HealthWay® PRODUCTS, Inc.

# Disinfecting Filtration System Series[1]

## OPERATION / INSTALLATION MANUAL
**Series 2000SC Filter Modules**

**MODELS:**

| | |
|---|---|
| **2000SC-120-1a-AL** | **50/60 Hz, 120 VAC, SINGLE PHASE, 355 SERIES FAN** |
| **2000SC-220-1-AL** | **50/60 Hz, 220 VAC, SINGLE PHASE, 355 SERIES FAN** |
| **2000SC-220-3AL** | **50/60 Hz, 230/440 VAC, 3 PHASE, 450 SERIES FAN** |
| **2000SC-120-1b-AL** | **50/60 Hz, 120 VAC, SINGLE PHASE, 450 SERIES FAN** |
| **2000SC-440-3AL** | **50/60 Hz, 230/440 VAC, 3 PHASE, 450 SERIES FAN** |

***SERIES 2000SC DISINFECTING FILTRATION SYSTEM***

[1] US Patent Pending

# OPERATION MANUAL

The following is a history of the **Disinfecting Filtration System** – ("**DFS")**

**Instruction Manual for Model 2000SC (Self-Contained)**

| **Revision** | **Printing** |
|---|---|
| Initial Printing | 11/10 |

**Part Number** MC-010 – Initial Printing 11/10.



**Address and Phone:** HealthWay, Inc., Maple Ave., Pulaski, NY 13142

**Phone No:** 315-298-2904
**Fax No:** 315-298-6992
**Email:** info@healthway.com

## Limitation of Warranty

(hereinafter referred to as "seller") warrants that this product, under **Liability** normal use and service as described in this manual, shall be free from defects in workmanship and in material for a period of twelve (12) months from the date of shipment to the customer. All repair work conducted under warrantee is to be conducted at plant. The buyer will be responsible for shipment of the product to be repaired to. If on site repair work is required, then will send a repair technician at the earliest and the buyer agrees to pay for all travel related expenses. In some cases, (if feasible), if a part needs to be replaced under warranty, then we will ship the part at its own expense, including instructions regarding part replacement. The buyer will perform the part replacement. This limited warranty is subject to the following exclusions:

1) With respect to any repair services rendered, seller warrants that the parts repaired or replaced will be free from defects in workmanship and material, under normal use, for a period of ninety (90) days form the date of shipment to the customer.

2) Seller does not provide any warranty on finished goods manufactured by others. Only the original manufacturer's warranty applies.

3) Unless specifically authorized in a separate writing by seller, seller makes no warranty with respect to, and shall have no liability in connection with, any goods which are incorporated into other products or equipment by the buyer.

The foregoing is IN LIEU OF all other warranties and is subject to the conditions and LIMITATIONS stated herein. NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE OR MERCHANTABILITY IS MADE.

THE EXCLUSIVE REMEDY OF THE USER OR PURCHASER, AND THE LIMIT OF THE LIABILITY OF SELLER FOR ANY AND ALL LOSSES, INJURIES, OR DAMAGES IN CONNECTION WITH THIS PRODUCT (INCLUDING CLAIMS BASED ON CONTRACT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT, OTHERWISE) SHALL BE THE RETURN OF THE PRODUCT TO THE DESIGNATED LOCATION AND THE REFUND OF THE PURCHASE PRICE, OR, AT THE OPTION OF THE SELLER, THE REPAIR OR REPLACEMENT OF THE PRODUCT. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, NO ACTION, REGARDLESS OF FORM, MAY BE BROUGHT AGAINST THE SELLER MORE THAN ONE (1) YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED.

The purchaser and all users are deemed to have accepted the terms of this LIMITATION OF WARRANTY and LIABILITY, which contains the complete and exclusive limited warranty of seller. This LIMITATION OF WARRANTY and LIABILITY may not be amended or modified nor may any of its terms be waived except by a writing signed by an authorized representative of seller.

## *CHAPTER 1 - SYSTEM OVERVIEW*

# FILTER - MODEL 2000SC DESCRIPTION

The filtration system is a high performance filtration system that utilizes award winning patent pending Disinfecting Filtration System technology. **DFS™ technology** electrically enhances a low efficiency, high flow, low pressure drop (0.6" @ 2,100cfm) filter to high efficiency while retaining the low pressure drop and high life advantages of the base filter material. This technology has also been shown to inhibit bacteria growth on the filter.

**The 2000SC Filter unit is available in the following models:**
Model Description:
2000SC-(Voltage)-(Phase)-(Housing Material) (Model w/ Blower(s));
(Voltage) Denotes the fan power requirements.
(Phase)=1, 3 Denotes the fan phases.
Housing is built standard in Aluminum;
Other Housing Material Options:
SS= Stainless Steel
G= galvanized

Refer to page 10 for detailed electrical specification.

| MODEL | POWER REQUIRMENT | FLOW (scfm)* | |
|---|---|---|---|
| | | 60Hz | 50Hz |
| 2000SC-120-1a-AL | 120VAC, 50/60Hz, Single-Phase | 1550 | 1300 |
| 2000SC-220-1-AL | 220VAC, 50/60Hz, Single-Phase | 1550 | 1300 |
| 2000SC-220-3-AL | 208-230VAC, 50/60Hz, 3-Phase** | 2100 | 1775 |
| 2000SC-120-1b-AL | 120VAC, 50/60Hz, Single-Phase | 2100 | 1775 |
| 2000SC-440-3-AL | 440-460VAC, 50/60Hz, 3-Phase | 2100 | 1775 |

*Nominal Max. Initial Flow – No External Static Pressure, 30% ASHRAE Prefilter
(Ask For Additional Engineering External Static Pressure vs. Flow (scfm) Data.
**208 VAC units will produce ~10% lower flow than listed in table.

**Model 2000SC Single Module Dimensions:**

| Height | Width | Depth |
|---|---|---|
| 26.125" (664mm) | 32.125" (816mm) | 26.25" (667mm) |

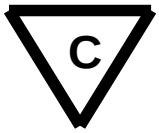
| Model | Weight # lb (kg) | Ship Wt # lb (kg) |
|---|---|---|
| 2000SC-120-1a-AL | 137 (62) | 200 (91) |
| 2000SC-220-1AL | 139(63) | 200(91) |
| 2000SC-220-3AL | 152(69) | 213 (97) |
| 2000SC-120-1b-AL | 152(69) | 213 (97) |
| 2000SC-440-3-AL | 152(69) | 213(97) |

**PLEASE CONFIRM YOUR MODEL NUMBER AND FOLLOW THE INSTRUCTIONS FOR THAT MODEL. THE ELECTRICAL POWER REQUIREMENTS FOR EACH INDIVIDUAL UNIT ARE ON THE DATA PLATE LABEL ADJACENT TO THE ELECTRICAL CONNECTIONS. THESE REQUIRMENTS SUPERCEDE ALL OTHER INFERENCES TO POWER REQUIREMENTS.**

