

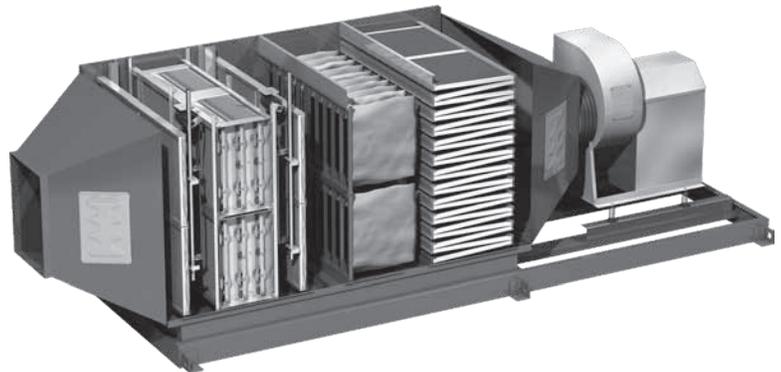
Installation, Operation and Maintenance Manual

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Grease Grabber™ Power Play

The Greenheck Grease Grabber™ Power Play is a pre-engineered electrostatic precipitator type filtration pollution control unit with integral exhaust fan (available without exhaust fan as an option). The unit is designed to remove grease and smoke particles as well as odor molecules from the kitchen exhaust airstream. This installation manual covers procedures for receiving, installing, and maintaining the filtered section of the unit.

For additional instructions and maintenance information on the integral exhaust fan, when applicable, refer to the fan nameplate to determine model type and visit www.greenheck.com to download the corresponding manual.



General Safety Information

Only qualified personnel should install this system. Personnel should have a clear understanding of these instructions and should be aware of general safety precautions. Improper installation can result in electric shock, possible injury due to coming in contact with moving parts, as well as other potential hazards. Other considerations may be required if high winds or seismic activity are present. If more information is needed, contact a licensed professional engineer before moving forward.

DANGER

Always disconnect power before working on or near this equipment. Lock and tag the disconnect switch or breaker to prevent accidental power up.

CAUTION

When servicing the fan, motor may be hot enough to cause pain or injury. Allow motor to cool before servicing.

CAUTION

Do not install this equipment in explosive atmospheres.

- Follow all local electrical and safety codes, as well as the National Electrical Code (NEC), the National Fire Protection Agency (NFPA), where applicable. Follow the Canadian Electric Code (CEC) in Canada.
- The rotation of the fan wheel is critical. It must be free to rotate without striking or rubbing any stationary objects.
- Fan motor must be securely and adequately grounded.
- Do not spin fan wheel faster than maximum cataloged fan rpm. Adjustments to fan speed significantly effects motor load. If the fan RPM is changed, the motor current should be checked to make sure it is not exceeding the motor nameplate amps.
- Do not allow the power cable to kink or come in contact with oil, grease, hot surfaces or chemicals. Replace cord immediately if damaged.
- Verify that the power source is compatible with the equipment.
- Never open access doors to a duct while the fan is running.
- The precipitator contains safety electrical interlock switches at all maintenance access doors. Do not attempt to defeat these interlocks.

Receiving

Upon receiving the product check to make sure all items are accounted for by referencing the packing list ensuring all items were received. Inspect each crate for shipping damage before accepting delivery. Notify the carrier if any damage is noticed. The carrier will make notification on the delivery receipt acknowledging any damage to the product. All damage should be noted on all the copies of the bill of lading which is countersigned by the delivering carrier. A Carrier Inspection Report should be filled out by the carrier upon arrival and filed with the Traffic Department. If damaged upon arrival, file claim with carrier. Any physical damage to the unit after acceptance is not the responsibility of Greenheck Fan Corporation.

Unpacking

Verify that all required parts and the correct quantity of each item have been received. If any items are missing, report shortages to your local representative to arrange for obtaining missing parts. Sometimes it is not possible that all items for the unit be shipped together due to availability of transportation and truck space. Confirmation of shipment(s) must be limited to only items on the packing list. Filters and carbon panels are shipped on separate skids in their original packaging. Do not remove factory packaging or install filters until just prior to commissioning. Remove all other shipping/packing materials including fan tie down straps.

Handling

Units are to be rigged and moved by the lifting brackets provided or by the skid when a forklift is used. Location of brackets varies by model and size. Handle in such a manner as to keep from scratching or chipping the coating. Damaged finish may reduce ability of unit to resist corrosion.

Storage

Units are protected against damage during shipment. If the unit cannot be installed and operated immediately, precautions need to be taken to prevent deterioration of the unit during storage. The user assumes responsibility of the unit and accessories while in storage. The manufacturer will not be responsible for damage during storage. These suggestions are provided solely as a convenience to the user.

INDOOR

The ideal environment for the storage of units and accessories is indoors, above grade, in a low humidity atmosphere which is sealed to prevent the entry of blowing dust, rain, or snow. Temperatures should be evenly maintained between 30°F (-1°C) and 110°F (43°C) (wide temperature swings may cause condensation and “sweating” of metal parts). All accessories must be stored indoors in a clean, dry atmosphere.

Remove any accumulations of dirt, water, ice, or snow and wipe dry before moving to indoor storage. To

avoid “sweating” of metal parts allow cold parts to reach room temperature. To dry parts and packages use a portable electric heater to get rid of any moisture build up. Leave coverings loose to permit air circulation and to allow for periodic inspection.

OUTDOOR

Units designed for outdoor applications may be stored outdoors, if absolutely necessary. Roads or aisles for portable cranes and hauling equipment are needed.

The unit should be placed on a level surface to prevent water from leaking into it. The unit should be elevated on an adequate number of wooden blocks so that it is above water and snow levels and has enough blocking to prevent it from settling into soft ground. Locate parts far enough apart to permit air circulation, sunlight, and space for periodic inspection. To minimize water accumulation, place all unit parts on blocking supports so that rain water will run off.

Do not cover parts with plastic film or tarps as these cause condensation of moisture from the air passing through heating and cooling cycles.

Inspection and Maintenance during Storage

While in storage, inspect equipment once per month. Keep a record of inspection and maintenance performed.

If moisture or dirt accumulations are found on parts, the source should be located and eliminated. At each inspection, rotate the fan wheel by hand ten to fifteen revolutions to distribute lubricant on motor. Every three months, the fan motor should be energized. If paint deterioration begins, consideration should be given to touch-up or repainting. Fans with special coatings may require special techniques for touch-up or repair.

Machined parts coated with rust preventive should be restored to good condition promptly if signs of rust occur. Immediately remove the original rust preventive coating with petroleum solvent and clean with lint-free cloths. Polish any remaining rust from surface with crocus cloth or fine emery paper and oil. Do not destroy the continuity of the surfaces. Wipe thoroughly clean with Tectyl® 506 (Ashland Inc.) or the equivalent. For hard to reach internal surfaces or for occasional use, consider using Tectyl® 511M Rust Preventive or WD-40® or the equivalent.

