

HORIZONTAL MODULATING CENTRIFUGAL POWER EXHAUST (For 15 - 25 Ton) MODELS DFC/DFG LIGHT COMMERCIAL ROOFTOP UNITS INSTALLATION INSTRUCTIONS

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SAFETY CONSIDERATIONS

Installation and servicing of air conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air conditioning equipment.

All operations should be performed by trained service personnel. When working on air conditioning equipment, observe precautions in the literature, tags and labels attached to the unit or accessory, and other safety precautions that may apply.

Follow all safety codes. Wear safety glasses and work gloves.



WARNING

ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE, MAINTENANCE OR REPAIR (HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED IN THIS MANUAL SHOULD SERVICE THE EQUIPMENT. THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SERVICE OR SERVICE PROCEDURES. IF YOU SERVICE THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT. IMPROPER INSTALLATION, ADJUSTMENT, SERVICING, MAINTENANCE OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



WARNING

HIGH VOLTAGE!
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



WARNING

DO NOT BYPASS SAFETY DEVICES.

DESCRIPTION

The horizontal modulating centrifugal power exhaust kits are used in conjunction with the model numbers listed at the top of this installation instruction. These kits are not applicable to downflow applications. See Table 1 for package usage.

The power exhaust kit includes 2 belt driven, A12-15A centrifugal blowers, mounted in power exhaust housing. Wiring harnesses are provided to connect the power exhaust to the economizer for low voltage, and to the unit single point connection for high voltage and for high voltage directly to the unit power block for 208/230V or the single point connection for 460V & 575V applications.

The power exhaust housing is constructed of pre-painted steel to match color of rooftop unit. It uses the aluminum filter provided with the economizer for outside air intake and mounts the horizontal ducting that will be made later in this installation.

HORIZONTAL MODULATING CENTRIFUGAL POWER EXHAUST PART NUMBERS

Part No.	Ton	Voltage	Height	Width	Depth
			(measurement in inches)		
0270L02564	15 to 25	208/230V 3 Phase	25.22"	62.55"	40.04"
0270L02565		460V 3 Phase			
0270L02566		575V 3 Phase			

**TABLE 1 - PART NUMBER PACKAGE USAGE AND
DIMENSIONS**

MOUNTING TYPE	DISCHARGE TYPE	CURB P/N	CURB HT.	ECONOMIZER P/N(s)
ROOF MOUNT	END DISCHARGE, SUPPLY & RETURN	HZCURB180300EDRPE	40"	SHZECN180300B / B1A SHZECNDB180300B / B1A SHZECDCD180300B / B1A
SLAB MOUNT	END DISCHARGE, SUPPLY & RETURN	HZCURB180300EDSPE	32"	
ROOF MOUNT	RETURN END DISCHARGE, SUPPLY DOWNFLOW	14CURB180300	14"	
ROOF MOUNT	RETURN END DISCHARGE, SUPPLY DOWNFLOW	18CURB180300	18"	

TABLE 2 - MOUNTING OPTIONS



IMPORTANT: FOLLOW ALL APPLICABLE LOCAL ELECTRICAL CODES AND NEC (NATIONAL ELECTRICAL CODE), WHEN INSTALLING THESE KITS.

The wire shall be sized to include power exhaust FLA and MCA. See Table 3 for electrical data.

PART NUMBER	230V, 3PH, 60Hz		
	FLA	MCA	FUSE SIZE
0270L02564	14.2	17.7	30

PART NUMBER	460V, 3PH, 60Hz		
	FLA	MCA	FUSE SIZE
0270L02565	8.4	10.4	15

PART NUMBER	575V, 3PH, 60Hz		
	FLA	MCA	FUSE SIZE
0270L02566	8.6	10.7	15

TABLE 3 - ELECTRICAL DATA

FLA - Full Load Amps

MCA - Minimum Circuit Amps

TO INSTALL HORIZONTAL POWER EXHAUST, PERFORM THE FOLLOWING PROCEDURES:

1. Turn off unit power supply and install lockout tag. For gas units, turn off the gas supply.

NOTE: BEFORE INSTALLING, ENSURE VOLTAGE OF POWER EXHAUST AGREES WITH POWER SUPPLY TO THE EQUIPMENT.



WARNING

UNIT DAMAGE HAZARD

FAILURE TO FOLLOW THIS CAUTION MAY RESULT IN EQUIPMENT DAMAGE. BE CAREFUL TO ROUTE WIRES TO AVOID PINCHING OR CUTTING DURING ASSEMBLY. IT CAN BE DIFFICULT TO PROTECT THE WIRES WHILE ATTACHING THE POWER EXHAUST TO THE UNIT.

