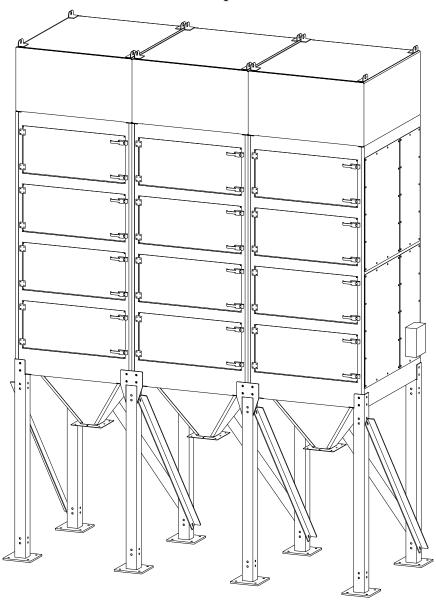


MODEL FORCETM FRP DUST COLLECTOR

Installation and Operation Manual



This manual contains specific cautionary statements relative to worker safety. Read this manual thoroughly and follow as directed. It is impossible to list all the hazards of dust control equipment. All persons involved with the equipment or systems should be instructed how to operate in a safe manner.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

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△ WARNING

Process owners/operators have important responsibilities relating to combustible hazards. Process owners/operators must determine whether their process creates combustible dust, fume, or mist. If combustible dust, fumes, or mist is generated, process owners/operators should at a minimum:

- Comply with all applicable codes and standards.
 Among other considerations, current NFPA standards require owners/operators whose processes involve potentially combustible materials to have a current hazard analysis, which can serve as the foundation for their process hazard mitigation strategies.
- Prevent all ignition sources from entering any dust collection equipment.
- Design, select, and implement fire and explosion mitigation, suppression, and isolation strategies that are appropriate for the risks associated with their application.
- Develop and implement maintenance work practices to maintain a safe operating environment, ensuring that combustible dust, fumes, or mist does no accumulate within the plant.

Micro Air recommends process owners/operators consult with experts to ensure all of these responsibilities are met.

As a manufacturer and supplier of Industrial Filtration Products, Micro Air can assist process owners/operators in the selection of filtration technologies. However, process owners/operators retain all responsibility for the suitability of fire and explosion hazard mitigation, suppression, and isolation strategies. Micro Air assumes no responsibility or liabitlity for the suitability of any fire and/or explosion mitigation strategy, or any items incorporated into a collector as part of an owner/operator hazard mitigation strategy.

Improper operation of a dust control system may contribute to conditions in the work area or facility that could result in severe personal injury and product or property damage. Check that all collection equipment is properly selected and sized for the inteded use.

Always follow the requirements of all authorities having jurisdiction (National and Local) in the application, installation, orperation and servicing of the dust collector.

Many of the processes outlined in this manual will expose the installer to circuits powered by high voltage. This installation is recommended for professional electricians or Micro Air trained factory service personnel. Lock out/ Tag out procedures are required. The installation/operation manual must be read and followed in its entirety.

MODEL FRP SPECIFICATIONS

CABINET DIMENSIONS:

FRP4	72" H x 53" W x 48" D
FRP6	92" H x 53" W x 48" D
FRP6-2	94" H x 95" W x 48" D
FRP6-3	94" H x 136" W x 48" D
FRP8	112" H x 53" W x 48" D
FRP8-2	114" H x 95" W x 48" D
FRP8-3	114" H x 136" W x 48" D
FRP8-4	114" H x 179" W x 48" D

Add 64" to height for long legs and 16" for short legs.

FILTER AREA:

600-1000 square feet
900-1500 square feet
1800-3000 square feet
2700-4500 square feet
1200-2000 square feet
2400-4000 square feet
3600-6000 square feet
4800-8000 square feet

Lower number is for PTFE and Spunbond filters, higher number is for all other media types.

INPUT VOLTAGE:

120V 60Hz 1 phase

208-230V / 460V 60Hz 3 Phase

MAXIMUM CURRENT:

1,11,11,11,11,11	oreres, i.i.
Pulse Only	1 Amp
5HP	208V: 13.6 Amps
	230V: 11.8 Amps
	460V: 5.9 Amps
7.5HP	208V: 19.4 Amps
	230V: 18.0 Amps
	460V: 9.0 Amps
10HP	208V: 24.9 Amps
	230V: 23.6 Amps
	460V: 11.8 Amps
15HP	208V: 36.8 Amps
	230V: 34.0 Amps
	460V: 17.0 Amps
20HP	230V: 46.0Amps
	460V: 23.0 Amps
30HP	230V: 68.0 Amps
	460V: 34.0 Amps

COMPRESSED AIR:

Minimum air line of 3/4 inch at 80 psi minimum and 90 psi maximum. Oil and moisture free compressed air is required for proper operation.

INSTALLATION:

INSPECTION:

The Micro Air dust collector is shipped on one or more skids. All skids should be inspected for any visible damage that may have occurred during shipment.

Report any damage to the delivery carrier.

CODES:

Codes may regulate recirculating filtered air in your facility. Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding recirculating of filtered air.

Codes may regulate acceptable locations for installing dust collectors. Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding dust collector installation.

Collectors must be anchored in a manner consistent with local code requirements. Anchors must be sufficient to support dead, live, seismic, and other anticipated loads.

SUGGESTED EQUIPMENT & TOOLS:

Crane or Lift truck Clevis Pins and Clamps

Lifting Straps or Chain

Spreader Bars

Socket Wrenches

Pipe Wrenches

Pipe Wrenches

Drill and Drill Bits

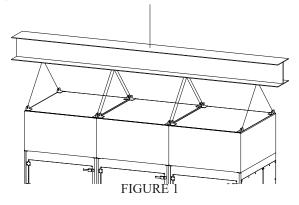
1/2" diameter anchor bolts

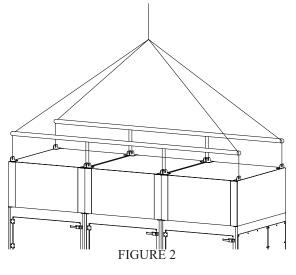
Drill and Wrenches

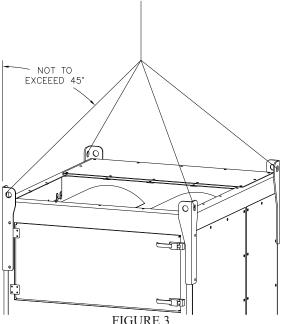
Adjustable Wrench Level

SET-UP

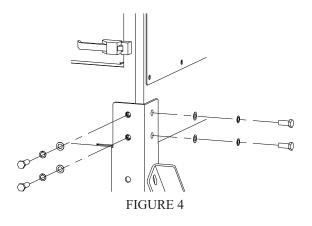
- 1. Determine the location where the unit is to be installed. Be sure to allow sufficient room to access the unit for servicing and maintenance on all sides.
- 2. Lift the unit with a lift truck or overhead crane rated to support the dust collectors weight. Use all the lifting lugs provided and lift in a method described in Figure 1, 2 or 3.







3. Bolt on each of the legs with the hardware provided (Figure 4).



4. When supplied, bolt on angle braces with provided hardware (Figure 5). Ensure each leg is plumb before tightening the bolts.

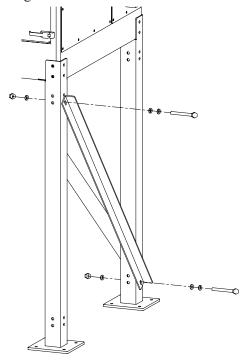
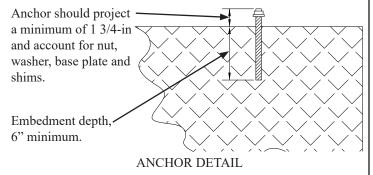


FIGURE 5

5. When the legs and angle braces have been completely installed each leg should be anchored to the ground using all the provided holes in the base plates (1/2" dia. anchors are recommended).

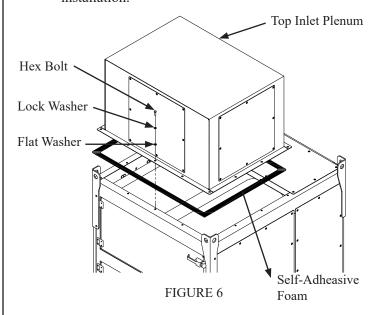


6. Install provided hole plugs into unused bolt holes in legs

⚠ Caution: The unit is not designed to be operated while hanging from lifting brackets. Unit must be mounted on legs and cross bracing installed when supplied.