Removing from Storage

As units are removed from storage to be installed in their final location, they should be protected and maintained in a similar fashion, until the equipment goes into operation. Prior to installing the unit and system components, inspect the unit assembly to make sure it is in working order.

1. Check all fasteners, set screws on the fan, wheel, bearings, drive, motor base, and accessories for tightness.
2. Rotate the fan wheel(s), where applicable, by hand and assure no parts are rubbing.

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Grease Grabber™ Power Play System Function

Grease Grabber Power Play is an electrostatic precipitator style air filtration unit, with an additional carbon filter module, designed for two specific functions:

- Remove smoke/grease particles from kitchen exhaust.
- Remove odor molecules from kitchen exhaust.

NOTE

Grease Grabber Power Play must be connected to a listed exhaust hood assembly and must be installed in accordance with local building codes, NFPA 96 and NEC.

NOTE

The unit must be installed with a minimum 18 inch clearance to combustible materials and must be installed as part of a listed duct assembly.

An aluminum mesh pre-filter removes large airborne particles from the incoming airstream prior to reaching the ionizer cell. The permanent electrostatic collector section removes grease and smoke particles from the airstream using a high voltage ionizer cell(s). The ionizer imparts a positive charge on the grease and smoke particles as they pass. These particles are then repelled by positively charged plates and collected on negatively charged plates. Upon completion of each cooking day, a wash sequence is initiated for the self-cleaning function of the electrostatic cell via the remote mounted control panel. The aluminum mesh mist eliminator prevents wash water from entering the safety filter and carbon panel sections of the unit. The safety bag filter is intended to protect the carbon panel section if power is lost to the ionizer collector cell.

NOTE

Power Play is designed to remove sub-micron, airborne particulate generated from cooking processes. This system is NOT INTENDED to eliminate regular hood and ductwork cleaning and service. Improper care and maintenance of this system and associated hoods and ductwork may present a fire hazard.

System Components

NOTE

The installation criteria for each of the system components shown below should be considered when selecting a site for install. For further detail on installing the components, refer to the INSTALLATION section on page 4.

Cabinet Assembly

The unit body is shipped on a common mounting rail ready for installation. If the unit was ordered with an exhaust fan, the fan will also be mounted as part of the cabinet assembly. Unless specified at time of order, the cabinet assembly must be mounted indoors and be protected from weather as well as be easily accessible for service personnel. (1) 1½ or 2 inch (depending on unit size) water supply line and (1) 3 inch waste water drain line is required at the unit for the system's wash function.

Safety Filters & Carbon Panels

Filter and ionizer cell quantities for each stage are based on unit size (see table on page 4). A consistent quantity of filters/ionizer cells are provided for each stage of the unit (pre-filter, ionizer cells, mist eliminator, and safety bag filter). Quantity of carbon panels will vary based upon unit exhaust rate. Install filters and carbon panels only when system is ready for start-up.

Filter Quantities

Unit Size	Safety Filter Quantity (2 ft. tall x 2 ft. wide)	Safety Filter Quantity (2 ft. tall x 1 ft. wide)
02-03	1	1
02-04	2	0
02-05	2	1
02-06	3	0
04-03	2	2
04-04	4	0
04-05	4	2
04-06	6	0
04-07	6	2
04-08	8	0
04-09	8	2
06-03	3	3
06-04	6	0
06-05	6	3
06-06	9	0
06-07	9	3
06-08	12	0
06-09	12	3

Remote Mounted Detergent Dispenser

A 55 gallon remote mounted detergent dispenser is included as part of the electrostatic collector self-wash system. Included as part of the 55 gallon dispenser assembly is a solenoid valve, pressure gauge, ball valve, y strainer, and backflow preventer. The detergent dispenser must be mounted indoors on a solid, level foundation, as close to the cabinet assembly as possible, and in a freeze protected location accessible to maintenance personnel. The 1/2 inch line from the detergent dispenser must be connected to the water supply line within 5 feet of the precipitator. Refer to the PLUMBING section for details on plumbing connections.

Remote Mounted System Control Panel and Power Pack (2 pieces)

The system control panel allows the user to interface with the unit and controls operation as well as monitors wash and other functions. The Power Pack contains a power transformer and works in conjunction with the System Control Panel and the unit's high voltage ionizer cells. The System Control Panel should be mounted in an area easily accessible to daily operational staff. The Power Pack should be mounted as close as possible to the System Control Panel and both should be mounted as close to the cabinet assembly as possible. Allow adequate room from the face of the panels for door swing clearance and servicing.

High Voltage Cable

High voltage cable is supplied to connect the ionizer/collector sections of the precipitator to the ionizer and collector terminals in the Power Pack. The red cable (50 ft supplied) is used for the ionizer and the blue cable (50 ft supplied) is used for the collector. Refer to the ELECTRICAL section for details on wiring.

Installation

Rigging/Placing Equipment

1. The unit is furnished with lifting lugs at the four corners and along the length as necessary.
2. Lift into place using all the lifting lugs.
3. Field weight will vary depending upon final selections such as fan type, accessories, etc. Approximate weights are shown in the table below.

Unit Size	Approximate Weight (lbs)	Approximate Weight (kg)
02-03	3100	1409
02-04	3620	1645
02-05	4025	1830
02-06	4280	1945
04-03	4000	1818
04-04	4580	2082
04-05	5200	2364
04-06	5700	2591
04-07	6420	2918
04-08	7080	3218
04-09	7560	3436
06-03	5200	2364
06-04	6140	2791
06-05	6800	3091
06-06	7325	3330
06-07	8275	3761
06-08	8800	4000
06-09	9510	4350

4. The unit can be positioned on a base or curb suitable for this purpose.
5. The unit must be anchored to its base/curb.
6. Alternatively, the unit may be suspended from an adequate overhead structure, using suitable undercarriage or hanging rods (by others). If the unit is suspended by hanging rods, minimum 1/2 inch (12.7 mm) diameter threaded rod is to be used. All hanger brackets/lifting lugs must be used to ensure proper support of the unit. The unit must also be hung level to ensure proper operation.
7. A service clearance of 42 inches must be provided on the access door side of the unit.
8. A minimum 18 inch clearance must be maintained between this unit and any combustible material.



9. The remote mounted detergent dispenser frame mounts to a foundation using the four mounting holes located at the base of the unit. For details on wiring this item, refer to the ELECTRICAL section. For details on plumbing connections, refer to the PLUMBING section.

Duct Connections

Ductwork must conform to the IMC and SMACNA guidelines.

As specified in NFPA 96, Ch. 7.5 (latest edition), exhaust duct systems must be constructed in the following manner; unless otherwise specified by the local authority having jurisdiction (AHJ).

Materials

Ducts shall be constructed of and supported by carbon steel not less than 1.37 mm (0.054 in.) (No. 16 MSG) in thickness or stainless steel not less than 1.09 mm (0.043 in.) (No. 18 MSG) in thickness.

Installation

All seams, joints, penetrations, and duct to hood collar connections shall have a liquid-tight external weld.