2. Remove the unit access panel to allow access to the inside of the rooftop unit. See Figure 1.
3. Break down the shipping crate being careful not to damage the power exhaust.

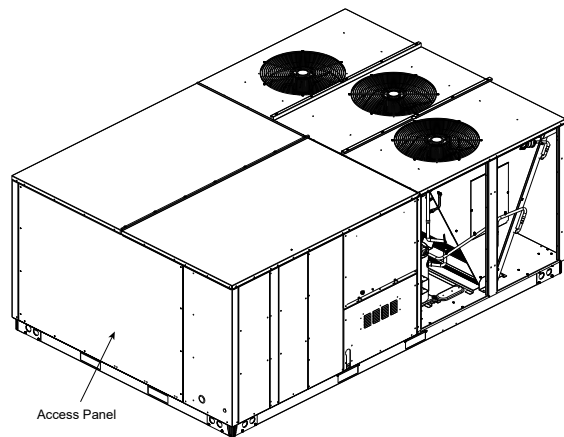


FIGURE 1 – ACCESS PANEL

4. Open the carton that came with the power exhaust and inspect the contents for shortages or damage.
5. Attach the 2 exhaust hoods to the cabinet using 18 of the provided sheet metal screws. See Figure 2.
6. If power exhaust is not already near the roof top unit, use proper rigging equipment and the 4 lifting eyes to lift the power exhaust and place it next to the RTU. Double check that the roof and roof curb are rated for the additional weight of the power exhaust.
7. Verify that the control box is on the side closest to the RTU control box. If it isn't, move it to the other side of the cabinet that has precut holes.
8. Verify that power supply to RTU has been turned off. If gas, turn off the gas supply as well.
9. Determine which side the power exhaust is to be attached to the horizontal return duct connected to the economizer return, then cut a 13" high x 62.5" wide rectangular opening into the side of the duct, centered vertically. See Figure 3.
10. Slide the support legs through the guides, and properly block up the power exhaust to align it with the cutout in the return duct. See Figure 4. Shim legs as required. Follow the wiring instructions specific to the economizer. Be sure power exhaust wiring does not interfere with damper operation or comes in contact with tubing or sheet metal edges.

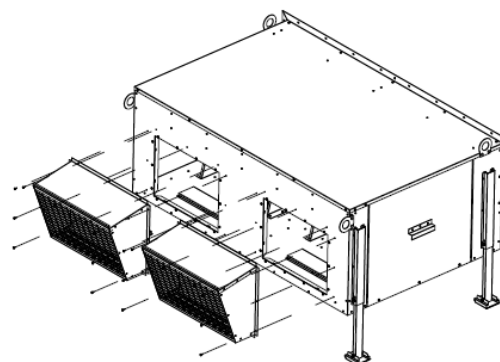


FIGURE 2

FIGURE 3

FIGURE 4

POWER EXHAUST WIRING FOR W7220 CONTROLLER:

1. Remove the Power Exhaust cabinet door and locate the high voltage power wires and low voltage control signal wires. See Figure 5.
2. Feed the line voltage and low voltage wires through the return duct back to the knockouts provided in the economizer, per Figure 6.
3. Attach the low voltage wires to 'EXH1' and 'C' of the W7220 Jade control module on the economizer, using the provided connectors per Figures 7 & 8.
NOTE: For a DDC Controller application, remove the control harness spade terminals from the relay coil in Figure 7, and discard the harness & Jade side connectors. Connect the DDC Economizer 'Power Exhaust' control wires to the same terminals on this relay.
4. 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, cut the male plug off, strip the wires, and terminate directly to the power block located in the rooftop unit, and connect the GREEN wire to a suitable 'earthed' ground. For units that have not been purchased with a modulating power exhaust factory installed option, meaning, the power exhaust was purchased as a field installed accessory, external power must be supplied to the power exhaust. DO

NOT CONNECT TO UNIT POWER. Unit MCA is calculated based on factory installed equipment, so components may not be sized appropriately.

5. 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 9.