## FILTER- MODELS 2000SC COMPONENTS DESCRIPTION

The filtration system 2000SC integrates the system components into a single, self-contained unit (A). The prefilter (F), V-BANK MAIN filter, and the High Energy Grid are accessible from the service door. The impeller (fan) of the Model 2000SC is controlled by the Main Illuminated Power switch on the filter unit. Series 2000SC filters are also remotely controllable by using the optional REMOTE controller/indicator. Electrical controls are located on the inlet side of the filter unit. They consist of one Illuminated Main Power ON-OFF switch and a Green LED to indicate HVPS power status. These are visible and accessible on the inlet plate of the unit. If the optional HVPS is installed there is a Red Led to indicate HVPS status instead of the Green LED, additionally a separate Reset pushbutton is provided to manually reset the HVPS if needed. The fan inlet screen is located on the back of the unit and provides protection from loose items being drawn into the fan and thus damaging the unit and internal components. A 20” x 20” duct may be connected by using the 16, 10-32 threaded screw holes on the inlet side. Supply from Models 2000SC can be connected by attaching a standard 22” x 22” hard duct to the 16, 10-32 threaded mounting screw holes on the filter unit.

---

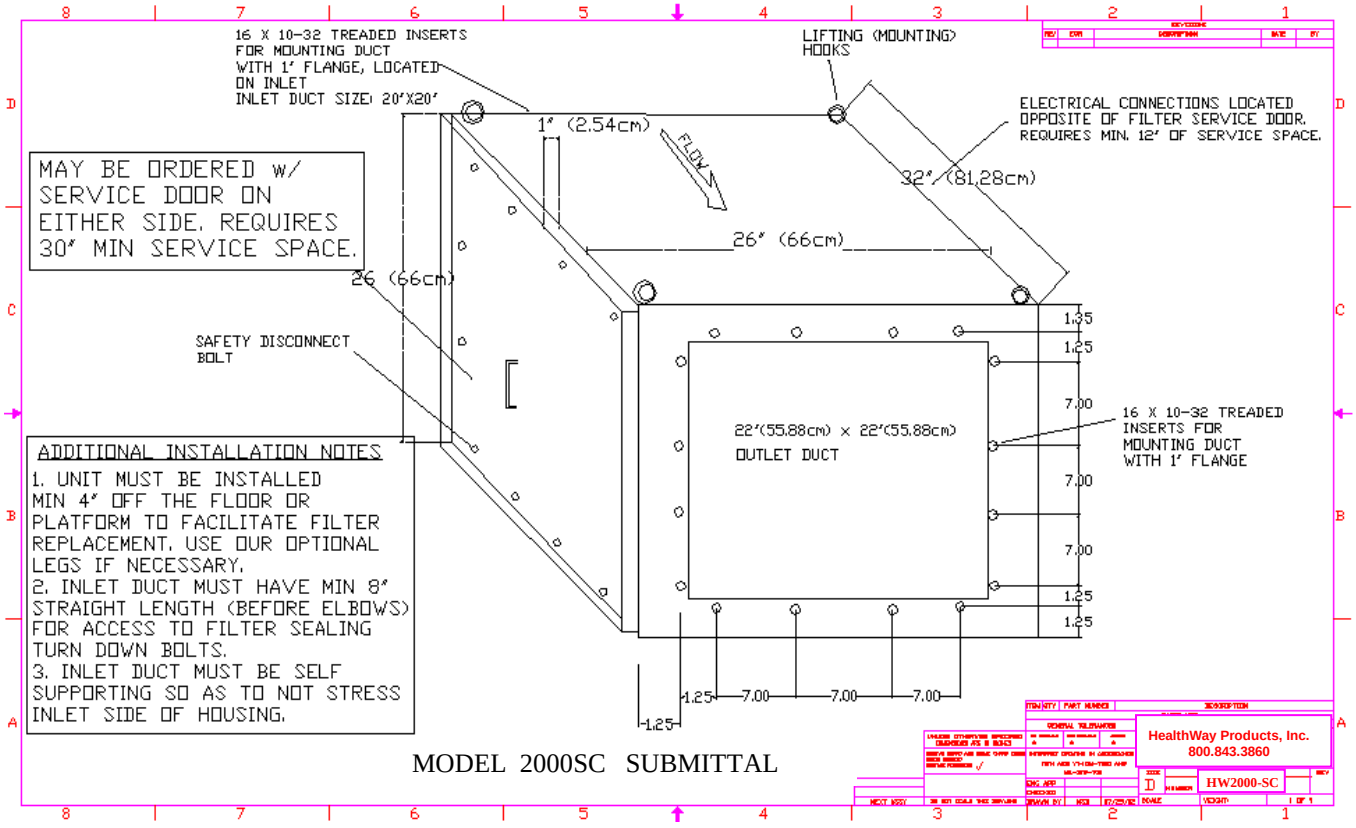



**PLEASE CONFIRM YOUR MODEL NUMBER, ELECTRICAL AND OTHER MODEL SPECIFICATIONS. FOLLOW INSTRUCTIONS FOR THAT MODEL IN ADDITION TO GENERAL INSTRUCTIONS FOR ALL MODELS.**

---

Power to all models is connected via proper electrical disconnects/breakers (refer to your local code) to the Model 2000SC as described in Chapter 3. The main switch controls power to the High Voltage power supply and the integrated fan/motor. The optional Remote Off/On switch controls power to the HVPS and fan.

**Note: For remote operation the main switch on the unit, must be in the ON position.**




MODEL 2000SC SUBMITTAL

# *CHAPTER 2 - RECEIVING AND UNPACKING*

## RECEIVING

Equipment is prepared for shipment in accordance with the Uniform Freight Classification. It is thoroughly inspected at the factory and, barring damage in transit, should be received in good condition.

When a carrier signs the HealthWay bill of lading, the **carrier accepts the responsibility** for any subsequent shortages or damage evident or concealed, and **any claim must be made against the carrier by the purchaser.** Evident shortage or damage **should be noted on the carrier's delivery document** before signature of acceptance. Inspection by the carrier of damage evident or concealed must be requested. After inspection, issue a purchase order for necessary parts or arrange for return of the equipment to for repair.

Filtration systems are shipped as fully assembled filter units with field installation necessary. These filter units must be handled and moved using good rigging techniques, being careful to avoid concentrated stresses that will distort any of the parts.

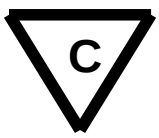
## STORAGE

If the unit is not to be installed promptly, store it in a dry place protected against moisture, dust, physical damage, weather, corrosion and excessive heat.

