

# FRED ICS 1.5/3



Manual for:

Installation • Operation • Maintenance

**TRION®**

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**CAUTION**

**APPLICATION AND OPERATION OF TRION CARTRIDGE AIR CLEANERS**

- Due to potential fire hazards, do not mix combustible materials with those that would be a potential source of ignition.**

**Examples of Combustible Materials:**

- Wood Dust**
- Paper Dust**
- Lint from fabrics or buffing wheels**
- Grinding dust from painting surfaces**
- Aluminum or magnesium dusts**

**Examples of Potential Ignition Sources:**

- Grinding dust from ferrous metals**
- Hot ash from any source**

- This equipment should not be used for the collection of any materials where there is a risk of explosion. Pressure relief vents or explosion vents should not be applied to the equipment or any adjoining system.**
- Equipment location, installation and operation should comply with all National and Local Fire Codes. When in doubt consult the proper authorities.**
- Workers and machine operators should be instructed to keep any burning objects, such as cigarettes, safely away from air inlets leading to the equipment.**
- All those involved with the use of this equipment should comply with the statements pertaining to worker safety as noted in this manual.**

**Trion *does not* assume responsibility for any/all damages arising from *Misapplications* or *Negligence* on part of Distributor Reps., Sub Contractors and Customers!**

## I. EQUIPMENT CHECKLIST

- | Qty | Description  |
|-----|--|
| • 1 | ICS OWNER'S MANUAL [Document # IC-901 }                          |
| • 1 | ICS-1.5 or ICS-3 or ICS-DC Unit                                  |
| • 1 | 8" x 10' Arm ass'y bottom mount                                  |
| • 1 | 8" Arm mounting bracket with hardware                            |
| • 1 | 1 lb [500g] precoat material                                     |
| • 1 | Stand kit (ICS-DC model only)                                    |
| • 1 | ICS stand owner's manual [Document # IC-925] (ICS-DC model only) |

## II. MECHANICAL INSTALLATION

- A) Install cabinet in a safe and nonhazardous location
- B) ICS-1.5 & ICS-3 Models only:
- Install capture arm on unit by aligning bolt hole pattern on inlet collar. Ensure that rubber seal is correctly positioned sealing the joint between the inlet collar and arm base (see Fig. 1)

### ICS-DC Model only:

- Assemble and install floor stand and unit as per instructions provided. (see attached)
  - Install appropriate ducting to connect to cabinet inlet. Use spiral ducting where possible while reducing the amount of flexible hose (Consult distributor or manufacturer if necessary).
- C) Make sure that filter is properly seated in place and that the compression plate seals the top gasket completely.
- D) Make sure that all doors are closed properly and knobs well tightened

### E) DRY COMPRESSED AIR INSTALLATION

Connect compressed air (80 - 100 psi [5-7 bar]) to the inlet fitting located on the side of the unit. The compressed air is used to SELF-CLEAN the system. It is recommended to install a cutoff valve on the line for safety purposes. A regulator will be necessary to step down the supply air if the shop pressure is above the above rating. NOT complying will result in component damage. A 1/2" NPT [15mm] supply line is recommended if distance to compressor is over 50 ft. [15m].

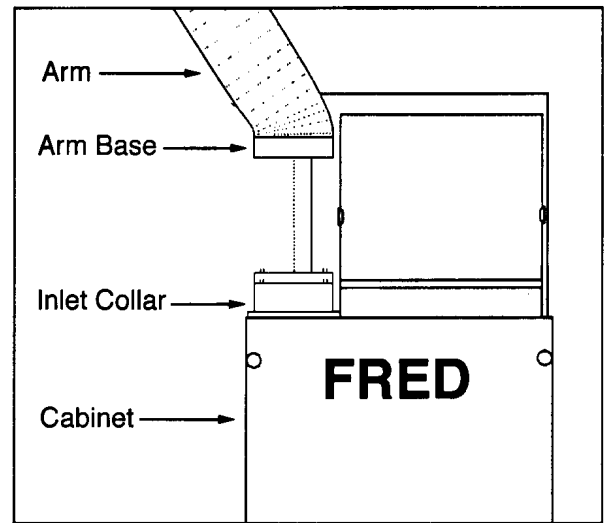


Figure 1 - Capture Arm Installation

## III. ELECTRICAL INSTALLATION

### ICS-1.5:

- A) The unit is supplied with 15 ft. [3m] electrical cord and a wall plug. This is to be plugged into a wall outlet. The wall outlet must be connected to at least a 20 AMP circuit with time delay fuses [type D].
- B) Electrical information regarding your FRED can be found on the name plate located on the top of your unit. Please refer to the electrical wiring diagram ICS-E52 attached.