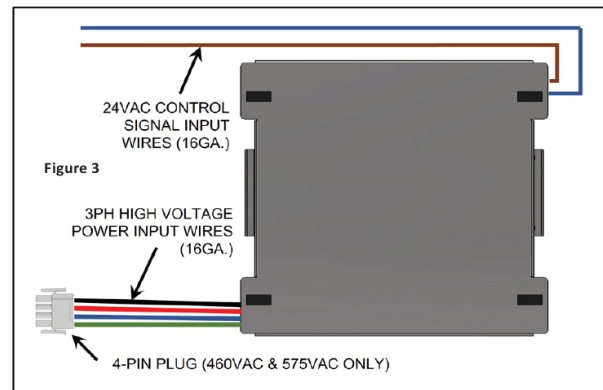


FIGURE 5

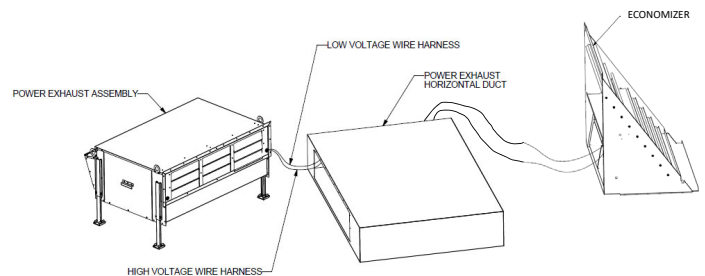


FIGURE 6

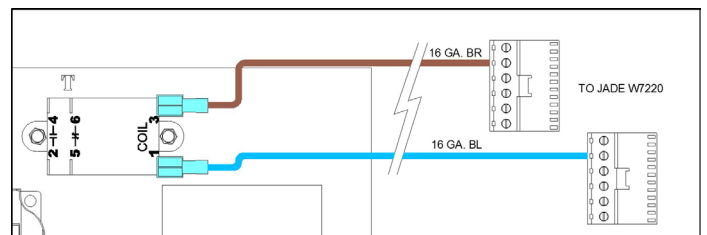


FIGURE 7

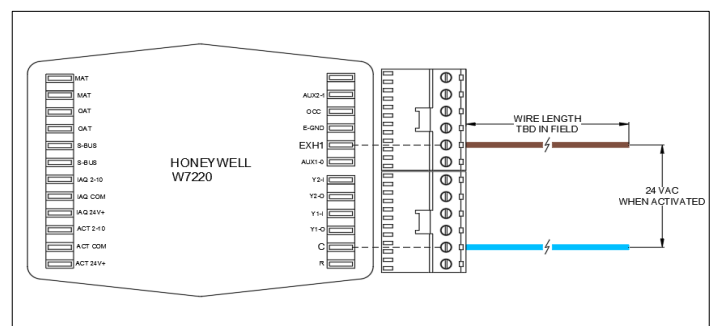


FIGURE 8

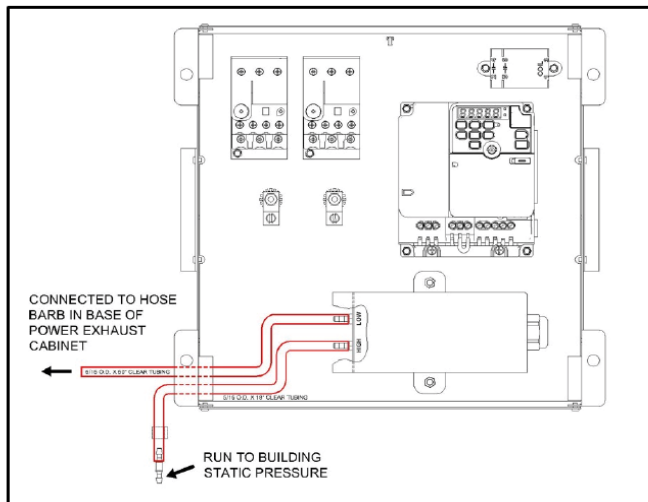


FIGURE 9

ATTACHING POWER EXHAUST TO THE UNIT:

1. Make sure all power exhaust harnesses are connected as indicated in the previous steps.
2. Make sure all wiring is secure. Use field-supplied wire ties if necessary. Be sure that wiring does not interfere with operation of the HVAC unit, economizer, or power exhaust.
3. Screw the power exhaust flanges to the return duct using (17) #10 x 1/2" lg. self drilling screws. Screw locations are 8X screws on top, 3X screws on each end, & 3X screws behind lower damper blades. See Figure 4. (Will need to reach through the power exhaust cabinet to secure lower flange).
4. Locate the aluminum filters shipped with the economizer. Open the filter clips under the economizer hood top. Slide the aluminum filter into the outside air opening until it is past the filter clips. Close the filter clips to lock the filter in place.
5. Return power to unit and remove lockout tag. For gas units, turn on the gas supply.
6. Test power exhaust operation by setting the power exhaust set point on the economizer controller to 0%. Power exhaust performance is shown in Figure 10.