## FILTRATION SYSTEM SAFETY PRECAUTIONS

Personnel, who will operate this system, or those who will perform maintenance thereon, **must be given all manuals and other instructions regarding safe operation of the filtration system.**

---

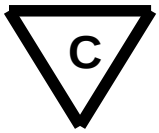



**THIS SYMBOL WILL BE USED THROUGHOUT THIS MANUAL TO INDICATE SAFETY CHECKPOINTS. FAILURE TO HEED THESE WARNINGS AND NOTICES MAY RESULT IN DAMAGE TO THE UNIT AND/OR INJURY OR DEATH TO PERSONNEL.**

---

This manual contains general recommendations, but specific requirements may apply to individual installations. Such requirements are outlined in federal, state, and local codes. **Compliance with applicable codes and strict adherence to these installation instructions are the sole responsibility of the user.**

## MODEL 2000SC UNPACKING & INSPECTION




**DO NOT LIFT UNIT MANUALLY. LIFT USING GOOD RIGGING TECHNIQUES, USING ALL FOUR EYEBOLTS.**

1) Carefully uncrate the components and identify each item according to the packing list and accompanying diagrams. To uncrate the main unit, remove the strapping and the box top. Using the 4 eye-bolts, carefully remove the unit from the box without damaging the fan inlet screen. Inspect for damages not previously evident.
2) **On rare occasions, the inlet cone becomes misaligned during shipping**. Inspect for proper alignment of the inlet cone by spinning the fan manually (using a short stick through the filter service door). If scraping sounds are present, press on the inner edges of the inlet cone at various points while spinning the fan until the scraping sounds stop. The inlet cone will then require adjustment by moving the cone toward the point which caused the scraping to cease.
3) **Open the filter service door. Inspect the wires of the High Energy Grid to confirm that all wires are in place**. The wires are spaced ~1" apart and each one should be checked. Make sure that all the wires are attached by using a flashlight. **Avoid removal of the V-BANK MAIN FILTER as the filter seal <u>may</u> be compromised.** The High Energy Grid wires may also be viewed by removing the prefilter, thus enabling full view of the wires. Replace the prefilter after inspection. Reattach any wires that may have loosened during shipping (Refer to **Chapter 5 MAINTENANCE and SERVICE FOR ULPD™ FILTER AND HIGH ENERGY GRID REMOVAL**).
4) Make certain the V-BANK MAIN FILTER is secure by checking to see if the bolts are tight. (Refer to **Chapter 5 MAINTENANCE and SERVICE**). **Do not loosen or remove primary filter.**

### TABLE 1 - COMPONENT IDENTIFICATION

| | ID CODE | DESCRIPTION |
|---|---|---|
| **PACKAGE MAIN** | **A** | Series 2000SC Filter Unit - 1 piece, including… |
| | **FT-101** | Factory-Installed Prefilter - 1 piece |
| | **FT-102** | Factory-Installed V-BANK MAIN FILTER - 1 piece |
| | **NZ-009** | Factory-Installed HIGH ENERGY GRID |

# *CHAPTER 3 - INSTALLATION PROCEDURES*

## INTRODUCTION

**The following procedures pertain to standard interior installations with instructions for select options.**

## POWER REQUIREMENTS FOR 2000SC FILTRATION SYSTEM

The power requirements are as follows (electrical disconnects may also be required - check applicable local codes):

| MODEL | POWER | FLA (AMPS) 60HZ / 50HZ | MAXIMUM RECOMMENDED CIRCUIT BRAEKER AMPS | POWER (WATTS) 60HZ / 50HZ |
|---|---|---|---|---|
| 2000SC-120-1a-AL | 120VAC, 50/60hz, Single Phase | 5.4A / 4.9A | 20 | 648W/ 588W |
| 2000SC-220-1AL | 220VAC, 50/60hz, Single Phase | 2.7A / 2.2A | 10 | 594W/ 484W |
| 2000SC-220 - 3AL | 208-230VAC, 50/60hz, 3 Phase | 4.3A / 3.8A | 20 | 990W/ 874W |
| 2000SC-120-1b-AL | 120VAC, 50/60hz, Single Phase | 15.2A / 14.5A | 30 | 1824W/ 1740W |
| 2000SC-440-3AL | 440 VAC, 50/60hz, 3 Phase | 2.6A/2.1A | 10 | 1144W/924W |

## LOCATION DETERMINATION

The filtration system installation location should be carefully planned with consideration given to the ease of access to the electrical box access panel and the filter service doors. Enough room (min 30” or 76cm) must be available next to the filter service door for filter replacement. A minimum of 12” or 31cm clearance must be available on the electrical connection (opposite side of filter service door) side of the filter unit. If the filter unit is to be located on a platform or the floor it should be located 6” off the floor to facilitate access to the filter turndown bolts; located on the filter inlet. The inlet duct also must have at least 8” of straight duct before any bends are made. **There should be no use or spillage of powdered products or of aerosols, sprays, or mists near the inlet connection to the filter.**

**Do not install the filtration system in an exterior environment, unless it is specifically made for exterior installations. Standard units are for indoor use only.**

## **MODEL 2000SC FILTER UNIT INSTALLATION** (Refer to Figure- 1)

1) **DO NOT INSTALL THE MODEL 2000SC IN AN EXTERIOR (OUTSIDE) ENVIRONMENT. (UNLESS SPECIFIED)**
2) **DO NOT LIFT 2000SC UNIT MANUALLY. LIFT USING GOOD RIGGING TECHNIQUES AND ALL FOUR EYEBOLTS.**
3) **Using good rigging techniques lift the unit using the four supplied eyebolts. Raise the unit to an elevation of approximately 12" below the installation location. DO NOT LIFT MANUALLY.**
4) **Following local building codes for HVAC equipment installation, install the unit in the selected location. The wiring or strapping must be at least 350-pound test weight.**

---

**CONSULT APPLICABLE LOCAL CODES FOR HVAC EQUIPMENT INSTALLATION TO DETERMINE THE APPROPRIATE STRAPPING OR WIRING USED TO INSTALL THE UNIT.**

---

**KEEP THE DUCTS AND OTHER RETURN CONNECTIONS CLEAN! SMALL METAL PARTICLES MAY BE DRAWN IN THE FAN, CAUSING DAMAGE TO THE PRIMARY FILTER.**