### ICS-3 & ICS-DC:

**NOTE:**  
All electrical connections must be made by a qualified electrician.

- A) Electrical information regarding your equipment can be found on the name plate located on top or side of the unit. Please refer to wiring diagram ICS-E53 for wiring information.
- B) Correctly size electrical supply cable according to motor horsepower and voltage. The following are recommended fuse sizes for the supply line:

<b>MOTOR SIZE: 3HP</b>	
Voltage	Recommended Fuse Size
208/230	30A
380	25A
460	20A
575	15A

Table 1: Recommended fuse sizes

- C) Supply voltage must be connected to the line side of the contactor (L1, L2, L3). The ground wire must also be connected to the ground terminal of the starter box. (see table 2)
- D) The supply cable must be pulled through an air tight connector and tightly secured.

Contactor Terminal	NORTH AMERICA	EUROPE
L1	Red (phase A)	Black
L2	Black (phase B)	Black
L3	White (phase C)	Black
Ground	Green	Yellow
Neutral (if present)	-----	Blue

Table 2: Electrical Line Connections

**NOTE:**

**This is a 3-phase motor starter. To ensure you have proper motor rotation, refer to the directional arrow on the blower housing located in the sound enclosure above the unit.**

- E) Switching two (2) of the 3-phase connections will reverse the direction of rotation of the motor. Your unit will be blowing the air at about one third of its efficiency if the blower is turning in the incorrect direction. It will also be making more noise than it should.

**WARNING**

**If starter needs to be installed in a remote location, do not route auxiliary contact cable in same conduit as motor cable. Not complying will damage the PC-board.**

PC-board located in the control box. The microprocessor has been programmed to turn on the cleaning system 30 seconds after the unit is turned OFF. The nozzle will travel from its home position (located at the bottom) through the top and back down to home. The home and top positions are sensed by a pair of proximity sensors. Simultaneously, when the gear-motor is engaged, an in-line solenoid opens and allows compressed air to reach the nozzle. If for some reason the start button on the unit is pressed before the cleaning system has had a chance to terminate the cycle, the system will shut the air off and will head down to the home position.

\* 7.5 min. for full cycle

**OVERLOAD PROTECTION**

If for any reason the cleaning mechanism should jam or is obstructed in any way, a thermal overload sensor located on the control board will prevent any damage to the electronics or to the gear-motor. Approximately 2 - 2 1/2 minutes after a stall situation occurs, the thermal overload will activate itself and shut down the system. At that moment, a red light emitting diode, labelled FAULT, located on the control board will start flashing, thus indicating a fault situation. In order to RESET THE SYSTEM, power to the unit must be completely interrupted. It is imperative that the unit be opened, the filter taken out and the cause of the problem be diagnosed before REOPERATING the cleaning mechanism. If for any reason, the cleaning mechanism must be disabled, simply disconnect the power from the transformer to the control board. The transformer is located in the control box, next to the control board.

**NOTE:**

**DIP switches are read on power-up only. In order to have a different switch setting take effect, the power to the unit must be cut off and turned on again.**

**IV. CLEANING SYSTEM**

**PRINCIPLE OF OPERATION**

The Injection Cleaning System operates by cleaning the filter cartridge in the reverse direction with an air nozzle blowing compressed air directly through the filter media.

The cleaning mechanism is automatically engaged when the unit is turned OFF. The system has a nozzle rotating inside the main filter cartridge on a threaded rod. As the nozzle spins on the stationary rod, it automatically moves up and down, thus covering the complete inner filter surface. This movement is accomplished by a fractional horsepower gear-motor located below in a dustproof enclosure.