7. FRP4, FRP6 and FRP8 require installation of the top inlet plenum as shown in FIG. 6.

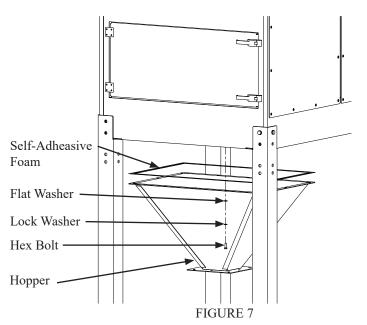
- a. Apply self-adheasive foam on the bolt hole flange of the inlet plenum.
- b. Place inlet plenum on top of dust collector and align the bolt holes.
- c. Attach the inlet plenum using 14 ea. 5/16" bolts, washers and lock washers.
- d. Three cap plates can be removed and reinstalled to allow you to use the opening best suited for your installation.



ACCESSORY INSTALLATION:

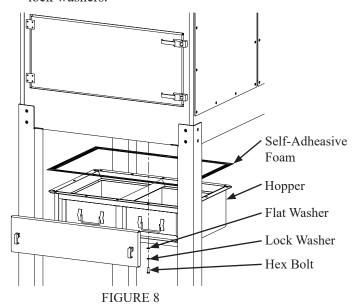
DUST COLLECTION HOPPER

- 1. Apply self-adheasive foam to the bolt hole flange on the hopper (Figure 7).
- 2. Align the hole pattern on the hopper flanges with the hole pattern on the underside of the unit.
- 3. Attach the hopper using 16 ea. 5/16" bolts, washers and lock washers.



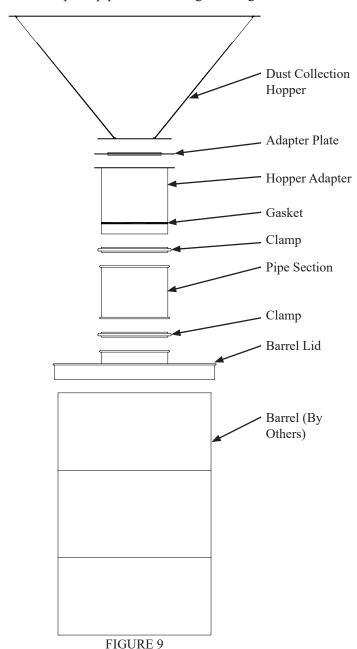
DUST COLLECTION TRAY

- 1. Apply self-adheasive foam to the bolt hole flange on the tray (Figure 8).
- 2. Align the hole pattern on the tray flanges with the hole pattern on the underside of the unit.
- 3. Attach the tray using 16 ea. 5/16" bolts, washers and lock washers.



BARREL LID

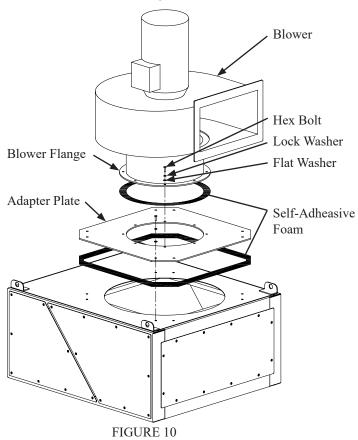
- 1. Bolt adapter plate and hopper adapter to the hopper using the four sets of 3/8" hardware (Figure 9).
- 2. Clamp the pipe section to the barrel lid
- 3. Slide the pipe section over the hopper adapter and adjust so that the barrel lid is resting on the barrel.
- 4. Roll the gasket down until it is resting on the flange of the pipe section.
- 5. Clamp the pipe section and gasket together.



TOP MOUNTED BLOWER

- 1. Apply self-adheasive foam to the bottom side of the blower flange (Figure 10).
- 2. Carefully lift the blower and position over the adapter plate using a lift truck or crane.
- 3. Align and lower the blower to the top of the adapter plate, ensuring the blower outlet is in the correct discharge orientation for your installation.
- 4. Install all bolts through the blower flange into the adapter plate and tighten until secured.

Note: In most installations the adapter plate will arrive installed on the unit. In the event it needs relocated to another module see figure 10.

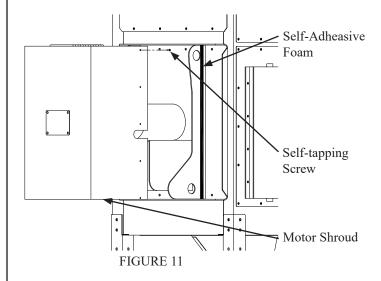


REAR MOUNTED BLOWER MOTOR SHROUD

Note: Do not install motor shroud before completing the electrical connection to the motor.

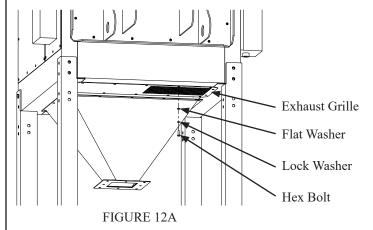
- 1. Place the motor shroud, as shown in Figure 11 over the motor having located the slotted hole of the motor shroud on the right hand side. This will allow the wiring conduit to clear the motor shroud.
- 2. With the shroud in place mark the centers of the six (6) holes in each vertical brace.
- 3. With the holes having been marked remove the motor shroud and use a 7/32" diameter drill bit to drill through the braces.

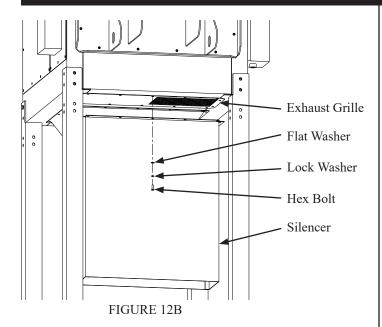
- 4. Apply the self-adheasive foam to the vertical braces as shown in Figure 11.
- 5. Re-install the motor shroud around the motor and attach using the twelve (12) self-tapping screws provided.
- 6. The four bolts and small cover on the back of the motor shroud may be removed to allow for the checking of proper motor rotation.



REAR MOUNTED BLOWER SILENCER & REAR MOUNTED HEPA AFTER FILTER

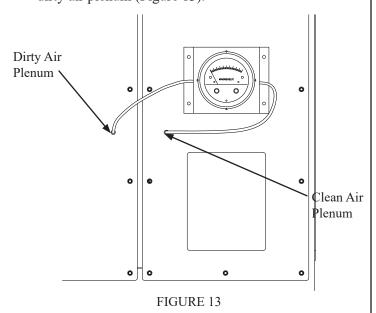
- 1. Remove the bolts from the exhaust grille (Figure 12A).
- 2. Align holes from the silencer flange with holes located on the exhaust grille.
- 3. Attach the silencer with the hardware removed in step one (Figure 12B)





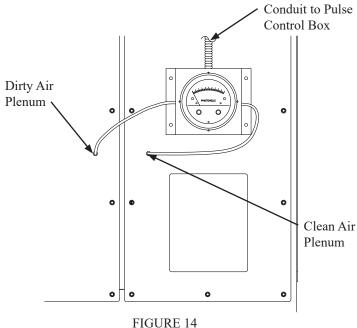
MAGNEHELIC GAUGE

- 1. Mount the magnehelic gauge into the magnehelic mounting bracket following the mounting instructions contained in the magnehelic packaging.
- 2. Mount the two male barb fittings in the pressure ports located on the side of the magnehelic gauge.
- 3. Mount the two pressure port plugs in the pressure ports located on the back of the magnehelic gauge.
- 4. Mount the bracket using the four (4) self-taping screws provided.
- 5. Using the 1/4" diameter clear tubing connect the "LOW" or "-" pressure port on the gauge to the clean air plenum and the "HIGH" or "+" pressure port to the dirty air plenum (Figure 13).