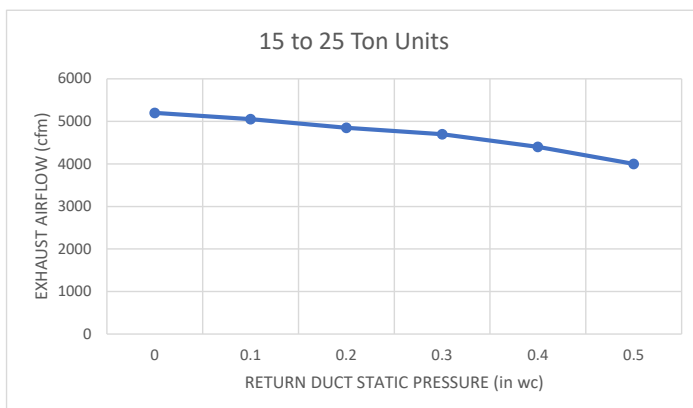


FIGURE 10 – POWER EXHAUST PERFORMANCE

7. Adjust the power exhaust set point on the economizer controller to the desired activation point per unit schematic.
8. 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.
9. If the blower motors start, check for the 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 11, when facing the motor from the pulley side.
10. 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.
11. Turn the main disconnect power back on and verify proper blower motor rotation.
12. If the blower motors did not start up, verify 24VAC at the coil of the control box relay, terminals 1 and 3, per Figure 7.
13. Remove the horizontal access panel.
14. On the Jade controller, go to the Menu CHECKOUT, and select Parameter CONNECT EXH1. This will send 24VAC to the power exhaust relay.
15. 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.
NOTE: Do not blow into transducer as this could damage it.
16. Repeat the above steps to assure the blower motors are rotating in the proper direction.
17. Set the Jade Controller back to the STATUS menu.
18. Re-attach the horizontal access panel, control box cover, and the power exhaust cabinet door.