An inlet transition is furnished to match the inlet duct size. The inlet transition is furnished with a listed duct access door for inspection and cleaning.

Units intended for indoor mounting are provided with an outlet mounting flange, either at the unit discharge or as part of a factory supplied UL 762 listed exhaust fan. Outlet ductwork from the exhaust fan is required to be per the above mentioned methods unless otherwise specified by the local authority having jurisdiction (AHJ).

NOTE

All water piping exposed to freezing temperatures must to be trace heated and insulated to prevent damage to the unit.

Plumbing

Once all system components are installed, plumbing connections for the system can be made. It is recommended that plumbing connections be done prior to making electrical connections.

From the building, a 1½- or 2-inch (refer to drawings) hot water line is required for connecting the wash system. Recommended water temperature is 140°F at 45 psi pressure. Refer to the chart on this page for information on water and detergent quantity requirements. Install the quarter turn ball valve (provided) at the incoming water source to allow the water to be turned off for servicing. Next, install the strainer (provided), backflow preventer (provided), pressure gauge (provided), and solenoid valve (provided) respectively. Locate these items along the incoming water line in a location convenient for inspection/servicing.

NOTE

For unit sizes 06-08 and 06-09, a minimum 2 inch incoming water service is required.

Unit Size	Wash Cycle Water Flow Rate (gpm)	Wash Cycle Detergent Flow Rate (gpm)
02-03	7.2	.36
02-04	9.6	.48
02-05	12.0	.60
02-06	14.4	.72
04-03	14.4	.72
04-04	19.2	.96
04-05	24.0	1.20
04-06	28.8	1.44
04-07	33.6	1.68
04-08	38.4	1.92
04-09	43.2	2.16
06-03	21.6	1.08
06-04	28.8	1.44
06-05	36.0	1.80
06-06	43.2	2.16
06-07	50.4	2.52
06-08	57.6	2.88
06-09	64.8	3.24

Detergent Dispenser

From the pump located on the base of the detergent dispenser, connect a ½-inch piping connection for the detergent supply to the 1½-inch water supply line. A quarter turn ball valve (by others) can be installed on this line if necessary for servicing. The connection of the ½-inch detergent supply line to the 1½-inch water supply line should be made within 5 feet of the cabinet assembly.

Cabinet Assembly

The unit is supplied with two (2) 1¼- or (2) 1½-inch wash headers located at the top of the cabinet assembly. Connect the water supply line to both of the wash headers at the top of the cabinet. Bring a 3-inch waste water drain piping connection with P trap to the drain pipe on the side of the cabinet assembly. The trap drain line water column for the drain should be sized for the total system resistance plus 1 in. wg.

Electrical

Once all system components are installed plumbing connections for the system can be made. It is recommended that plumbing connections be done prior to making electrical connections.

CAUTION

RISK OF ELECTRIC SHOCK. All wiring to be done by qualified personnel only.

NOTE

All wiring must be done according to the equipment data plate information, NEC (National Electrical Code NFPA 70), and local codes.

NOTE

All wiring must be permanently installed in conduit. Under no circumstances should extension cords be used to connect the source of electrical supply to the equipment.

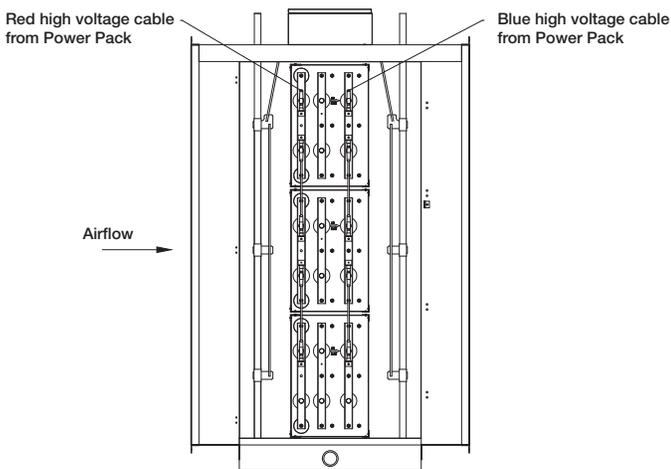
NOTE

The system control panel, power pack, and cabinet assembly housing to a structural steel or earth ground. The detergent pump motor and solenoid valve must also be appropriately grounded.

Electrostatic Cell Wiring

Using the supplied red high voltage cable in a dedicated conduit line, connect the terminal point of the ionizer portion of the cells to the ionizer terminal in the system power pack. Using the supplied blue high voltage cable in a separate dedicated conduit line, connect the terminal point of the collector portion of the cells to the collector terminal in the system power pack (See FIGURE 1).

Figure 1



NOTE

Do not connect the ends of the high voltage cable to the terminal points until all conduits are installed and the high voltage cable is run.

Knockout locations for conduit connections to carry the high voltage cables are located at the top and side of the system power pack and the sides of the terminal box on top of the cabinet assembly. Use a knockout punch to open holes for minimum 1/2-inch conduit. Use caution to keep the system power pack and terminal box interiors free of scraps and other debris.

NOTE

50 feet of each the red and blue high voltage cable are provided with the unit. Under no circumstances should the high voltage cable be spliced or terminated at locations other than the specified terminal points. If longer lengths of high voltage cable are required for installation, consult the manufacturer.

Once conduit is in place and high voltage cable has been run, terminate the high voltage cables at the power pack by stripping approximately 3/8-inch of insulation from each wire and attach a supplied terminal ring to each. Securely attach the terminal ring end of the red cable to the ionizer terminal in the power pack and the terminal ring end of the blue cable to the collector terminal in the power pack (See FIGURE 2). After the connections are made, completely coat the terminal connection with minimum 1/4-inch thick layer of silicone caulk (See FIGURE 3).

Figure 2

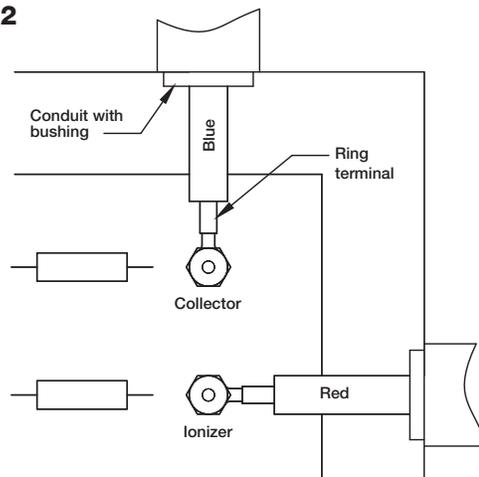
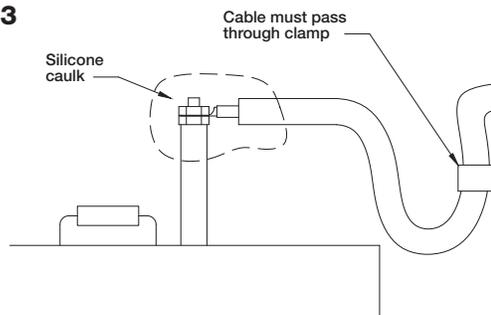
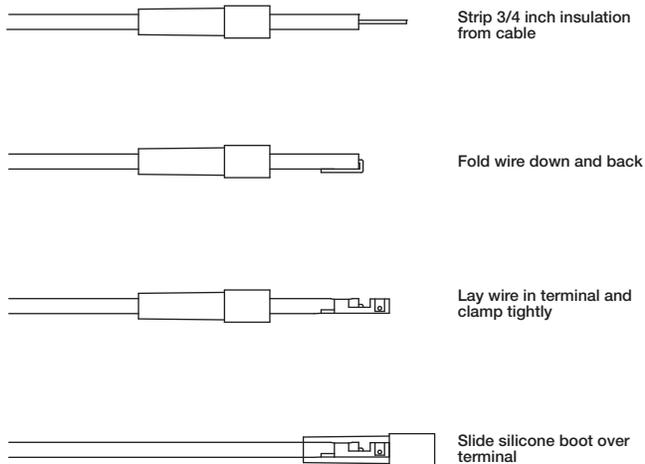


