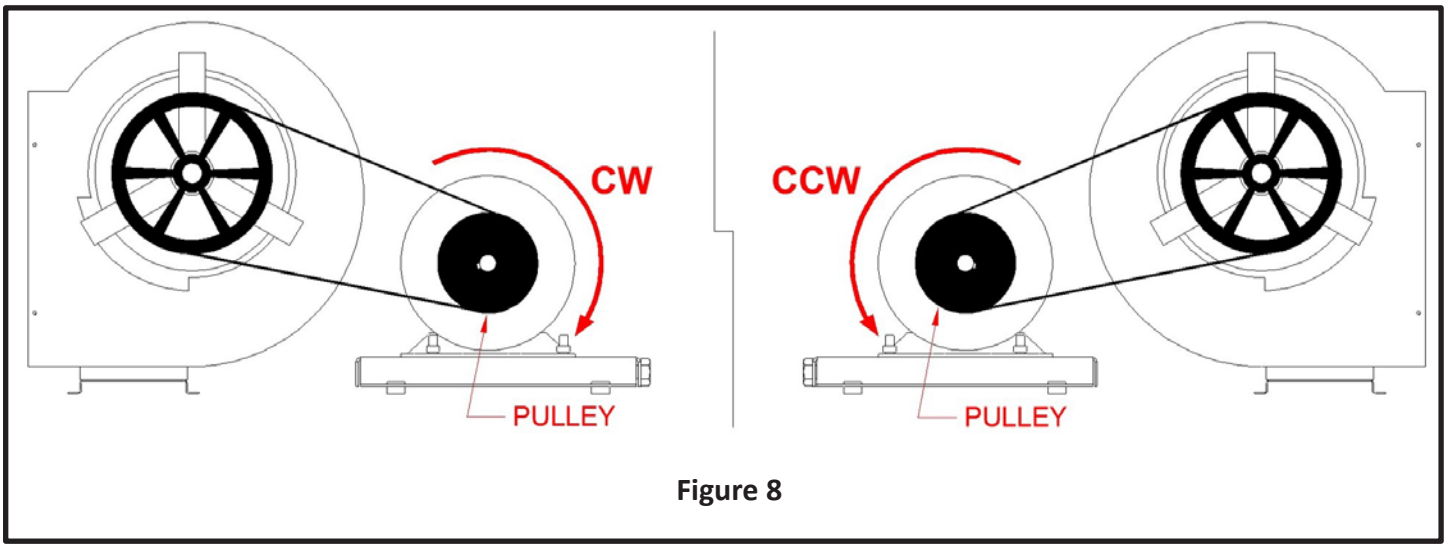


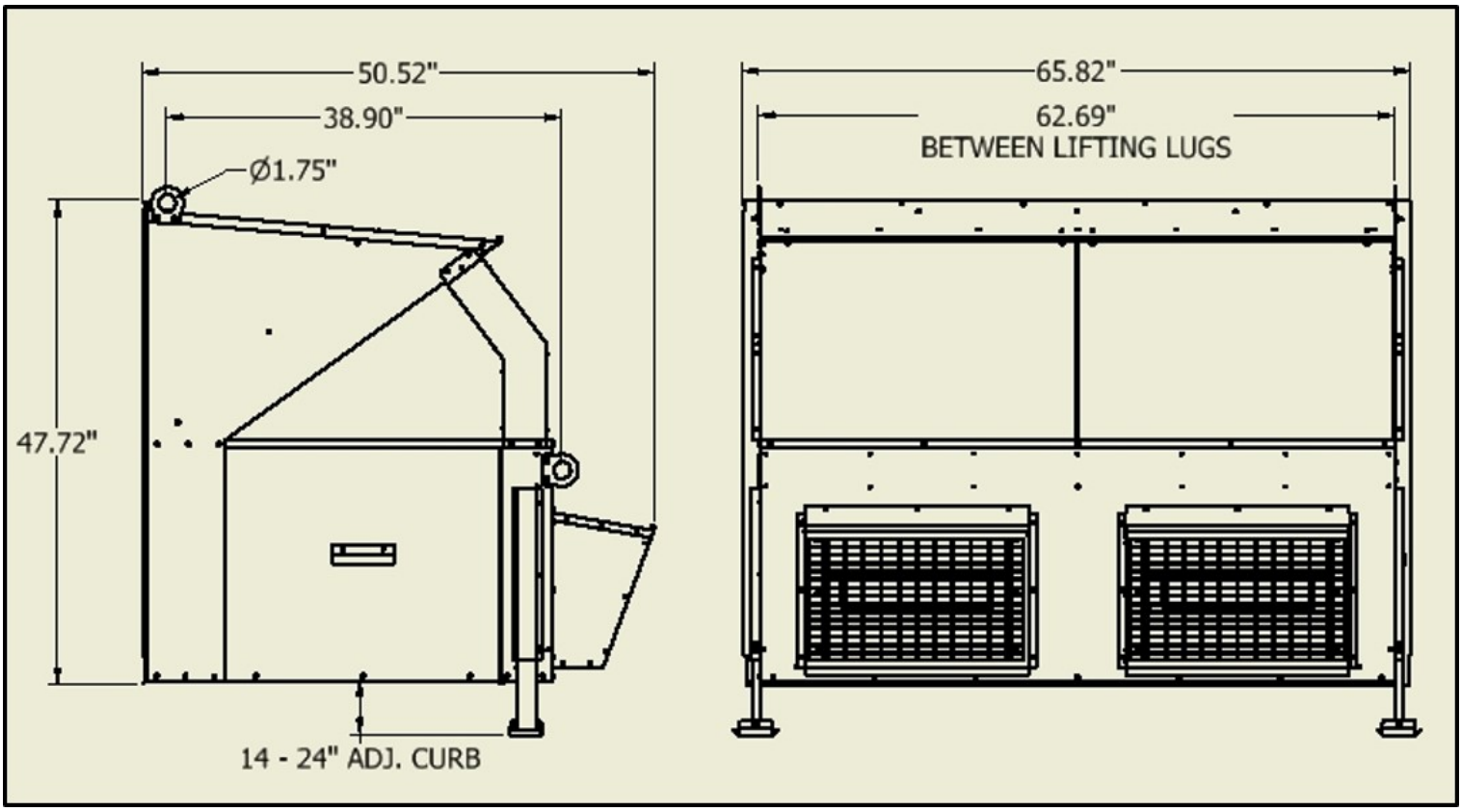
Figure 8

INSTALLATION WITH ECONOMIZER (cont'd)