---

**ALWAYS ENSURE THAT FOR RECIRCULATING AIR FLOW APPLICATIONS, RETURNS HAVE PERFORATED OR OTHER SUITABLE GRILLS.**

---

## RETURN CONNECTIONS (RECIRCULATING FLOWS ONLY)

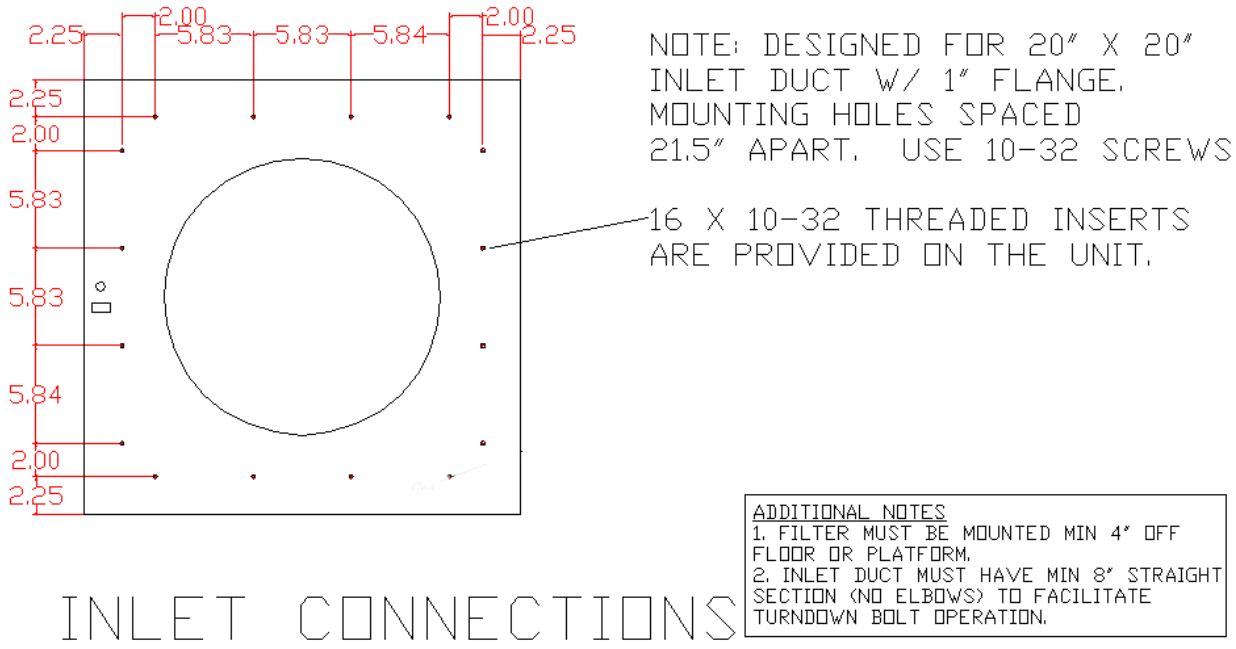
## STANDARD INLET / RETURN DUCT CONNECTIONS

A 20” x 20” (out flanged) duct may be connected to the unit using the instructions below.

**1)** Align duct with 16, threaded 10-32 holes on filter inlet panel.
**2)** Secure with 16, #10-32 x ¾” machine screws (G-4) being careful not to damage gasket. **DO NOT USE SCREWS LONGER THAN ¾” AS DAMAGE TO THE FILTER UNIT MAY OCCUR!**
**3)** The inlet duct also must have at least 8” of straight duct before any bends are made to facilitate access to the filter turndown bolts.

**4)** All ductwork must be kept clean and be properly sealed.

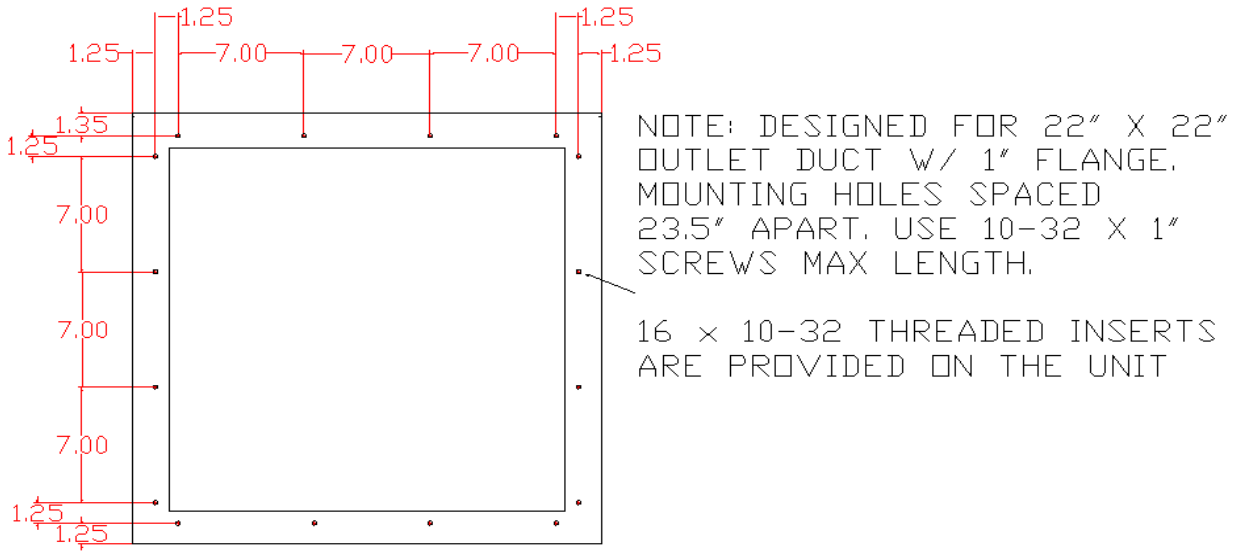
## MODEL 2000SC




## SUPPLY CONNECTIONS

**STANDARD SUPPLY (OUTLET) DUCT CONNECTION FOR THE MODEL 2000SC** A standard (out flanged) 22" x 22" aluminum or stainless steel supply duct may be connected to the 2000SC using the above hardware and instructions. (Only aluminum or stainless ducting should be used as galvanized will shed particles)

1) Align duct with 16, threaded 10-32 holes on filter inlet panel.
2) Secure with 16, #10-32 x ¾" machine screws (G-4) being careful not to damage gasket. **DO NOT USE SCREWS LONGER THAN ¾" AS DAMAGE TO THE FILTER UNIT MAY OCCUR!**
3) All ductwork must be kept clean and be properly sealed.




OUTLET CONNECTIONS

## CHECKING INLET CONE ALIGNMENT

**C** **DO NOT OPERATE THE UNIT UNTIL THE INLET CONE HAS BEEN CONFIRMED TO BE PROPERLY ALIGNED, AS DOING SO MAY DAMAGE THE INLET CONE AND THE BLOWER.**

Inspect for proper alignment of the inlet cone by spinning the fan manually (using a short stick through the filter service door. If scraping sounds are present, press on the inner edges of the inlet cone (at various points while spinning the fan until the scraping sounds stop. The inlet cone will then require adjustment by moving the cone toward the point, which caused the scraping to cease. Align by slightly loosening (DO NOT REMOVE) the 8, ¼'-20 hex head bolts holding down the inlet cone. Retighten the bolts.

## Series 2000SC ELECTRICAL CONNECTIONS

(Refer to Figure 3-1 (2000SC-120-1AL), Figure 3-2 (2000SC-220-1AL), 3-3 (2000SC-220-3AL), 3-4 (2000SC-440-3AL) as appropriate for each model.

