CUSTOM PACKAGED ELECTRONIC AIR CLEANER

Model 75 Series Units
with
Integral Washing System

- INSTALLATION
- OPERATION
- SERVICE

For Model Numbers
75- _____-02 & -04

Electrostatic Precipitators for Commercial & Industrial Applications

UL LISTED
EXHAUST FILTRATION SYSTEM
86LF

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TRION air purification systems
A FEDDERS ENGINEERED PRODUCTS COMPANY

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SECTION I DESIGN

FOR THE SYSTEM DESIGN ENGINEER

1. General Description

The standard major components supplied with each unit for installation are as follows:

electronic air cleaner
controller / power supplies
the detergent system
wash water line strainer and solenoid valve

The electronic air cleaner contains the ionizing-collecting cells (collecting elements), wash manifolds—located to the front and rear of each tier of cells—and metal mesh pre-filters and after-filters. Perforated plate or impingement type mist suppressors, in lieu of the metal pre-filters, are options when specified.

Gasketed access doors located on one end of the cabinet, 90 degrees to the direction of the airflow, provide entry for removal of the cells and filters. The location of the access doors, wash manifold drive motors and manifold header pipes may be specified as "right" or "left" handed. The hand designation is determined by standing in the ductwork on the air entering side of the unit so the airflow strikes your back.

The Pulse Width Modulated (PWM) power supplies, providing the necessary high voltage for the air cleaner and the controls initiating and sequencing the wash cycle are furnished in a NEMA 12 enclosure designed for remote mounting. The distance between the controller and unit must be determined as the interconnecting high voltage leads are furnished to the specified length. Consult factory for distances greater than 50 ft. Cables are not to be spliced at any point along their length. In addition, the enclosure is a central junction for the primary wiring.

The detergent system is furnished as a completely assembled unit to be piped directly to the wash water supply, into the wash manifold headers.

Note: 30 or 55-gallon detergent tanks are available as an option.

Note: Trion Tridex Detergent is specially formulated for use with Trion electronic air cleaners. Use of other cleaners and detergents, not specifically approved by Trion, can cause possible failures in the unit and will void any and all warranties on our equipment.

The strainer and solenoid valves are to be installed in the wash water supply lines. A back flow preventer and/or check valves should be installed according to local code requirements. These items are not provided as part of the system accessories. The Model 75 has a ¼" Female NPT fitting for installation of a pressure gage (Not supplied by Trion). This gage is used to ensure adequate water pressure during the wash cycle, (see attached piping diagram for specific locations).

2. System Design and Layout

The arrangement of the supplied components and the general layout of the system will vary according to application, adjoining equipment and available space. However, there are several basic factors pertaining to all installations that must be considered:

To maintain the selected cleaning efficiency, it is important to assure that the total air volume (capacity in CFM) is uniformly distributed across the entire face area of the unit. The metal mesh filters, perforated plate or mist suppressors provide some resistance to effect even air distribution. However, since most air ducts are designed to handle air velocities greater than the rated velocity of the air cleaner, it is necessary to properly transition any attached ducting. If possible, a contraction ratio of 1 in 3 (approximately 20°) should be maintained. If space prohibits, turning vanes, air baffles or other means may be utilized. Ducting – where attached to the cabinet collars – should be gasketed, caulked or otherwise made watertight.

When there is a danger of rain, snow or debris being drawn into the system with outside air, the make-up air intake should be protected with rain louvers, hooding and hardware cloth to prevent the rain, snow or debris from entering the electronic air cleaner.

Contaminants to be collected – such as oils in vaporous state – must be condensed into particulate form prior to entering the ionizing-collecting cells in order to maintain the anticipated efficiency. Gases, vapors or any non-particulate cannot be precipitated and will therefore pass through the air cleaner. Any condensing that takes place downstream from the air cleaner defeats the purpose. By the same token, heavy concentrations of water vapor, or other matter that becomes highly conductive when condensed, must be prevented from entering and/or condensing in the collecting elements to prevent electrical arc over and shorting.

SAFETY NOTE:
Factory designed access to all electrically charged high voltage components contain electrical interlocks for the safety of operating personnel. Any additional access that may be provided in the system, where there is access to high voltage, must be equipped with such interlocks. Interlocks are readily available from the factory.

Waterwash drain lines from the cabinet drain basin should be trapped or otherwise sealed against the system pressure (in accordance with local codes). Wash water to the unit must meet the volume required for the specific unit involved and must be between 40 PSIG Min. – 60 PSIG Max. at full flow to provide proper spray patterns from the wash nozzles. The wash water MUST be Hot water (140^0F recommended) and installed as close as possible to the unit and detergent system.

NOTE: THE HOT WATER TANK IS NOT PROVIDED BY TRION.

Each installation varies according to needs, but normally the controller is located near the air cleaner. Ideal mounting height is at eye level for ease in reading the instrumentation and to facilitate service.

For ease in maintenance and component removal, adequate space, **39" Minimum Required**, must be provided in front of all access doors, motors, pump and accessory equipment. Special consideration should be given in this respect for installations where the unit is suspended overhead. Catwalks or platforms should be provided.

CAUTION

In addition to the above space requirement, installation of the Model 75 in NFPA applications shall have a clearance of at least 18 inches to a combustible material, 3 inches to limited combustible material, and 0 inches to noncombustible material. Any reduction in clearance or exceptions must be in compliance with NFPA and acceptable to the Authority Having Jurisdiction.

******WARNING******

Fire Suppression Systems

Extreme caution should be exercised when this unit is installed in applications that are collecting volatile or potentially flammable contaminants such as cooking grease and petroleum based oils.

Trion strongly recommends a fire suppression system be installed in the ductwork and on the Model 75 in cases where these contaminants are collected on the cell plates and collect on the attached ductwork.

Contact the factory for questions or concerns regarding a fire suppression system.

3. Outdoor Installations

Requirements for outdoor protection vary in accordance to climate and equipment component arrangement for the particular job. The best approach for equipment protection is the construction of a heated shed or building over the installation. As an alternative, the installing contractor should treat the equipment as required to meet the specific needs. Detailed discussions of the Model 75 components are as follows, using a rooftop installation as an example (refer to Figure 3):

Adjoining Ductwork (not supplied by Trion)

The ductwork located on the air entering side of the cabinet, between the point where it enters the roof and the cabinet, must be air tight to prevent the entrance of moisture, especially if it is under negative pressure. It must also be adequately insulated or other means taken to prevent the formation of condensation through temperature change. Condensation will short out the ionizing-collecting cells. Insulation must be of the outdoor variety.

Trion Model 75 Cabinet

The access doors on the Model 75 cabinet are gasketed and the unit is basically sealed against air leakage. The paint finish (epoxy) is for interior and exterior use. Like the air-entering duct, the cabinet must be insulated or other means taken to prevent condensation from taking place, which results in electrical shorting of the ionizing-collecting cells. Insulation, when employed, must be suitable for outdoor applications and when applied, consideration given to all access door openings and electrical interlock box covers. Trion will, upon request, install manifold drive motor covers for a cost adder.

Controller/PWM Power Supplies

As the controller/power supplies are designed for remote mounting, they can be, in many cases, located indoors and still be reasonably close to the main cabinet. If located outdoors with the cabinet, it must be weather protected. The enclosure is NEMA 12 rated and is not waterproof.

Drain Line

The drain line, located under the ionizing/collecting cell access door at the lowest point of the Trion cabinet drain pan, should be piped with as short a run as possible to the heated interior of the building. Preferably, straight down from the drain pan supply through the floor. The normally recommended drain line trap, to seal off the cabinet from the drain against the system pressure, should be located in the heated interior. If not installed in this manner, heat wrap or other means should be employed to prevent freezing. Clean-outs are recommended to be installed in all drain lines.

Wash Water Supply Line

Naturally, the length of the run between the Trion cabinet and the heated building should be kept to a minimum. Preferably the line would go through the roof directly below each of the two manifold headers. The strainer, solenoid valve and back flow preventer should be kept indoors. Installed in this manner, a dumping valve can be included in the supply line to drain the remaining water and prevent freezing. The normally open dumping valve should be energized to close when the water wash solenoid valve is energized to open. The strainer and solenoid valve are supplied by Trion. The dumping valve and back flow preventer or check valve are to be supplied by others.

If the above method is not employed, the supply line and manifold headers must be kept from freezing with heat wrap or other means.

Detergent System

The detergent system, designed for remote mounting, should be installed indoors and piped to the water

supply line within the heated interior. Detergent feed line should be piped with as short a run as possible and inject into the wash water supply line as close as possible and upstream from the Model 75 header connection points. (Refer to Figure 3).
Contact the local Trion Sales Office or the factory if questions arise, or any additional information is required.

SECTION II INSTALLATION

FOR THE INSTALLING CONTRACTOR

1. Unpack and Inspect
At the time the unit is received, all shipping containers and their contents should be examined for damage. Any damage occurring in shipment must be immediately reported to the carrier, an inspection report completed and a claim filed at the receiving point.

The unit cabinet is shipped completely assembled and, where size permits, the ionizing-collecting cells are shipped inside the cabinet. On large units, the upper tier of cells may be shipped in separate containers. The controller, detergent feeder and other separate accessories are shipped in the containers as noted on the packing list.

2. Position Air Cleaner Cabinet
To reduce weight for ease in handling, remove the pre-filters, after-filters and the ionizing-collecting cells from the cabinet, and place them safely aside. Position the cabinet in the designated location giving consideration to the following points:

(a) Provide sufficient clearance in front of the access doors for ionizing-collecting cell and mechanical filter removal. **A minimum of 39 inches is required. (see figure 5)**
(b) Level the cabinet to assure proper drainage from the drain pan.
(c) Unless specific design features have been prearranged, the direction of airflow through the cabinet may be either from the right or the left. When the ionizing-collecting cells are reinstalled, the directional arrows on the cell end plates must concur with airflow through the cabinet. If mist suppressors have been specified, they are to be installed on the air entering side of the unit.

After the cabinet has been properly located, it may be secured into place at the predrilled factory mounting pads either by bolting or welding.

3. Connect Adjoining Ductwork
Depending on the application, the installation plan may or may not call for adjoining ductwork on the air entering and/or air leaving sides of the cabinet.

When adjoining ducting is to be installed, the bottom of the horizontal duct runs should be relatively flat and sloped toward the cabinet drain pan for an 18-inch length. As a result, any wash water splash back occurring during the washing operation will run back into the drain pan.

Duct securement to the collar may be completed using the predrilled flange. The seam should be made air and watertight by caulking or gasketing.

When a blower is installed downstream from the Trion cabinet, the ducting between the cabinet and the blower will be under negative pressure and should be made air tight to prevent infiltration of contaminated air.

After the ductwork has been installed, clear remaining material or debris from inside ducts and bottom of cabinet, then re-install both the mechanical filters and the ionizing-collecting cells.

NOTE: Follow the directional arrows located on the cell end plates. The side of each cell containing the spiked ionizer blades must be located on the air entering side of the cabinet. The brass contact plungers on the cell should be inserted toward the back of cabinet. Also, mist suppressors, when specified, must be located on the air entering side of the cabinet.

4. Mount Detergent System
Refer to Detergent Outline Drawing (Figure 9). The detergent system should be located as close to the unit as practical, but should not exceed 20 feet in elevation difference. Service space must be provided for periodic manual filling of the detergent tank and to gain access to the pump and motor assembly. When positioned, the assembly may be secured in place at the predrilled factory mounting pads, either by bolting or welding.

5. Connect Drain
Connect a drain line to the pipe coupling provided in the cabinet drain basin in accordance with the governing plumbing codes. The drain line must be sealed with a trap or other means to prevent air by pass. If a trap is used, it should hold sufficient water column to overcome the system air pressure and to assure that loss of liquid from evaporation between cleaning periods will not break the seal. The drain line should not be smaller than the drainpipe coupling, or it will otherwise restrict the flow of water. Elevation of the equipment may be required to allow adequate draining.

6. Connect Water Wash Supply
The items furnished to be included in the wash water supply are a strainer, an electrically operated solenoid valve, and a detergent system. Refer to the Piping Schematic (Figure 10).

Unless otherwise specified, the water wash supply should be hot **(140^{0}F recommended-WATER HEATER NOT SUPPLIED BY TRION**) at the volume specified for the given unit, and at a full flow pressure between 40 and 60 PSIG.

WARNING: Adequate precautions should be taken in the event the water supply, detergent system and drains are subjected to freezing temperatures.

Although not required, a pressure gage and a manual service valve are recommended as shown in the diagram. The components should be located within the system to provide for service access.

7. Mount Controller

The Controller should be mounted at eye level and located as close to the air cleaner as practical. It must be mounted indoors out of the weather unless supplied with a weatherproof cabinet. Allow sufficient space in front of the access door(s) for service. Refer to appropriate Control/Remote PWM Box Outline Drawing for mounting hole layout and dimensions.

8. Complete Wiring

(a). *High Voltage Wiring*

WARNING:
EXERCISE ALL THE NORMAL PRECAUTIONS WHEN WORKING WITH HIGH VOLTAGE AND COMPLY WITH NEC AND ALL APPROPRIATE LOCAL CODES.

The high voltage wiring entails interconnecting the power supply(s) to the ionizing-collecting cell(s) through the factory-installed junction box on top of the cabinet. All the wiring in the cabinet has been completed at the factory.

Refer to the Field Wiring Diagram. Two high voltage leads, Red/Black Tracer for the ionizer and one Red for the collector, are factory furnished. Each lead is to be run in separate conduit and must be of continuous run (do not splice) between the controller and the ionizing-collecting cell terminal connection in the junction box.

(b). *Primary Wiring*

The Wash Controller is the main distribution point for all primary wiring. The various electrical components involved are connected to and powered from the controller. These interlocks are safety switches that prevent access to the charged high voltage components without first turning "OFF" the high voltage by interrupting the 24 VDC input to the PLC. Refer to the appropriate Field Wiring Diagram.

(c). *Grounding*

An earth ground must be provided to the Model 75 cabinet and control. All ground connections must be in contact with bare metal and securely affixed. Ground conductor size and connection means will be in accordance with all applicable electrical code standards.

9. Check Out for System Start-up

When the installation has been completed, assure that the equipment is ready for start-up by checking the following:

A. All construction debris is removed from the ionizing-collecting cells, drain basin and ductwork.
B. The inside of the controller and detergent tank are clear of any foreign materials.
C. The drain line from the Trion drain basin is clear and completely connected to its point of termination.
D. All piping is completed to the manifold headers and wash water is available.
E. Supply line power is available and electrical wiring is completed to the following components:

1. Controller
2. Solenoid Valve
3. Detergent Pump Motors
4. Manifold Drive Motors
5. Electrical Interlocks
6. Ionizing-Collecting Cells
7. The System Fan

NOTE: Do not put the initial supply of detergent into the detergent tank. This is to be done after volume settings are made at start-up.

SECTION III OPERATION & SERVICE

WARNING
RISK OF ELECTRIC SHOCK
These serving instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

FOR THE MAINTENANCE ENGINEER

1. Introduction and Principle of Operation

The Trion® electronic air cleaner is technically known as an electrostatic precipitator. In this type of equipment, all airborne particles, even of microscopic size, are electrically charged (positively) as they pass through a high voltage ionizer. These charged particles are then attracted and adhere to a series of parallel collecting plates, which form the negative elements of an electrostatic field.

The ionizer consists of charged stainless steel spiked blades spaced between grounded electrodes. The collecting section consists of parallel plates arranged so that each alternate plate is charged while the intermediate plates are electrically grounded.