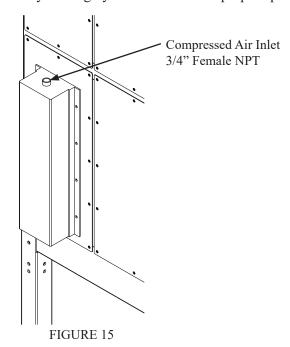
PHOTOHELIC GAUGE

- 1. Mount the photohelic gauge into the photohelic mounting bracket following the mounting instructions contained in the photohelic packaging.
- 2. Mount the two male barb fittings in the pressure ports located on the side of the photohelic gauge.
- 3. Remove cover from electrical box so that wiring diagram on back of cover can be used.
- 4. Remove the two red wires that are connected to the timer board pressure switch input (HI & COM) and relay CR1, or the two red wires that are connected to the timer board pressure switch input (HI & COM) and the differential pressure switch (HI & LOW). See specific unit wiring schematic for further clarification.
- 5. Wire the photohelic gauge as the electrical diagram shows. Use the 3/4" conduit opening on the photohelic, connecting to the pulse control electrical box.
- 6. Replace the cover back onto the photohelic gauge and mount the bracket using the four (4) self-taping screws provided.
- 7. Using the 1/4" diameter clear tubing connect the "LOW" or "-" pressure port on the gauge to the clean air plenum and the "HIGH" or "+" pressure port to the dirty air plenum (Figure 14).
- 8. The right set point dial of the gauge should be positioned at the filter differential set point you want the Roto-pulse system to be enabled. The left should be positioned at the filter differential set point you wnat the Roto-pulse system disabled.



COMPRESSED AIR INSTALLATION:

The compressed air inlet for the Roto-Pulse cleaning system is at the top of the surge tank located on the side of the unit (Figure 15). A minimum of a 3/4 inch diameter line and clean, dry compressed air at a pressure of 80 psi to 90 psi is required for proper operation of the Roto-pulse cleaning system. For models FRP8-3 and FRP8-4 two 3/4 inch diameter lines from a minimum 1 inch diameter header line are required. A unit specific combination regulator/ filter dryer is highly recommended for proper operation.

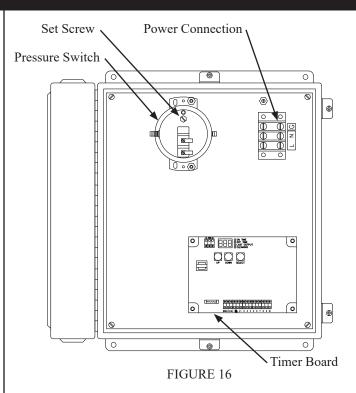


ELECTRICAL INSTALATION:

⚠ Caution: Installation can cause exposure to live components. Disconnect electrical power before proceeding with installation. Proper lock out/tag out procedures should be used.

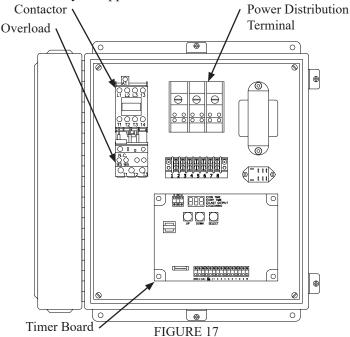
PULSE CONTROLS ONLY ELECTRICAL BOX

- 1. Open the electrical box cover located on the side of the unit. Make connections from your 120V supply power to terminal L, N and G (Figure 16).
- 2. When supply power has been terminated, reconnect the power. Momentarily turn the motor blower on and adjust pressure switch via set screw until contact is made. Use an ohm meter to measure continuity across the pressure switch.



FULL CONTROL ELECTRICAL BOX

- 1. Determine the location for mounting the electrical box (on the unit or remotely). If mounting is on the unit mount near the pulse jumper box in order to minimize electrical runs if feasible.
- 2. Mount the electrical box.
- 3. Open the electrical box cover located on the side of the unit. Make connections from your 208V, 230V, or 460V supply power to power distribution terminal L1, L2, and L3 (Figure 17). Wire size should be rated for FLA of your application.



- 4. Wire from the Overload T1, T2, and T3 to the motor electrical housing. Wire size should be the same as step 3.
- 5. Wire from the timer board in the full control electrical box and the pulse jumper box on the side of the unit. Wire size is 14AWG minimum.
- Reconnect the power. Momentarily turn the unit on and off with the start/stop switches. Confirm the rotation of the motor is in the proper direction. Rotation can be viewed at the open end of the blower motor.
- 7. If motor rotation is in the proper direction then AMP draw information is located on the inside of the Full Electrical Control Box cover. If motor current is higher than rated for the motor supplied, do not continue operation. Re-check your wiring and if problems continue contact your Micro Air representative for instructions.

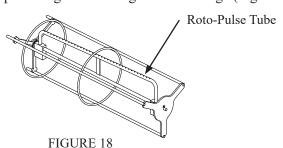
UNIT OPERATION:

- 1. Turn the blower on. This action will cause the filter unit to activate and start cleaning filters.
- Once the unit is running, the Roto-Pulse cleaning system will be operational. Operation is detected by hearing a 0.07 second air pulse approximately every 5 seconds. If adjustment to timing of pulses is desired refer to the section "Roto-Pulse Cleaning Timer Adjustments".
- 3. Check the After-Pulse cleaning cycle by turning off the blower. The unit should continue to pulse every 5 seconds for a period of approximately 17 minutes. If adjustment to the after-pulse time is desired refer to the section "After-Pulse Cleaning Timer Adjustments".

CARTRIDGE CLEANING OPERATION:

The Micro Air Dust Collector is designed with the Roto-Pulse Cleaning System to clean the cartridge filters.

This system provides superior cleaning performance using a rotating tube with pre-drilled holes. As the pulse valve opens, the Roto-Pulse tube rotates while air exits the holes, thus providing the cleaning of the cartridge (Figure 18).



- 1. For proper cleaning, the compressed air pressure should be regulated at 80 psi to 90 psi.
- 2. During normal operation the Roto-Pulse cleaning system is factory set to clean two (2) cartridge filters for a period of 0.07 seconds every 5 seconds.
- 3. Once the unit is turned off the cleaning cycle will continue for a period of 17 minutes. Do not service the filters until cleaning is completed.

Caution: Allow 20 minutes of downtime before opening filter access doors.

After-Pulse system is operational after unit is turned off.

- 4. The Roto-Pulse cleaning operation dislodges particles from the cartridges. Particles then fall down into the dust tray or collection hopper.
- 5. After continued use of the unit, the dust collection barrel or dust tray will need to be emptied. The frequency of servicing will vary depending on the type and quantitity of dust that is collected.

ROTO-PULSE CLEANING TIMER ADJUSTMENTS:

A Caution: Adjustment can cause exposure to live components.

- 1. Turn the blower off.
- 2. Open the electrical box cover.
- 3. The timer control board is preset at the factory to clean two (2) cartridge filters every 5 seconds. This time can be adjusted from 1 second to 999 seconds. To adjust this time press the select button on the timer board until the "off time" LED is lit. Press the up/down buttons until the desired value is displayed. Press select to set the new value.

Note: Cleaning of the filters too often will decrease your level of performance. A certain level of dust cake on the filters will improve the capture efficiency of the filters. You should try to maintain a mimimum of 1 in. w.c. of pressure differential across the filters. If you can not maintain this minimum level of differential pressure across the filters the time between cleaning pulses should be increased until this can be achieved.

4. The timer control board is preset at the factory to have a cleaning pulse duration of 0.07 seconds. This can be adjusted from 0.05 seconds to 600 seconds. To adjust this time press the select button on the timer board until the "on time" LED is lit. Press the up/down buttons until the desired value is displayed. Press select to set the new value.

Note: While this time can be adjusted it is recommended that you leave the "ON TIME" at the factory setting. If less cleaning is needed you should increase the time between pulses as a means of reducing the amount of cleaning. If more cleaning is needed you should decrease the amount of time between pulses. Beware, as the time between pulses is decreased for additional cleaning, this will increase your compressed air consumption and create an additional load on your compressed air system.