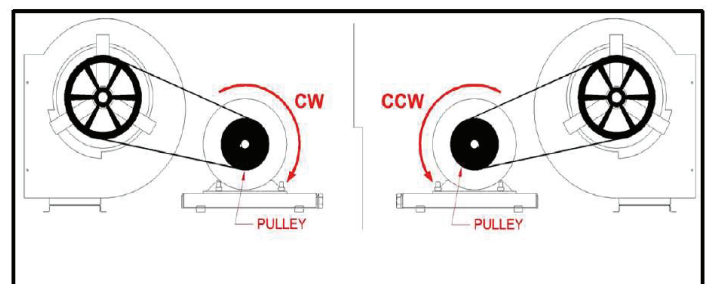


FIGURE 11

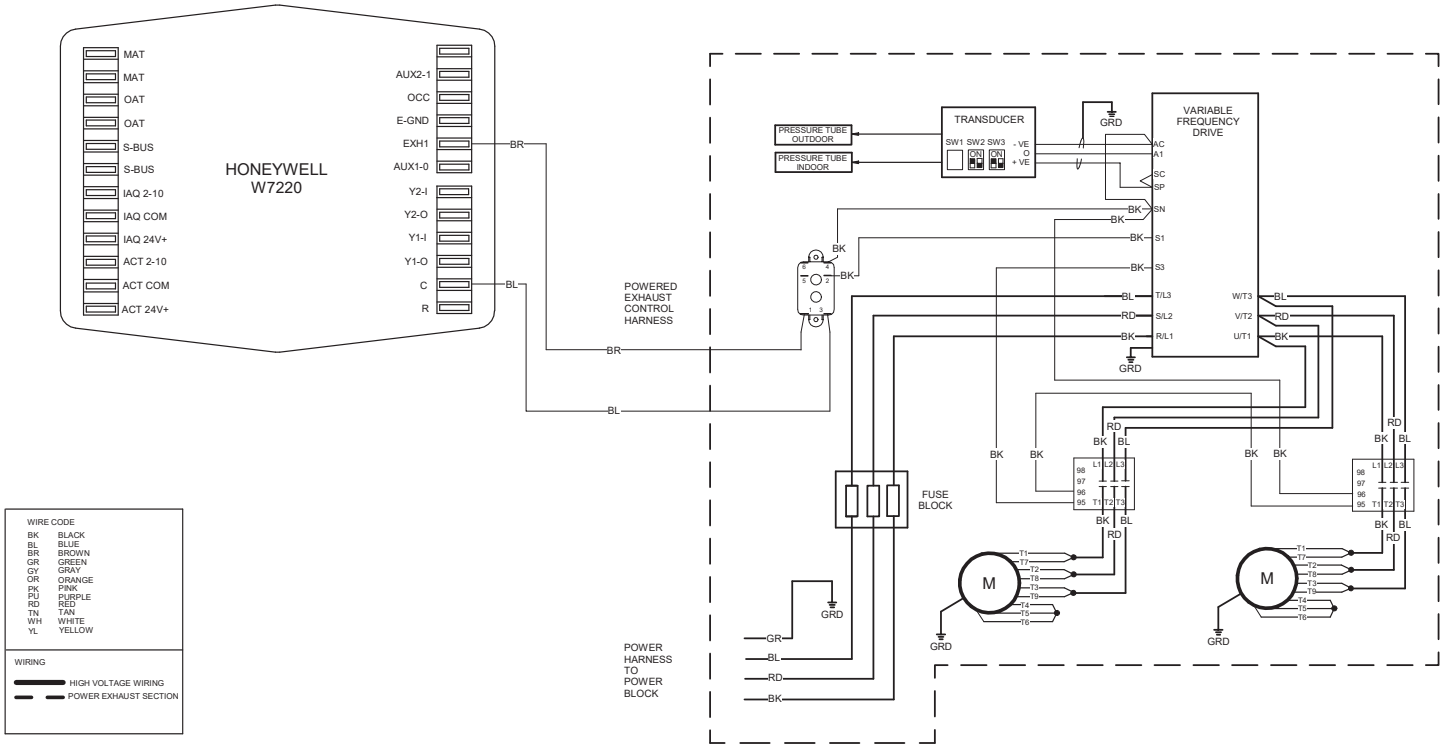
WIRING DIAGRAM

JADE ECONOMIZER WITH CENTRIFUGAL
BLOWER EXHAUST 208-230V 3 PHASE

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MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY
CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.





NOTE: Wiring is subject to change. Always refer to the unit wiring diagram and accessory wiring diagram booklet for the most up-to-date wiring.