Periodically, depending on the type and concentration of contamination in the air, the contaminant is washed from the plates by the integrally constructed water wash system.

Three major functional components comprise the air cleaner:

(1) Ionizing-collecting cells to ionize and collect airborne particulate matter.
(2) Power supply(s) to supply high voltage direct current to the ionizing-collecting cells.
(3) Control operated washer to automatically wash away the collected contaminant.

Normally, systems are designed for collection efficiencies in the range of 90 percent or more. Collecting a contaminant at these efficiencies, especially when there are high concentrations can result in large accumulations in a relatively short period. Therefore, maintenance must encompass two areas; the operation of the equipment for efficient collection and the systematic removal of the collected contaminant.

2. General Description

The ionizing-collecting cells (contaminant collecting elements) are housed in the cabinet on slide rails. They can be removed from the cabinet as required, through the end access door, by sliding them out like drawers. On multi-cell units, all of the electrical connections between cells in a given tier are automatically made through spring plunger connectors. On the access end, the high voltage cables from the power supplies are connected to the junction box on top of the cabinet. The high voltage cables from the junction box to the individual tiers are factory wired. When installing cells into the cabinet, observe the directional arrows on the cell end plates. The side of the cell containing the spiked ionizer blades must always be located on the air entering side. The spring plunger connectors, located on one end of each cell, will always face toward the back of the Model 75 Cabinet.

Both the air entering and air leaving side of the cabinet contain either metal mesh filters or perforated plate, whichever was specified. These items act as trash screens, provide resistance for even air distribution, and help contain splash back from the integral water wash system.

The Power Supply(s) convert the 115 volt, 60HZ, single phase AC supply to the high voltage DC needed to power the ionizing-collecting cells. Potential of 13 KVDC are required for the ionizer sections and 6.5 KVDC for the collector sections of the cells.

The integral wash system consists of a series of spray nozzles soldered into oscillating water wash manifolds. The manifolds are located in the front and rear of each cell tier. They are oscillated through straight drive linkage powered by fractional HP motors. A detergent system is also incorporated into the wash system. The amount of detergent used for washing is readily adjustable, and that amount is dependent upon the type and amount of collected contaminant.

The washing operation is cycled periodically, and again the frequency is dependent on the type and amount of contaminant collected. The events in a wash cycle are:

A. Power Supply(s) and System Fan “OFF”
B. Washer and Detergent “ON”
C. Washer and Detergent “OFF”
D. Pause for Detergent to react
E. Washer “ON” (without detergent for rinse)
F. Washer “OFF”
G. Pause for Drip Dry
H. Blower “ON” for forced dry
I. Power Supply(s) “ON”

The time span for all of the events is factory set when the equipment is initially ordered.

3. Initial Start-up

A. Inspect the inside of the adjoining ductwork and Trion cabinet to be sure it is clean and free of any debris or construction materials. Especially note the opening in the drain basin for any restrictions. The ducting, where secured to the cabinet collars, should be sealed water tight either with gasketing or caulking.

B. Inspect the ionizing-collecting cells to see that all of the ionizing blades are intact, that no large pieces of foreign material are lodged between the plates, and that the cells are properly installed in the cabinet with the spiked ionizing blades located on the air entering side.

C. Check the high voltage leads to see that they are connected to the proper terminal both at the ionizing-collecting cells, the junction box and inside the controller. (Refer to Figures 2 and 4).

D. Be sure that the drain lines from the Trion cabinet drain basin are completely connected and properly terminated. A trap or seal of some type should be incorporated in the line to prevent air bypass.

E. Check the water supply line to be sure water is available and that the strainer, solenoid valve, and detergent system are properly installed and connected. (Refer to Figure 10).

F. Be sure that electrical power is available, that the wiring is completed, and that the system blower is ready to energize.

G. Be sure that all access door interlocks are closed.

H. Close the system electrical supply switches, making power available to the Trion controller and the system fan.

I. Turn the controller selector switch to the “ON” position. The blower should run (if installed) and the power supply(s) should be energized. Electrical arcing within the ionizing-collecting cells may occur. It is a normal occurrence caused by accumulation of dusts from construction or other sources in the cell(s) and should subside quickly. If the arcing is continuous and does not subside, recheck the routing of the high voltage leads between the power supply(s) and the cell(s). Refer to the field wiring diagram. The ionizer lead must be connected to the ionizer and the collector lead to the collector.

J. Ensure the detergent tank is clean, then fill the tank 1/8 full with clean water. **Do not fill with the detergent until start-up adjustments have been completed.**

K. (Review this paragraph in its entirety before initiating the wash start button.)

Next, set the detergent volume setting per wash at the detergent feeder. Manually initiate the wash cycle by pushing the "Wash Start" button on the control. The wash control duration is **70** minutes and by means of a factory preset programmable logic controller (PLC) will sequence the washing events as previously outlined. When the detergent pump is energized, note the amount that is used by observing the reduction in the liquid level in the tank. The usage should be approximately 1 part of detergent to 20 parts of water. The water and detergent requirements for each unit model are listed on the Piping Schematic, Figure 10. To adjust the volume output from the pump, refer to the Detergent System Outline, Figure 9. The pump is a constant displacement type and the amount of detergent forced into the water supply to wash the unit is dependent upon the setting of the control valve in the bypass return line to the reservoir. The side of the translucent reservoir is marked with volume markers. Adjust the control valve to obtain the correct usage for the given unit model, then secure the setting with the Allen head set screw located in the valve adjustment knob. When the correct adjustment has been made, remove the remaining water from the reservoir and fill the tank with initial supply of detergent furnished.

L. When the wash control has cycled out, manually set the programmable timer relay (TR), or initiator clock, located in the control for automatic initiation of the washing operation. This setting can be tailored to the washing frequency best suited for the specific application and may be best explained by example.

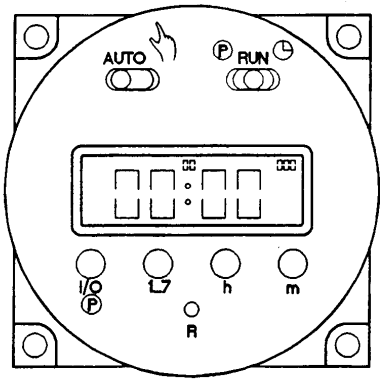
Suppose the application of the equipment is to clean restaurant kitchen exhaust air. The collected contaminant to be washed away is of greasy nature, containing particulate such as smoke and fume from the grill, mist and vapors from the French fryer, flour dust and other various matter that is created by normal kitchen operation.

In our example, the restaurant operates Monday through Saturday (closed Sunday) and opens daily at 6:00 a.m. and closes daily at 11:30 p.m. This busy schedule presents a relatively heavy dirt loading and being of greasy nature should be washed away daily. The best time being shortly after closing when the atmosphere has settled but before the greasy contaminant collected has had a chance to harden and setup.

From the above, a wash schedule of every day except Sunday at 1:00 a.m. can be established. As the duration of events preset at the factory is approximately 70 minutes, the cycle will end at approximately 2:20 a.m.

Prior to setting the initiator clock it will be necessary to charge the battery located inside the clock. This is accomplished by turning the selector switch on the front of the control to the "ON" position. A light inside the switch will glow. If it does not glow, check to be sure there is supply line power to the control. DO NOT PUSH THE WASH BUTTON. Allow the control to remain in the "ON" position for 24 to 36 hours while the battery is charging.

Initiator clock setting:



Initiator Clock (Programmable Timer Relay)

To set the initiator clock, it is first necessary to set the existing time, then the program times that are to be initiated.

To set existing time:

1. Depress the reset (R) button to cancel out any previous settings.

2. Slide the P-Run switch to the clock position . Monday (MO) will be indicated.

3. Push the (1 ... 7) button until the present day of the week is indicated.

4. Push the hour (h) button to the present hour of the day.

5. Push the minute (m) button to the minutes past the hour of the day.

6. Slide the P-Run switch to the run position. The colon will blink indicating the clock has been set.

To set the programs (wash times) according to the times in the example outlined above.

1.Slide the auto-manual switch to the auto position.

2. Slide the P-Run switch to the program (P) position. The word "ON" and the number 1 will appear on the display. This indicates the time the first program is to be turned "ON."

3. Push the day (1 ... 7) button until only the day Monday (MO) appears on the display.

4. Push the hour (h) button until the designate hour (01:00) appears on the display.

5. It is not necessary to set the minute (m) as 1:00 o'clock on the hour was the selected wash initiation "ON" time. The "ON" time has now been set.

6. Next, set the program "OFF" time. This will be 1 minute after the "ON" time. A 1-minute duration is adequate program time as the initiation signal is sent to the wash control logic timer instantaneously.

Push the I/0 (P) button. The word "OFF" and the number 1 will appear on the display. This indicates the set time the first program is to be turned "OFF."

7. Push the day (1 ... 7) button until only the day Monday (MO) appears on the display.

8. Push the hour (h) button until the hour 01:00 appears on the display.

9. Push the minute (m) button until the time 01:01 appears on the display. Program 1, wash time "ON" and "OFF," for Monday has now been set.

10. Next set the second program which will be the Tuesday (TU) washing. Push the program I/0 (P) button. The word "ON" and the number "2" will appear on the display.

11. Repeat the setting process for TU as outlined above in steps 3 through 9 for MO "ON" - "OFF" time.

12. After the wash program has been set for TU, repeat the same setting procedure for WE, TH, FR and SA. Omit SU.

13. Slide the P-Run switch to the run position. The existing time of day will show on the display. The six selected wash days established in the example have been set.

NOTE: Using the above procedures, different washing days and "ON - OFF" times may be established and set into the initiator clock to best serve a specific application.

NOTICE: Once the reset key (R) is pressed, the previous time and program will be cleared to the initial state.

Kitchen Exhaust Applications

M. For safe and proper operation adhere to the following instructions and procedures:

1. Exhaust systems shall be operated during all periods of cooking in restaurant applications.

2. Filter-equipped exhaust systems shall not be operated with filters removed.

3.The posted instructions for manually operating the fire extinguishing system shall be kept conspicuously posted in the kitchen and reviewed periodically with employees by the management.

4. Listed exhaust hoods shall be operated in accordance with the terms of their listings and the manufacturers instructions.

5. Cooking equipment shall not be operated while its fire-extinguishing system or exhaust system is not operating or otherwise impaired.

4. Wash Control and Detergent System Settings

Some dirt's being more tenacious than others are more difficult to remove and require a stronger detergent solution. Average settings have been factory set. Best possible settings for any given installation, however, are determined through experience. Determination can be made by visually examining the collecting elements after the first few washings.

To adjust the volume of detergent used within the given time setting, loosen the knurled knob with an Allen wrench on the control valve located in the by-pass line. Refer to the Detergent System Outline. Turning the knob clockwise increases the volume and counter clockwise decreases the volume. When adjustment has been made, be sure to retighten the setscrew.

5. Routine Maintenance

A. *Washing Frequency*

The frequency that the collected dirt is to be washed from the unit depends upon the type and amount of dirt in the air to be cleaned. Dirt which is greasy in nature tends to harden after collection and should be washed away often. Likewise, units operating under extremely heavy dirt loads should be washed more often as a large build-up of collected material will have a tendency to "blow-off" if permitted to remain on the collecting elements for long periods of time. In that the type and amount of dirt varies geographically (and from one location to another in any given area) it is recommended to start operation with a washing frequency of at least once a week. This schedule may then be altered as needed after visual examinations of the collected material contained on the ionizing-collecting cells. Daily washing is not unusual for units operating on heavy welding fume, kitchen exhaust hoods or similar applications.

B. *Detergent*

Effective washing is dependent upon detergent. The detergent reservoir should be examined on a routine basis, a minimum tank level established and never permitted to empty. An empty tank not only means poor washing, but can also be detrimental to the pump. The inside of the tank should be kept clean, free from dirt and foreign objects. The detergent, as supplied by Trion, Inc., is formulated specifically for electronic air cleaners. If substitutes are used, they must be approved by Trion, so as to not void the warranty. They should be safe for use in ventilation systems and non-caustic, as 95% of the ionizing-collecting cells are constructed of aluminum, special high voltage insulation and gasket seals.

C. *Electrical Operation*

The Air Boss controller (Optional) contains a digital LED display for kilovolt and milliampere readings. The milliammeter should be observed on a routine basis to be sure that it is reading within the prescribed operating range as marked on the data plate. For those units containing a voltmeter, the collector voltage should be between 6 and 7 KV, and the ionizer between 12.5 and 13.5 KV.

The ATS controller and remote PWM box both have LED indicating lights to show power to the PWM power supplies. Flickering or failed LED's indicate electrical arcing and/or power failure.

6. Periodic Maintenance

A. *Water Wash System –* ***Every 6 Months***

The water wash spray pattern should be checked on each nozzle to be sure that a full spray pattern is developed. Distorted patterns are usually caused by dirt in the nozzle orifice, which can be cleaned by inserting a small gage, soft copper wire into the orifice. If any one manifold contains several nozzles that are restricted, the drain plug at the idler end of the manifold should be removed, after the nozzles have been cleaned, and the manifold flushed with clean water. The main supply line strainer and the strainer in the detergent system should be checked and cleaned. Check the wash manifold drive linkage connections and tighten or adjust as required.

B. *Fire Suppression System* ***(IF INSTALLED) – Every 6 Months***

Properly trained and qualified personnel shall complete inspection, cleaning and servicing of the fire suppression system.

All actuation components, including remote manual pull stations, mechanical or electrical devices, detectors, fire-actuated dampers, etc., shall be checked for proper operation in accordance with the manufacturers listed procedures. In addition to these requirements, the specific inspection requirements of the applicable NFPA standard shall also be followed. If required, certificates of inspection and maintenance shall be forwarded to the authority having jurisdiction.

C. *Controller -* ***Every 12 Months***

The inside of the controller cabinet should be examined for accumulated dirt and dust. If required, the components should be cleaned using a good brand of electrical contact cleaner. All terminal connections should be checked for securement and tightened or reworked as required.

D. Ionizing-Collecting Cell – ***Every 6 to 12 Months***

Remove and inspect the ionizing-collecting cells for excessive dirt accumulations not removed by the integral washing system. Manually clean as required in a soak tank, commercial car wash, or with a pressure hose or pressure cleaner using a low pressure setting. At this time, particular care should be taken in cleaning each of the insulators.

WARNING:
DO NOT USE HIGH PRESSURE STEAM CLEANING EQUIPMENT TO CLEAN CELLS. THE EXCESSIVE HEAT AND PRESSURE WILL CAUSE THE PLATES TO WARP AND IN TURN POSSIBLY CAUSE EXCESSIVE ARCING.

E. *Motors –* ***Every 24 Months***

As the operation of detergent pump motor is limited, frequent oiling is not required. Lubricate with several drops of SAE 10 motor oil every two years. DO NOT OVER OIL. The manifold drive motors are factory lubricated for life and do not require oiling.

F. *Filter Devices –* ***Every 4 to 6 Months***

Hoods, impingers, metal mesh filters, ducts and other appurtenances shall be cleaned to bare metal at frequent intervals prior to surfaces becoming heavily contaminated with grease, oil or other contaminant. It may be advantageous to clean readily removable items, such as impingers, metal mesh filters or other permanent filter devices in a soak tank, with a pressure hose or pressure cleaner low setting. After cleaning to bare metal, components shall not be coated with powder or other substance.

When a cleaning service is used, a certificate showing dates of inspection and/or cleaning shall be maintained on the premises.

WARNING
Flammable solvents or other flammable cleaning aids shall not be used.