**C**

1) **ALL ELECTRICAL CONNECTIONS MUST BE ACCOMPLISHED BY A CERTIFIED ELECTRICIAN FOLLOWING DIRECTIONS LISTED HERE.**
2) **USE SEPARATE BREAKERS FOR EACH, V-BANK MAIN FILTER UNIT.**
3) **CHECK THE LABELS SHOWING THE PREWIRED MOTOR VOLTAGE SETTINGS.**

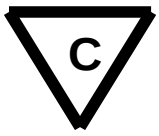

**DO NOT INITIATE POWER TO THE UNIT UNTIL THE HIGH ENERGY GRID WIRES HAVE BEEN CHECKED FOR PROPER CONNECTION**
**(Refer to *Chapter 2 UNPACKING and INSPECTION*).**

---

**Before electricity is applied to the unit, examine the wires to confirm that none have come disconnected during shipping.** Remove the filter service door. Remove the prefilter. Visually examine the High Energy Grid wires for secure connections to the High Energy Grid spring at each end. **DO NOT LOOSEN OR REMOVE PRIMARY FILTER**. Replace the prefilter after inspection.

**CAUTION: CHECK THE DATA PLATE ADJACENT TO THE ELECTRICAL CONNECTION BOX, WHICH INDICATES ALL THE ELECTRICAL REQUIREMENTS FOR THAT PARTICULAR FILTER UNIT!**

---




1. **THERE SHOULD BE NO REASON TO OPEN THE ELECTRICAL BOX EXCEPT FOR REPAIR BY A QUALIFIED TECHNICIAN. DO NOT OPEN THE ELECTRICAL BOX WITHOUT FIRST DISCONNECTING THE MAIN POWER AT THE BREAKER- THE ELECTRICAL BOX CONTAINS LIVE ELECTRICAL PARTS**
2. **THE ELECTRICAL BOX SHOULD ONLY BE OPENED BY A TRAINED TECHNICIAN AND/OR ELECTRICIAN.**
3. **THERE ARE NO USER SERVICEABLE PARTS INSIDE THE ELECTRICAL BOX.**

---

Remove the electrical access panel on the side of the filter unit. Connect AC power to the Model 2000SC by running power cables through 3/8” conduit and connect to the marked wires via wire nuts in the power connector box. Attach an appropriate conduit connector on the access panel for a hole size of 13/16”.

**MODELS 2000SC-220-3, 2000SC-440-3:**

**1)** Connect the three, 208-230VAC, or 440-460VAV, 3-phase lines and electrical ground wire to the wires marked and colored as follows: L1 (Black), L2 (Blue), L3 (Red) and G (Ground/Green). (**Check filter data plate for required voltage and amperage. Voltages are not interchangeable!**)
**2) Make sure a Main Circuit Breaker is used on each Filter Unit.**
**3) A separate electrical disconnect at the unit may be required by local code.**

**MODELS 2000SC-120-1 & 2000SC-220-1:**

1) Connect the 115 or 230VAC single- phase power as applicable: HI= Black, LN - or second leg of 115/220 (neutral as applicable) =Blue, Ground = Green. **Line neutral must be used for 115VAC and single wire 220VAC systems.** (**Check filter data plate for required voltage and amperage. Voltages are not interchangeable!**)
2) **Make sure a Main Circuit Breaker is used on each Filter Unit.**
3) **A separate electrical disconnect at the unit may be required by local code.**

**THE ELECTRICAL GROUND CONNECTION MUST BE MADE WITH HIGH QUALITY (MINIMUM 16 GAUGE MTW) WIRING TO A HIGH QUALITY ELECTRICAL GROUND CONNECTION.**

## REMOTE CONTROLLER INSTALLATION (Refer to Schematic)

**STANDARD HVPS:**

Simply run wire rated for a minimum of 30VAC from the remote access panel located in the Model 2000SC unit remote electrical compartment – above the power connections box, to the remote controller. Open the remote controller. Connect wires marked 1-4 to the wires marked 1-4 in the remote access panel in the Model 2000SC. All the remote wires carry 24VAC except the signal return 4. **NOTE: GREEN WIRE 4 IS A SIGNAL RETURN; IT IS NOT A FRAME/CHASSIS GROUND.**

**OPTIONAL HVPS:**

Simply run wire rated for a minimum of 30VDC from the remote access panel located in the Model 2000SC unit remote electrical compartment – above the power connections box, to the remote controller. Open the remote controller. Connect wires marked 1-6 to the wires marked 1-6 in the remote access panel in the Model 2000SC. All the remote wires carry 24VDC except the signal return 4. **NOTE: GREEN WIRE 5 IS A SIGNAL RETURN; IT IS NOT A FRAME/CHASSIS GROUND.**

## HVAC (AIR CONDITIONER) CONNECTIONS

**STANDARD HVPS:**

If connecting a HVAC or fan coil system to the model 2000SC remote, the thermostat must always have the fan switch set in the “ON” position. **OPTIONALLY, THE SECOND POLE OF THE OFF/ON SWITCH IN THE REMOTE CONTROLLER MAY BE USED (black wires #5 & #6) TO PROVIDE A CONTACT FOR CONTROLLING THE OPERATION OF THE A/C UNIT (IF THE A/C UNIT HAS THIS CONTROL FEATURE).**
Call for details regarding individual HVAC systems.

**OPTIONAL HVPS:**

Models with the optional higher output HVPS are wired a follows:

If connecting a HVAC or fan coil system to the model 2000SC remote, the thermostat must always have the fan switch set in the “ON” position. **OPTIONALLY, THE SECOND POLE OF THE OFF/ON SWITCH IN THE REMOTE CONTROLLER MAY BE USED (black wires #7 & #8) TO PROVIDE A CONTACT FOR CONTROLLING THE OPERATION OF THE A/C UNIT (IF THE A/C UNIT HAS THIS CONTROL FEATURE).** Call for details regarding individual HVAC systems.

## *CHAPTER 4 - SYSTEM OPERATION*

# FILTRATION SYSTEM OPERATING INSTRUCTIONS

Air flows through the prefilter into the ionizing section where incoming particles are charged and then removed by the terminal **V-BANK MAIN** filter.

**TO TURN ON & RESET (THE HV TRIP) THE MODELS 2000SC, STANDARD HVPS:**

1) Turn on the main switch, it should illuminate, indicating the power is on.
2) Turn the remote **(If Equipped)** off / On Switch to the "ON "position.
3) If the Green LED is off, indicating high voltage power supply trip, wait ~30-45 seconds and the HVPS will reset and the Green LED should come on.
4) To turn off the unit, simply switch the main Off / On switch or remote (If Equipped) to "Off".

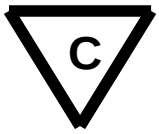
**TO TURN ON & RESET (THE HV TRIP) THE MODELS 2000SC, OPTIONAL HVPS:**

1) Turn on the main switch, it should illuminate, indicating the power is on.
2) Turn the remote **(If Equipped)** Off / On Switch to the "ON "position.
3) If the Red LED is on, indicating high voltage power supply trip, wait ~30-45 seconds and the HVPS will reset and the Red LED should turn off.
4) To turn off the unit, simply switch the main Off / On switch or remote (If Equipped) to "Off".
5) A separate reset pushbutton is included to manually reset the HVPS if needed.

**The HVPS will not be supplied with power if any of the following four switches are open: a)** the main power switch is OFF, which initiates power flow for the entire unit, **b)** the optional remote controller switch is in the OFF position, **c)** the safety switch screw on the filter service door which releases the safety switch is not installed, **d)** the arc trip protection circuit which detects an arc and shuts off power to the HVPS is tripped.