Figure 3



Terminate the other end of the high voltage cables at the system cabinet on the unit housing. Ensure enough cable is run to reach approximately 2 inches past the high voltage spark plug terminal point on the upper most electrostatic collector. Slide the silicone boot over the end of the high voltage cable and strip approximately 3/4 inch of insulation from the end of the cable. Fold the exposed wire down and back over the insulated end and tightly crimp on the supplied terminal connection (See FIGURE 4). Slide the silicone boot back over the terminal end of the cable and firmly press onto the end of the high voltage spark plug terminal point until the connection snaps into place.

Figure 4



Exhaust Fan Motor Wiring

This unit is furnished with a remote-mounted motor starter and an ON/OFF disconnect switch, mounted adjacent to the fan and factory wired to the fan motor. A three phase electrical supply must be field wired to the motor starter, and from the motor starter to the ON/ OFF disconnect switch. Refer to the applicable fan installation manual for detailed instructions on wiring the fan.

System Control Panel Wiring

Run a 120 volt, 30 amp service with 12 gauge wires to the system control panel connecting to terminals L1 (hot), L2 (common) and ground.

Connect the detergent pump, using 14 gauge wire, to the system control panel, terminals 1TB23 and 2TB20. Ensure the detergent pump motor is adequately grounded. Also connect terminals 6TB1, 6TB2, and 6TB3 at the detergent dispenser to terminals 3TB4, 4TB4, and 3TB15, respectively, in the system control panel.

Connect the water supply line solenoid valve, using 14 gauge wire, to the system control panel, terminals 1TB26 and 2TB23. Ensure the solenoid valve is adequately grounded.

Connect the power pack to the system control panel using 14 gauge wire. Wire terminals 1, 2, and 3 in the power pack to terminals 1TB17, 2TB4, and ground, respectively, in the system control panel. Wire terminals 6, 7, 8, and 9 in the power pack to terminals 1TB16, 1TB18, 1TB15, and 1TB19, respectively, in the system control panel.

Connect the junction box on top of the system cabinet to the system control panel using 14 gauge wire. Connect terminals 5TB1 and 5TB2 (access door safety interlock) to terminals 1TB4 and 1TB13, respectively, in the system control panel. Also connect terminals 5TB5, 5TB7 (upstream wash motor), 5TB8, and 5TB10 (downstream wash motor) to terminals 1TB21, 2TB18, 1TB22, and 2TB19, respectively, in the system control panel.

NOTE

The system control panel is furnished with pre-wired circuits that can be interfaced/interlocked with a make-up air unit, remote start/stop, remote enunciator panel, fire suppression system, and/or damper control. Please refer to the plumbing and electrical schematics section for details on wiring these components.

Initial System Start-Up

1. Turn off fan at motor starter disconnect, also turn off Power Pack.
2. Turn on System Control at disconnect switch and push green "Start" button. At this point green normal operation light should be on.
3. Turn on Power Pack, red and clear lights should be on at Power Pack and at System Control. If lights are not on, check to make sure door interlock switch is made. With high voltage on, check meter reading at Power Pack, it should read 12kv and approximately 1mA per linear feet of ionizer-collector cell. Random electrical arcing in the collector cells is normal at initial power up. This will settle down.
4. Turn fan on at disconnect.
5. System should now be in normal run mode.
6. Turn off System Control at disconnect switch. System Control, Power Pack and fan should now be off. Turn on System Control at disconnect switch and push green "Start" button. System control, powerpack, fan (entire system) should now be on.
7. Make sure all water and detergent line manual valves are open, then initiate the wash mode by depressing the black manual wash button, yellow wash in process light should be on. All other lights should be off. See manual for wash sequence. There is a 5 minute fan coast down time prior to wash cycle starting. Check all piping for leaks.

Manual versus Auto Operation

Greenheck recommends the system be set up to operate automatically. This will assure routine wash cycles are completed, which will enhance system reliability. Once automatic operation is set up, the system will start-up, operate and shutdown at the prescheduled times for each day of the week. The wash will initiate automatically, also as prescheduled. If manual operation/washing is required, follow the instructions under “washing” in the operation section.

Automatic Operation

(E-1012 operator Interface is located in top left corner of System Control door).

System Operating Schedule

- Scroll down to day of the week, scroll over to off, press enter to switch day on or off.
- Scroll over to start hour, use numbered keypad to enter hour in military time, press enter.
- Scroll over to start minute, use numbered keypad to enter minutes, press enter.
- Scroll over to stop hour, use numbered keypad to enter hour in military time, press enter.
- Scroll over to stop minute, use numbered keypad to enter minutes, press enter.
- Enter all days of the week Sunday thru Saturday either on or off, and start stop time.

System Wash Schedule

NOTE

The wash cycle start time must be later than the system stop time, preferably within 15 minutes.

- Scroll down to wash start.
- Scroll over to hour, use numbered keypad to enter hour in military time, press enter.
- Scroll over to minute, use numbered keypad to enter minutes, press enter.
- Scroll down to day of week.
- Scroll over to off, press enter to switch day on or off.
- Enter all days of the week Sunday thru Saturday either off or on.

Setting Clock

- Scroll down to clock.
- Scroll over to enabled, press enter to disable clock for setting time.
- Scroll down to hour, use numbered keypad to enter hour in military time, press enter.
- Scroll over to minute, use numbered keypad to enter minutes, press enter.
- Scroll over to second, use numbered keypad to enter seconds, press enter.
- Scroll down to month, day and year.

- Enter month using numbered keypad, press enter.
- Scroll over to day, using numbered keypad enter day, press enter.
- Scroll over to year, using numbered keypad enter year, press enter.
- Scroll up to clock.
- Scroll over to disabled; press enter to enable the clock.

Daylight Savings Time

Scroll down to day light savings, scroll down to enabled, press enter to switch enable or disable day light savings time. Start and stop times can then be set once the daylight savings setting has been entered.