At the start of the cleaning process, electrical switches that could be accidentally activated shall be locked out. Components of the fire suppression system (if installed) shall not be rendered inoperable during the cleaning process.

Care should be taken not to apply cleaning chemicals on any fusible links or other detection devices of the automatic extinguishing system.

7. Troubleshooting

WARNING:
EXERCISE THE USUAL PRECAUTIONS WHEN WORKING WITH HIGH VOLTAGE. THE MAXIMUM OPERATING OUTPUT FROM THE POWER SUPPLY IS 15,000 VDC AND 5.5 MA. to 11.0 MA. WHEN IN PARALLEL.

IF SAFETY SWITCHES ARE CLOSED AND CIRCUIT IS ENERGIZED, DO NOT TOUCH HIGH VOLTAGE. WHEN THE CIRCUIT IS DE-ENERGIZED, ALWAYS BLEED OFF REMAINING STATIC CHARGE WITH AN INSULATED HANDLED SCREW DRIVER BY SHORTING TO GROUND THE POINTS OF HIGH VOLTAGE DC POTENTIAL.

WARNING
Risk of Electrical Shock

The servicing Instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the service instructions unless you are qualified to do so.

A. Introduction

This section on troubleshooting provides a description of potential malfunctions, their cause, location and correction. A Troubleshooting Reference Chart listing the most probable causes and corrections follows the general text.

NOTE: All repair to the fire suppression system (If Supplied) must be completed by the authorized fire control contractor.

The electronic air cleaner is the unit within the system that has the highest efficiency collection rating and is also the one with the highest potential for malfunction. When a malfunction does occur, the outage is usually found in the electrical secondary circuit in the ionizing-collecting cell(s).

Indicating lights are installed in the face panel of the control to monitor the electrical operation of each power supply and the ionizing-collecting cell(s) they energize. The quantity of power supplies per unit is dependent upon unit size with one or two power supplies for each ionizing-collecting cell tier in height. Other than the basic hand tools, it is advantageous to have a volt/ohm/milliammeter with a 20 KVDC high voltage probe. These instruments are standard catalog items by several manufacturers.

B. Secondary Short Circuit

The most common outage is a short in the secondary circuit and is best located through the process of elimination. Symptoms are a flickering indicating light accompanied by an arcing noise in the ionizing-collecting cell(s) or an indicating light that is not glowing.

A flickering light with an arcing noise is an indication of a high resistance short circuit and a light that is not glowing is an indication of a dead short. (A light that is not glowing can also be an indication of an open circuit in the primary circuit. Refer to the paragraph on open

circuits.) The short may be in the power supply, the high voltage cables or the ionizing-collecting cell(s). To isolate the short to any one of these three components, proceed as follows:

WARNING

When safety interlock switches are closed, do not come in contact with high voltage components. The operating output from the high voltage power supply(s) is 12,600 VDC and 6 MA. to 11.0 MA.

When the power supply(s) is de-energized there Is a 20 second delay for the voltage to decay. Always short from ground to a point of high voltage with a well Insulated jumper wire or an insulated handled screwdriver to bleed-off any remaining residual charge.

1. Disconnect both high voltage leads from their respective terminals in the power supply and support them away from any point of contact.

2. Energize the power supply:

   a. If the light still flickers or does not glow, the trouble is indicated to be in the power supply. First, check the inline fuse mounted on the circuit board and replace if it is blown. Second, replace the power supply in its entirety.

   b. If the light glows steady with the leads disconnected, the power supply is indicated to be normal.

NOTE: It will be necessary to close the access door electrical interlock switch operated by the access door and affix the junction box lid with hardware supplied to close the electrical interlock switch on the box, to complete the primary circuit to the power supply.

3. Next, reconnect both high voltage leads to their respective terminals inside the power supply and disconnect them at the ionizing-collecting cell(s). Support them away from any point of contact and energize the power supply.

a. If either high voltage lead is defective the light will indicate the trouble. Each lead may then be checked separately by disconnecting them, one at a time, from their respective terminals at the power supply. When a lead is found to be defective, replace it in its entirety. Do not repair or splice.

b. If the light glows steady with the leads disconnected at the ionizing-collecting cell(s) the trouble is then indicated to be in the ionizing-collecting cell(s).

The trouble can then be isolated to, a single cell, or the ionizing or collector section of a given cell as follows:

(1) First determine if the short is in the ionizing section or the collecting section by connecting each high voltage lead to its respective section, one at a time, and energizing the power pack. (The lead not connected must be supported away from any point of contact.) The short symptoms will still exist for the section in which the short is located. If the trouble causing the short is bridging both sections, then the short will be indicated in both sections when they are individually connected.

(2) When the short is isolated to a cell tier, remove all the cells within the tier and visually check the sections indicated to contain the short.
   (a). If the short is in the ionizer section, look for a broken or defective insulator.
   (b). If the short is in the collector section, look for a large piece of foreign material bridging the collector plates or a defective insulator.
   (c) . If the short is indicated to be in both sections, it will probably be a foreign object bridging the air gap between the ionizer and the collector.

c. Open Circuits

Although open circuits can occur in the secondary they usually take place in the primary. If the unit contains only one power supply and the indicating light does not glow the outage is probably one of the following.
(1)Supply line power to the control disconnected. Reconnect.
(2)Open access door interlock in control of electronic air cleaner. Be sure all access doors are properly closed and secured.
(3)Blown in-line fuse located on the power supply circuit board. Replace Power Supply.
(4)Outage in the power supply. Look for charred or burned components or a loose wiring connection. Replace power supply or reconnect wiring.
(5)Defective indicating light. Replace light.

d. Malfunctions other than short or open circuits. Refer to trouble reference chart in this section.

8. Spare Parts

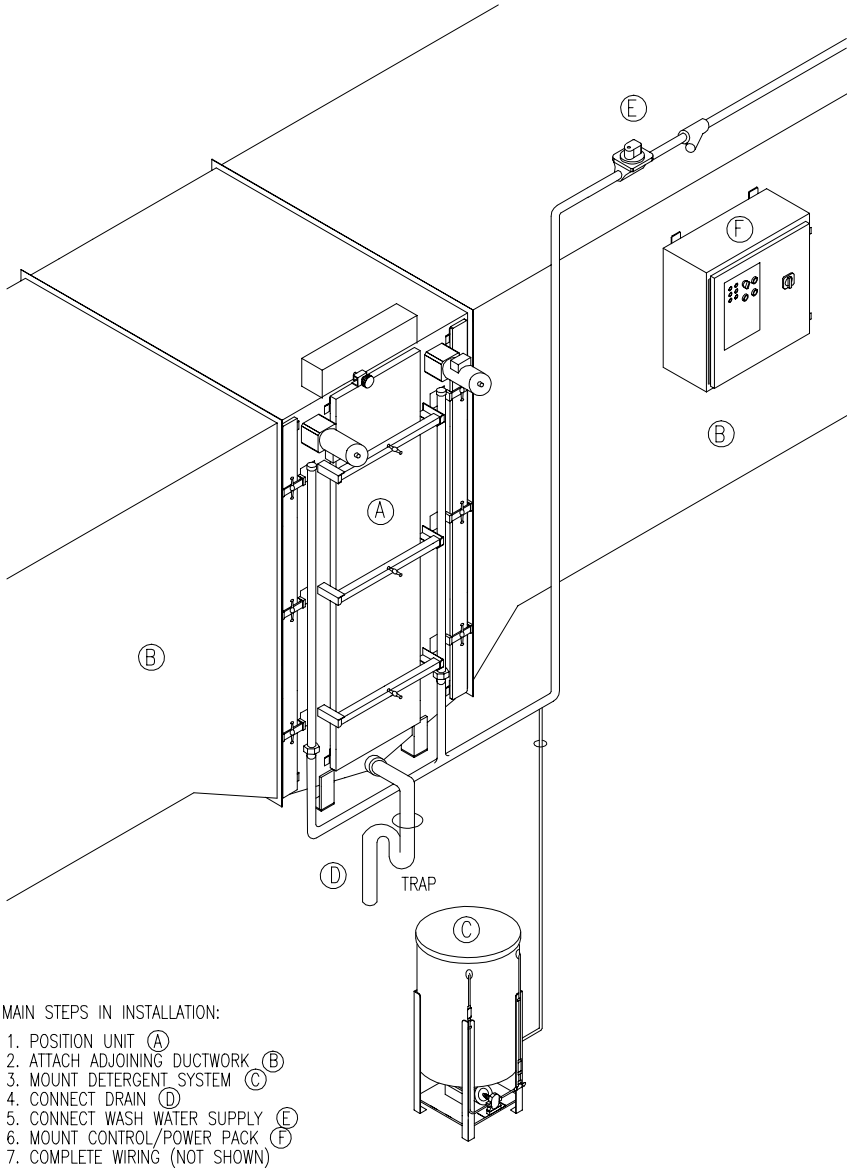
Recommended spare part quantities are usually based on the unit size and the amount of units per installation. For specific recommendations, consult the Trion factory or nearest Sales Office. Consideration, however, should be given to stocking the following components;

DESCRIPTION	QTY.
PWM Power Supply	2
Junction Box Stand Off Insulators	2
Cell Insulators	6
LED	2

Part Numbers are not listed as they are subject to change. Always state Unit Model and Serial Numbers when ordering parts.

Troubleshooting Reference Chart

PROBLEM/ SYMPTOM	PROBABLE CAUSE	LOCATION	REASON - CORRECTION
Indicating Light Not Glowing	Short Circuit	Ionizing Section of Cell	1. Dirty insulator(s) – Clean 2. Defective insulator(s) – Replace 3. Foreign Object Between Ionizing Bar and Ground electrode - Remove
		Collecting Section of Cell	1. Dirty insulator(s) - Clean 2. Defective insulator(s) – Replace 3. Foreign Material Bridging Plates - Remove 4. Bent Plates – Straighten or Replace
		High Voltage Leads	1. Disconnected High Voltage Lead Contacting Ground - Reconnect 2. Defective Lead/Insulation Breakdown – Replace Entire Lead
		Power Supply	Charred/Over Heated Components – Replace Power Supply
Indicating Light Not Glowing	Open Circuit	Control	1. Disconnected Supply Line Power – Reconnect 2. Faulty indicting Light - Replace
		Power Supply	1. Blown Fuse – Replace Power Supply. 2. Disconnected Wire – Replace 3. Charred/Over Heated Components – Replace Power Supply
		Electronic Air Cleaner Housing	1. Electrical Interlock Switch Not Closed – Close Access Door 2. Junction Box interlock switch not closed – Secure Cover 3. Faulty Electrical Interlock Switch - Replace
Indicating Light Flickering	High Resistance Short	High Voltage Circuit	1. Ionizer High Voltage Lead Connected to Plate Section and Plate Lead to Ionizer – Reconnect Leads 2. Loose or Disconnect high Voltage Lead-Tighten or Reconnect 3. Loose or Defective Intercell Connection (on Multicell Units) – Tighten or Replace 4. Foreign Object Adrift in Ionizer or Plate Section of Cell - Remove

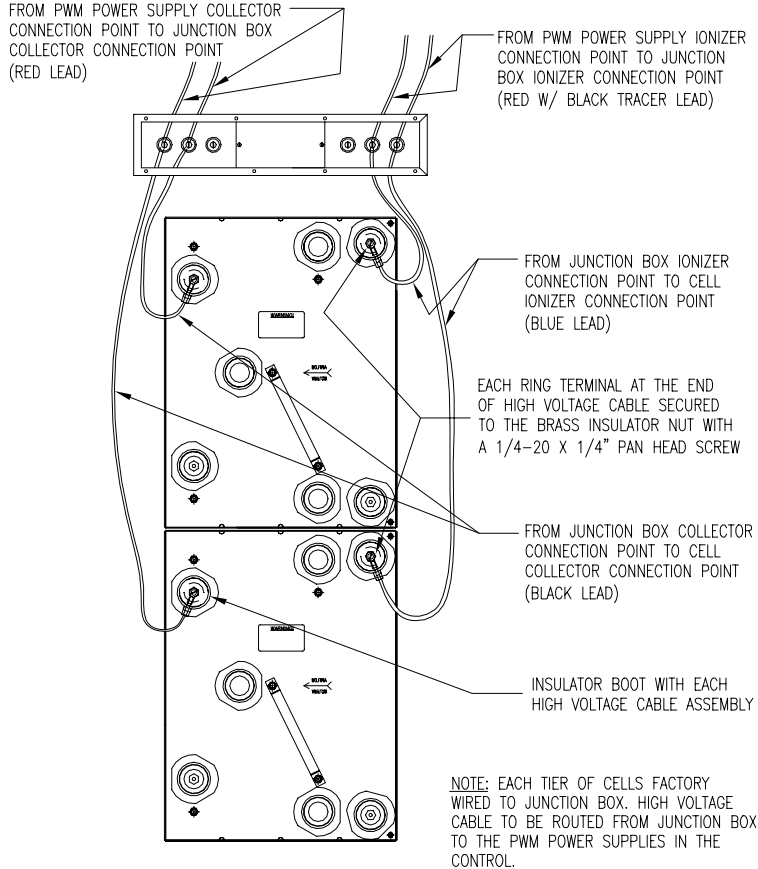


MAIN STEPS IN INSTALLATION:

1. POSITION UNIT (A)
2. ATTACH ADJOINING DUCTWORK (B)
3. MOUNT DETERGENT SYSTEM (C)
4. CONNECT DRAIN (D)
5. CONNECT WASH WATER SUPPLY (E)
6. MOUNT CONTROL/POWER PACK (F)
7. COMPLETE WIRING (NOT SHOWN)