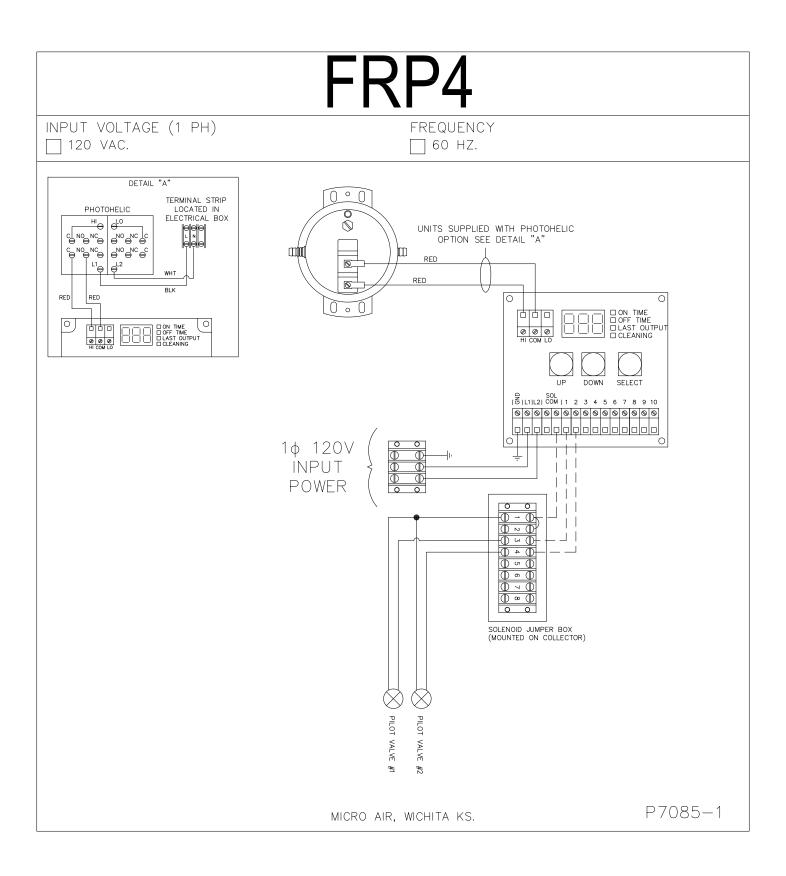
- 5. Once adjustments have been made close the electrical box cover.
- 6. Start the unit and observe the new pulse settings and determine if additional adjustments are necessary. If more adjusting is needed, repeat the previous steps.

AFTER-PULSE CLEANING TIMER ADJUSTMENTS:

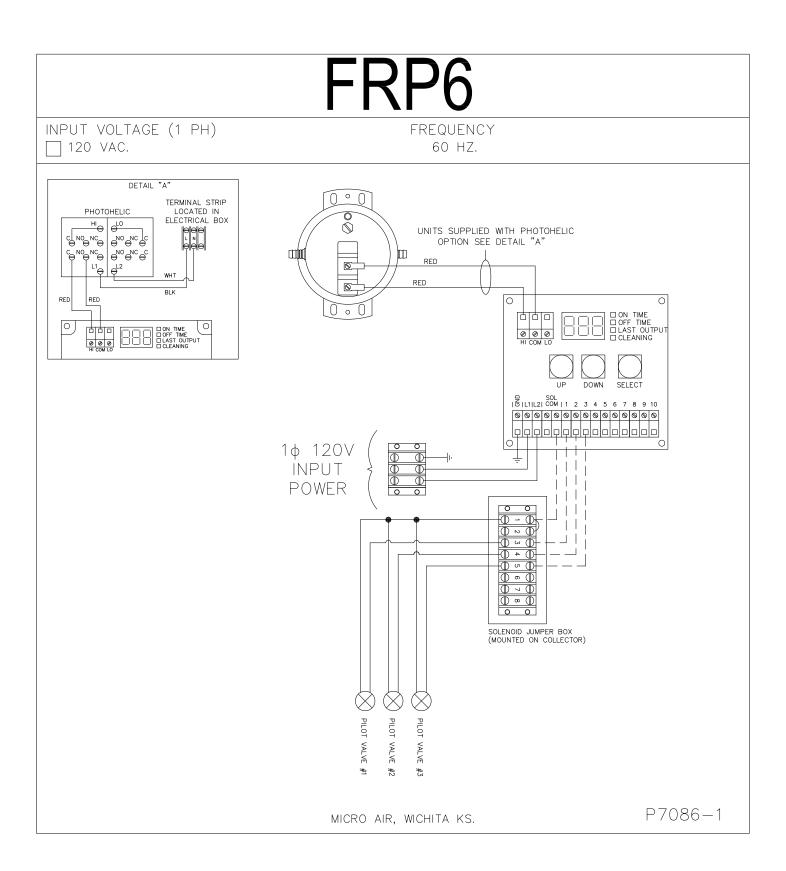
⚠ Caution: Adjustment can cause exposure to live components.

- 1. Turn the blower off.
- 2. Open the electrical box cover.
- 3. The timer control board is preset at the factory to have an After-Pulse cleaning duration of 999 seconds (17 minutes). This can be adjusted from 0 seconds to 999 seconds. To adjust this time press the select button on the timer board until the "off time" LED is lit. Press and hold the select button for 3 seconds. Press the up/down buttons until the desired value is displayed. Press select to set the new value. The after-pulse operation can be disabled by setting the time value to zero (0) seconds.