Operation

Power to the system is controlled by the disconnect knob in the upper right corner of the control system. The disconnect must be in the ON position for the system to operate. The operation of the Power Play system falls into four main categories:

1. **NORMAL:** System collects smoke and grease particulate from the airstream

NOTE

As a safety precaution, the system will only operate in the NORMAL mode when the access door of the unit is completely closed and the plunger of the safety switch is fully extended through keeper. If the plunger of the safety switch is not fully extended, the green NORMAL light on the control system will illuminate, but the red POWER light and clear HIGH VOLTAGE on the control panel and the red POWER light and clear HIGH VOLTAGE light on the power supply will not illuminate. During operation in the NORMAL mode, depressing the EMERGENCY STOP button will immediately shut down the system. The red light adjacent to the EMERGENCY STOP button will illuminate until the button is released. The system will continue to operate in the NORMAL mode after the EMERGENCY STOP button is released.

Figure 5: NORMAL Mode Indicating Light and Component Status

Indicating Light Status

Control System

- NORMAL (green): On
- POWER SUPPLY (red): On
- POWER SUPPLY (clear): On

Power Supply

Component Status

- System Fan: On
- High Voltage Power Supply: On
- Wash Motors: Off
- Solenoid Valve: Closed
- Detergent Pump Motor: Off

Figure 6: WASH Mode Indicating Light and Component Status

Indicating Light Status

Control System
- WASH (yellow): On

WASH Mode Steps and Component Status

Delay Period (5 min.)

- High Voltage Power Supply: Off
- Wash Motors: Off
- Solenoid Valve: Closed
- Detergent Pump: Off
- Blower: Off

Wash (2 min.)

- High Voltage Power Supply: Off
- Wash Motors: On
- Solenoid Valve: Open
- Detergent Pump: On
- Blower: Off

Soak (2 min.)

- High Voltage Power Supply: Off
- Wash Motors: Off
- Solenoid Valve: Closed
- Detergent Pump: Off
- Blower: Off

Rinse (2 min.)

- High Voltage Power Supply: Off
- Wash Motors: On
- Solenoid Valve: Open
- Detergent Pump: Off
- Blower: Off

Drip Dry (10 min.)

- High Voltage Power Supply: Off
- Wash Motors: Off
- Solenoid Valve: Closed
- Detergent Pump: Off
- Blower: Off

Fan Dry (60 min.)

- High Voltage Power Supply: Off
- Wash Motors: Off
- Solenoid Valve: Closed
- Detergent Pump: Off
- Blower: On

2. **WASH:** System goes through cycles to clean and dry dirty ionizing-collecting cells
3. **RESET:** Returns the system to the NORMAL mode if a WASH cycle is accidentally initiated
4. **SLEEP:** Waiting period after a WASH mode

Washing

Power Play's PLC control is preprogrammed to manually initiate and cycle through the wash, rinse, dry and system standby steps, as described below. To initiate a wash manually, with the system in the NORMAL mode, depress the WASH push-button. The WASH mode consists of 6 steps. FIGURE 6 describes the indicating light and system component status while operating in the WASH mode. After the WASH/FAN DRY cycle is completed, the system is programmed to shut down and manual start next morning. As indicated in FIGURE 6, there is a 5 minute delay period, after wash initiation, before the wash process begins. If the WASH cycle is accidentally initiated, the operator may reset the system during the 5 minute delay period, and the system will return to NORMAL operation. If the system is reset after the 5 minute delay period, the WASH cycle will be accelerated and the system will return to the NORMAL mode after the WASH cycle is complete.

During operation in the WASH mode, depressing the EMERGENCY STOP button will immediately shut down the system. The red light adjacent to the EMERGENCY STOP button will illuminate until the button is released. The system will continue to operate in the WASH mode after the EMERGENCY STOP button is released.

Reset Mode

On rare occasions, it may be necessary to reset the system. This may be required if a WASH cycle is inadvertently initiated. As indicated previously in FIGURE 6, there is a 5 minute delay period after the WASH button is pushed, before the wash process begins. If the WASH cycle is accidentally initiated, the operator may reset the system during the 5 minute delay period, and the system will return to NORMAL operation. If the system is reset after the 5 minute delay period, the WASH cycle will be accelerated and the system will return to the NORMAL mode after the WASH cycle is complete.

FIGURE 7 on page 10 illustrates the sequence of events that occurs when the system is reset during the different stages of system operation. When the system is in the RESET mode, the white RESET light will illuminate on the control panel. It is recommended that the system be programmed so that system on/off and wash cycles are automatically initiated. This programming will be done by the factory engineer during commissioning.

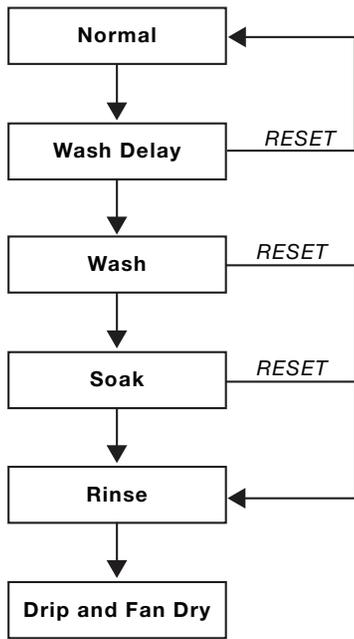


Figure 7 - RESET Mode Sequencing

Detergent Dispenser

General: The detergent dispenser supplies detergent to the wash system during the WASH mode. The detergent dispenser is designed to operate for the entire duration of the WASH mode (2 minutes), and the amount of detergent delivered is regulated by the flow control valve. The detergent reservoir holds approximately 55 gallons of detergent. The DETERGENT LOW light will illuminate when the amount of detergent in the reservoir drops below eight (8) gallons. The reservoir should be refilled as soon as possible after the DETERGENT LOW light comes on, to ensure that detergent is dispensed and to prevent pump damage.

NOTE

The detergent pump motor will not operate while the detergent low light is illuminated.

Adjustments

The liquid level sensor was setup during field inspection and should not require adjustment.

Flow Control Valve Adjustment

The detergent dispenser will be adjusted during commissioning to a detergent-to-wash water ratio of 1:20, meaning one gallon of detergent is used for every 20 gallons of wash water used. In some applications, the amount of detergent used may need to be increased. This may be done by adjusting the flow control valve on the upper left front of the detergent dispenser.

Adjustments to the flow control setting should be done in small increments over a period of several wash cycles. Turning the knob clockwise, increases the amount of detergent used during a wash cycle.

Maintenance

Routine service is required in order to ensure optimum performance and reliability of the system.

- A. **Aluminum Mesh Pre-filters & Post Filters:** These metal filters in the precipitator should be removed and thoroughly cleaned on a minimum two (2) week interval, removing any grease and particulate buildup.
- B. **Ionizing-Collecting Cells:** The ionizing-collecting cells should be inspected for grease build-up on a monthly basis. This monthly inspection should be done after the system has completed a wash cycle. If grease build-up is apparent, remove cells and clean manually. The cells should be removed and manually cleaned every 6 months minimum.
- C. **Safety Bag Filters:** Safety filters change out frequency depends on the volume of cooking. Change filters every 3 months or prior to an increase in resistance that affects hood capture efficiency. See ordering instructions in this manual.