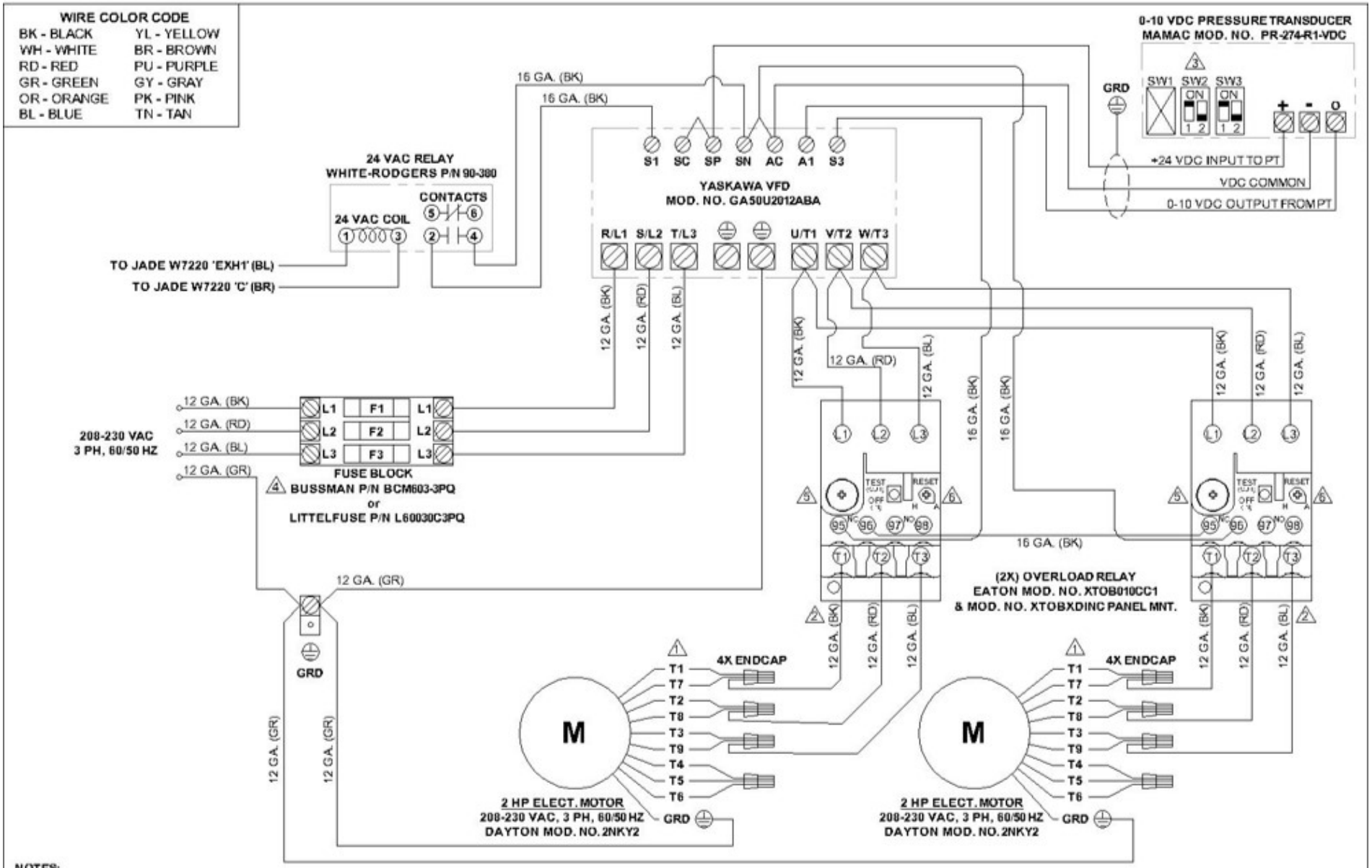
23. On the Jade controller, go to the Menu CHECKOUT, and select Parameter CONNECT EXH1. This will send 24VAC to the power exhaust relay.
24. If the blower motors still do not run, slightly squeeze the building static pressure hose connected to the side hose barb on the control box, just before the hose barb, then squeeze it again between the first pinch point and the control box. The blower motors should start up, as forcing a little bit of pressure to the pressure transducer will exceed the 0.02" water gauge default setpoint.
25. Repeat the above steps to assure the blower motors are rotating in the proper direction.
26. Set the Jade Controller back to the STATUS menu.
27. Re-attach the horizontal access panel, control box cover and the power exhaust cabinet door.

Product Specifications

MODULATED MCM MODEL NO.	TONNAGE	VOLT.	PH.	MOTOR			UNIT				
				QTY.	H.P.	RPM	FLA	MCA	FUSE SIZE	MAX. CFM	BLOWER SIZE
145-DK-142	15 to 25	208-230		2	2	1745	13.9	17.4	20	9750	A12-15A
145-DK-144		460					8.1	10.1	12		
145-DK-147		575					8.3	10.4	12		