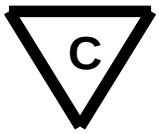
**Remote Off / On switch will not initiate power to the filtration system unless all the above listed switches are properly set.**

---




**WHEN OPERATING WITH A HVAC SYSTEM, THE HVAC FAN MUST BE SET IN THE "ON" POSITION AT ALL TIMES OF OPERATION. THE HVAC SYSTEM MUST BE TURNED OFF WHENEVER THE SYSTEM IS TURNED OFF.**

---

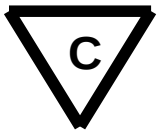



**DO NOT OPEN ANY DOORS OR PANELS OR TOUCH ANY INTERNAL PARTS UNTIL:**

**1) THE MAIN POWER SWITCH IS TURNED TO "OFF".**

**2) ALL ELECTRICAL BREAKERS / DISCONNECTS ARE TURNED OFF.**

3) **WAIT 30 SECONDS UNTIL THE FAN HAS QUIT TURNING.**




**WAIT A MINIMUM OF 30 SECONDS AFTER THE ELECTRICAL FLOW IS INTERRUPTED BEFORE TOUCHING INTERNAL COMPONENTS. THE SYSTEM OPERATES AT 12kVDC.**

**HVPS (HIGH VOLATAGE POWER SUPPLY) OPERATION, STANDARD HVPS:**
The AC-DC high voltage power supply is powered by 120VAC. It is accessed by removing both the filter service door and electrical plate cover.

Under normal operation no arcing should occur. However, a safety feature for this has been included in the Model 2000SC. There is an integrated spark / arc detecting circuit in the HVPS which detects arcs. If any sparking does occur in the High Energy Grid section, the output of the HVPS is turned off. In this mode, both the output of the high voltage power supply and the Green LED HVPS status indicator are turned off. The HVPS will automatically reset after ~30-45 seconds. The Green LED will come on when the HVPS is operating.
**If the power supply repeatedly trips or will not reset contact.**

**The HVPS will restart, after a trip, after ~30-45 seconds.** If the HVPS repeatedly reverts to arc protection, you may:

1) Continue operating the filtration system with the Green LED extinguished and HVPS disabled until it is convenient to resolve the problem. **NOTE THAT THE MODEL 2000SC FILTER EFFICIENCY WILL NOW BE LOWER THAN UNDER NORMAL OPERATION.**
2) Resolve the problem by shutting down the filtration system by switching OFF the main power switch and:
    a) Change the **V-BANK MAIN FILTER** and/or
    b) Clean the High Energy Grid **(Refer to *Chapter 5 MAINTENANCE and SERVICE*)**. Should the problem persist after changing the filter and cleaning the High Energy Grid, **call for assistance.**

**HVPS (HIGH VOLATAGE POWER SUPPLY) OPERATION, OPTIONAL HVPS:**

The DC-DC high voltage power supply is powered by 24VDC. The 24VDC is provided by an AC-DC power supply. They are both accessed by removing both the filter service door and electrical plate cover.

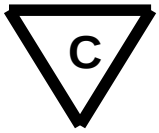
Under normal operation no arcing should occur. However, a safety feature for this has been included in the Model 2000SC. There is a spark / arc detecting circuit connected to the HVPS which detects arcs. If any sparking does occur in the High Energy Grid section, the output of the HVPS is turned off. In this mode, the output of the high voltage power supply is shut off and the Red LED HVPS status indicator is turned on. The HVPS will automatically reset after ~30-45 seconds. In addition a separate reset switch is included on the filter unit. The Red LED will turn off when the HVPS is operating. **If the power supply repeatedly trips, or will not reset, contact.**

**The HVPS will restart, after a trip; in approximately ~30-45 seconds in addition the HVPS can be reset manually using the reset pushbutton.** If the HVPS repeatedly reverts to arc protection, you may:

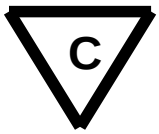
3) Continue operating the filtration system with the Green LED on and HVPS disabled until it is convenient to resolve the problem. **NOTE THAT THE MODEL 2000SC FILTER EFFICIENCY WILL NOW BE LOWER THAN UNDER NORMAL OPERATION.**
4) Resolve the problem by shutting down the filtration system by switching OFF the main power switch and:
    a) Change the **V-BANK MAIN FILTER** and/or
    b) Clean the High Energy Grid **(Refer to *Chapter 5 MAINTENANCE and SERVICE*)**. Should the problem persist after changing the filter and cleaning the High Energy Grid, **call for assistance.**

## *CHAPTER 5 - MAINTENANCE and SERVICE*

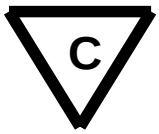
## FILTRATION SYSTEM PERIODIC MAINTENANCE




**DO NOT USE ALCOHOL OR OTHER CLEANERS THAT WILL DAMAGE ACRYLICS AND OTHER PLASTICS. AVOID USE OF CLEANERS THAT ARE CORROSIVE TO ACRYLICS AND ALUMINUM.**




**USE ONLY V-BANK MAIN FILTERS. WARRANTY WILL BE VOIDED OTHERWISE. USE OF NON- SYSTEM FILTERS WILL BE HAZARDOUS TO PERSONNEL AND/OR EQUIPMENT, SINCE THEY ARE NOT DESIGNED FOR HIGH VOLTAGE OPERATION.**




**ALWAYS TURN OFF ELECTRICAL SWITCHES AND CIRCUIT BREAKERS / DISCONNECTS BEFORE OPENING THE SERVICE DOOR. WAIT A MINIMUM OF 30 SECONDS TO TOUCH ANY INTERNAL COMPONENT.**

## FILTER UNIT ELECTRICAL BOX AND FILTER SERVICE DOOR

**<u>Instructions for Service Technician only</u>: Turn off the electrical power to the filtration system, <u>at the main disconnect and/or circuit breaker</u> and at the main, Illuminated, power switch, located on the Filter Unit. Wait a minimum of 30 seconds prior to touching any internal component.** The electrical cover plate may now be removed for servicing, if necessary.


1) **DO NOT REMOVE THE ELECTRICAL COVER PLATE WITHOUT FIRST DISCONNECTING THE MAIN POWER - THE ELECTRICAL BOX CONTAINS LIVE ELECTRICAL PARTS.**
2) **THE ELECTRICAL BOX SHOULD ONLY BE OPENED BY A TRAINED TECHNICIAN AND / OR ELECTRICIAN.**
3) **THERE ARE NO USER SERVICEABLE PARTS INSIDE THE ELECTRICAL BOX.**

To open the filter service door**, <u>Remove Safety Switch Screw First</u>** then 11, 3/8 Hex head, flange nuts. Note that the safety switch screw is located on the bottom of the filter service door towards the inlet end of the housing. This disengages the filter access door's safety disconnect switch thereby disabling the power switch.