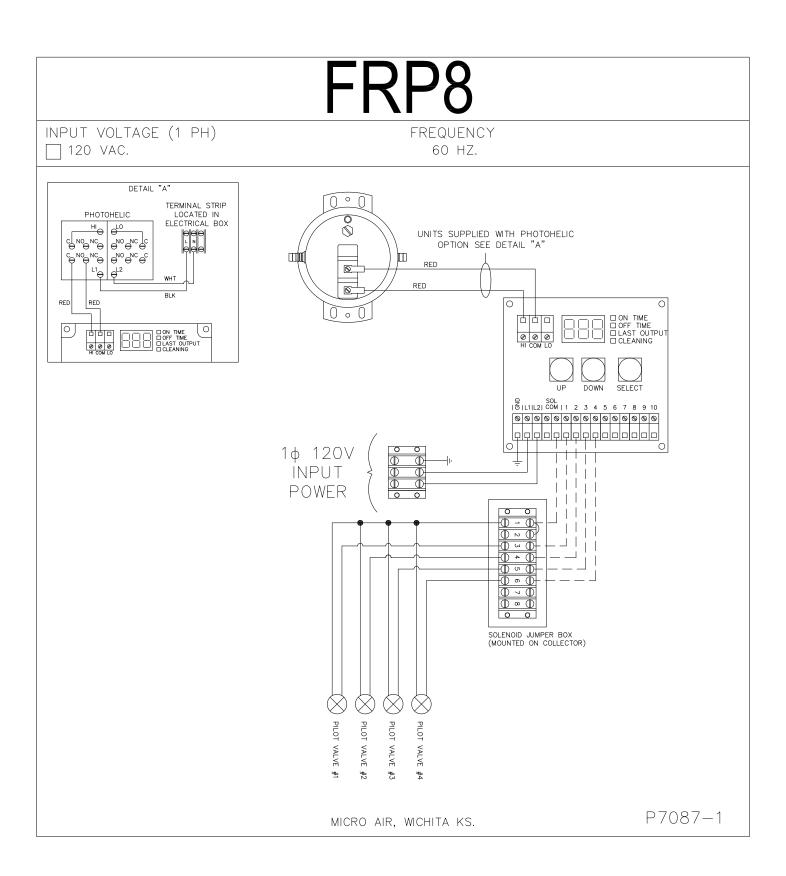
FRP4 PULSE CONTROL ONLY WIRING DIAGRAM



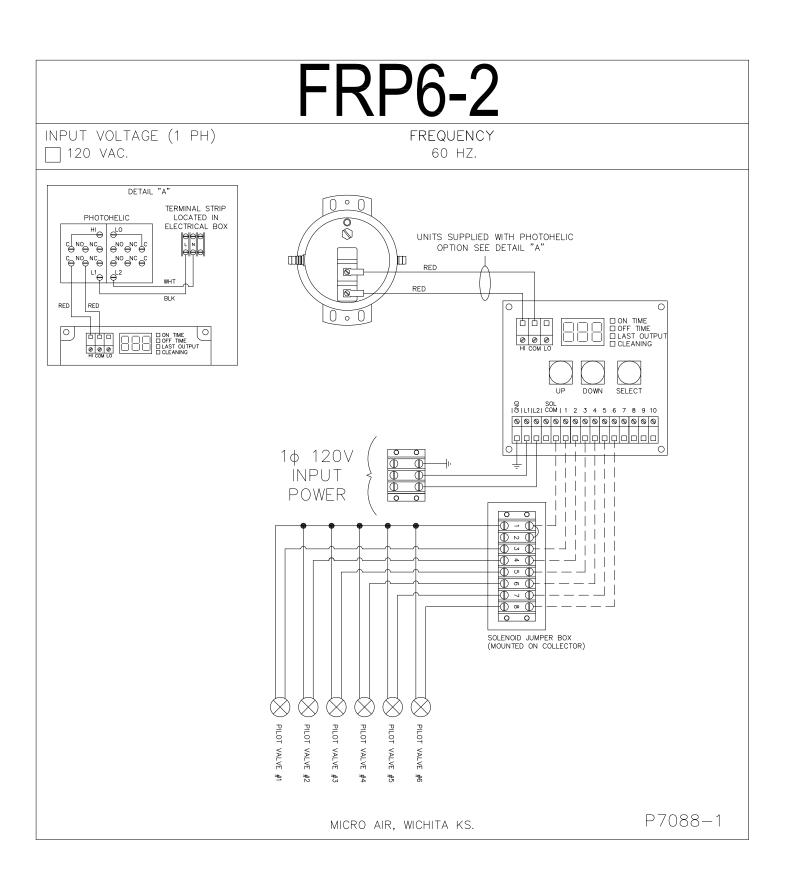
FRP6 PULSE CONTROL ONLY WIRING DIAGRAM



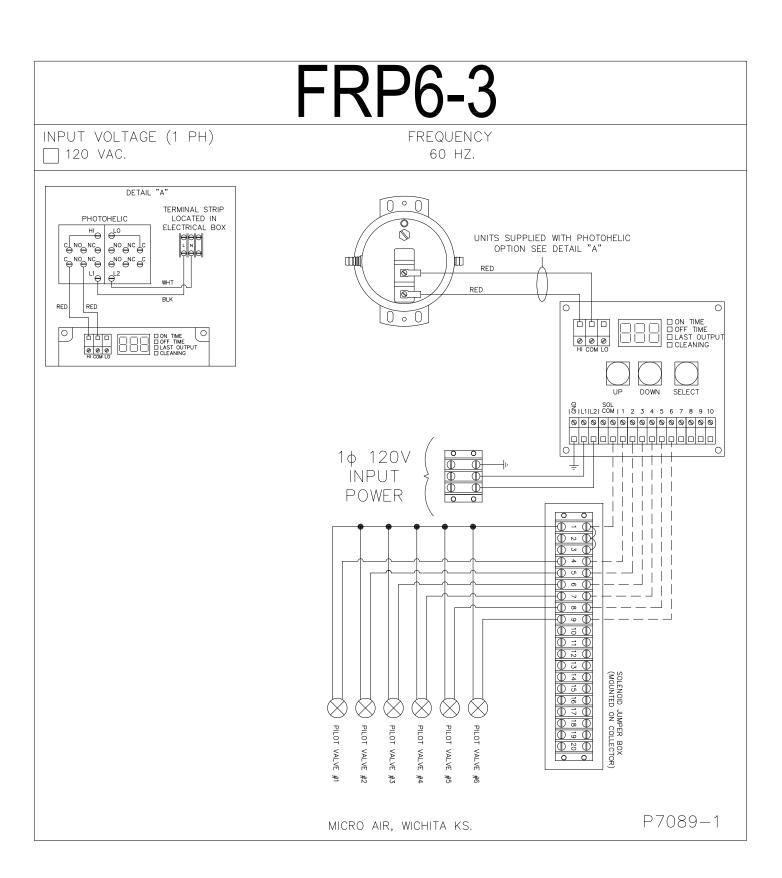
FRP8 PULSE CONTROL ONLY WIRING DIAGRAM



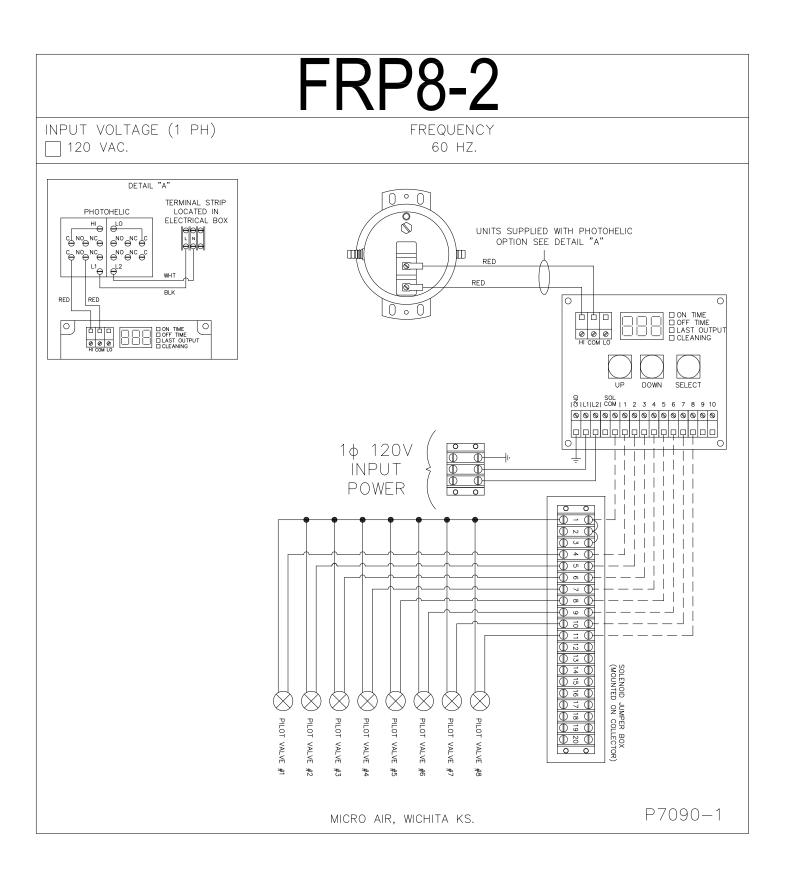
FRP6-2 PULSE CONTROL ONLY WIRING DIAGRAM



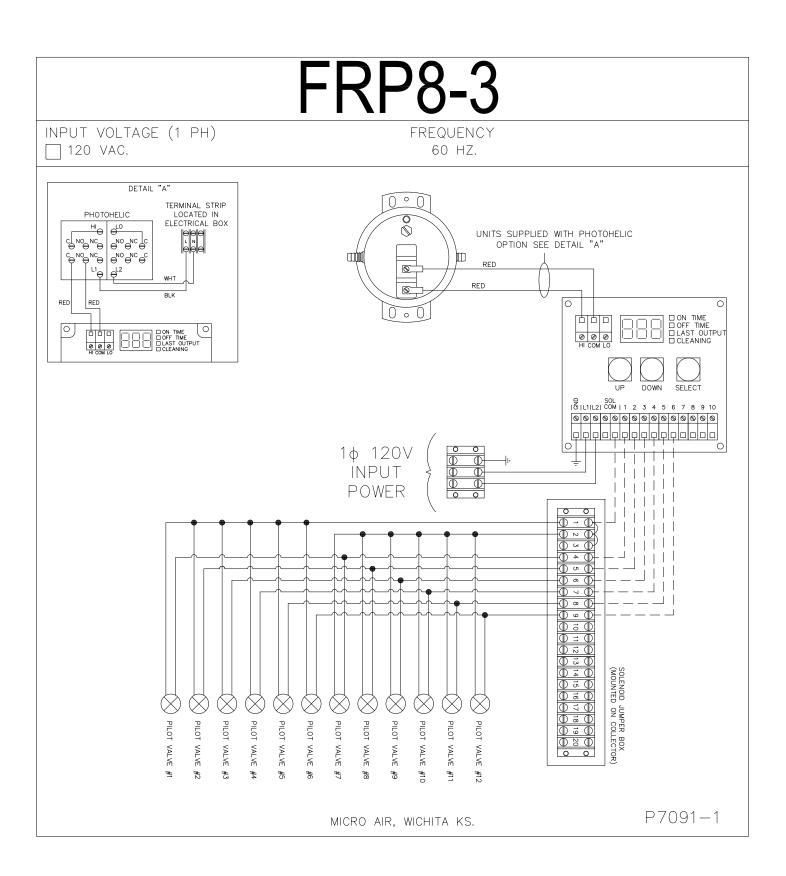
FRP6-3 PULSE CONTROL ONLY WIRING DIAGRAM