**ENGAGING THE SYSTEM**

The cleaning cycle is controlled by a microprocessor based

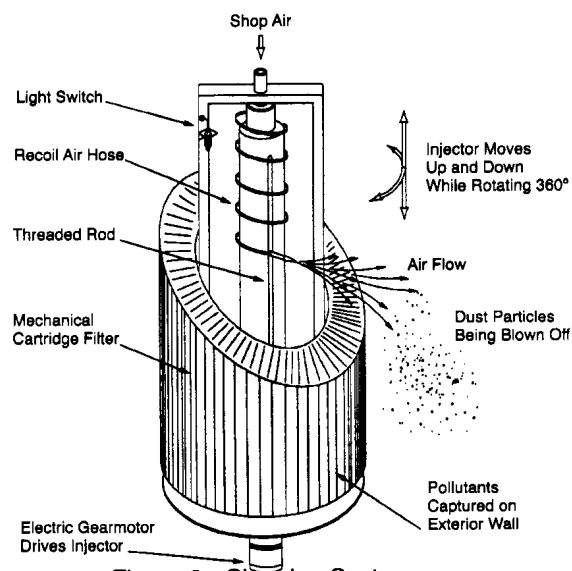


Figure 2 - Cleaning System

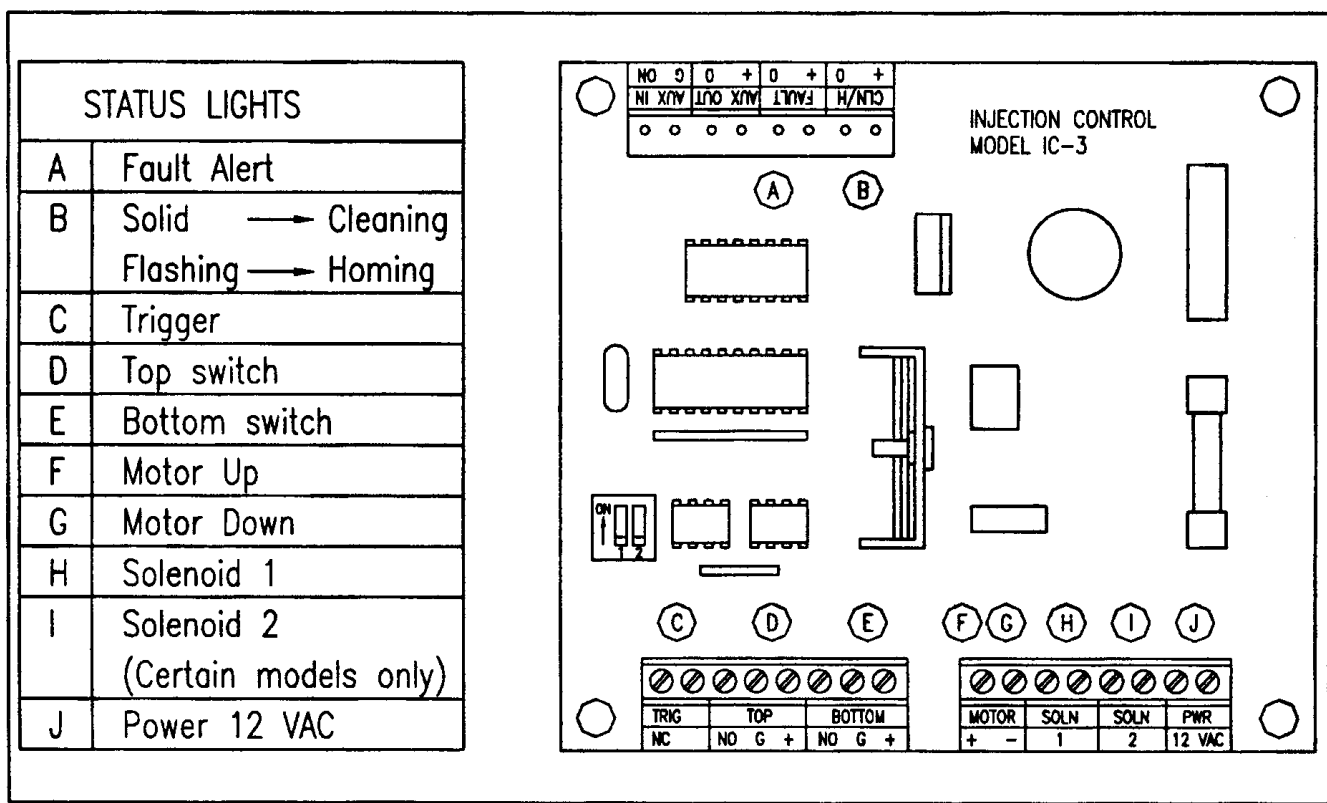


Figure 3: - IC-3 Control Board

## V. START-UP

- A) Press the green start button located on the starter box located on the top or side of the unit.
- B) CHECK AMPERAGE: Amperage should never exceed the rated motor amperage for more than a few seconds.
- C) CHECK THE SELF-CLEANING SYSTEM: Your FRED unit will automatically start cleaning thirty seconds after the machine is turned OFF. In order to accomplish this, both compressed air and electrical power supply must remain supplied for the duration of the cleaning cycle. For a detailed description of the cleaning system, see the section entitled CLEANING SYSTEM.

follow the instructions under PRE-COATING in the MAINTENANCE section.

- E) When all above is in order, your unit is ready to be put in service.

## VI. MAINTENANCE

### DUST DRAWER

The dust drawer should be emptied periodically. Make visual inspections during the first few weeks of operation to determine proper emptying cycle. Empty drawer only after a cleaning cycle is completely finished to prevent dust from escaping cabinet.