When replacing the filter service door, the safety switch screw must be placed in the appropriate location to complete the electrical path through the safety switch. **<u>DO NOT BY-PASS THIS SAFETY FEATURE!!</u>**

**C** **USE ONLY V-BANK MAIN FILTER. WARRANTY WILL BE VOIDED OTHERWISE. USE OF NON- SYSTEM FILTERS WILL BE HAZARDOUS TO PERSONNEL AND EQUIPMENT.**

## PREFILTER

Depending on the operating conditions and environment, these filters are changed one to four times a year.

To change filters, remove the filter service door. During operation, the gasket on the filter service door is compressed, forming a loose bond that remains after the nuts and safety screw are removed. Panel removal may require a firm pulling effort. Simply slide the filter out of the filter channel. To install a new prefilter simply slide the filter back in the filter channel. **Pay attention to the flow direction arrow on the prefilter, the arrow should point towards the supply/outlet end of the filter unit**.

## V-BANK MAIN FILTER

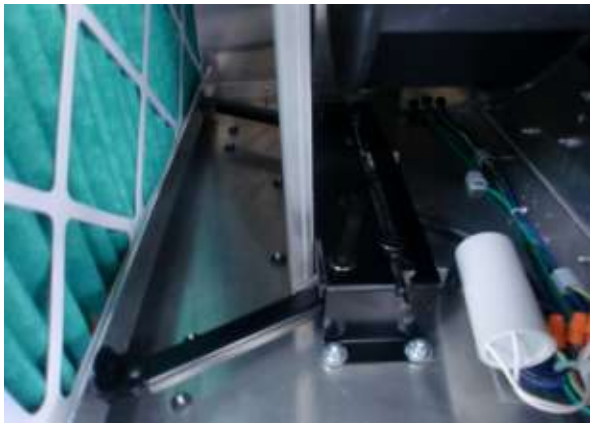
The **V-BANK MAIN FILTER** is sealed against the filter seal plate via a high-density, closed-cell, foam gasket. The **V-BANK MAIN FILTER** will require changing ~once a year under normal operating conditions. Filter life varies and greatly depends on the operating environment & conditions.

**C** **LOOSEN THE TOP AND BOTTOM SCISSOR LOCKING MECHANISM BEFORE ATTEMPTING TO REMOVE THE V-BANK MAIN FILTER.**

## A. REMOVAL

1) Remove the filter service door

2) Loosen with an ELECTRIC OR MANUAL 1/4” socket wrench the top and bottom scissor locking mechanism located near by the motor plate on the inlet side of the filter unit, before attempting to remove the **V-BANK MAIN FILTER**. Make sure the scissor mechanism is fully opened to allow easy removal of the high energy grid from the V-Bank Filter.



3) Disconnect the High Voltage lead from the High Energy Grid.

4) Separate the High Energy Grid from the **V-BANK MAIN FILTER** by moving it to the rear of the filter unit.

5. Grasp the frame of the **V-BANK MAIN FILTER** and slide it out of the filter access opening. The filter gasket will be sealed against the seal plate. This may require a firm pulling effort away from the seal plate.

5) Clean the inside of the filter unit as instructed in following section, if necessary.

**C** **AT EVERY FILTER CHANGE, INSPECT AND CLEAN THE HIGH ENERGY GRID ASSEMBLY. INSPECT AND CLEAN THE INSIDE OF THE Heathway® DFS 2000SC FILTER UNIT. REFER TO THE FOLLOWING SECTION FOR PROPER CLEANING PROCEDURES.**

## B. REPLACEMENT

**C** **USE ONLY GENUINE, V-BANK MAIN FILTER. WARRANTY WILL BE VOIDED OTHERWISE. USE OF NON- SYSTEM FILTERS CAN BE HAZARDOUS TO PERSONNEL AND EQUIPMENT, SINCE THEY ARE NOT DESIGNED FOR HIGH VOLTAGE OPERATION.**

**C** **HANDLE V-BANK MAIN FILTERS WITH CARE. DO NOT TOUCH THE FILTER MEDIA AND DO NOT ALLOW FILTER PLEATS TO BECOME CRUSHED OR PIERCED. ONLY HANDLE THE FILTER FRAME.**

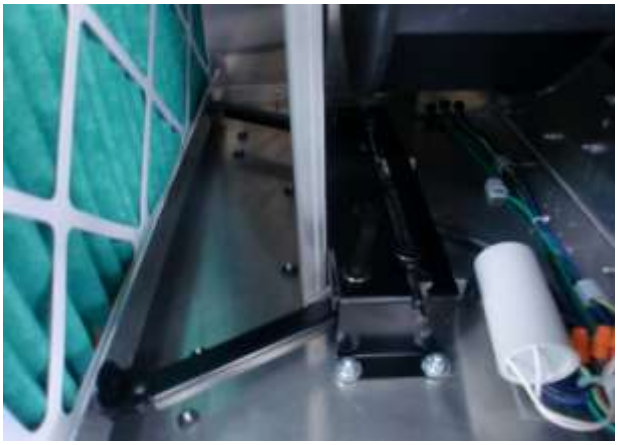
1) Make sure that the filter ground clip (If Equipped) is positioned such that it will contact the filter ground grid when the filter is tightened. **NOTE THE FLOW ARROW DIRECTION AND THIS END UP DIRECTIONS ON THE FILTER**. It should be aligned with the flow direction (facing towards the outlet/supply side of the filter unit). The High Energy Grid assembly must be upstream of the filter.

2) With filter service door and old filter removed, slide the primary filter into the filter access opening. The filter gasket must be facing the filter seal plate. Push it up against the stop opposite of the access door, and then push it up against the seal plate.

3) Slide the High Energy Grid forward into the filter. Use the alignment tabs to align the High Energy Grid correctly. **DO NOT FORCE THE HIGH ENERGY GRID INTO THE FILTER!**

4) Tighten top and bottom scissor locking mechanism, with an electric or manual 1/4” socket wrench, so that the scissors push against the prefilter channel, which in turn pushes the filter against the seal plate compressing the gasket.

5) Tighten each scissor to about 15 foot-pounds using a torque wrench and a 1/4” socket. Follow a crossing pattern and tighten the scissors evenly.



6) Reinstall Pre-filter in channel

7) **RECONNECT THE HIGH VOLTAGE LEAD BETWEEN HIGH ENERGY GRID AND HVPS!!!**

8) Reinstall the filter access door and tighten the 11, 3/8” flanges hex nuts.
9) Reinstall the safety screw in lower, rear of door.

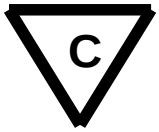
## High Energy Grid

**INSPECTION**

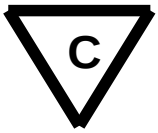
**Before electricity is applied to the unit, examine the wires to confirm that none have come loose or disconnected during shipping.** Remove the filter service door and the prefilter. Visually examine the High Voltage wires for secure connection to the Grid retaining springs and ceramic spacers at each end. Reattach any wires that have been detached.