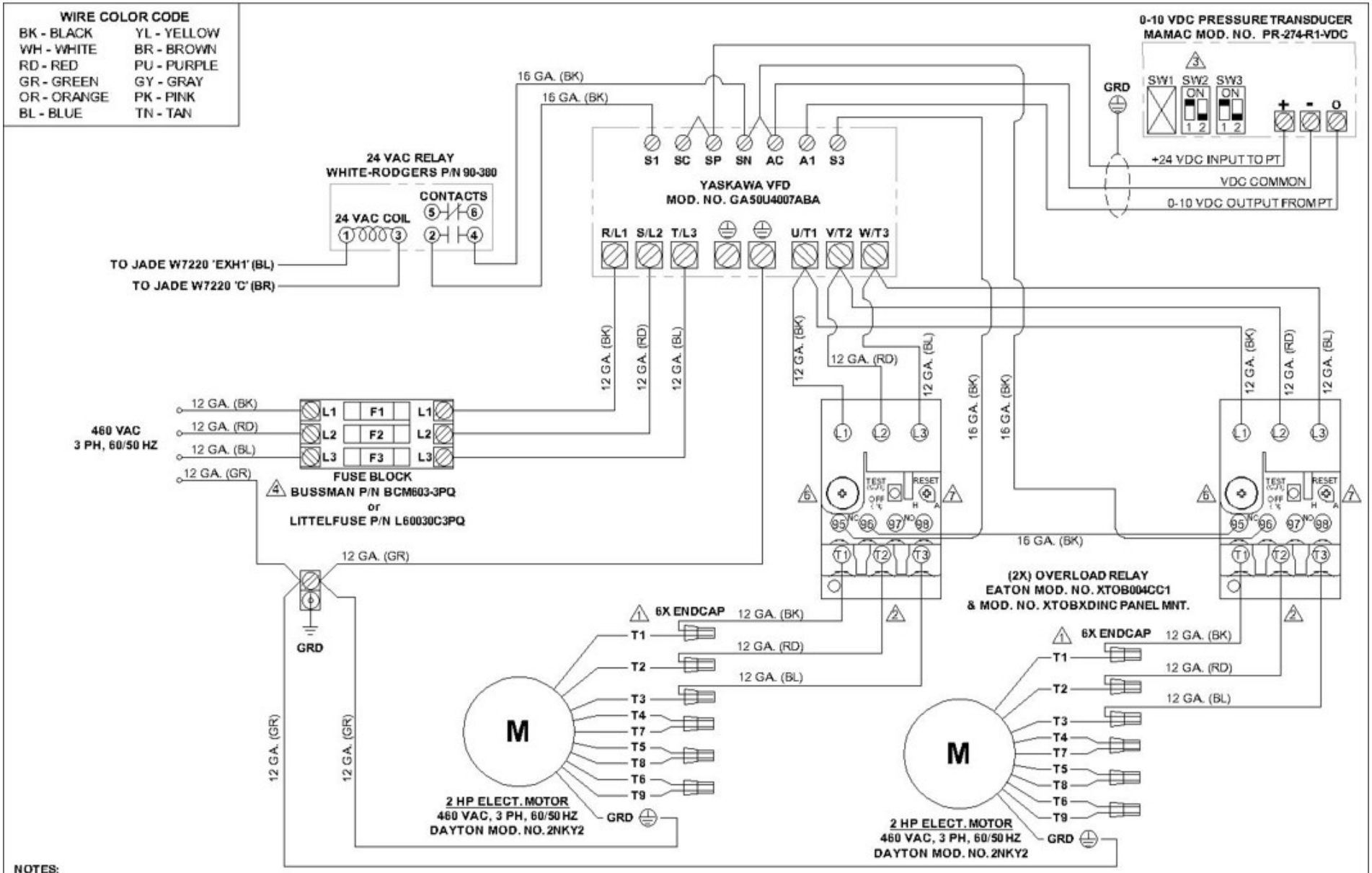
CONTENTS	
QTY	**DESCRIPTION**
1	POWER EXHAUST CABINET ASSEMBLY
2	EXHAUST HOOD ASSEMBLY
2	LEG ASSEMBLY
18	SHT. MTL. SCREWS, #10 x 1/2" LG.
2	HEX HD BOLT, 1/4-20UNC X 2-3/4" LG.
2	S/L HEX NUT, 1/4-20UNC
2	TERMINAL BLOCK, 6-PIN JADE CONNECTOR
1	YASKAWA GA500 / A1000 DOCUMENTATION
1	INSTALLATION INSTRUCTION



NOTES:

1. WIRED FOR 208-230 VAC, 3 PHASE, 60/50 HZ, PER DAYTON MODEL NO. 2NKY2.
2. TO REVERSE ROTATION OF MOTOR, INTERCHANGE ANY TWO LEADS OF T1, T2, OR T3.
3. SWITCHES SHOULD BE SET AS SHOWN (FACTORY DEFAULT). TO PROVIDE 0-10 VDC OUTPUT @ 0-0.10" W.C., SWITCH SW1 IS FACTORY SEALED AND CANNOT BE ADJUSTED.
4. USE 3X LITTELFUSE P/N KLDR-020, 20 AMP CLASS CC, DUAL ELEMENT TIME DELAY FUSE.
5. SET THE OVERLOAD RELAY CURRENT DIAL TO A TRIP POINT OF 7.0 AMPS.
6. SET THE OVERLOAD RELAY 'RESET' SELECTOR KNOB TO AUTOMATIC RESET, OR "A". THE THERMAL OVERLOADS MAY REQUIRE COOLING DOWN BEFORE AUTOMATIC RESETTING OCCURS.