### FILTER CARTRIDGE

The cartridge will need to be replaced periodically. There are several types of cartridge filters available, from water washable to fire retardant. Be sure to select filters for your application. Consult the distributor or factory for assistance. This period can hardly be estimated due to the variety of applications this unit can serve. It can vary from 6 to 24 months depending on many factors such as density of fumes/dust, particle size, humidity of air, oil or grease contents of matter, etc...

### NOTE:

**It is not absolutely necessary for the proper operation of the unit to have the compressed air connected at all times. But not doing so will prevent the SELF-CLEANING operation of the machine. This will in turn cause the particles accumulated on the filter cartridge to remain and deteriorate the performance of the unit more rapidly than if the SELF-CLEANING is active.**

- D) PRE-COAT FILTER: The filter cartridge must be pre-coated with the precoat material provided. Please

### IMPORTANT

Do not wet or clean this cartridge with any liquid, as it may cause the forming of unwanted blockage on the filter media. Or it may weaken the cartridge which could cause breakage and ultimately damage the blower.

### CAUTION

The bowl must not be allowed to fill itself to the level of the filter. Not complying will result in water passing through and embedding itself in the filter cartridge, thus damaging the media and blocking the filter pores decreasing the performance of the unit.

### PRE-COATING

When replacing filters, the new filters need to be pre-coated with 1 lb. [500g] of silica based cellulose or other acceptable pre-coat material available on the market. This is done as follows:

- Disable the cleaning mechanism for 10-15 working hours by disconnecting or shutting off the air supply from the unit.
- Remove the rear carbon door (mesh door) to view visible bypass.
- Remove the capture arm from the unit (if applicable).
- Turn the unit ON.
- Block-off 3/4 of the inlet opening (to dampen the air flow somewhat).
- Slowly feed the pre-coat material in the unit through the inlet.
- Reinstall capture arm.
- Reinstall rear carbon door.

Pre-coat material is sent with every new unit and replacement cartridge supplied by Trion.

### CARBON FILTER

The carbon filter is located in the rear mesh door panel. This panel aids in adsorbing most gases and odors out of the air-stream. This panel needs to be replaced every 12-18 months or when the odors become apparent or if panel turns brown. As a good practice, this filter should be replaced every time the main filter cartridge is replaced. To replace, remove mesh door from unit, tear out old carbon panel, and install new panel by applying a small amount of contact cement or other glue on the outside edge of the panel facing the door. The glue is only necessary to hold the panel up when reinstalling the mesh door.

### COMPRESSED AIR FILTER

Check the compressed air filter periodically and replace the filter media if necessary. If moisture or water is present in the bowl, vent out through bleed valve located beneath bowl while air pressure is ON. Make visual inspections during the first few weeks of operation to determine proper emptying cycle.

### CAPTURE ARM

Adjustment to arm friction joints can be made by releasing the lower hose clamp, pushing back the main hose and tightening the joints. This will permit the arm to hold the desired position. Further adjustments can be made by tightening the eye bolt to loosen or tighten the springs that provide the counterbalancing force.