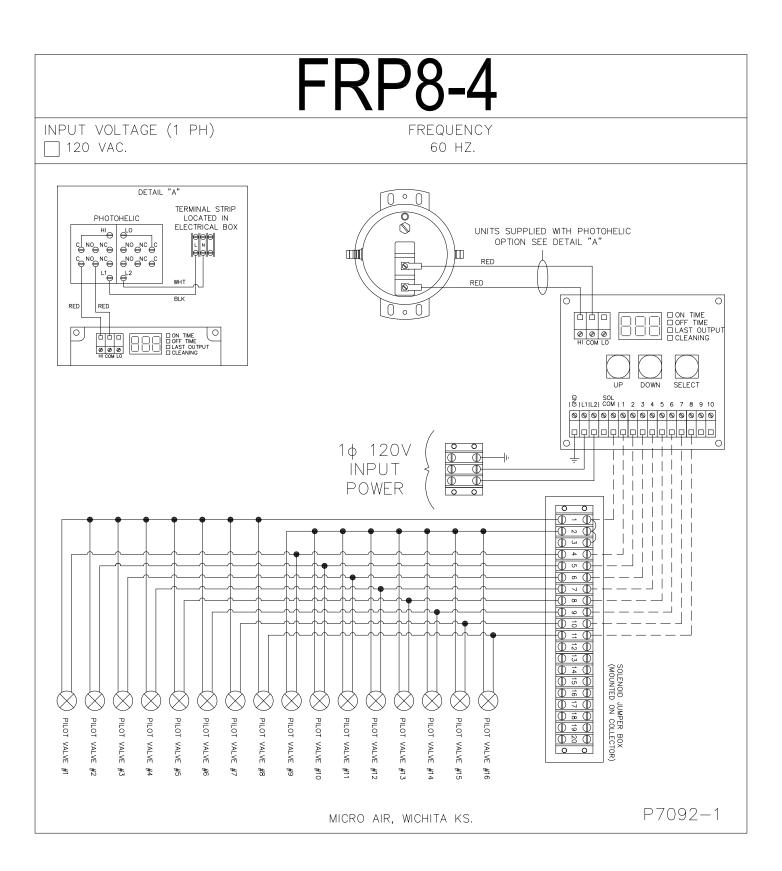
FRP8-2 PULSE CONTROL ONLY WIRING DIAGRAM



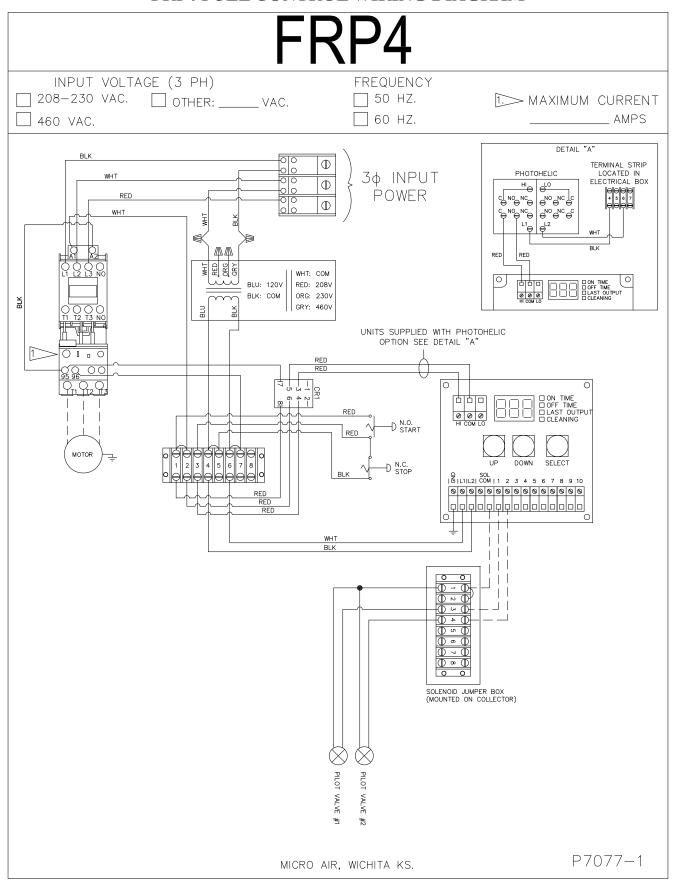
FRP8-3 PULSE CONTROL ONLY WIRING DIAGRAM



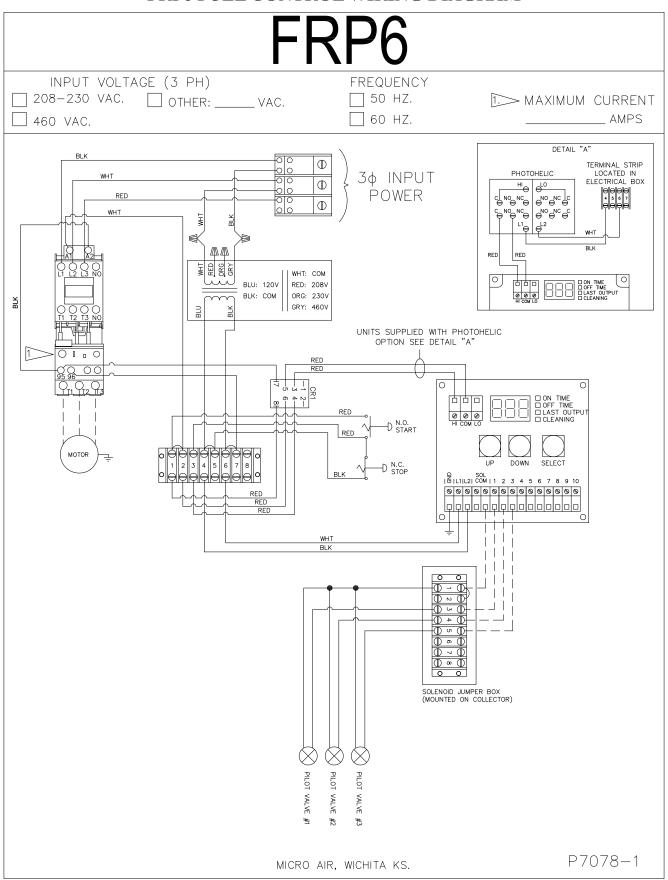
FRP8-4 PULSE CONTROL ONLY WIRING DIAGRAM