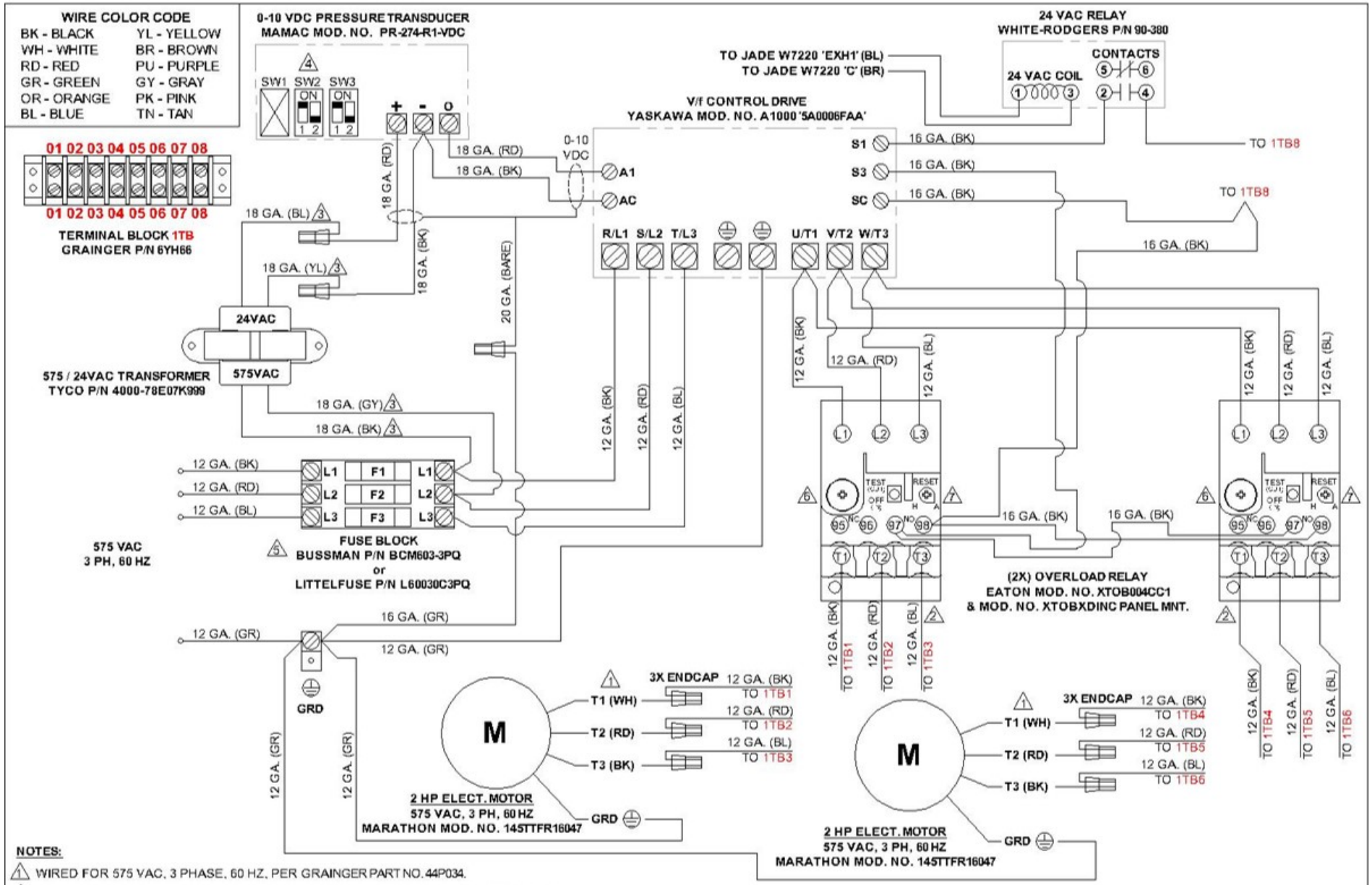
DRAWN BY: B. KELL	MCDANIEL METALS INC.		
DATE COMPLETED: 05/17/2021	DESCRIPTION: WIRING DIAGRAM - YASKAWA/GA500 MODULATING CENTRIFUGAL PW-R, EXH, VERT. ECONOMIZER 208-230VAC / 3PH / 60HZ INPUT, 208-230VAC/ 3PH OUTPUT		
CHECKED BY: MG			
DATE CHECKED: 05/17/2021			
CUSTOMER: DAIKIN	M.M. PART NO: 145-DK-142		
CUSTOMER PART NO.:	M.M. DIAGRAM NO.: 145-DK-142	REV. 3	