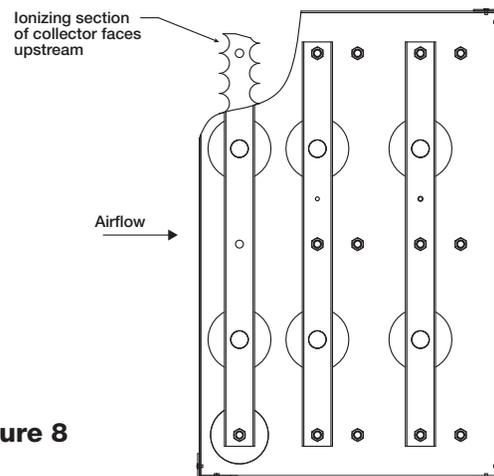


Figure 8

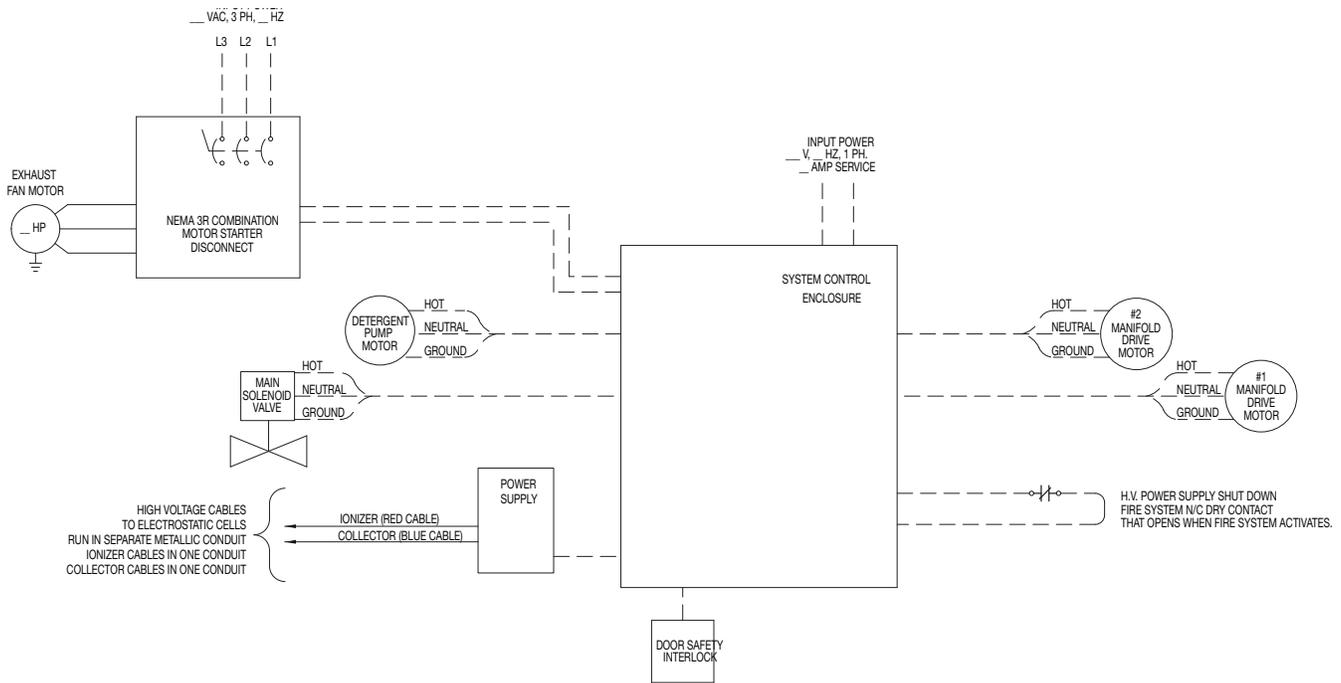
- D. **Activated Carbon Panels:** Carbon panel change out frequency is also dependent on the volume of cooking. Replace when an increase in odor breakthrough is first noticed. Change out should range between 3 and 6 months.
- E. **System Fan/Motor:** Fan, motor and drives should be inspected, serviced and cleaned according to the manufacturer's instructions, annually.
- F. **Wash System Detergent:** Greenheck specifies GLT-33 detergent, manufactured by Green Ladder Technologies. This detergent has been specially formulated for this type equipment, and will help ensure successful operation and optimum performance. GLT-33 should also be used to manually clean mesh filters and ionizing-collecting cells. Substituting other types of detergent may result in decreased system performance, system shutdown or voided limited warranty. See detergent ordering instruction sheet in this manual.

To access the pre- and post-mesh filters and ionizing collecting cells, follow these instructions.

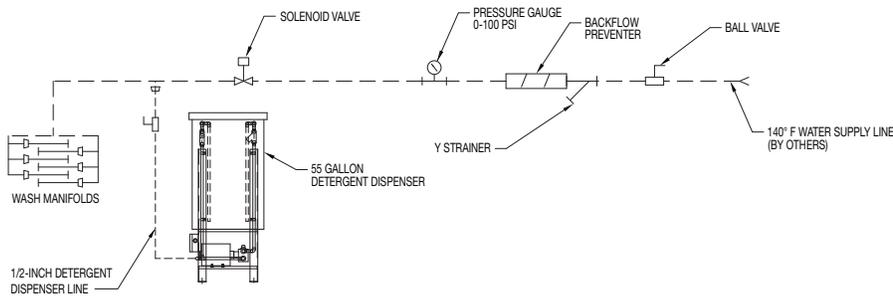
1. Rotate the disconnect knob on the upper right hand corner of the System Control to the OFF position. "Lock Out" the system by flipping the red lever in the handle outward and securing it with a padlock.
2. Open the access door by turning the knob on the red safety switch until the plunger is fully retracted, then unscrew the black knobs to unlatch the door.
3. Slide the metal mesh filters from the tracks
4. Thoroughly clean the metal mesh filters using hot water and a GLT-33 detergent.
5. Reinstall the filters in the tracks.
6. Remove the collector cells retaining brackets using a 7/16-inch wrench.
7. Remove the red and blue high voltage cables and jumper cables by firmly grasping the red boots and pulling them from the high voltage plugs.
8. Carefully remove a cell from the cabinet. Each 2 ft. cell weighs approximately 65 lbs., so use caution when handling. Use care not to bend or dent the collecting plates or framework.
9. Carefully inspect the cell for bent collector plates. Bent plates may be carefully straightened by hand, using needle-nose pliers.
10. Inspect the cell for residual grease that was not removed during the wash process. Excessive grease buildup indicates that the cells need to be removed from the cabinet and thoroughly cleaned manually, following the procedures under Ionizing-Collecting Cells in Maintenance.
11. Reinstall the cell to the location from which it was removed. The serrated ionizing blades of the cell must be facing upstream. There is an airflow arrow on the cell end plate.
12. Reconnect the high voltage cables, and cell retaining brackets.
13. Close the access door completely, engage the door latch, and turn the knob on the red safety switch until the plunger is fully extended.