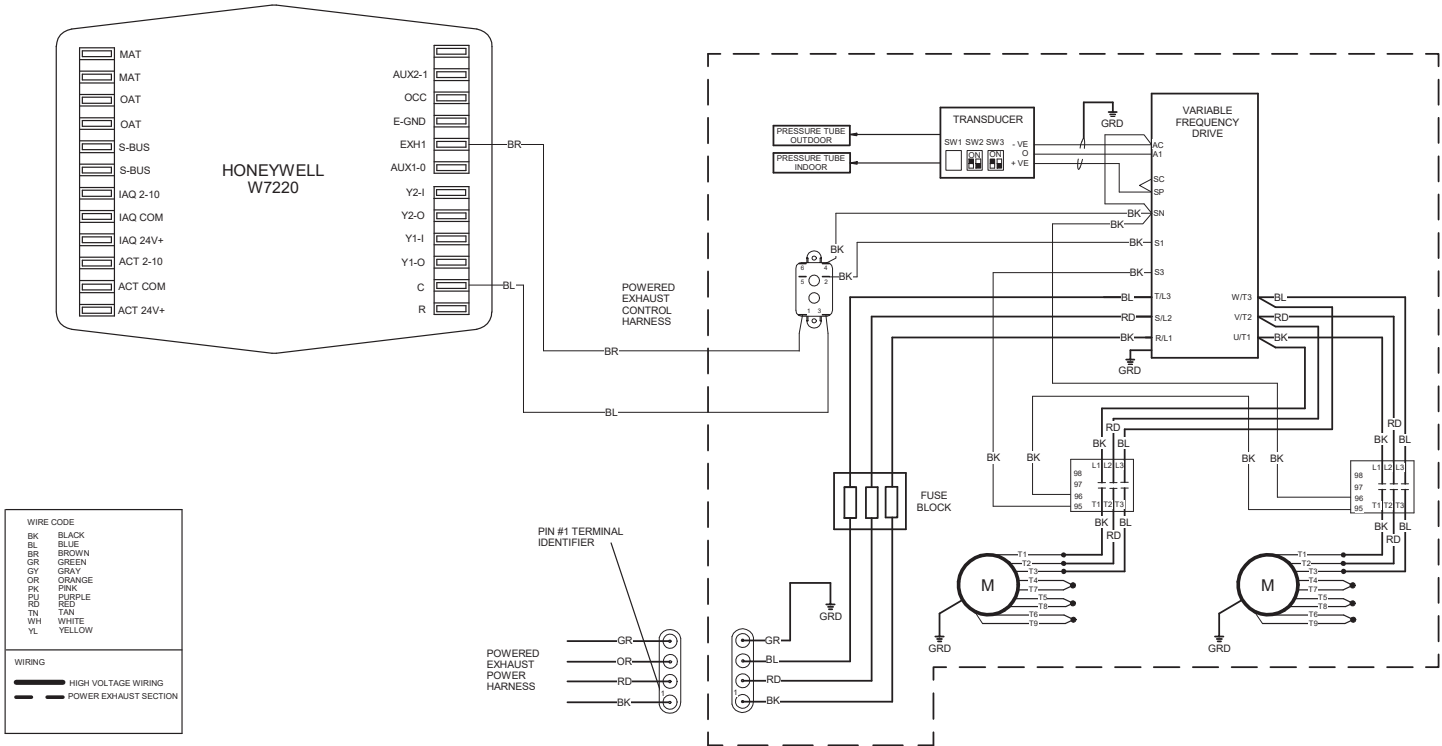
WIRING DIAGRAM

JADE ECONOMIZER WITH CENTRIFUGAL
BLOWER EXHAUST 460V 3 PHASE

**WARNING**

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NOTE: Wiring is subject to change. Always refer to the unit wiring diagram and accessory wiring diagram booklet for the most up-to-date wiring.