GENERAL COMPONENT ARRANGEMENT

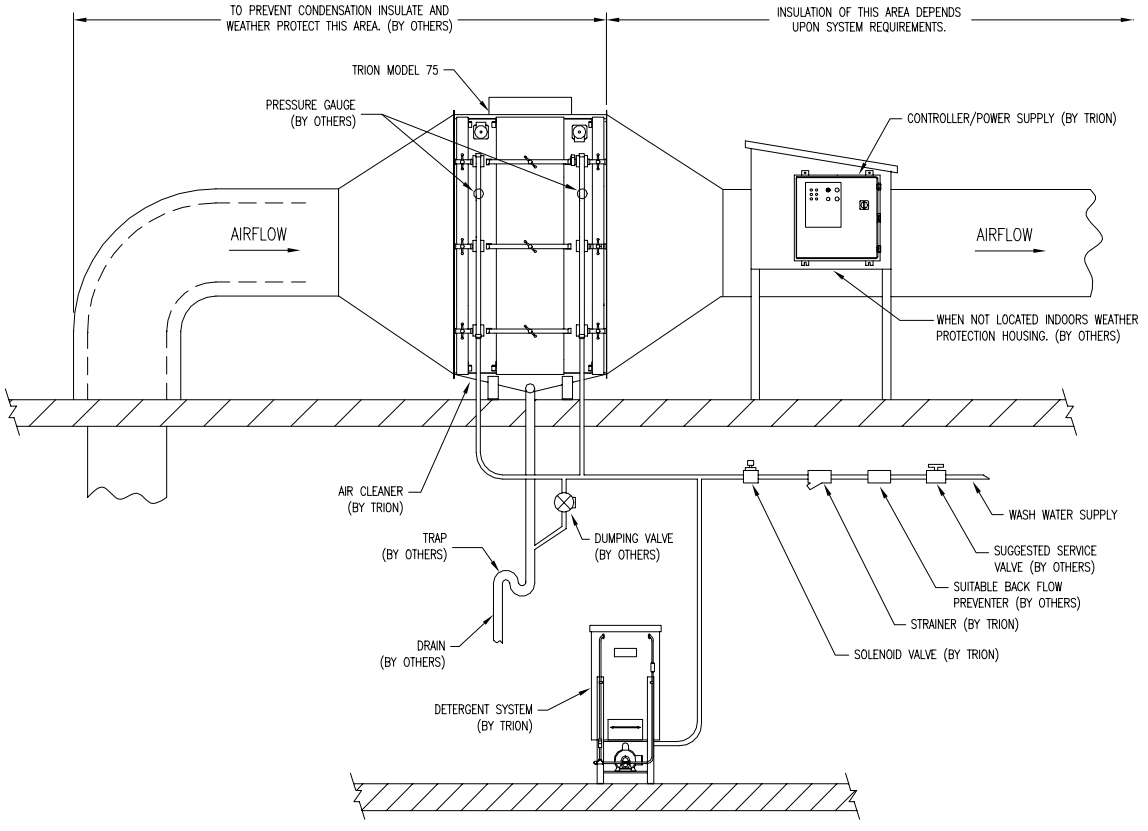
FIGURE 1



HIGH VOLTAGE LEAD CONNECTING TERMINALS

FIGURE 2

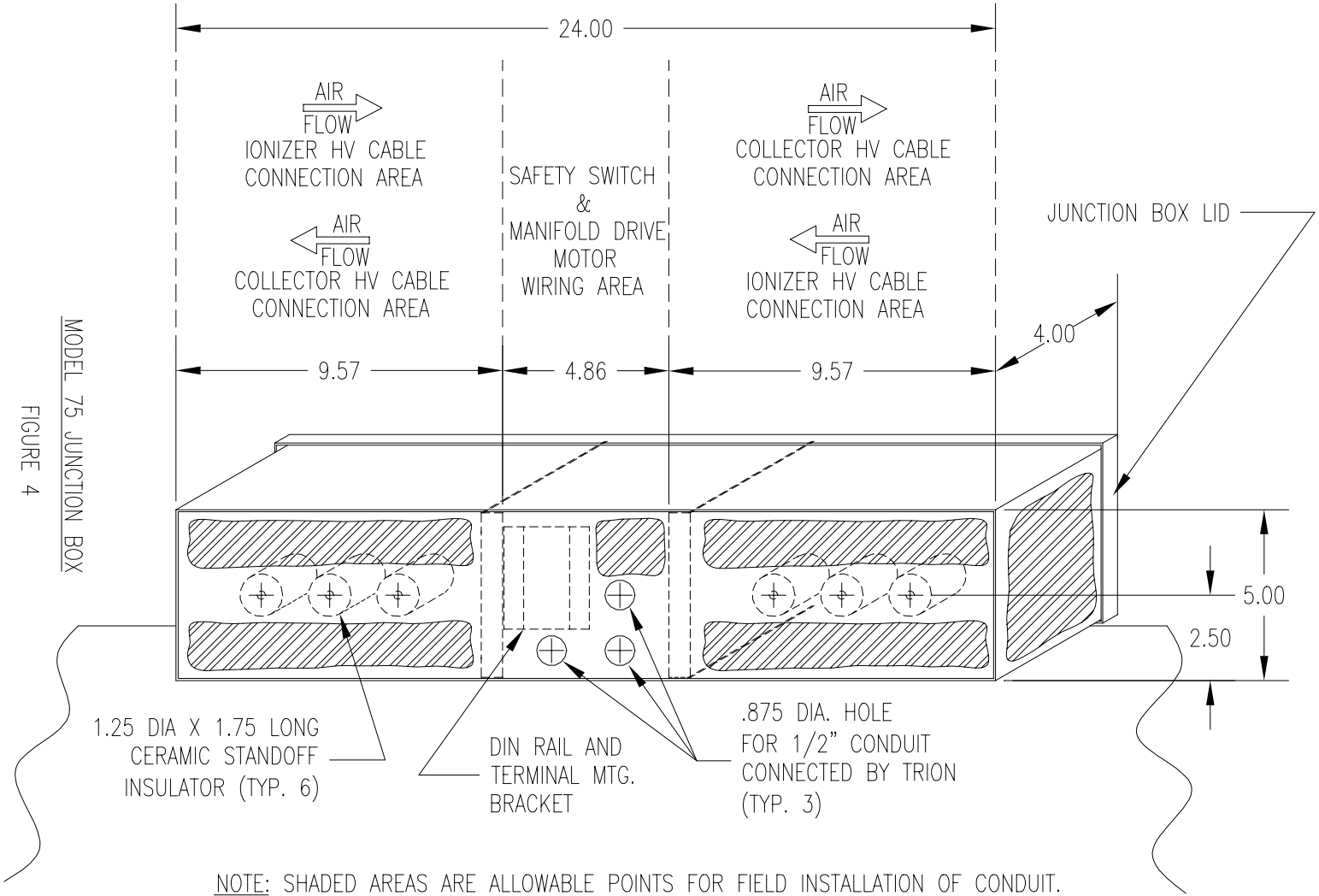
M75FIG2.DWG



TYPICAL OUTDOOR INSTALLATIONS

FIGURE 3
14

M75FIG3.DWG



NOTE: SHADED AREAS ARE ALLOWABLE POINTS FOR FIELD INSTALLATION OF CONDUIT.

MODEL 75 JUNCTION BOX

FIGURE 4

M75FIG4.DWG

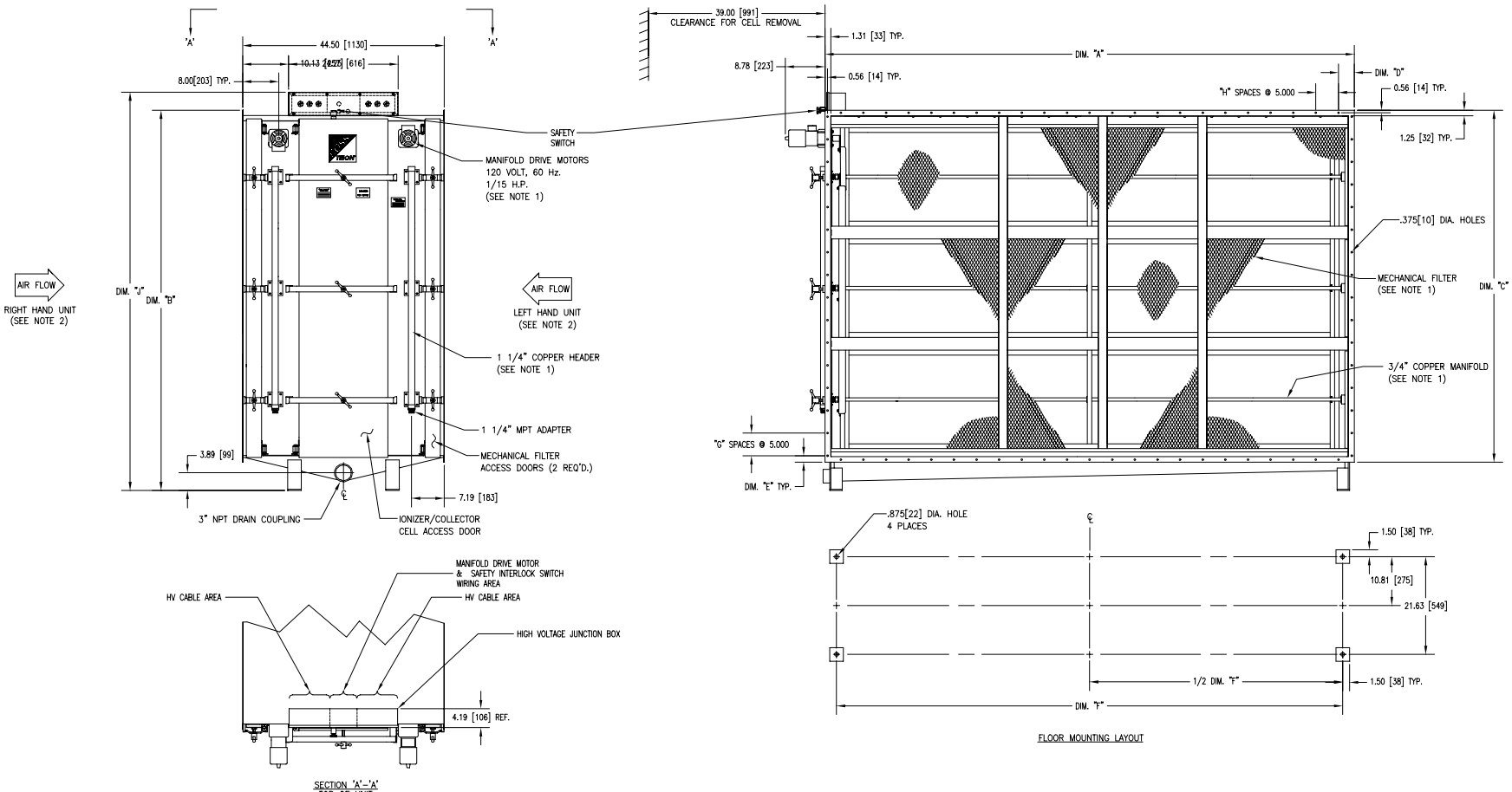
UNIT SIZE	DIM."A"	DIM."B"	DIM."C"	DIM."D"	DIM."E"	DIM."F"	"G" SPACES	"H" SPACES	DIM. "J"	UNIT WEIGHT APPROX.
MODEL 75-102	28.31 [719]	34.87 [886]	28.62 [727]	1.65 [42]	1.81 [46]	23.37 [594]	5	5	38.87 [987]	370 LBS.[168.2 kg]
MODEL 75-103	39.50 [1003]			2.25 [57]		34.56 [878]		7		450 LBS.[204.5 kg]
MODEL 75-104	50.44 [1281]			2.72 [69]		45.50 [1156]		9		540 LBS.[245.5 kg]
MODEL 75-105	61.63 [1565]			3.31 [84]		56.69 [1440]		11		620 LBS.[281.8 kg]
MODEL 75-106	72.81 [1850]			3.90 [99]		67.87 [1724]		13		705 LBS.[320.5 kg]
MODEL 75-107	83.75 [2127]			1.87 [48]		78.81 [2002]		16		800 LBS.[363.6 kg]
MODEL 75-108	94.97 [2412]			2.48 [63]		90.03 [2287]		18		880 LBS.[400.0 kg]
MODEL 75-109	106.16 [2696]			3.08 [78]		101.22 [2571]		20		960 LBS.[436.4 kg]
MODEL 75-110	117.00 [2972]			3.50 [89]		112.06 [2846]		22		1050 LBS.[477.3 kg]
MODEL 75-203	39.50 [1003]	59.50 [1511]	53.24 [1352]	2.25 [57]	1.62 [41]	34.56 [878]	10	7	63.50 [1613]	740 LBS.[336.4 kg]
MODEL 75-204	50.44 [1281]			2.72 [69]		45.50 [1156]		9		905 LBS.[411.4 kg]
MODEL 75-205	61.63 [1565]			3.31 [84]		56.69 [1440]		11		1050 LBS.[477.3 kg]
MODEL 75-206	72.81 [1850]			3.90 [99]		67.87 [1724]		13		1190 LBS.[540.9 kg]
MODEL 75-207	83.75 [2127]			1.87 [48]		78.81 [2002]		16		1360 LBS.[618.2 kg]
MODEL 75-208	94.97 [2412]			2.48 [63]		90.03 [2287]		18		1500 LBS.[681.8 kg]
MODEL 75-209	106.16 [2696]			3.08 [78]		101.22 [2571]		20		1640 LBS.[745.5 kg]
MODEL 75-210	117.00 [2972]			3.50 [89]		112.06 [2846]		22		1805 LBS.[820.5 kg]

UNIT SIZE	DIM."A"	DIM."B"	DIM."C"	DIM."D"	DIM."E"	DIM."F"	"G" SPACES	"H" SPACES	DIM. "J"	UNIT WEIGHT APPROX.
MODEL 75-303	39.50 [1003]	84.12 [2137]	77.87 [1978]	2.25 [57]	1.43 [36]	34.56 [878]	15	7	88.12 [2238]	1050 LBS.[477.3 kg]
MODEL 75-304	50.44 [1281]			2.72 [69]		45.50 [1156]		9		1275 LBS.[579.5 kg]
MODEL 75-305	61.63 [1565]			3.31 [84]		56.69 [1440]		11		1480 LBS.[672.7 kg]
MODEL 75-306	72.81 [1850]			3.90 [99]		67.87 [1724]		13		1680 LBS.[763.6 kg]
MODEL 75-307	83.75 [2127]			1.87 [48]		78.81 [2002]		16		1920 LBS.[872.7 kg]
MODEL 75-308	94.97 [2412]			2.48 [63]		90.03 [2287]		18		2120 LBS.[963.6 kg]
MODEL 75-309	106.16 [2696]			3.08 [78]		101.22 [2571]		20		2325 LBS.[1056.8 kg]
MODEL 75-310	117.00 [2972]			3.50 [89]		112.06 [2846]		22		2552 LBS.[1159.1 kg]

NOTES:

1.) UNIT SHOWN WITH WASH AND METAL MESH FILTERS. DESIGNATE BY ORDER DESCRIPTION, THE LOCATION & PART NUMBER OF WASH ASSEMBLY AND MECHANICAL FILTER TYPE.

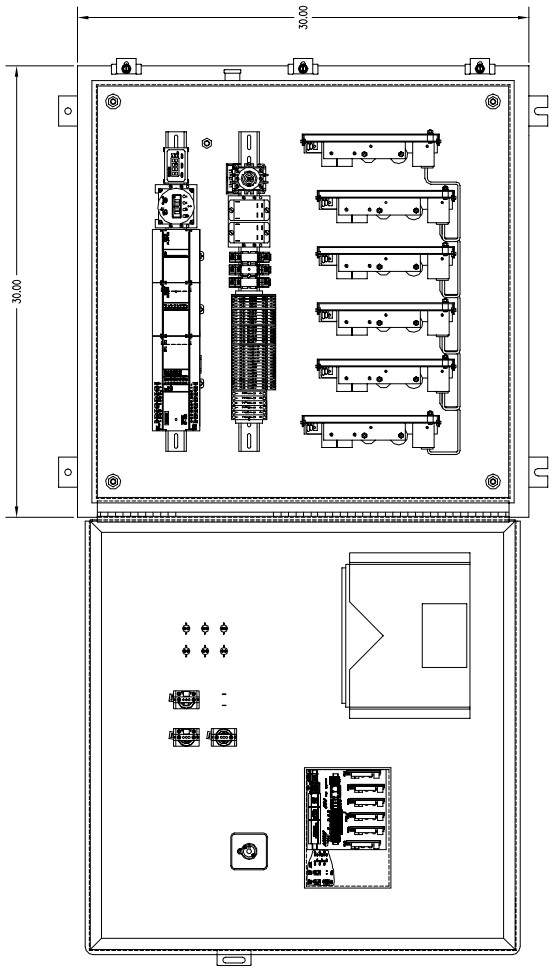
2.) SPECIFY DIRECTION OF AIR FLOW THROUGH UNIT ON ORDER DESCRIPTION.