### VII. TROUBLESHOOTING GUIDE

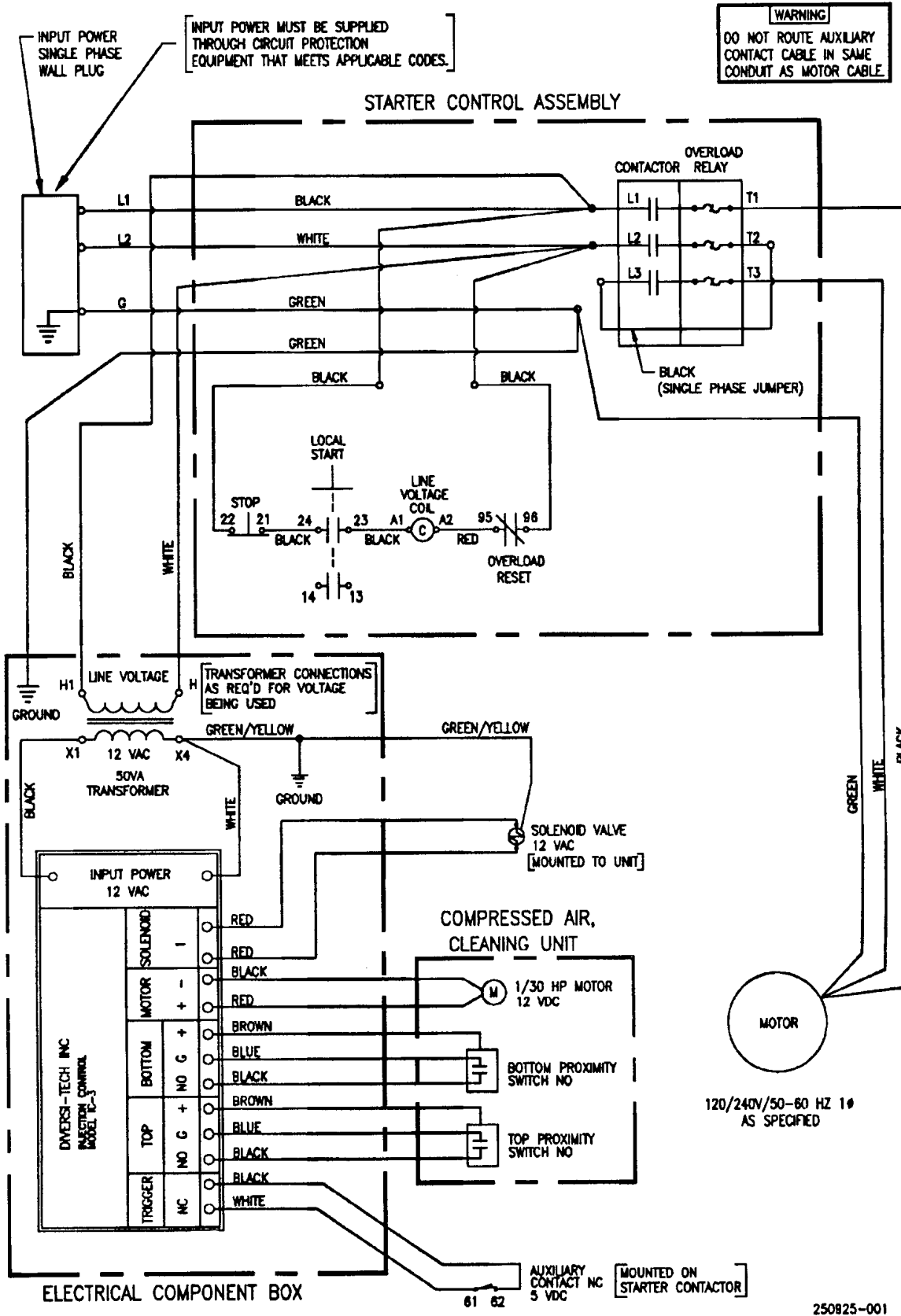
**NOTE:** As soon as a malfunction in the cleaning system is discovered, DO NOT disconnect power right away. Verify the red FAULT light on the PC board located in the electrical control box. If it is flashing, it indicates that there was a complete shut down of the board due to some failure, and that the only way to reset the system is by turning all power OFF and ON again. Once the status light has been verified, power can be turned OFF.