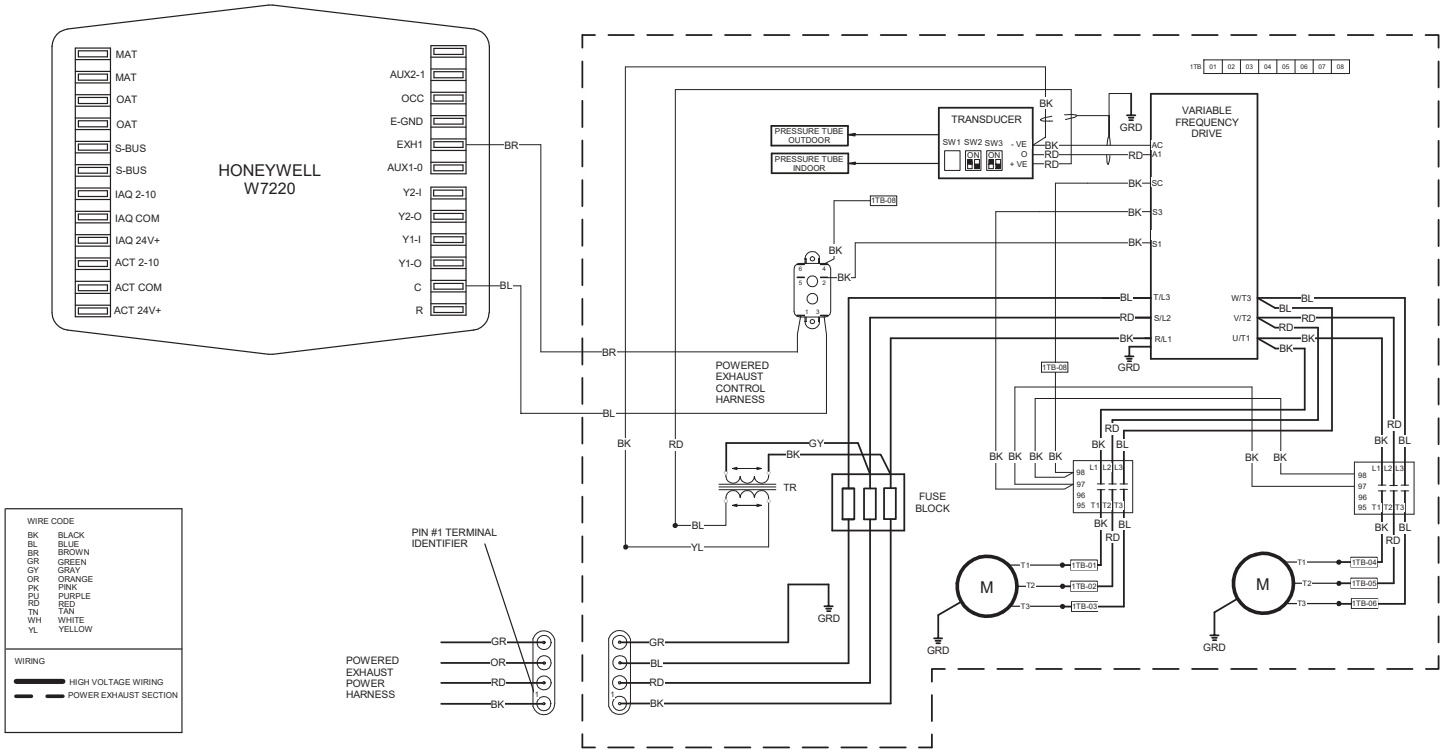
WIRING DIAGRAM

JADE ECONOMIZER WITH CENTRIFUGAL
BLOWER EXHAUST 575V 3 PHASE

**WARNING**

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NOTE: Wiring is subject to change. Always refer to the unit wiring diagram and accessory wiring diagram booklet for the most up-to-date wiring.

DDC ECONOMIZER WITH CENTRIFUGAL BLOWER EXHAUST 208-230V 3 PHASE



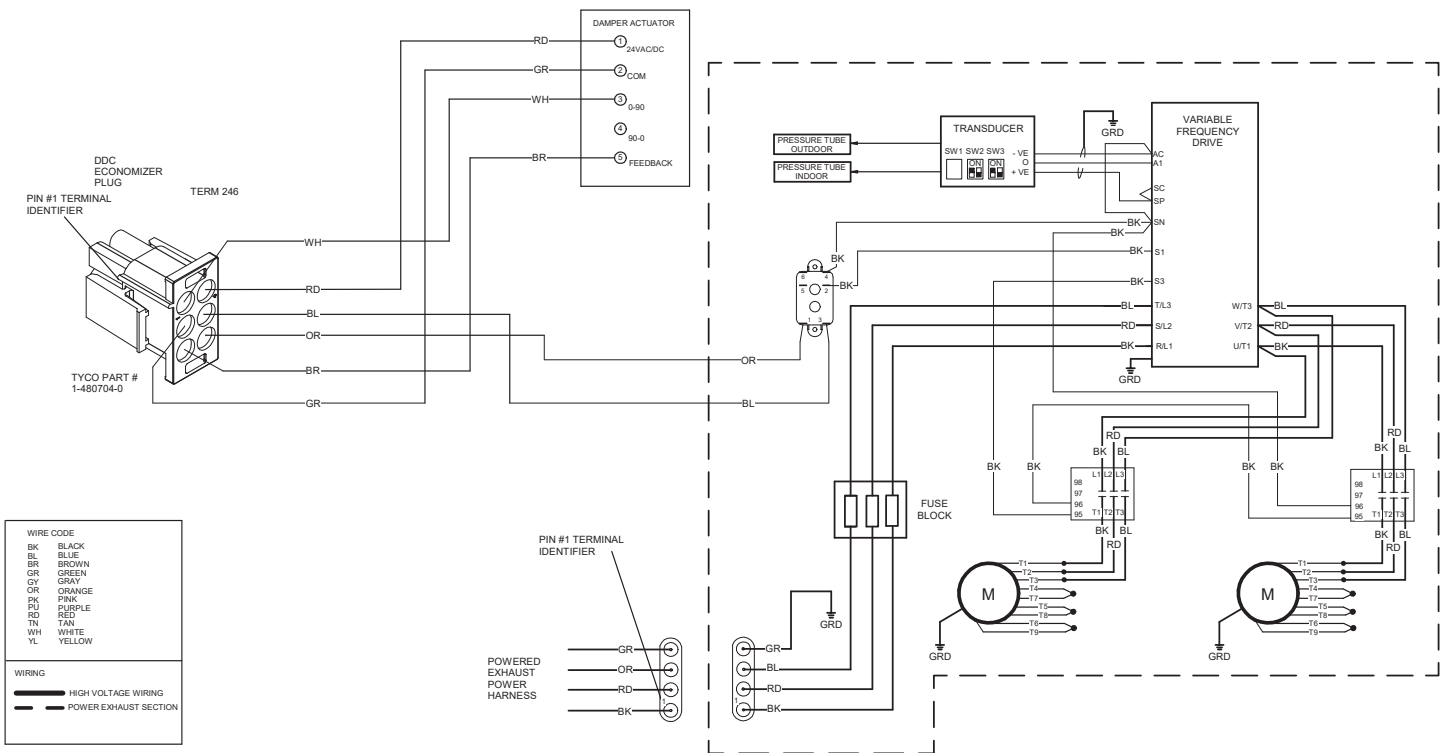
WIRING DIAGRAM

DDC ECONOMIZER WITH CENTRIFUGAL BLOWER EXHAUST 460V 3 PHASE

**WARNING**

HIGH VOLTAGE!
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MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY
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NOTE: Wiring is subject to change. Always refer to the unit wiring diagram and accessory wiring diagram booklet for the most up-to-date wiring.