NOTES:

1. WIRED FOR 460 VAC, 3 PHASE, 60/50 HZ, PER DAYTON MODEL NO. 2NKY2.
2. TO REVERSE ROTATION OF MOTOR, INTERCHANGE ANY TWO LEADS OF T1, T2, OR T3.
3. SWITCHES SHOULD BE SET AS SHOWN (FACTORY DEFAULT), TO PROVIDE 0-10 VDC OUTPUT @ 0-0.10" W.C.. SWITCH SW1 IS FACTORY SEALED AND CANNOT BE ADJUSTED.
4. USE 3X LITTELFUSE P/N KLDR-012, 12 AMP CLASS CC, DUAL ELEMENT TIME DELAY FUSE.
6. SET THE OVERLOAD RELAY CURRENT DIAL TO A TRIP POINT OF 3.5 AMPS.
7. SET THE OVERLOAD RELAY 'RESET' SELECTOR KNOB TO AUTOMATIC RESET, OR "A". THE THERMAL OVERLOADS MAY REQUIRE COOLING DOWN BEFORE AUTOMATIC RESETTING OCCURS.

DRAWN BY: B. KELL	**MCDANIEL METALS INC.**		
DATE COMPLETED: 05/18/2021	DESCRIPTION: Y-IRING DIAGRAM - YASKAY-AGA500 VFD MODULATING CENTRIFUGAL PW-R, EXH.W/VERT.ECONOMIZER 460VAC / 3PH / 60HZ INPUT, 460VAC/ 3PH OUTPUT		
CHECKED BY: MG			
DATE CHECKED: 05/18/2021			
CUSTOMER: DAIKIN		M.M. PART NO: 145-DK-144	
CUSTOMER PART NO:		M.M. DIAGRAM NO: 145-DK-144	REV. 3



NOTES:

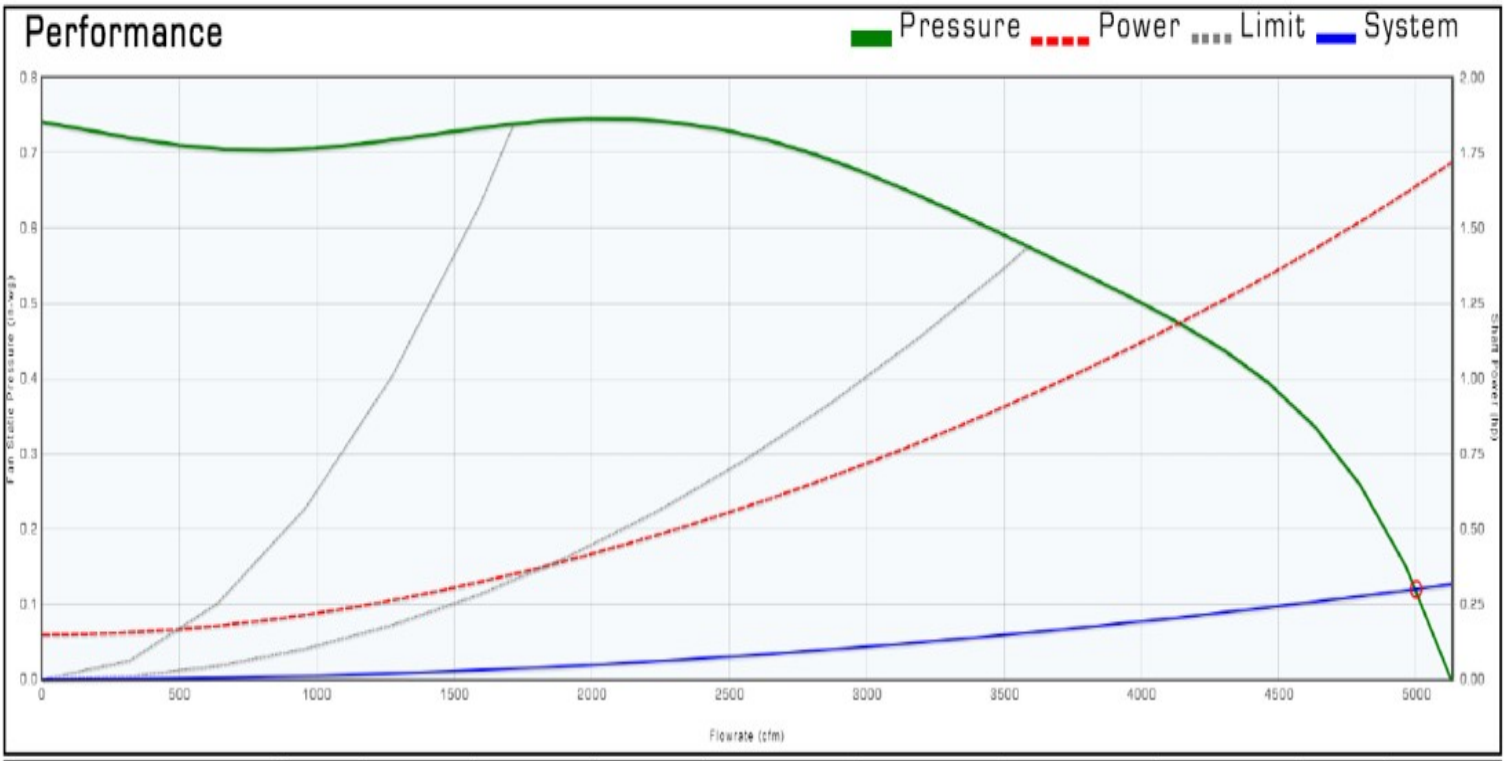
1. WIRED FOR 575 VAC, 3 PHASE, 60 HZ, PER GRAINGER PART NO. 44P034.
2. TO REVERSE ROTATION OF MOTOR, INTERCHANGE ANY TWO LEADS OF T1, T2, OR T3.
3. USE THE TRANSFORMER WIRES FOR THESE CONNECTIONS.
4. SWITCHES SHOULD BE SET AS SHOWN (FACTORY DEFAULT), TO PROVIDE 0-10 VDC OUTPUT @ 0-0.10" W.C.. SWITCH SW1 IS FACTORY SEALED AND CANNOT BE ADJUSTED.
5. USE 3X LITTELFUSE P/N KLDR-012, 12 AMP CLASS CC, DUAL ELEMENT TIME DELAY FUSE.
6. SET THE OVERLOAD RELAY CURRENT DIAL TO A TRIP POINT OF 3.0 AMPS.
7. SET THE OVERLOAD RELAY 'RESET' SELECTOR KNOB TO AUTOMATIC RESET, OR "A". THE THERMAL OVERLOADS MAY REQUIRE COOLING DOWN BEFORE AUTOMATIC RESETTING OCCURS.

DRAWN BY: B. KELL	**MCDANIEL METALS INC.**		
DATE COMPLETED: 05/08/2019	DESCRIPTION: WIRING DIAGRAM MODULATING CENTRIFUGAL PWR. EXH. VERT. ECONOMIZER 575VAC / 3PH / 60HZ INPUT, 460VAC / 3PH OUTPUT		
CHECKED BY:			
DATE CHECKED:			
CUSTOMER: DAIKIN		M.M. PART NO: 145-DK-147	
CUSTOMER PART NO.:		M.M. DIAGRAM NO.: 145-DK-147	REV. 2

Date 16-8-2019

Job Name					Submitted by/notes			
Model A12-15A	Flow 5000 cfm	Pressure 0.12 in-wg	Temperature 70 °F	Altitude 0 ft	Density 0.075 lb/ft^3	Q Derate 0 cfm	P Derate 0.00 in-wg	Vav Set Point 0.00 in-wg
Fan Tag	Flow 5000 cfm	Pressure 0.12 in-wg	Power 1.64 hp	Static Efficiency 5.8 %	Total Efficiency 30.9 %	Speed 708 rpm	Outlet Velocity 2900 fpm	Efficiency Rating FEG75
	Impeller Dia 12.0 in	Outlet Area 1.72 ft^2	Max. Speed 1400 rpm	AMCA Class 0	Drive Belt Drive	Blades 43	P Volume 5.17 ft^3	TurnDown 100 %