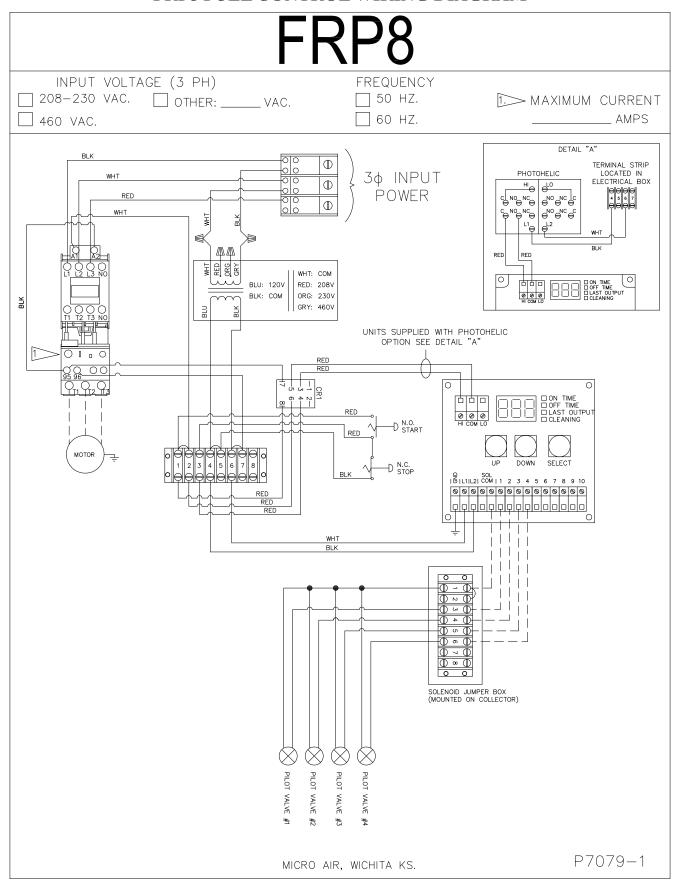
FRP4 FULL CONTROL WIRING DIAGRAM



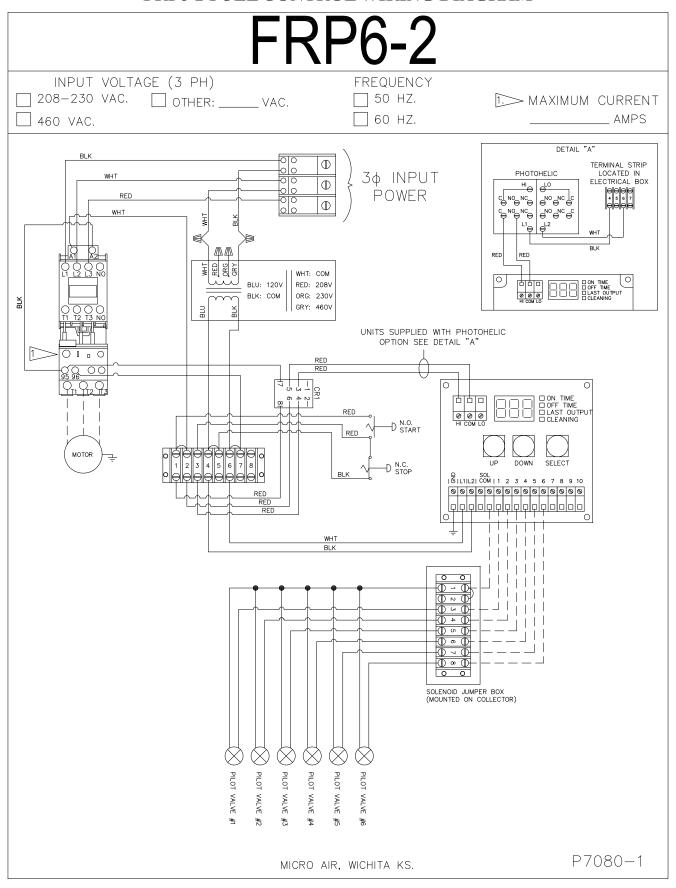
FRP6 FULL CONTROL WIRING DIAGRAM



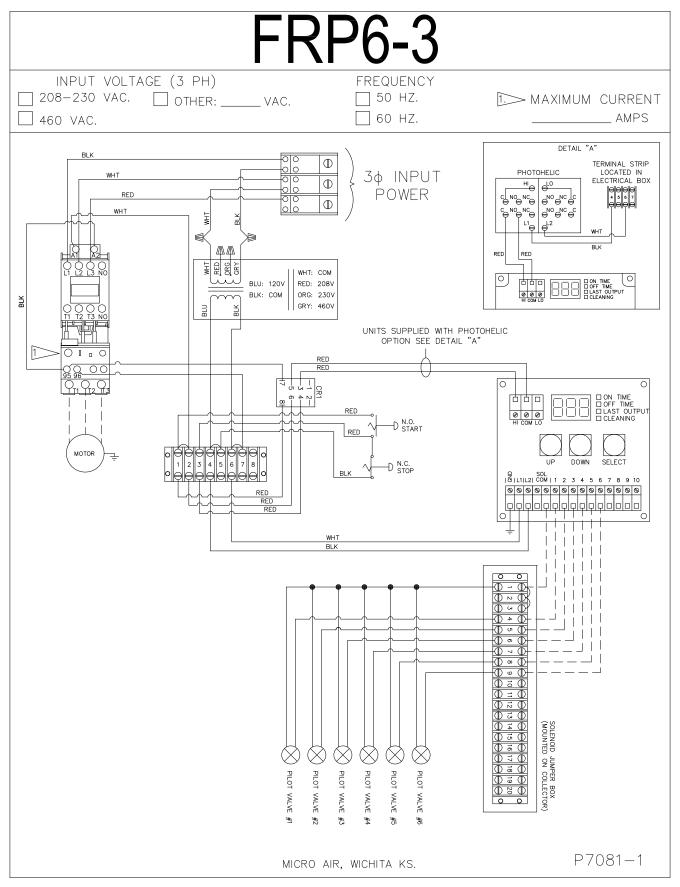
FRP8 FULL CONTROL WIRING DIAGRAM



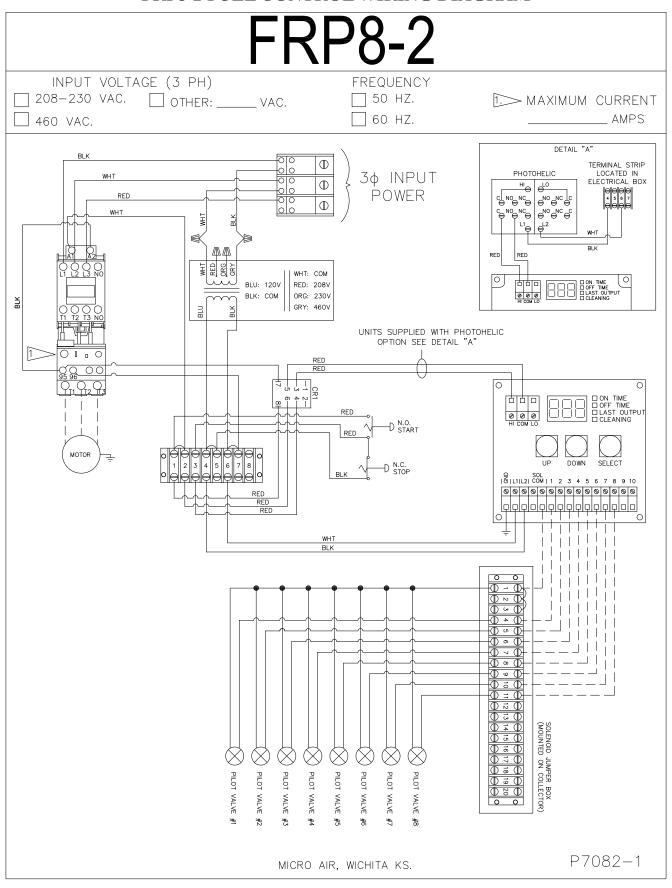
FRP6-2 FULL CONTROL WIRING DIAGRAM



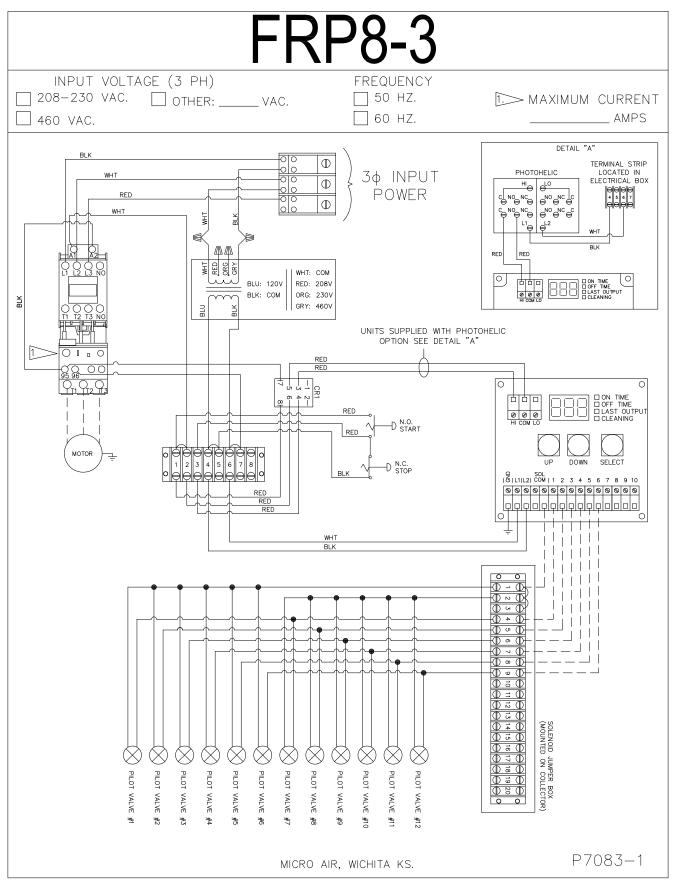
FRP6-3 FULL CONTROL WIRING DIAGRAM



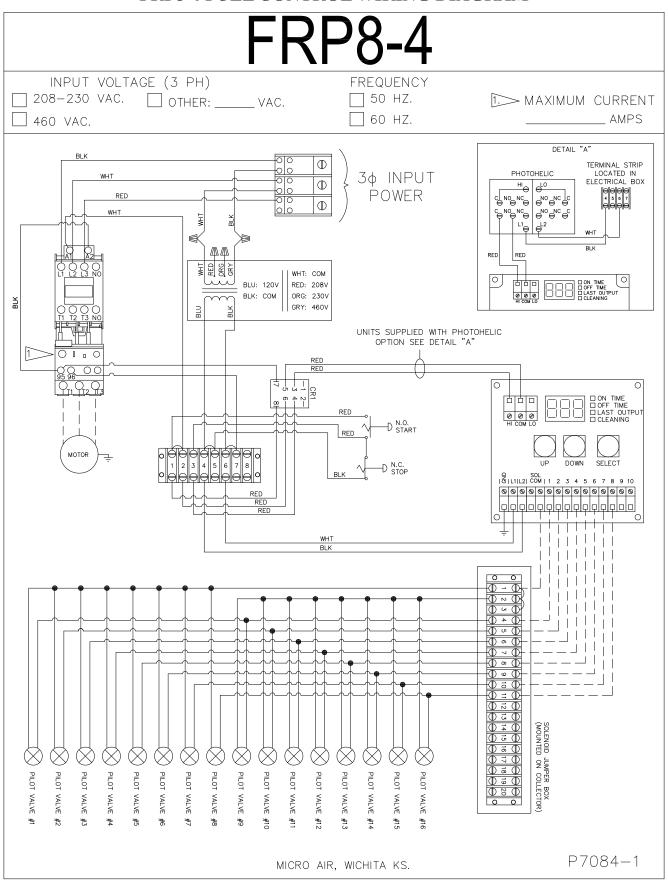
FRP8-2 FULL CONTROL WIRING DIAGRAM



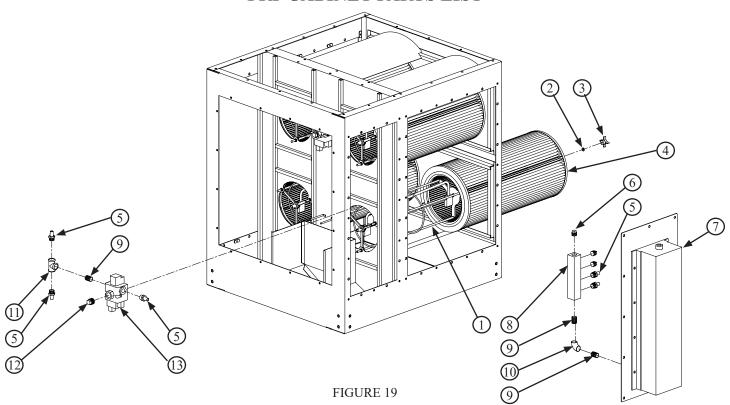
FRP8-3 FULL CONTROL WIRING DIAGRAM



FRP8-4 FULL CONTROL WIRING DIAGRAM



FRP CABINET PARTS LIST



ITEM	PART	DESCRIPTION
	NO.	
1	36720-13	Filter Support Assembly (Roto-Pulse)
2		Washer (Supplied with filter)
3	P3649	4-Prong Knob
4	P7400RM	80/20 Cartridge Filter
	P7404RM	HO Spunbond Polyester Cartridge Filter
	P7405RM	Spunbond Polyester Cartridge Filter
	P7406RM	PTFE Cartridge Filter
	P7415NM	NanoMAX Cartridge Filter
5	P3585	3/4" NPT x 5/8" Barb
6	P3564	3/4" NPT Plug
7	P7330	Surge Tank
8	P7343	4-Valve Manifold
	P7344	6-Valve Manifold
9	P2099	3/4" NPT Close Nipple
10	P7345	3/4" NPT Elbow