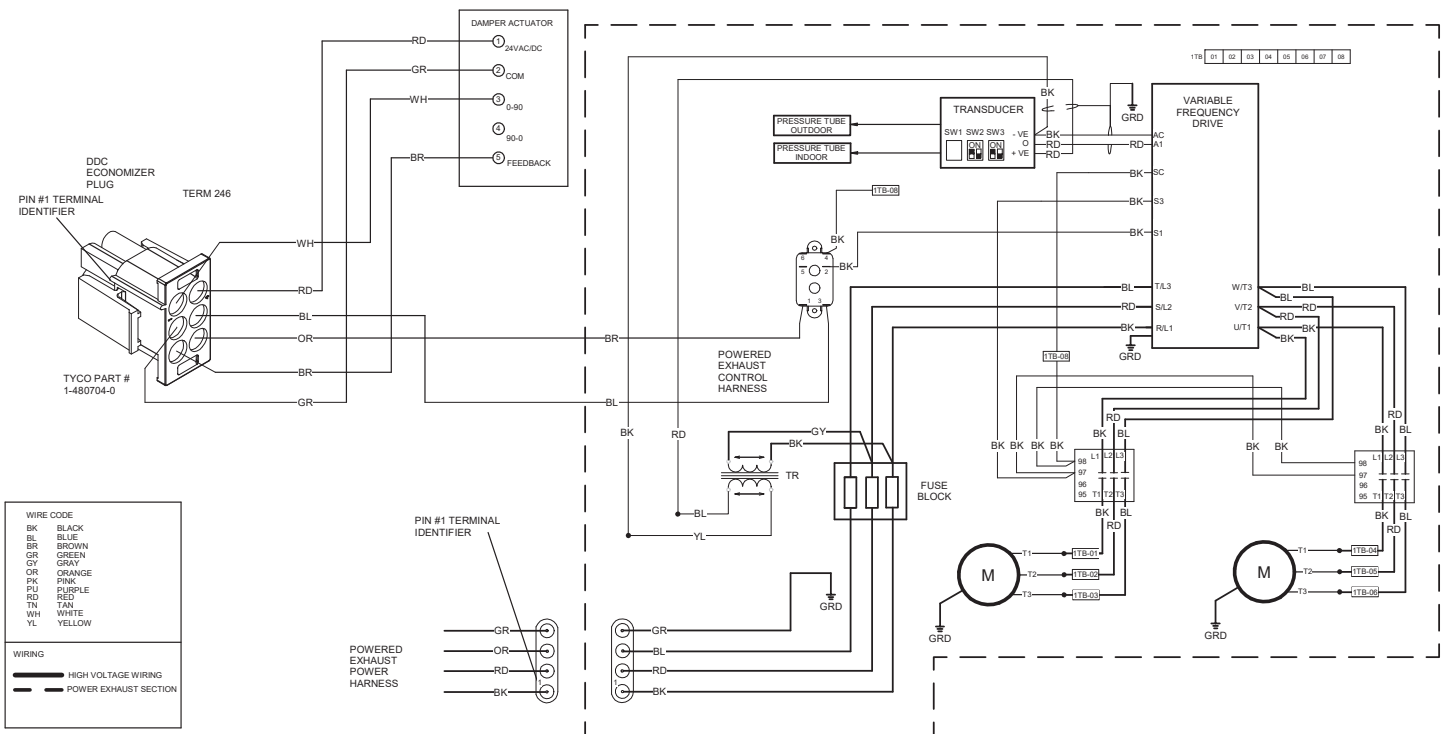
WIRING DIAGRAM

DDC ECONOMIZER WITH CENTRIFUGAL BLOWER EXHAUST 575V 3 PHASE

**WARNING**

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DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.





NOTE: Wiring is subject to change. Always refer to the unit wiring diagram and accessory wiring diagram booklet for the most up-to-date wiring.

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