Plumbing and Electrical Schematics

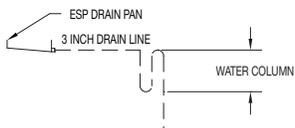
FIELD WIRING DIAGRAM



WASH WATER PLUMBING SCHEMATIC



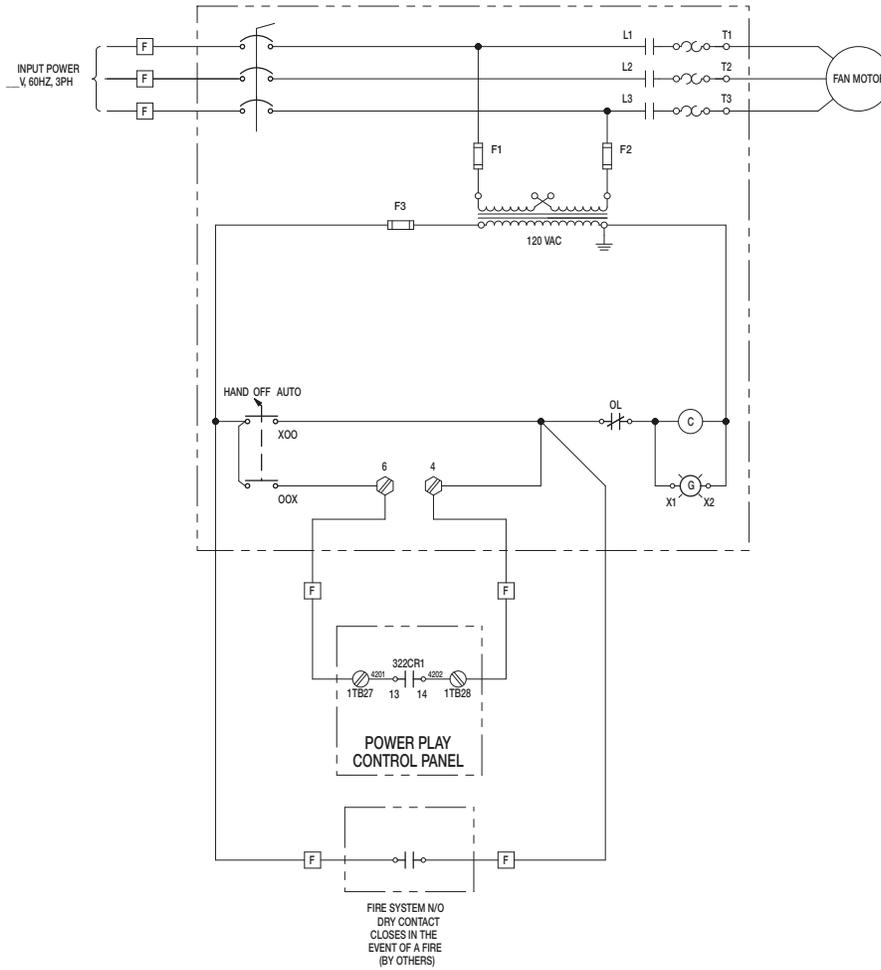
DRAIN LINE PLUMBING SCHEMATIC



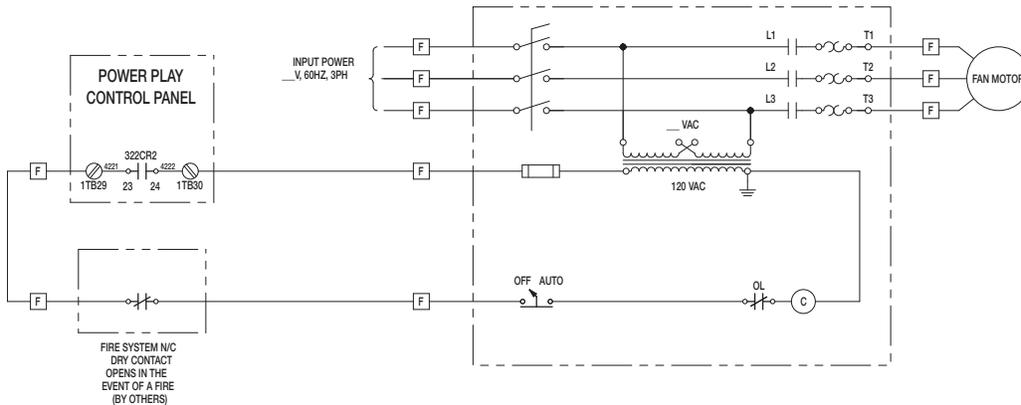
Fan Wiring

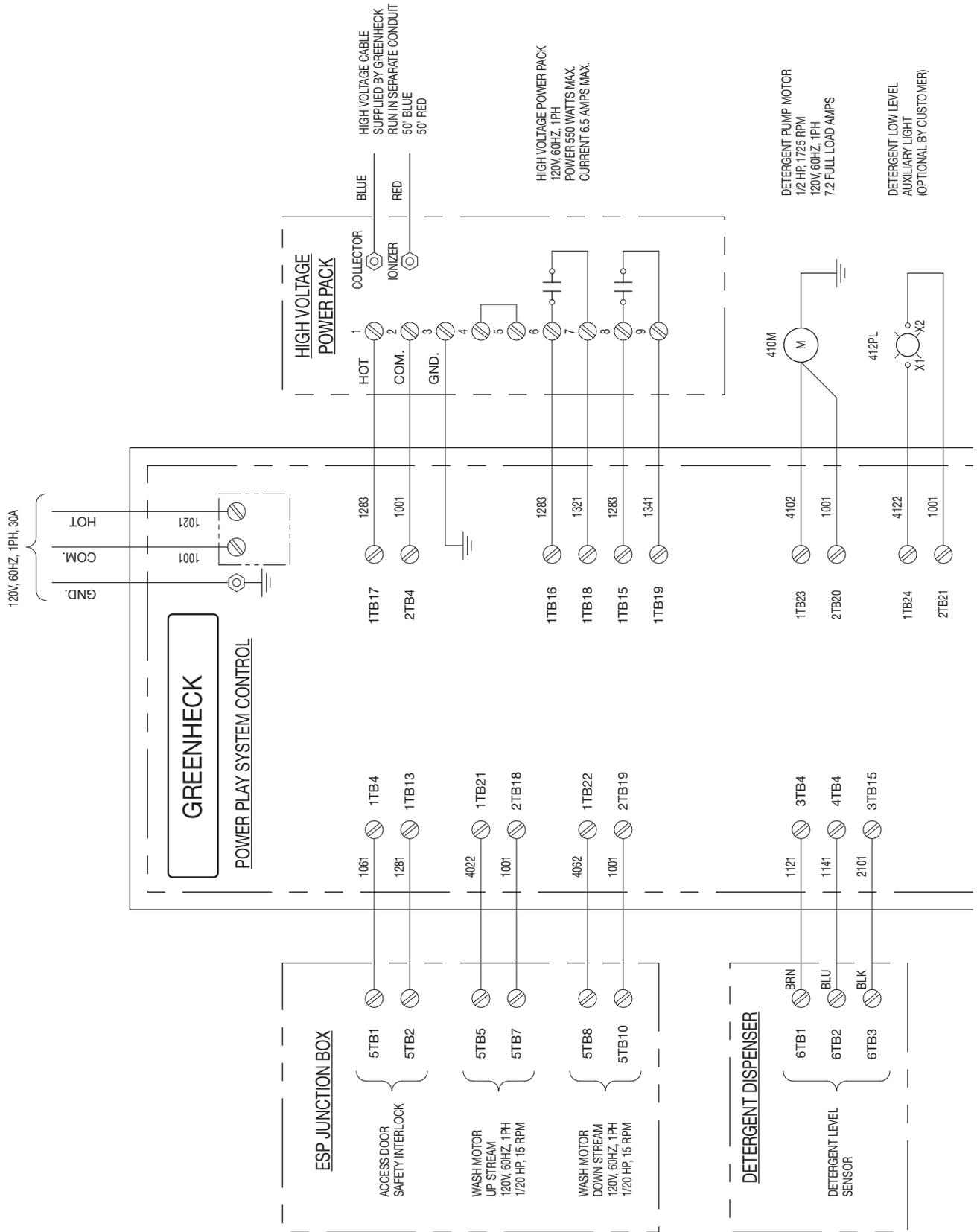
EXHAUST FAN

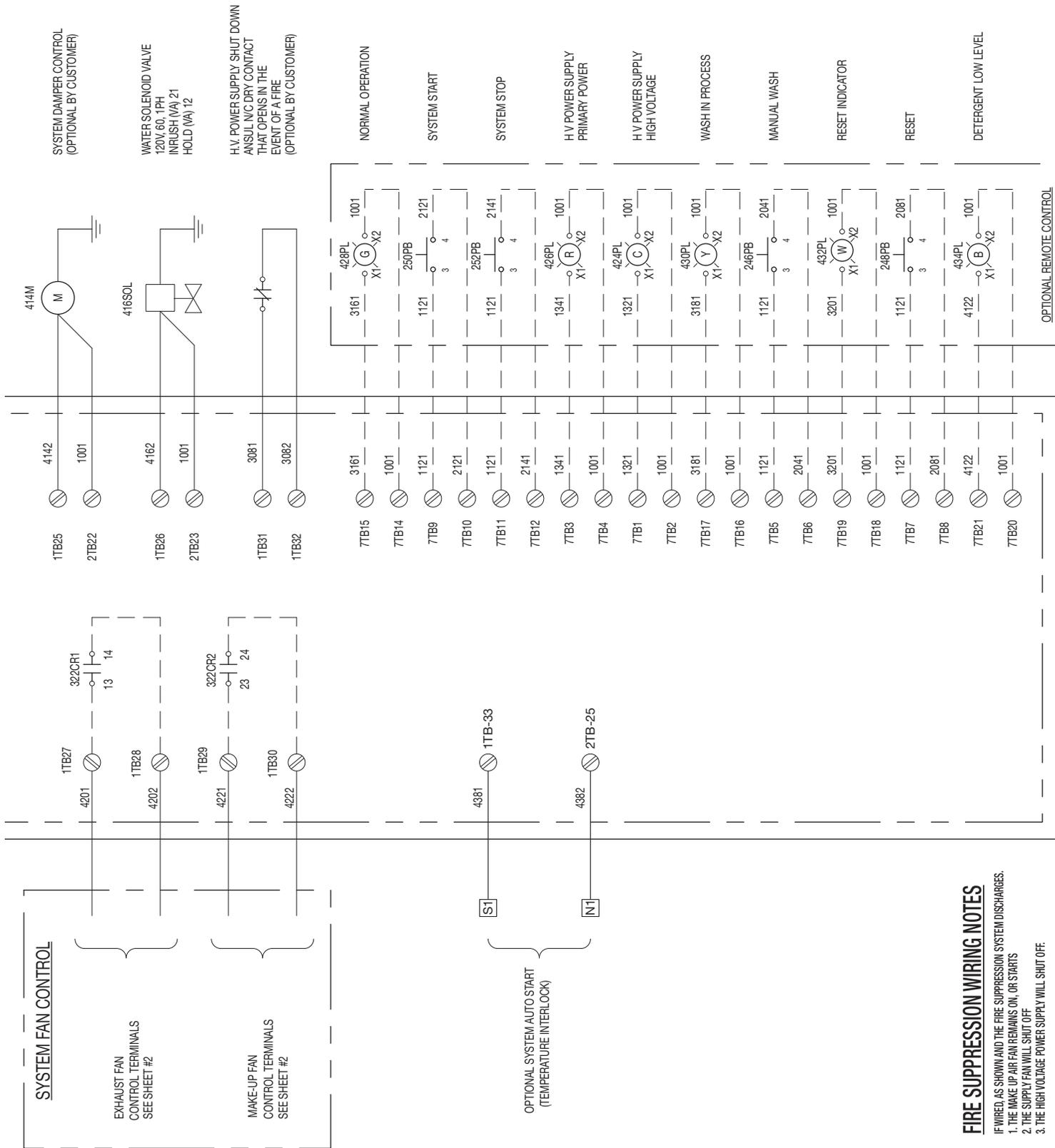
-  DENOTES TERMINAL CONNECTION IN POWER PLAY CONTROL PANEL
-  DENOTES FIELD WIRING



MAKE-UP AIR UNIT (BY OTHERS)







FIRE SUPPRESSION WIRING NOTES

- IF WIRED, AS SHOWN AND THE FIRE SUPPRESSION SYSTEM DISCHARGES.
1. THE MAKE UP AIR FAN REMAINS ON, OR STARTS
 2. THE SUPPLY FAN WILL SHUT OFF
 3. THE HIGH VOLTAGE POWER SUPPLY WILL SHUT OFF.

Maintenance Log

Date _____ Time _____ AM/PM

Notes: _____

Date _____ Time _____ AM/PM

Notes: _____

Date _____ Time _____ AM/PM

Notes: _____

Date _____ Time _____ AM/PM

Notes: _____

Date _____ Time _____ AM/PM

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Date _____ Time _____ AM/PM

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Date _____ Time _____ AM/PM

Notes: _____

Date _____ Time _____ AM/PM

Notes: _____

Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year from the shipment date. Any units or parts which prove defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by Greenheck prove defective during this period, they should be returned to the nearest authorized motor service station. Greenheck will not be responsible for any removal or installation costs.

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

AMCA Publication 410-96, Safety Practices for Users and Installers of Industrial and Commercial Fans, provides additional safety information. This publication can be obtained from AMCA International, Inc. at: www.amca.org.



Phone: (715) 359-6171 • Fax: (715) 355-2399 • E-mail: gfcinfo@greenheck.com • Website: www.greenheck.com