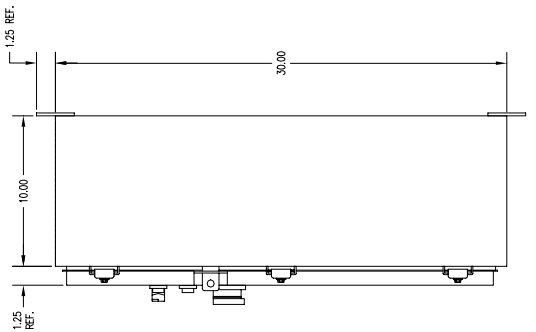


MODEL 75 UNIT OUTLINE

FIGURE 5

ATS CONTROL
(STANDARD)





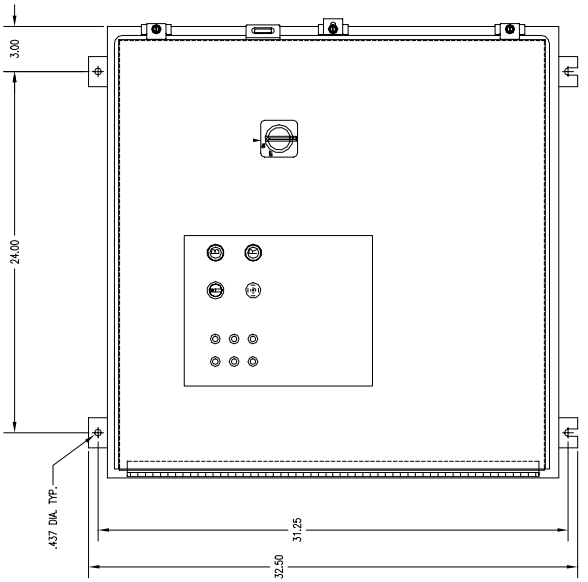
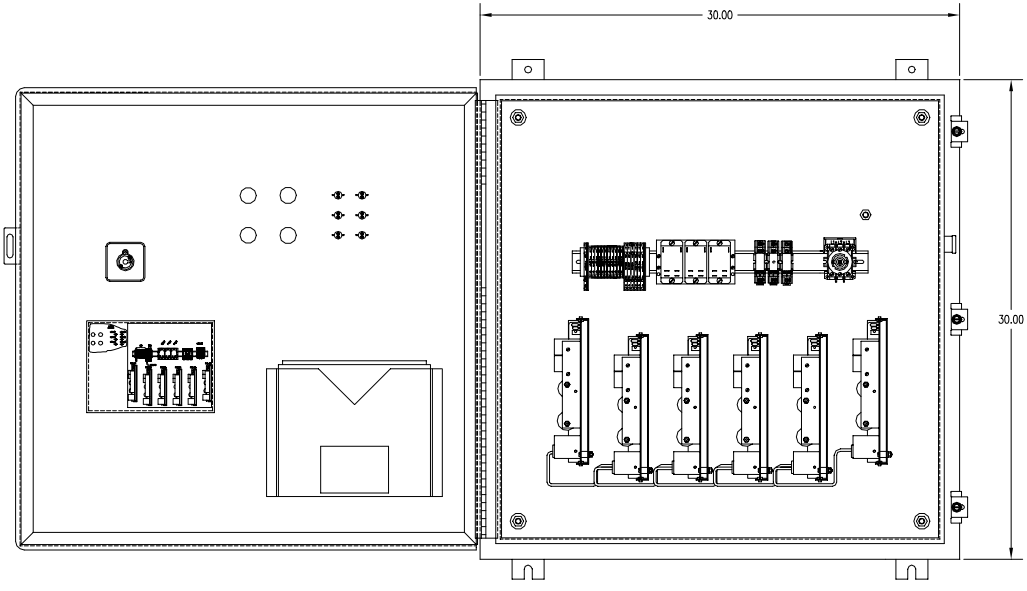
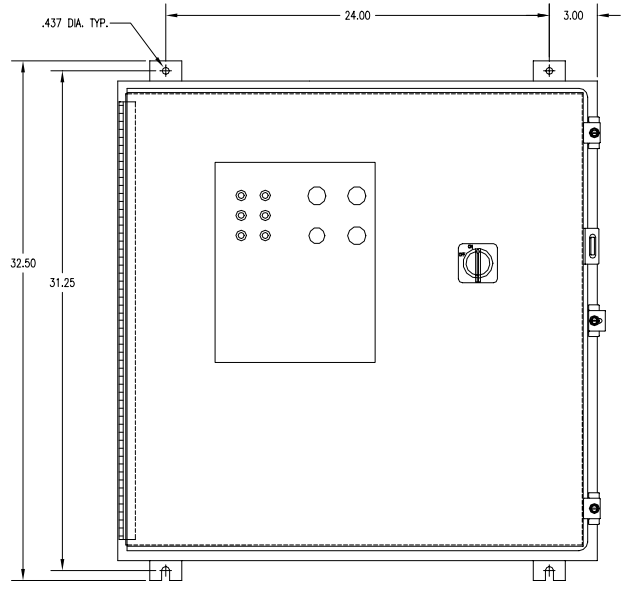


FIGURE 6

M75FIG6.DWG



REMOTE PWM ASSEMBLY
(OPTIONAL)



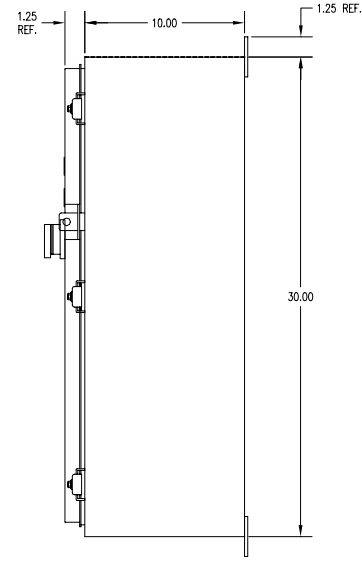


FIGURE 7

M75FIG7.DWG

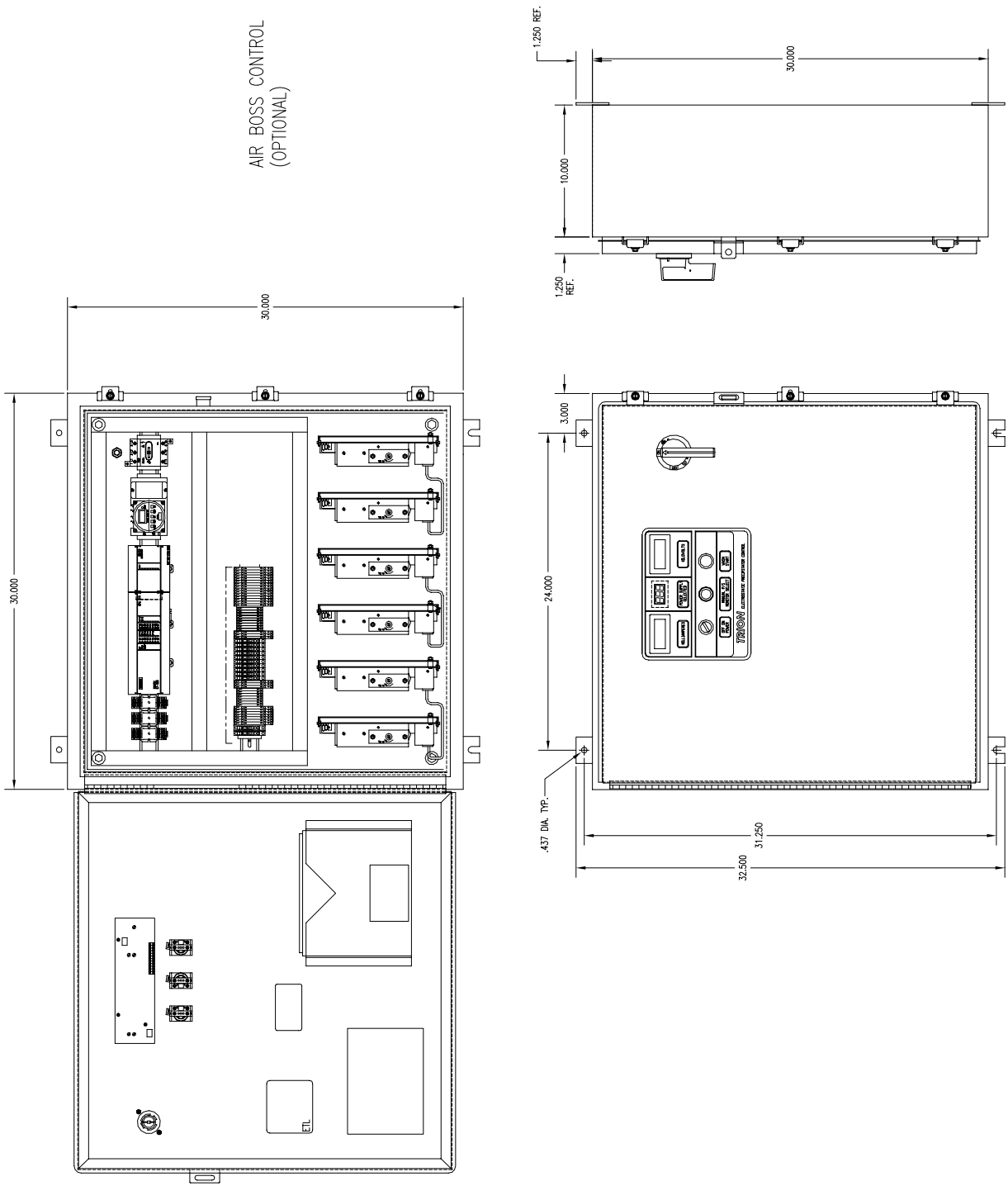
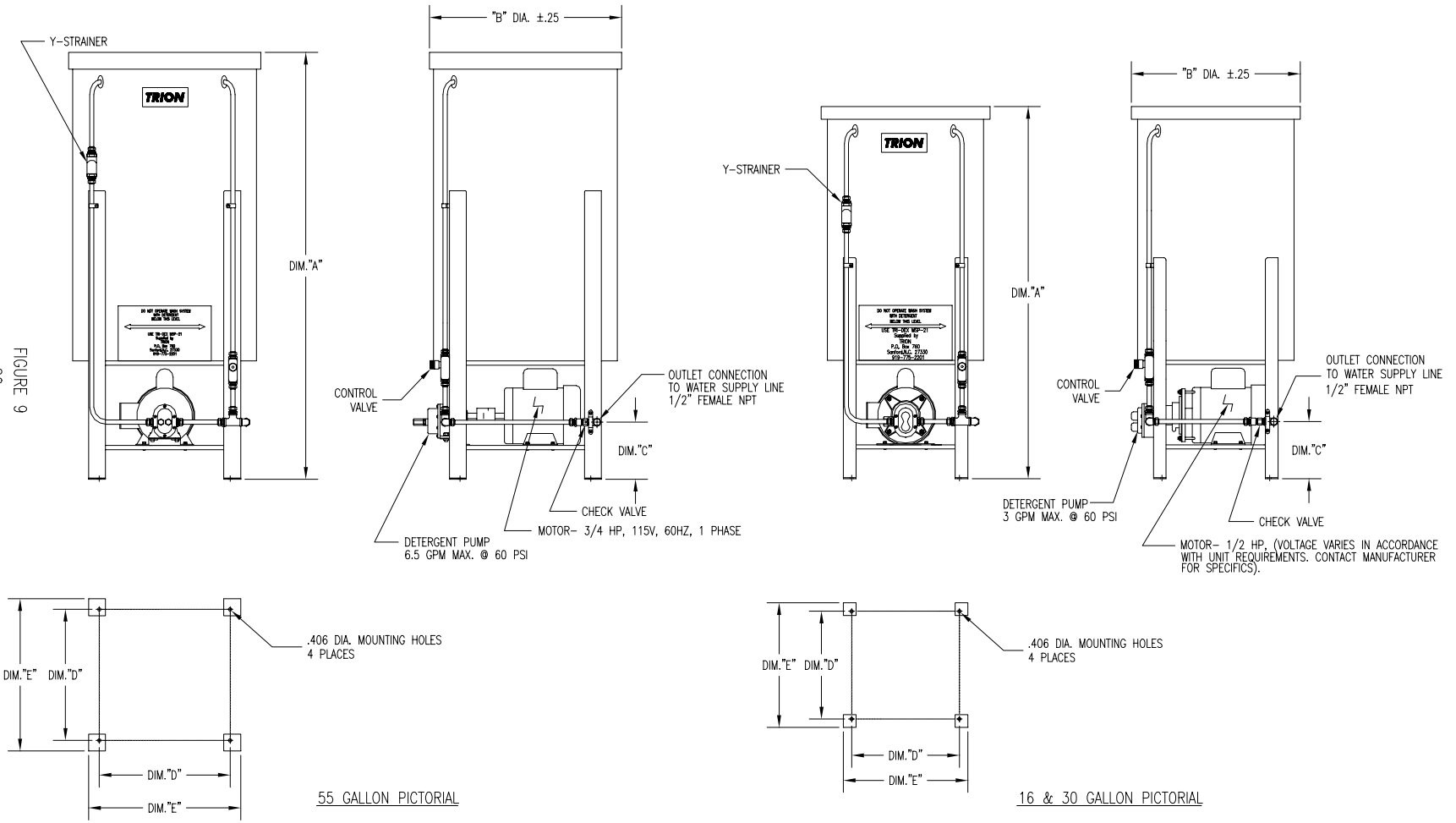


FIGURE 8

M75FIG8.DWG

DETERGENT TANK	DIM."A"	"B" DIA.	DIM."C"	DIM."D"	DIM."E"	WEIGHT-EMPTY	WEIGHT-FULL
16 GALLON	42.00	15.50	6.31*	9.50	11.49	50 LBS.	200 LBS.
30 GALLON	44.00	20.00	6.31*	12.75	14.74	65 LBS.	330 LBS.
55 GALLON	50.50	23.00	6.75	15.50	17.86	115 LBS.	585 LBS.

* ADD .50 TO THIS DIMENSION FOR 56 FRAME PUMP MOTOR.



DETERGENT FEEDER OUTLINE

FIGURE 9

M75FI09.DWG

MODEL	WATER REQ'D @ 50 PSI	WATER REQ'D PER CYCLE	DETERGENT REQUIRED PER CYCLE	PIPING COMPONENT SIZE
73/75-102	5.3 GPM	18.6 GALS.	0.3 GALS.	2.00
73/75-103	8.0 GPM	28.0 GALS.	0.4 GALS.	2.00
73/75-104	10.6 GPM	37.1 GALS.	0.5 GALS.	2.00
73/75-105	13.3 GPM	46.6 GALS.	0.7 GALS.	2.00
73/75-106	16.0 GPM	56.0 GALS.	0.8 GALS.	2.00
73/75-107	18.6 GPM	65.1 GALS.	0.9 GALS.	2.00
73/75-108	21.3 GPM	74.6 GALS.	1.1 GALS.	2.00
73/75-109	23.9 GPM	83.7 GALS.	1.2 GALS.	2.00
73/75-110	26.6 GPM	93.1 GALS.	1.3 GALS.	2.00
73/75-203	16.0 GPM	56.0 GALS.	0.8 GALS.	2.00
73/75-204	21.3 GPM	74.6 GALS.	1.1 GALS.	2.00
73/75-205	26.6 GPM	93.1 GALS.	1.3 GALS.	2.00
73/75-206	31.9 GPM	111.7 GALS.	1.6 GALS.	2.00
73/75-207	37.2 GPM	130.2 GALS.	1.9 GALS.	2.00
73/75-208	42.6 GPM	149.1 GALS.	2.1 GALS.	2.00
73/75-209	47.9 GPM	167.7 GALS.	2.4 GALS.	2.00
73/75-210	53.2 GPM	186.2 GALS.	2.7 GALS.	2.00
73/75-303	23.9 GPM	83.7 GALS.	1.2 GALS.	2.00
73/75-304	31.9 GPM	111.7 GALS.	1.6 GALS.	2.00
73/75-305	39.9 GPM	139.7 GALS.	2.0 GALS.	2.00
73/75-306	47.9 GPM	167.7 GALS.	2.4 GALS.	2.00
73/75-307	55.9 GPM	195.7 GALS.	2.8 GALS.	2.00
73/75-308	63.8 GPM	223.3 GALS.	3.2 GALS.	2.00
73/75-309	71.8 GPM	251.3 GALS.	3.6 GALS.	2.00
73/75-310	79.8 GPM	279.3 GALS.	4.0 GALS.	2.00

16 & 30 GAL. SYSTEM PUMP CHARACTERISTICS	
WATER SUPPLY LINE (PSI)	MAXIMUM (FT) VERTICAL HEAD
45	34
50	23
55	11
60*	*
PUMP CAPACITY @ MAXIMUM VERTICAL HEAD IS 3.0 GPM	

55 GAL. SYSTEM PUMP CHARACTERISTICS	
WATER SUPPLY LINE (PSI)	MAXIMUM (FT) VERTICAL HEAD
45	34
50	23
55	11
60*	*
PUMP CAPACITY @ MAXIMUM VERTICAL HEAD IS 6.5 GPM	

* CONTACT FACTORY FOR WATER PRESSURE'S 60 PSI AND HIGHER FOR MAXIMUM VERTICAL HEAD.