Performance



Sound(Lwi)	63	125	250	500	1000	2000	4000	8000	Lw	LwA
	81	80	76	75	74	71	70	68	85	79

PROCEDURE FOR CHANGING BUILDING STATIC PRESSURE VFD SETPOINT

The Differential Pressure Transducer (DPT) is outfitted with a Low Pressure and High Pressure fitting suitable for 3/16" O.D. x 1/8" I.D. rubber pressure tubing. The DFT has a differential pressure range of 0 - 0.1" Water Column, with a proportional output of 0 - ⁺10 VDC, at an accuracy of +/- 1% of Full Scale, and Overpressure Protection of 10 PSI, minimum. The low pressure line is connected to a hose barb located in the bottom of the power exhaust cabinet behind the blower motor, and has a shroud covering it on the underneath side to protect it from local wind velocity, so it may accurately check atmospheric pressure. The installer shall run a suitable pressure hose from the high pressure hose barb located on the back of the control box to a static pressure pick-up strategically located in the building to measure its indoor static pressure. The VFD is factory-programmed with a setpoint of 0.02" W.C., which equates to an outpoint signal of +2.0 VDC at terminals 'A1' and 'AC' of the GA500 VFD motor drive. The VFD is always energized, but the blower will only start to exhaust air when the building static pressure reaches the programmed setpoint, and will modulate using a closed-loop P-I algorithm to maintain the setpoint building pressure, up to 2400 CFM. Contact the factory for other available building static pressure ranges. Below is the procedure for changing the **Building Static Pressure Setpoint** value, or Parameter B5-19.

GENERAL NOTE

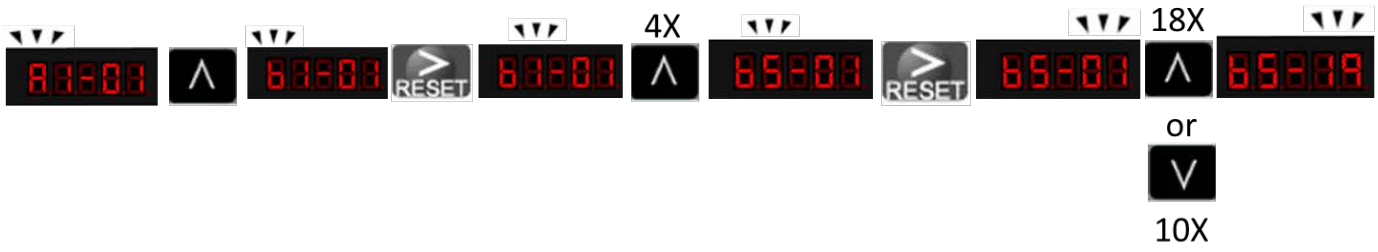
Use the RESET button to select the digit you would like to change and the ∧ and ∨ buttons to adjust the value. The RESET button will toggle through the characters that are shown. The ENTER button will input your selection, and a message END will appear confirming the selection. The parameter you selected will re-appear.

1. Reset the VFD by turning off power from the main disconnect box. Wait for the D.O. display to extinguish, then turn the main disconnect power back on. The D.O. should be illuminated.
2. Press the **V** button on the D.O. twice until the D.O. shows the Parameter menu (PAr), as shown below:

3. Press ENTER on the D.O. to begin setting parameters, the D.O. should show Parameter A1-01, with the 'A' blinking:

PROCEDURE FOR CHANGING BUILDING STATIC PRESSURE VFD SETPOINT (cont.'d)

4. As an example, press the following string of buttons to access Parameter B5-19, and changing it from '000.02' (.02" W.C.) to '000.05' (0.05" W.C.):



5. The 'END' display is a temporary confirmation of the change and will go back to the B5-19 parameter within a few seconds. Pressing 'ENTER' will display the input again. Press 'ESC' to get back to the main menu, or the Frequency Reference Display, thus:

6. Below are the range of settings for Parameter B5-19 for a 0.0 – 0.1" W.C. Pressure Transducer:

Parameter B5-19 Setpoint	Bldg. Indoor Static Pressure (in*wg)
000.00	0.00
000.01	0.01
000.02	0.02
000.03	0.03
000.04	0.04
000.05	0.05
000.06	0.06
000.07	0.07
000.08	0.08
000.09	0.09