## VII. TROUBLESHOOTING GUIDE (continued)

<p>System is NOT turning</p> <p>AND</p> <p>"FAULT" light is NOT flashing on PC board.</p>	<p>Power is not supplied to PC board.</p>	<ul style="list-style-type: none"> <li>• Check if power, 12 VAC, is supplied to PC board from transformer. (secondary side) The power indicator light should be ON.</li> </ul>
	<p>Trigger contact is not being read.</p>	<ul style="list-style-type: none"> <li>• When the blower motor is OFF the "TRIG" light should be ON. If not, check wiring from the auxiliary contact NC terminal on the starter to the PC board TRIG NC terminal. (Refer to the electrical diagram)</li> </ul>
	<p>One or both proximity sensors are defective.</p>	<ul style="list-style-type: none"> <li>• Check the operation of the proximity sensors, by placing a small piece of metal over the top proximity sensor, the "TOP" light will turn ON momentarily. The same holds for the bottom sensor and "BOT" light.</li> <li>• Replace proximity sensors if necessary.</li> </ul>
	<p>Loose connection between PC board and motor.</p>	<ul style="list-style-type: none"> <li>• Check motor connection. When the "UP" light is ON, the motor should be rotating the nozzle upwards; and downwards when the "DWN" light is ON. (Refer to the electrical diagram)</li> </ul>
<p>System is NOT turning.</p> <p>AND</p> <p>"FAULT" light on PC board is flashing</p>	<p>Motor was in an overload condition and the PC board shut down all systems.</p>	<ul style="list-style-type: none"> <li>• Turn OFF all power to unit and turn it ON again. This will reset the system.</li> </ul>
	<p>This could be a result of the nozzle being jammed, or of something restricting free movement of the nozzle.</p>	<ul style="list-style-type: none"> <li>• Locate and repair the cause of the physical restriction before operating the system.</li> </ul>
<p>System is NOT turning.</p> <p>AND</p> <p>"FAULT" light on PC board is flashing.</p> <p>AND</p> <p>Nozzle holder is stuck on proximity sensor.</p>	<p>Proximity sensor is defective.</p>	<ul style="list-style-type: none"> <li>• Check the operation of the proximity sensors, by placing a small piece of metal over the top proximity sensor, the "TOP" light will turn ON momentarily. The same holds for the bottom sensor and "BOT" light.</li> </ul>