NOTES:

1) THE BACKFLOW PREVENTER MUST BE LOCATED UPSTREAM FROM THE DETERGENT FEEDER LINE CONNECTION AND "Y" STRAINER. THIS DEVICE SHOULD BE CONTINUOUS PRESSURE TYPE, AND INSTALLED IN ACCORDANCE WITH ALL APPLICABLE PLUMBING CODE REQUIREMENTS.
2) SOLENOID VALVE COIL MUST BE MOUNTED UPRIGHT.
3) WATER CONSUMPTION PER CYCLE BASED ON 1 MINUTE WASH AND 2 MINUTE RINSE (FACTORY SET) WASH CYCLE. TO DETERMINE WATER CONSUMPTION FOR OTHER WASH CYCLES MULTIPLY FLOW RATE (GPM) BY TOTAL OF WASH AND RINSE CYCLE TIME (MINUTES).
4) IT IS RECOMMENDED THAT HOT WATER (MIN. 120°F) BE USED FOR A MORE EFFICIENT WASH CYCLE. HOT WATER TANKS SHOULD BE LOCATED AS CLOSE AS POSSIBLE TO THE UNIT BEING WASHED AND SUFFICIENT PIPING MUST BE PROVIDED SO THE WATER FLOW IS NOT RESTRICTED NOR WATER PRESSURE APPRECIABLY REDUCED.
5) DETERGENT QUANTITY ADJUSTABLE.
6) WATER MAIN SUPPLY LINE PRESSURE:
   45 PSI MINIMUM
   75 PSI MAXIMUM
7) DRAIN LINE TRAP MUST PROVIDE SUFFICIENT WATER COLUMN TO OVERCOME THE INTERNAL STATIC PRESSURE OF THE AIR HANDLING SYSTEM IN WHICH THE MODEL 73/75 IS INSTALLED.
8) ALL PIPE COMPONENTS (VALVES, PRESSURE GAUGE, BACKFLOW PREVENTER) SHOWN ON THIS DRAWING ARE TO BE LOCATED IN PROXIMITY TO MODEL 73/75 UNIT.
9) SIZE WATER SUPPLY LINE PIPE FOR FLOW AND PRESSURE REQUIREMENT SHOWN IN TABLE AND NOTE 5. PIPING BETWEEN COMPONENTS TO MATCH PIPE COMPONENT SIZE IN TABLE.
10) ALL DRAIN PIPE SHOULD ALLOW FOR MAXIMUM AVAILABLE SLOPE (1/4" PER FOOT MINIMUM).
11) HEADERS ARE NOT REQUIRED ON MODEL 73/75-102 THRU MODEL 73/75-110. TWO 3/4" MPT CONNECTIONS ARE PROVIDED FOR THE WASH WATER SUPPLY LINE IN LIEU OF HEADERS.
12) EACH HEADER IS SUPPLIED WITH A CONNECTION POINT FOR A PRESSURE GAUGE.
13) INJECT DETERGENT LINE INTO MAIN WATER LINE AS CLOSE AS POSSIBLE AND UPSTREAM FROM THE MODEL 73/75.
14) PROTECT ALL WASH WATER AND PLUMBING COMPONENTS THAT ARE SUBJECT TO FREEZING.

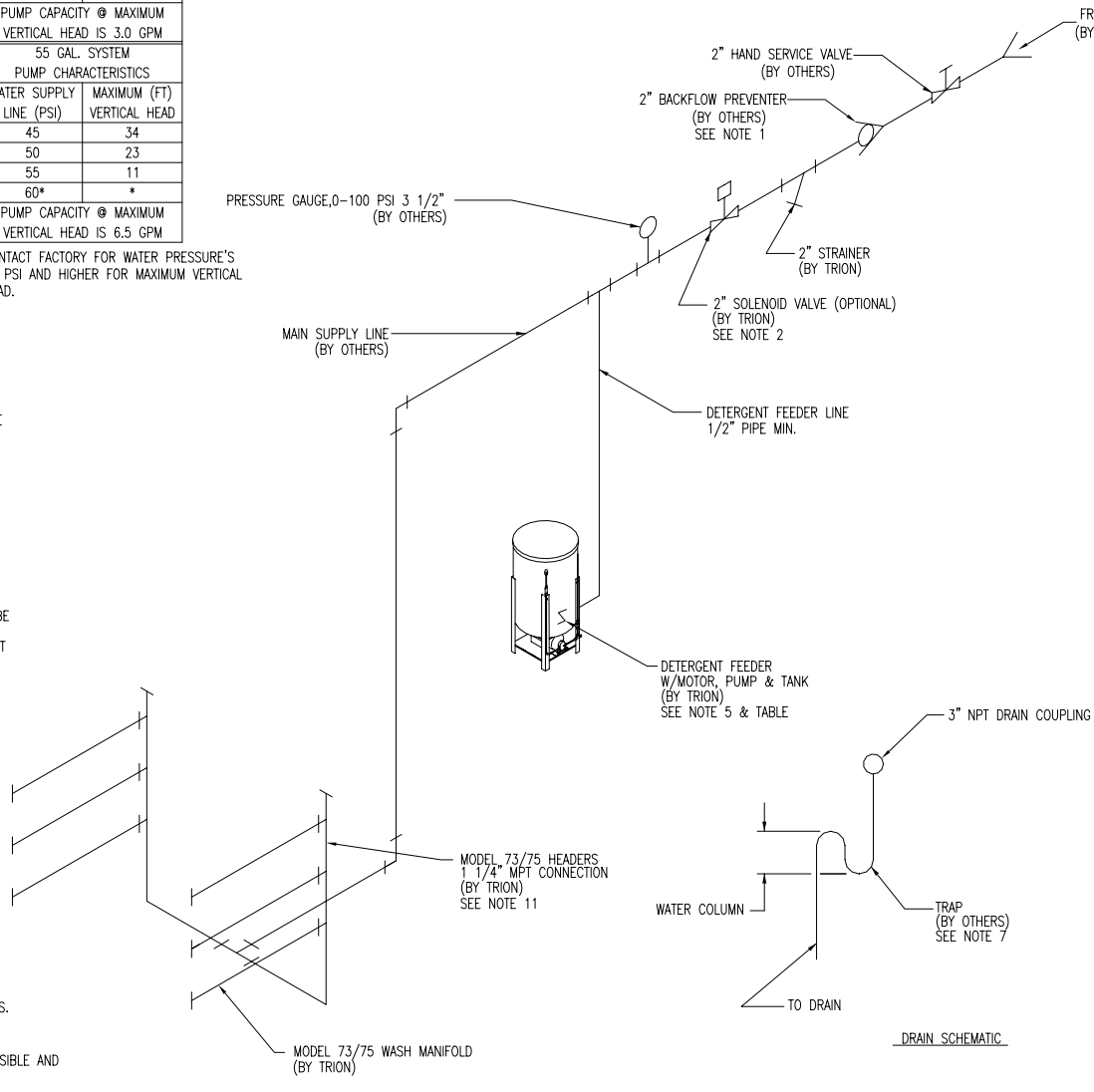
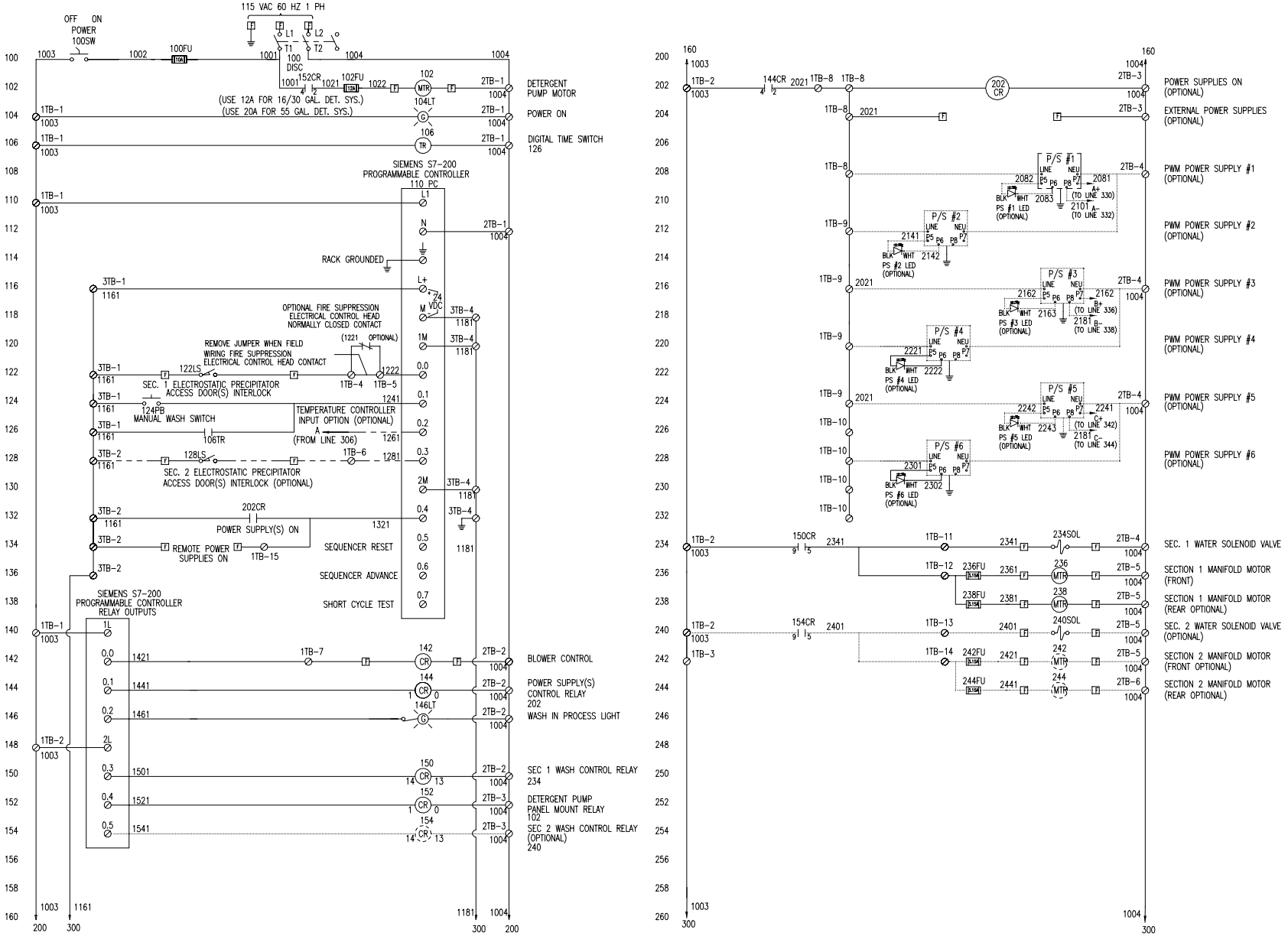


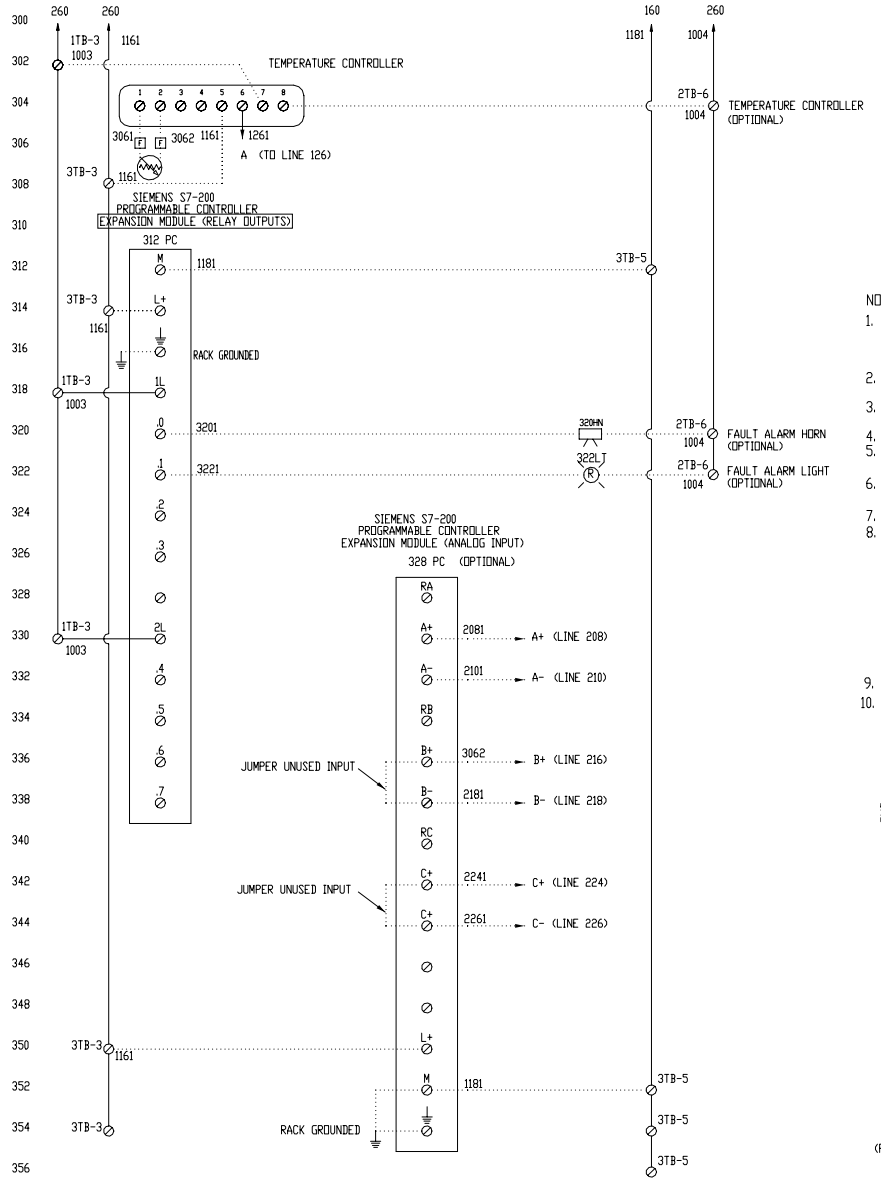
FIGURE 10



ATS CONTROL SCHEMATIC

FIGURE 11

154629-1
REV-E



ATS CONTROL SCHEMATIC

SEQUENCE and TIMING OPERATIONS

(SINGLE SECTION SHOWN)