11	P3563	3/4" NPT Tee
12	P3964	1" NPT Plug
13	P7331	Pulse Valve
N.S.	P3411	1" Hose Clamp
N.S.	P3403	5/8" Air Hose
14	P3505	Pressure Switch
15	P3874	Timer Board

ITEM	PART	DESCRIPTION
	NO.	
16	P2921	DPDT Relay
17	P1754	Transformer
18	P3910	Contactor
	P3912	Contactor
	P3913	Contactor
19	P3915	Overload
	P3917	Overload
20	36030-04	Disk Pad
21	P3602	3/8" x 1/2" x 1/2" Bearing
22	P2286	Nylon Shoulder Washer
23	P2285	Compression Spring
24	P3907	Pivot Bolt
25	36713-06	Filter Support Weldment
26	P249	5/16" Lock Washer
27	P222	5/16" - 18 Hex Nut
28	36730-06	Roto Tube Weldment
29	P3413	1/2" x 5/8" Barb
30	P3595	17/32" x 5/8" x 3/4" Bearing
31	P7340	Hinge
32	P7341	Latch
N.S.	P7339	Door Gasket

FRP ELECTRICAL PARTS LIST

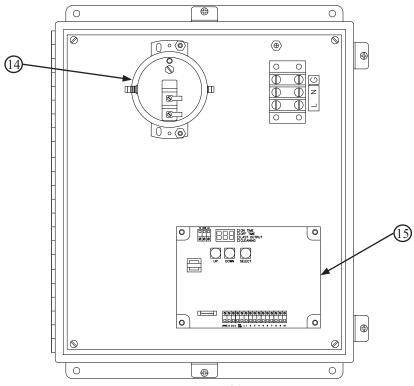


FIGURE 20

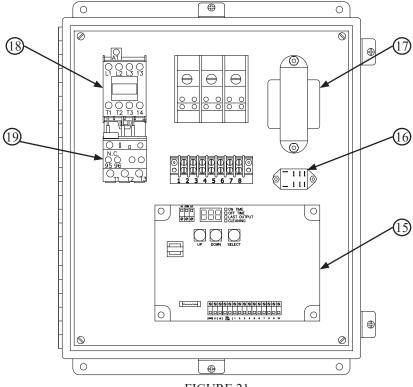
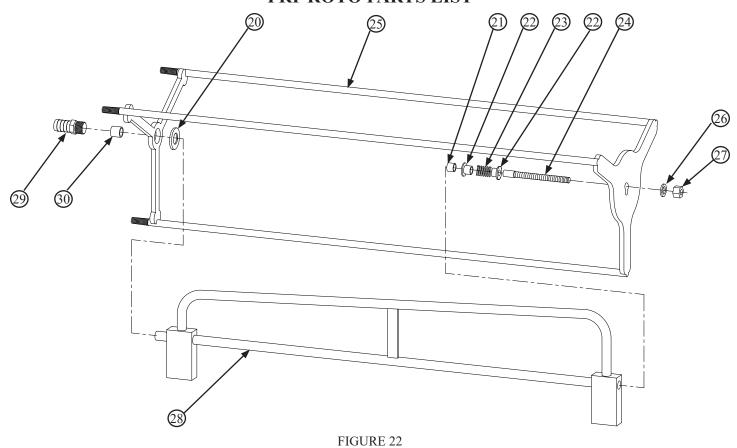
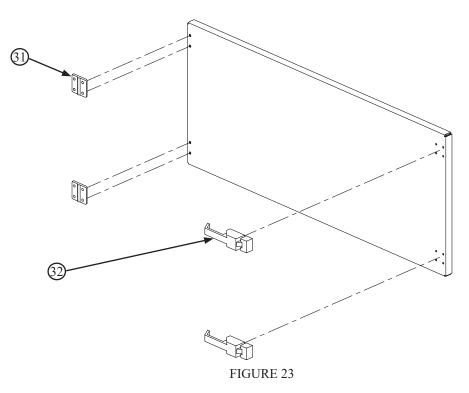


FIGURE 21

FRP ROTO PARTS LIST



FRP DOOR PARTS LIST





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INSTALLATION NOTES:

Date of Installation:	
Installer:	
Voltage:	
L1-L2	
L2-L3	
L3-L1	
Amp Draw:	
Air Pressure:	