	<p>Proximity sensor needs adjustment.</p>	<ul style="list-style-type: none"> <li>• Loosen proximity sensor locking nuts and move sensor approximately 1/16" (2mm) up or down.</li> </ul>
<p>System turns but no air comes out of nozzle.</p>	<p>Air line is not connected to unit, or air supply is not ON.</p>	<ul style="list-style-type: none"> <li>• Supply shop air to unit.</li> </ul>
	<p>Solenoid is not opening.</p>	<ul style="list-style-type: none"> <li>• Upon a cleaning cycle, the "SOLN1" light turns ON indicating power is being supplied to the solenoid.</li> <li>• Check the wiring between the PC board and the solenoid for bad connection</li> <li>• Check if solenoid is operational. This can be done by jumping the solenoid leads to the secondary side of the transformer. (12 VAC)</li> <li>• If both wiring and solenoid are in order, the PC board might need to be changed.</li> </ul>
<p>Not enough air coming out of nozzle).</p>	<p>Low air Supply pressure.</p>	<ul style="list-style-type: none"> <li>• Ensure that air pressure is 80-100psi (5-7 Bar)</li> </ul>
	<p>The nozzle is blocked by dirt or other contaminant.</p>	<ul style="list-style-type: none"> <li>• Remove blockage from nozzle.</li> <li>• Check if pneumatic filter is filtering air properly. Filter unit might need replacement.</li> </ul>
	<p>There is an air-leak in the pneumatic system.</p>	<ul style="list-style-type: none"> <li>• Verify pneumatic system for leaks and tighten or change hose clamps or hoses.</li> </ul>

**NOTES:** If unit has been disconnected at any point after the system failure, the red "FAULT" light will have gone OFF. Therefore not allowing the operator to diagnose where the problem might have occurred. If this the case, reconnect units and proceed as normal with the cleaning cycle. If the light is to come ON, it will do so approximately 2 - 2 1/2 minutes after and indicate an overload condition.

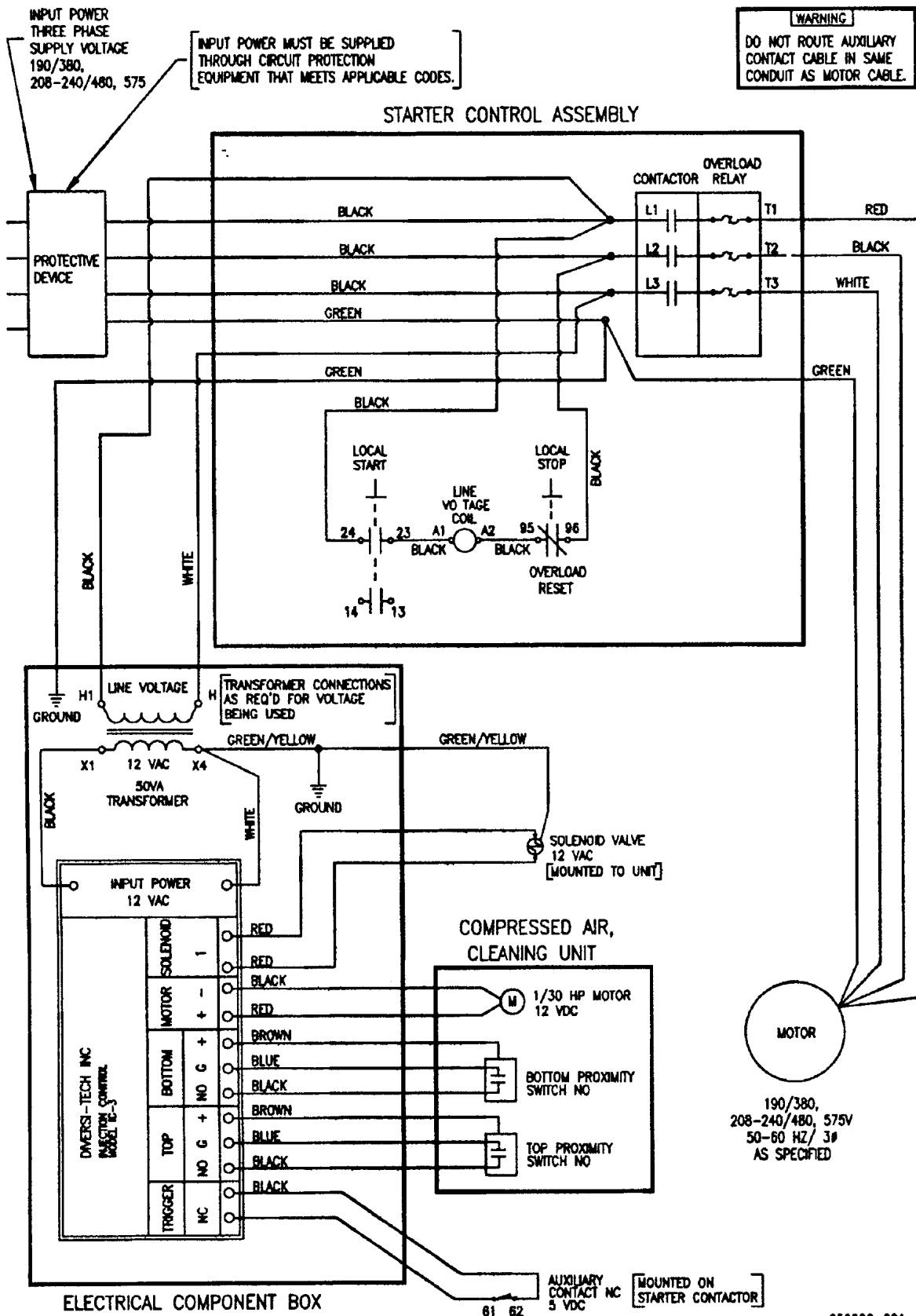
VIII. WIRING DIAGRAM ICS - 1.5 (1.5 HP Single Phase)  
 120/240V/60HZ/1Ø  
 DRAWING NO. 250925