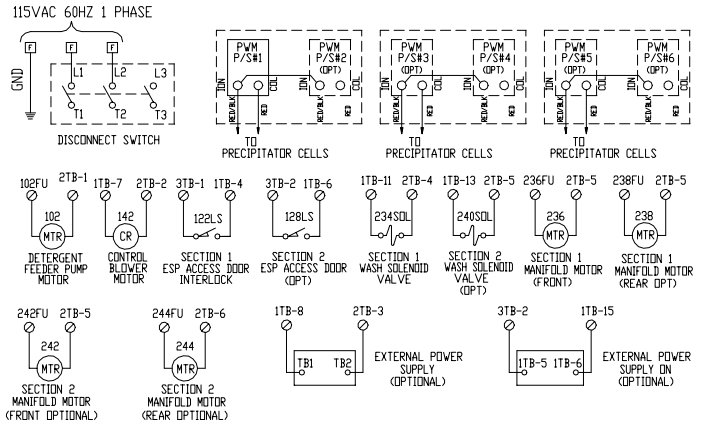
SYSTEMS OPERATIONS		P.C. TIMERS / DEVICES TO ADVANCE TO NEXT STEP	SEQUENCER STEP NO.	OUTPUTS ACTIVATED - X					
				1st RO 0.0 1421	1st RO 0.1 1441	1st RO 0.2 1461	1st RO 0.3 1501	1st RO 0.4 1521	1st RO 0.5 1541
AIR CLEANER ALL SECTIONS		I0.1	0	X	X				
SYSTEM AIR SHUTDOWN	1 min.	T37	1			X			
SEC 1 PRE WASH	30 SEC.	T42	2			X	X		
SEC 1 WASH	1 min.	T38	3			X	X	X	
SEC 1 SOAK	2 min.	T39	4			X			
SEC 1 RINSE	2 min.	T40	5			X	X		
DRIP DRY	4 min.	T41	6			X			
FORCE DRY	60 min.	C1	7	X		X			
RETURN TO STEP 0		M0.3	8						
				BLOWER CONTROL RELAY	POWER PACKS CONTROL RELAY	WASH IN PROCESS LIGHT	SECTION 1 WASH CONTROL RELAY	DETERGENT PUMP RELAY	SECTION 2 WASH CONTROL RELAY (OPTIONAL)

NOTES:

1. HIGH VOLTAGE LEADS BY TRION. STANDARD LENGTH 50 FT. IONIZER RED/BLACK, COLLECTOR RED. RUN LEADS IN SPERATE CONDUITS BETWEEN POWER PACKS AND AIR CLEANER. DO NOT SPLICE LEADS. ISOLATE HIGH VOLTAGE CABLE AWAY FROM CONTROL WIRING.
2. CONTROL ENCLOSURES AND AIR CLEANER MUST BE GROUNDED TO STRUCTURAL STEEL AND EARTH GROUND.
3. ALL PRIMARY INTERCONNECTION WIRING BY CUSTOMER MUST MEET APPLICABLE CODE REQUIREMENTS.
4. EACH MANIFOLD MOTOR REQUIRES 1.7 AMPS AT 115 VAC 60HZ.
5. SOLENOID VALVES REQUIRE 6.0 - 15.4 WATTS AT 115 VAC 60 HZ (SEE SPECIFIC VALVE FOR RATING).
6. 16/30 GALLON DETERGENT PUMP MOTOR REQUIRES 10 AMPS @ 115 VAC/60HZ/1PH 55 GALLON DETERGENT PUMP MOTOR REQUIRES 12 AMPS @ 115 VAC/60HZ/1PH
7. CONTROL POWER REQUIREMENTS 30 AMPS AT 115 VAC 60 HZ.
8. LISTED BELOW IS THE POWER PACK SCHEDULE FOR THE MODEL 70 SERIES UNITS

MODEL 70 SERIES UNIT	NO. PWM POWER SUPPLIES REQ'D.
-102 THRU -105	1
-106 THRU -110 -203 THRU -205	2
-303 THRU -305	3
-206 THRU -210	4
-306 THRU -310	6

9. ⊘ DENOTES TERMINAL CONNECTION IN CONTROL ENCLOSURE.
10. [F] ALL FIELD WIRING PROVIDED BY CUSTOMER.



FIELD WIRING

FIGURE 12

154629-2
REV.-E

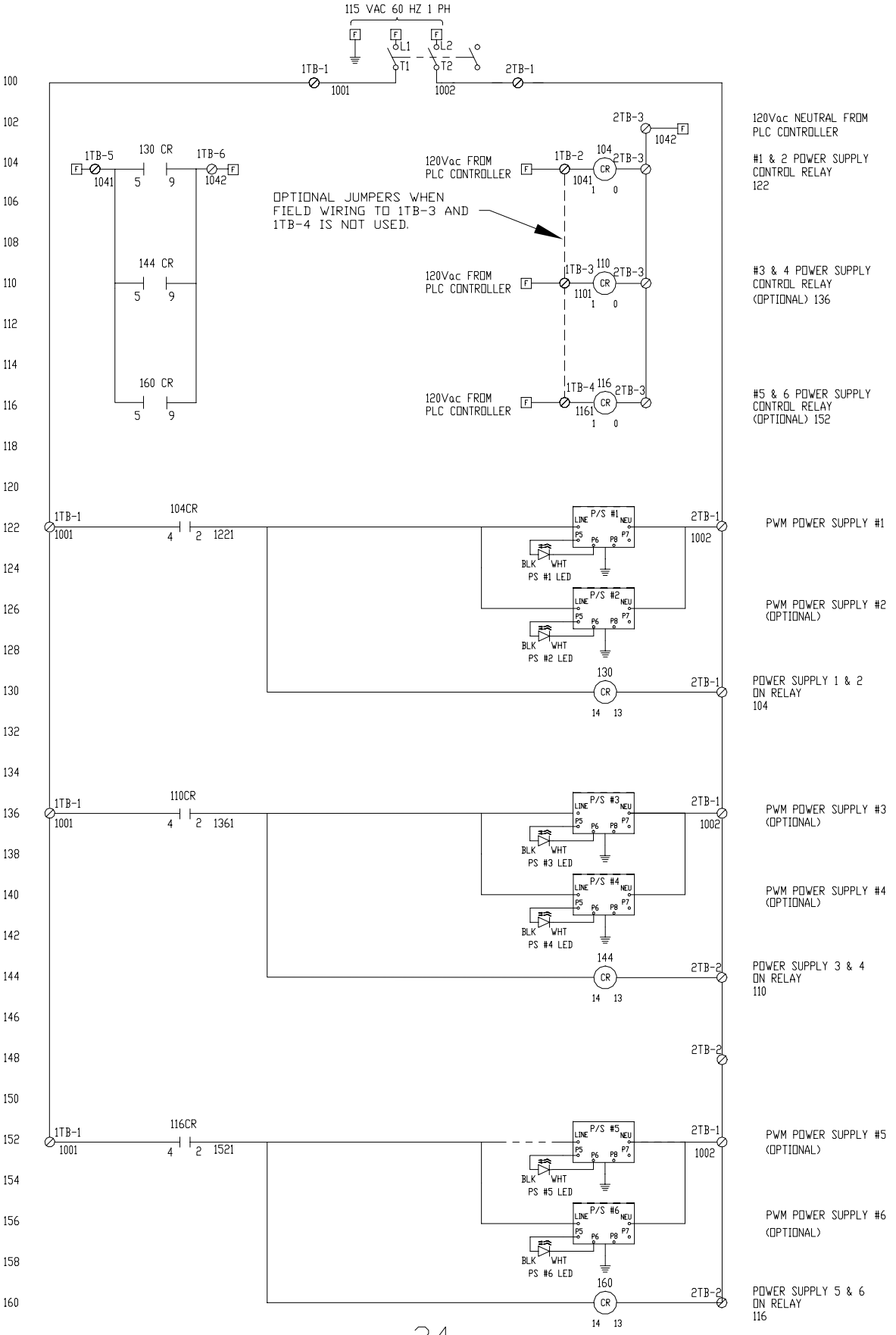
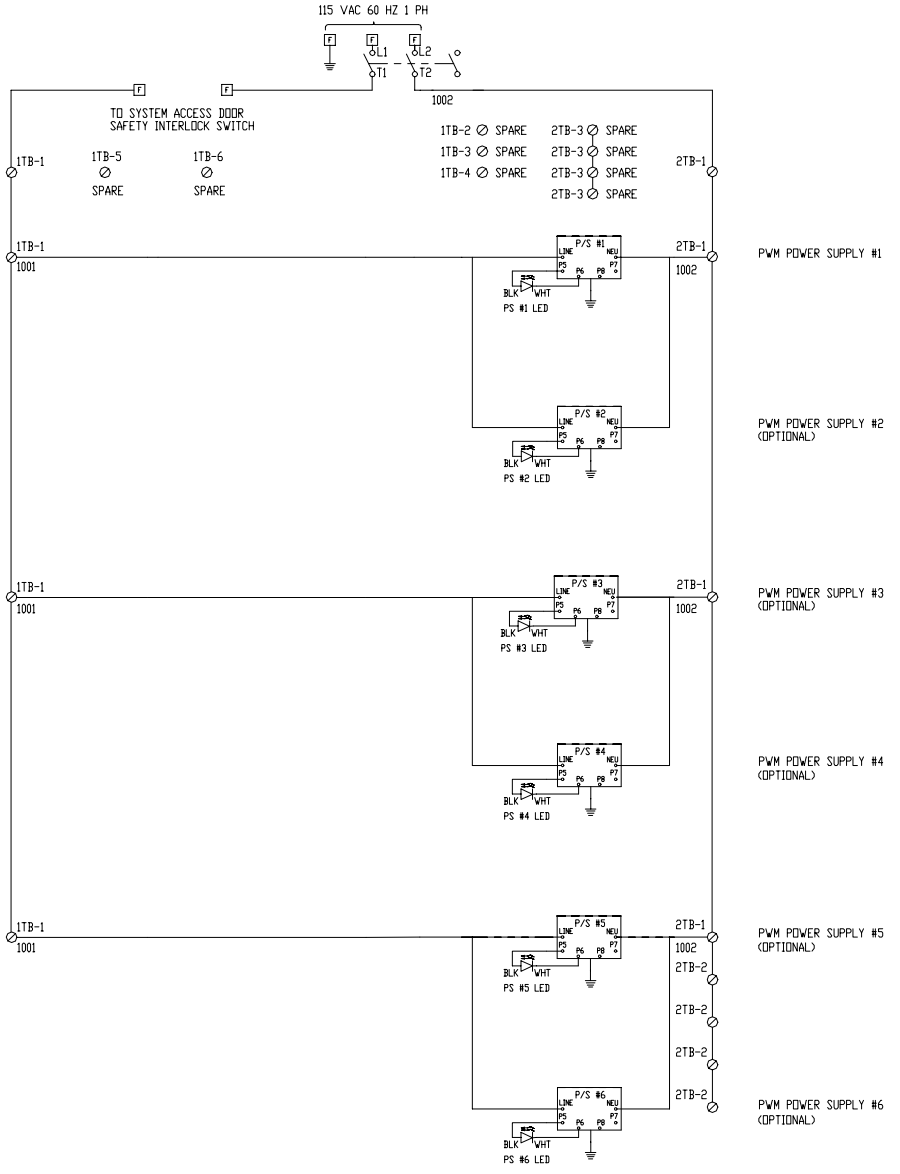
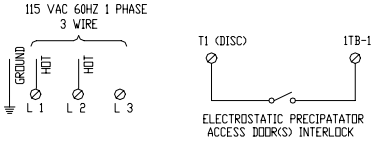
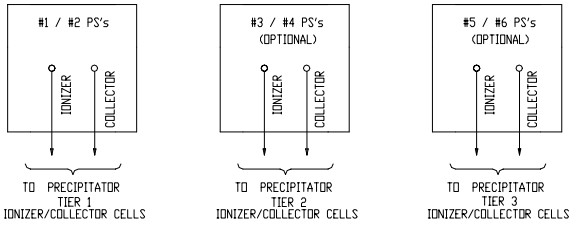


FIGURE 13

ATS REMOTE POWER SUPPLY SCHEMATIC







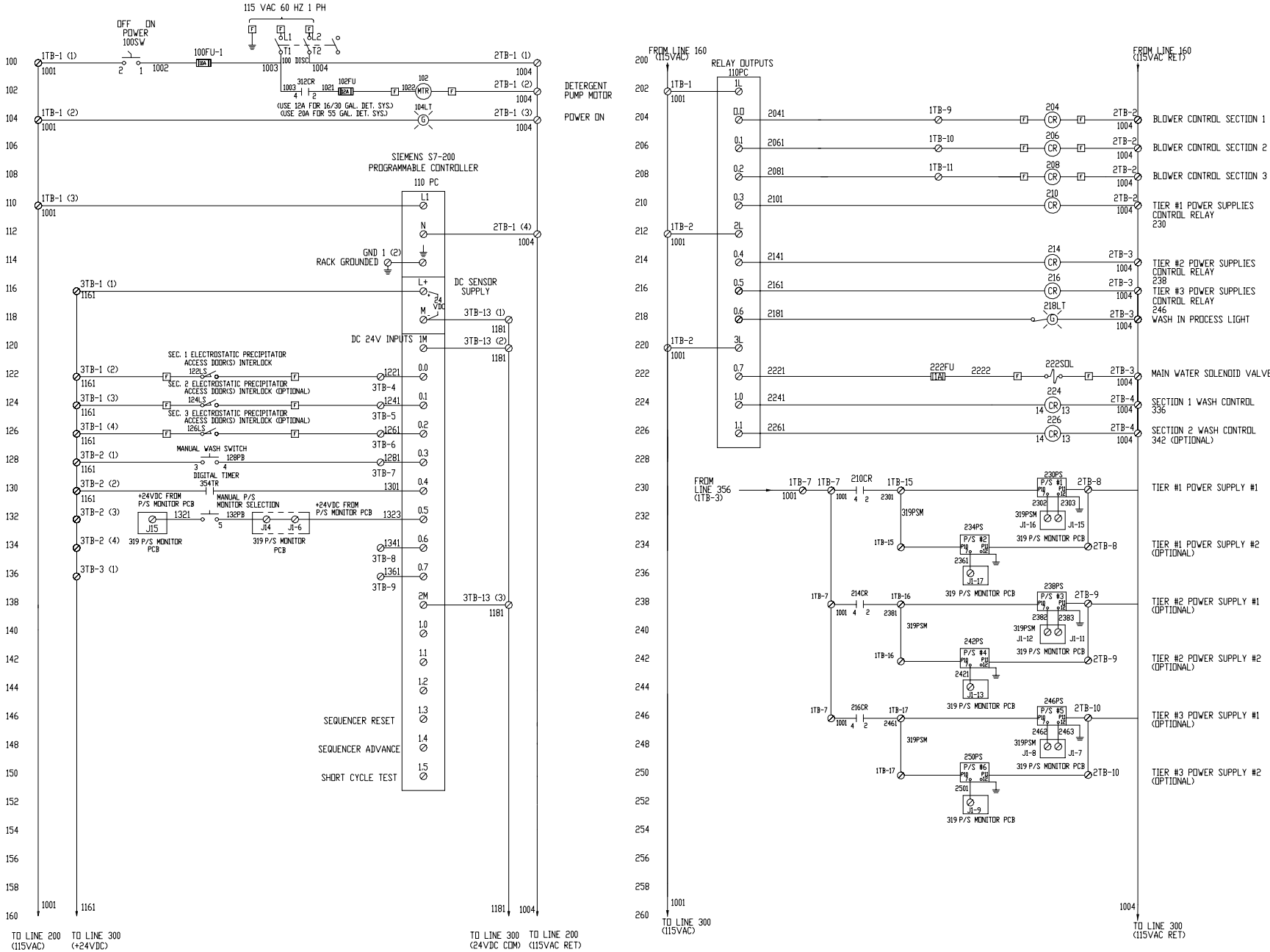
NOTES:

1. HIGH VOLTAGE LEADS BY TRION. STANDARD LENGTH 50 FT. IONIZER RED/BLACK TRACER LEAD, COLLECTOR-RED LEAD. RUN LEADS IN SEPARATE CONDUITS BETWEEN POWER PACKS AND AIR CLEANER. DO NOT SPLICE LEADS.
2. CONTROL ENCLOSURE AND AIR CLEANER MUST BE GROUNDED TO STRUCTURAL STEEL AND EARTH GROUND.
3. ALL PRIMARY INTERCONNECTION WIRING BY CUSTOMER MUST MEET APPLICABLE CODE REQUIREMENTS.
4. CONTROL POWER REQUIREMENTS IS 15 AMPS MINIMUM.
5. ⊘ DENOTES TERMINAL CONNECTION IN REMOTE POWER SUPPLY ENCLOSURE.

ATS REMOTE POWER SUPPLY SCHEMATIC

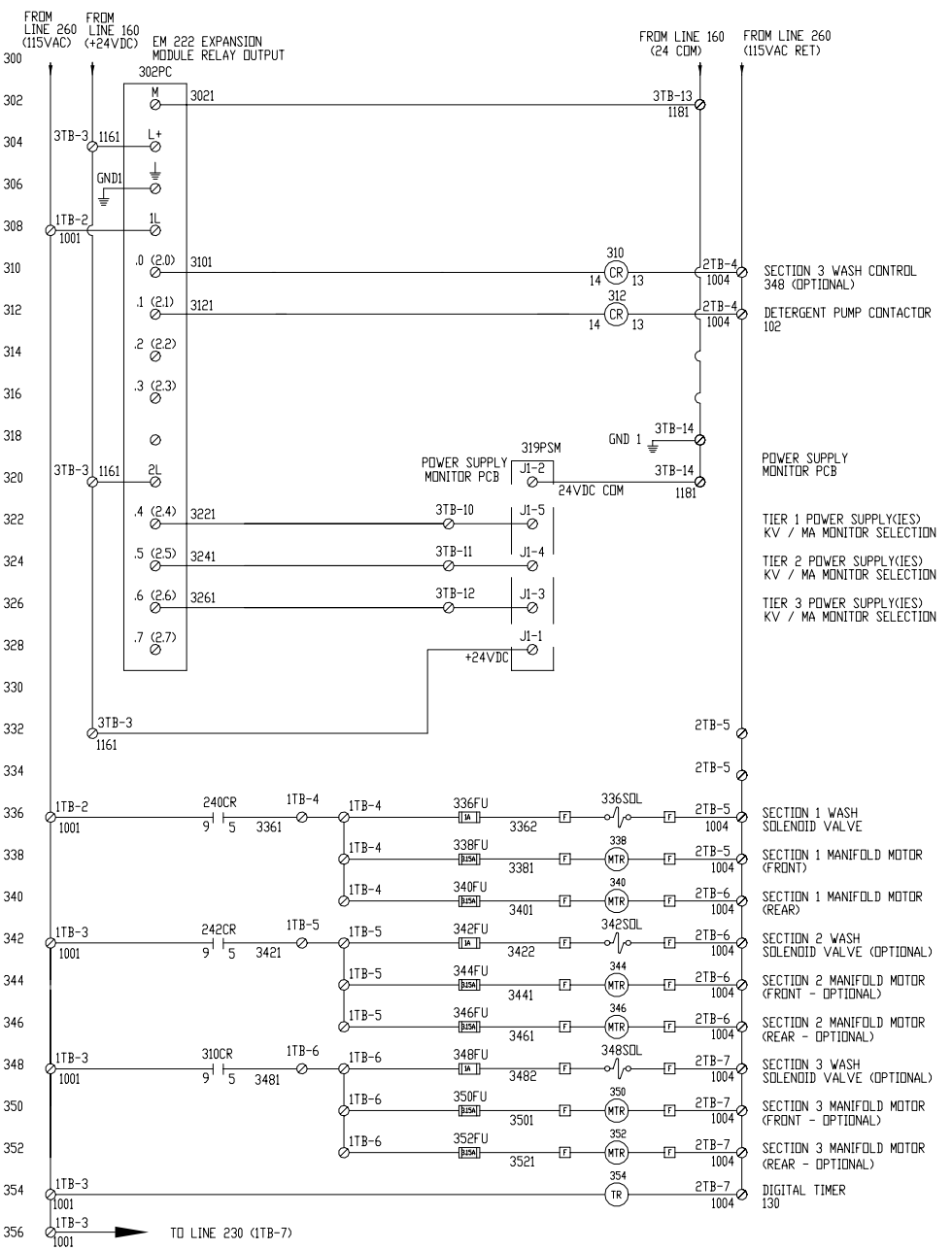
FIELD WIRING

FIGURE 14

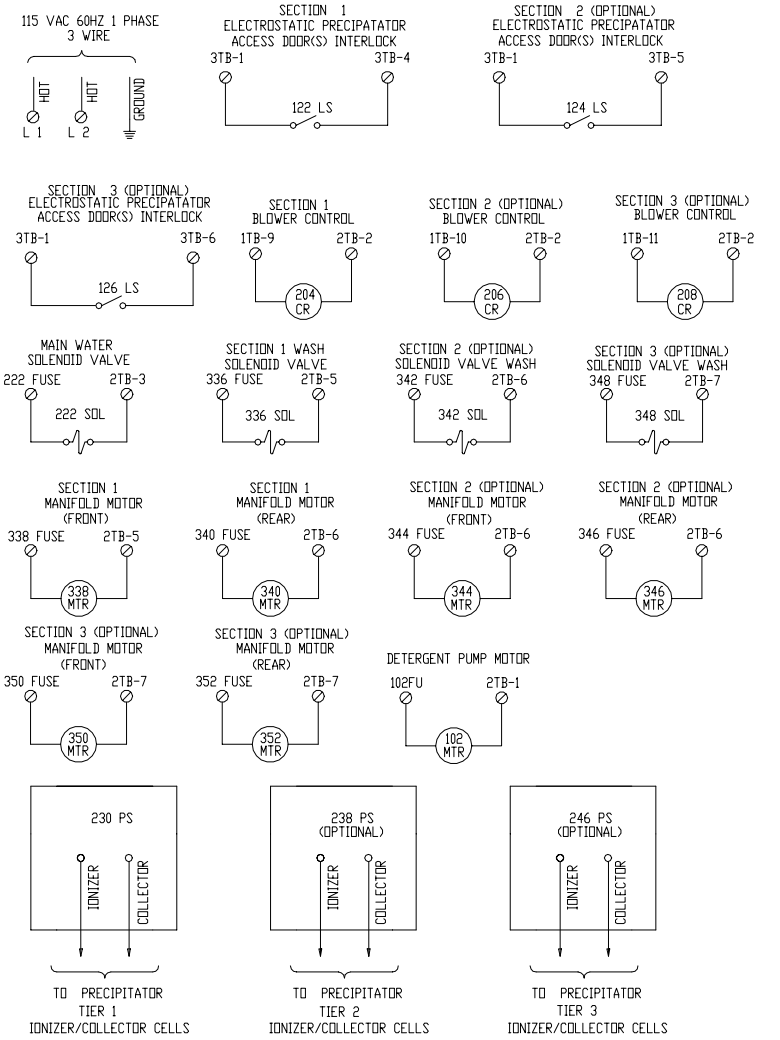


AIR BOSS WASH CONTROL SCHEMATIC FIGURE 15

154636-1
REV.-B



AIR BOSS WASH CONTROL SCHEMATIC



NOTES:

1. HIGH VOLTAGE LEADS BY TRION. STANDARD LENGTH 50 FT. RUN LEADS IN SEPARATE CONDUITS BETWEEN POWER PACKS AND AIR CLEANER. DO NOT SPLICE LEADS.
2. CONTROL ENCLOSURE AND AIR CLEANER MUST BE GROUNDED TO STRUCTURAL STEEL AND EARTH GROUND.
3. ALL PRIMARY INTERCONNECTION WIRING BY CUSTOMER MUST MEET APPLICABLE CODE REQUIREMENTS.
4. EACH MANIFOLD MOTOR REQUIRES 1.7 AMPS AT 115 VAC 60HZ.
5. MAIN WATER AND SECTION SOLENOID VALVES REQUIRES 6 to 15.4 WATTS AT 115 VAC 60HZ. (SEE SPECIFIC VALVE FOR RATING)
6. 16/30 GALLON DETERGENT PUMP MOTOR REQUIRES 12 AMPS AT 115VAC, 60HZ, 1PH. 55 GALLON DETERGENT PUMP MOTOR REQUIRES 20 AMPS AT 115VAC, 60HZ, 1PH.
7. CONTROL POWER REQUIREMENTS IS 30 AMPS MINIMUM.
8. ⊘ DENOTES TERMINAL CONNECTION (1TB,2TB & 3TB) IN WASH CONTROL ENCLOSURE.

FIELD WIRING FIGURE 16

154636-2
REV.-B

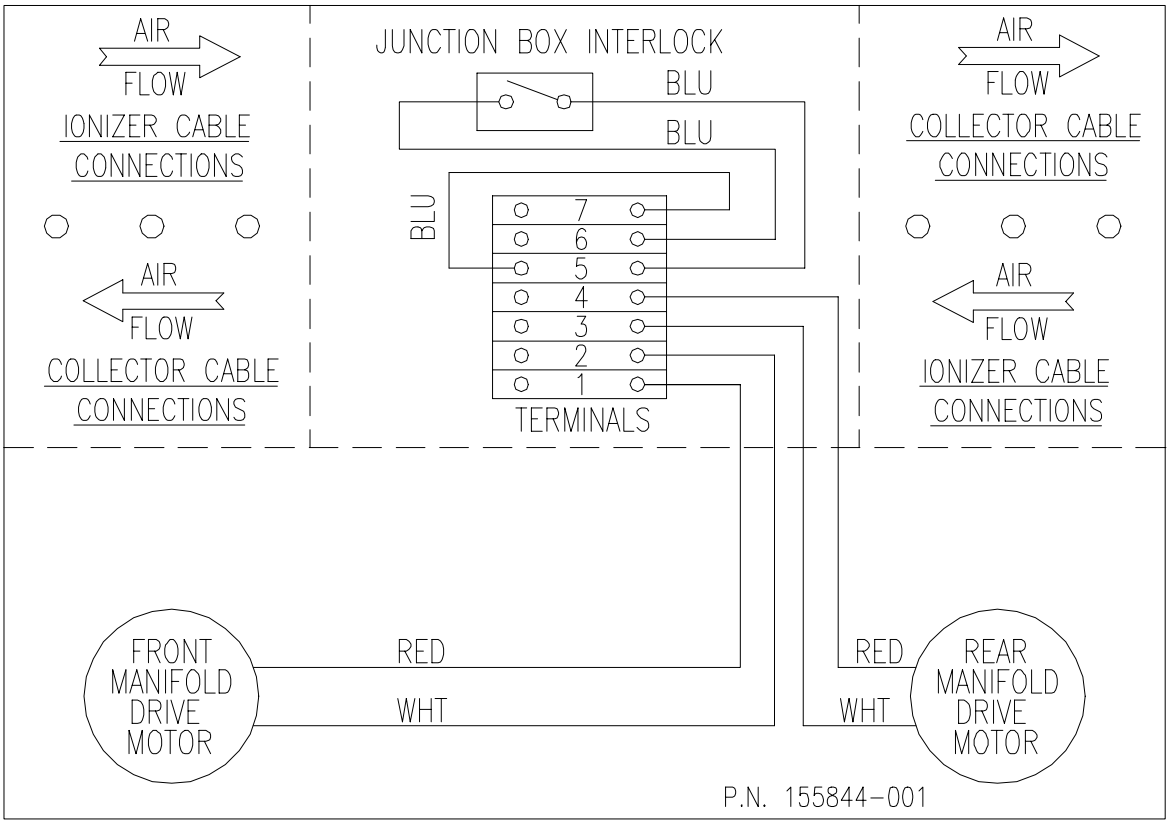
STANDARD SINGLE SECTION SEQUENCE AND TIMING OPERATIONS

SYSTEMS OPERATIONS		P.C. TIMERS / DEVICES TO ADVANCE TO NEXT STEP	SEQUENCER STEP NO.	OUTPUTS ACTIVATED - X																	
				1st RO 0.0 2041	1st RO 0.1 2061	1st RO 0.2 2081	1st RO 0.3 2101	1st RO 0.4 2181	1st RO 0.5 2261	1st RO 0.6 2341	1st RO 0.7 2381	1st RO 1.0 2401	1st RO 1.1 2421	2nd RO 2.0 3101	2nd RO 2.1 3121	3rd RO 2.2	4th RO 2.3	5th RO 2.4 3221	6th RO 2.1 3241	7th RO 2.1 3261	7th RO 2.1 3261
AIR CLEANER ALL SECTIONS		I0.1	0	X			X														
SYSTEM AIR SHUTDOWN	1 min.	T37	1							X											
SEC 1 PREWASH	30 SEC.	T43	2							X	X	X						SCROLLING WHEN P/S's ON			
SEC 1 WASH	1 min.	T38	3							X	X	X			X			SCROLLING WHEN P/S's ON			
SEC 1 SOAK	2 min.	T39	4							X								SCROLLING WHEN P/S's ON			
SEC 1 RINSE	2 min.	T40	5							X	X	X						SCROLLING WHEN P/S's ON			
DRIP DRY	4 min.	T41	6							X								SCROLLING WHEN P/S's ON			
FORCE DRY	60 min.	C1	7	X						X								SCROLLING WHEN P/S's ON			
RETURN TO STEP 0		M0.3	8																		

SECTION 1 BLOWER CONTROL RELAY
SECTION 2 BLOWER CONTROL RELAY
SECTION 3 BLOWER CONTROL RELAY
SECTION 1 POWER PACKS CONTROL RELAY
SECTION 2 POWER PACKS CONTROL RELAY
SECTION 3 POWER PACKS CONTROL RELAY
WASH IN PROCESS LIGHT
MAIN WATER SOLENOID VALVE
SECTION 1 WASH CONTROL RELAY
SECTION 2 WASH CONTROL RELAY
SECTION 3 WASH CONTROL RELAY
DETERGENT PUMP RELAY
UNIT RUNNING
UNIT IN WASH
TIER 1 POWER SUPPLIES MONITOR SEL.
TIER 1 POWER SUPPLIES MONITOR SEL.
TIER 1 POWER SUPPLIES MONITOR SEL.
UNIT OUT OF WASH

FIGURE 17

154636-3
REV.-B



JUNCTION BOX WIRING
FIGURE 18