250925-001

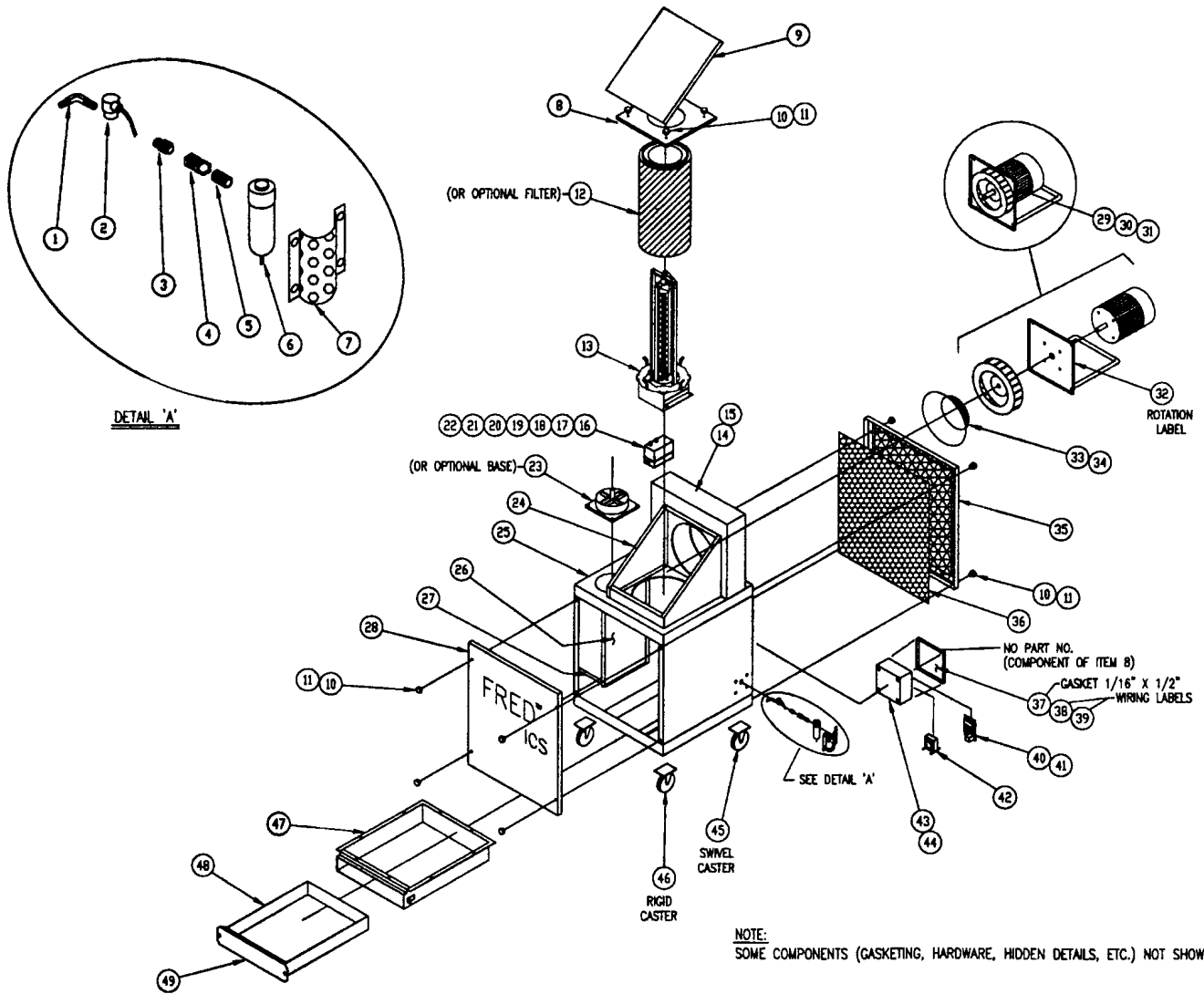


VIII. WIRING DIAGRAM ICS - 3 & DC (3 HP Three Phase)  
 208-230/460V, 575V/60HZ/3Ø  
 DRAWING NO. 250926



250926-001

VIII. REPLACEMENT PARTS - UNIT  
DRAWING NO. 351294



Item	Part No.	Description
1	150917-001	90° Barbed Hose Connector
2	250920-001	Solenoid - 12 VAC, 1/8 NPT
3	150918-001	Reducing Hex Nipple
4	123032-002	Bulkhead fitting
5	130971-002	Close Nipple
6	150924-001	Pneumatic Filter
7	250798-001	Pneumatic Filter Guard
8	250779-001	Filter Compression Plate
9	250778-001	Filter Access Cover
10	250823-001	Retaining Knob
11	245635-016	Retaining Ring
12	251100-001	Cartridge Filter with Fire Retardent Coating
13	250824-001	(Air Nozzle) Injection Cleaning Mechanism
14	350800-001	Blower Housing Welded Assembly 1.5 HP
15	350800-002	Blower Housing Welded Assembly 3.0 HP
16	250928-001	Compact Starter Assembly 120V/ 60 Hz/ 1ø
17	250928-002	Compact Starter Assembly 240V/ 60 Hz/ 1ø
18	250929-001	Compact Starter Assembly 208V/ 60 Hz/ 3ø
19	250929-002	Compact Starter Assembly 240V/ 60 Hz/ 3ø
20	250929-003	Compact Starter Assembly 460V/ 60 Hz/ 3ø
21	250929-004	Compact Starter Assembly 575V/ 60 Hz/ 3ø
22	150930-001	Auxiliary Contact All Units
23	250815-001	Inlet Collar Welded Assembly
24	350785-001	Hood Welded Assembly
25	350776-001	Cabinet Welded Assembly
26	350768-001	Spark Baffle
27	250767-001	Spark Baffle Stand Off
28	350766-001	Solid Door Assembly
29	350810-001	Blower Assembly 1.5 120/ 240V/ 60 Hz/ 3ø
30	350810-002	Blower Assembly 3.0 208-230/ 460V/ 60 Hz/ 3ø
31	350810-003	Blower Assembly 3.0 575V/ 60 Hz/ 3ø
32	250922-001	Rotation Logo -- Clockwise Rotation
33	250819-001	Inlet Cone Assembly 1.5 HP
34	250819-002	Inlet Cone Assembly 3.0 HP
35	350765-001	Mesh Door Assembly
36	151067-001	Activated Carbon Filter Material 30 1/2" x 36"
37	224779-026	Adhesive Back Neoprene Gasket 1/2" x 1/16"
38	250925-001	Wiring Label - Single Phase
39	250926-001	Wiring Label - Three Phase
40	250834-001	IC-3 Printed Circuit Board Assembly
41	143574-005	PC Board Supports
42-a	250835-001	Transformer - Multiple Voltage 120/240V - 12/24V
42-b	250835-002	Transformer - Multiple Voltage 208/416V - 12/24V
42-c	250835-003	Transformer - Multiple Voltage 240/480V - 12/24
42-d	250835-004	Transformer - Multiple Voltage 575 - 600 12V
43	250833-001	Screw Cover Pull Box w/ Cover
44	250799-001	Electrical Box Mtg. Plate
45	60000-0003-0100	Swivel Caster - 5" Wheel
46	150821-001	Rigid Caster - 5" Wheel
47	350792-001	Drawer Box Welded Assembly
48	250788-001	Drawer Assembly
49	224779-024	Adhesive Back Neoprene Gasket 1/2" x 1/8"

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