**REMOVAL**

1) Remove the filter service door.
2) Remove the prefilter.
3) Loosen with a 1/4” wrench the top and bottom, scissor locking mechanism, located beside the motor plate near the inlet of the filter unit, before attempting to remove the **V-BANK MAIN FILTER**.
4) Disconnect the High Voltage lead from the High Energy Grid.
5) Separate the High Energy Grid from the **V-BANK MAIN FILTER** by moving it to the rear of the filter unit.
6) Remove High Energy Grid by sliding it out the filter access door.

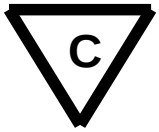



**DO NOT APPLY ELECTRICITY TO THE UNIT UNTIL ALL HIGH ENERGY GRID WIRES HAVE BEEN CONFIRMED TO BE PROPERLY CONNECTED.**




**DO NOT LEAVE THE HIGH VOLTAGE CONNECTOR DISCONNECTED DURING REINSTALLATION.**

## FILTRATION SYSTEM CLEANING INSTRUCTIONS




**DO NOT USE ALCOHOL OR OTHER CLEANERS THAT WILL DAMAGE ACRYLICS AND OTHER PLASTICS. AVOID USE OF CLEANERS THAT ARE CORROSIVE TO PLASTIC AND ALUMINUM. ALCOHOL WILL SHATTER ACRYLIC HIGH ENERGY GRID COMPONENTS.**

## CLEANING

Depending on contamination level, this procedure should be conducted about once a year or during each filter change or if an electrical problem occurs (i.e., repeated shut off, arc tip, of the HVPS). In most cleanroom applications, the High Energy Grid should stay clean for an extended amount of time. Remove the grid as described in the previous section.

1) Using a fiber free swab, either dry or moistened with distilled or deionized water, clean each wire, spring clip, and ceramic insulator. To clean the wires, simply run the swab, either dry or moistened with distilled or deionized water, along the length of each wire.
2) Clean the inner surfaces of the High Energy Grid material using a lint free clean room wiper moistened with distilled or deionized water. **Do not use alcohol or other cleaners that damage acrylics and other plastics. Avoid use of cleaners that are corrosive to plastic and aluminum. Alcohol will shatter acrylic High Energy Grid components.** This surface may also be vacuumed using a small vacuum attachment.
3) Clean the high energy grid side surface by vacuuming between the wires using a small vacuum attachment or by using a lint free clean room wiper, either dry or moistened with distilled or deionized water. Take care to avoid leaving large fibers snagged on the wires, control grid, or other components of the High Energy Grid. Make sure that any contaminant that falls to the bottom of the filter unit is removed.

**NOTE THAT THE SPRING-LOADED WIRES, SPACED ~1" APART, AND ARE EASILY SPREAD APART USING ONLY *LOW PRESSURE*, ALLOWING THE USE OF A NARROW VACUUM ACCESSORY.**

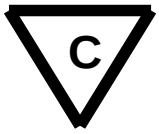
4) In extreme cases, it may be necessary to remove the wires from the springs attached at each end to the power distribution bars, thus allowing complete access to the inside of the High Energy Grid assembly for cleaning as previously described. **It is recommended that be contacted for detailed instructions should this step appear necessary.**
5) Vacuum the bottom of the filter seal plate section and of the filter unit to remove any particles dislodged during cleaning. Reinstall the High Energy Grid, **V-bank Main Filter**, electrical cover panel, and filter service door as previously instructed.

# FILTRATION SYSTEM TROUBLESHOOTING

| PROBLEM DESCRIPTION | RECOMMENDED ACTION |
|---|---|
| **A)** Green LED is Off, Standard HVPS only.<br>**B)** Red LED is On, Optional HVPS only.<br>**C)** Arcing is audible and if it persists.<br>**D)** HVPS will not reset. | 1) Clean the High Energy Grid $^{and}/_{or}$ check for broken, loose, $^{and}/_{or}$ disconnected wires (Refer to Chapter 5 - Cleaning Instructions).<br>2) Change filters (Refer to Chapter 5 - Periodic Maintenance) of corresponding High Energy Grid section.<br>3) Check for proper operation (monitor voltage) of the HVPS. Replace if necessary. **Call for assistance.**<br>4) Reduce HVPS output voltage. **Call for assistance.** |
| **E)** Fan motor trips repeatedly (3 phase models) | 1) Check voltage of supply and rpm if feasible.<br>2) **Call for assistance.** |
| **F)** Fan does not turn on (single phase models only) | 1) Check the circuit breaker, reset if necessary.<br>2) **Call for assistance.** |
| **G)** Fan and HVPS does not turn on. | 1) Safety switch screw on the filter service door is not engaging the safety switch. Tighten screw or check operation of switch.<br>2) **Call for assistance.** |
| **H)** HVPS not operating - no voltage | 1) Check the input on the HVPS for proper voltage. **Call for assistance.**<br>2) Check for shorts due to dislodged or broken wires.<br>3) If proper input voltage is present and there are no shorts, HVPS may need to be replaced.<br>4) **Call for assistance.** |

**If a problem arises that is not described above, or if none of the recommended actions resolve the problem, please call:** 315-298-2904 OR **Fax No:** 315-298-6992 **Email:** info@healthway.com **for assistance.**

# FILTRATION SYSTEM RECOMMENDED SPARE PARTS LIST




**USE ONLY V-BANK MAIN FILTERS and REPLACEMENT COMPONENTS. WARRANTY WILL BE VOIDED OTHERWISE. USE OF NON- SYSTEM FILTERS WILL BE HAZARDOUS TO PERSONNEL AND EQUIPMENT.**

Recommends that the following spare parts be available on-site at all times, especially for critical operations. Order all parts by contacting either by **Phone No:** 315-298-2904, **Fax No:** 315-298-6992, **Email:** info@healthway.com

| COMPONENT | REC QTY | TECHNOVATION PART NUMBER |
|---|---|---|
| High Voltage Power Supply (Standard HVPS) | 1 | EC-035 |
| High Voltage Power Supply (Optional HVPS) | 1 | EC-035 |
| Low Voltage Power Supply (Optional HVPS Only) | 1 | EC-035 |
| V-BANK MAIN Filter | 1 | FT-102 |
| Prefilter, 30% ASHRAE | 1 | FT-101 |
| High Energy Grid Wires & Springs | 10 | NZ-009 |
| Flange Nuts | 11 | HA-017 |
| Safety Switch Bolt | 1 | HA-002 |

***APPENDIX A***

## DFS FILTRATION SYSTEM MODEL 2000SC SPECIFICATIONS

**See attached spec sheets for Models 2000SC**

## *APPENDIX B*

# FIGURES

**Figure 1** DFS Filtration System Model 2000SC

**Figure 2** High Energy Grid

**Figure 3-1, 3-2, 3-3 & 3-4** Electrical Schematics

**Figure 4** Remote Controller Schematic

FIG. 3-1: MODEL 2000SC-120-1AL, 110-120VAC 50/60HZ, 1 PHASE ELECTRICAL SCHEMATIC, W/REMOTE

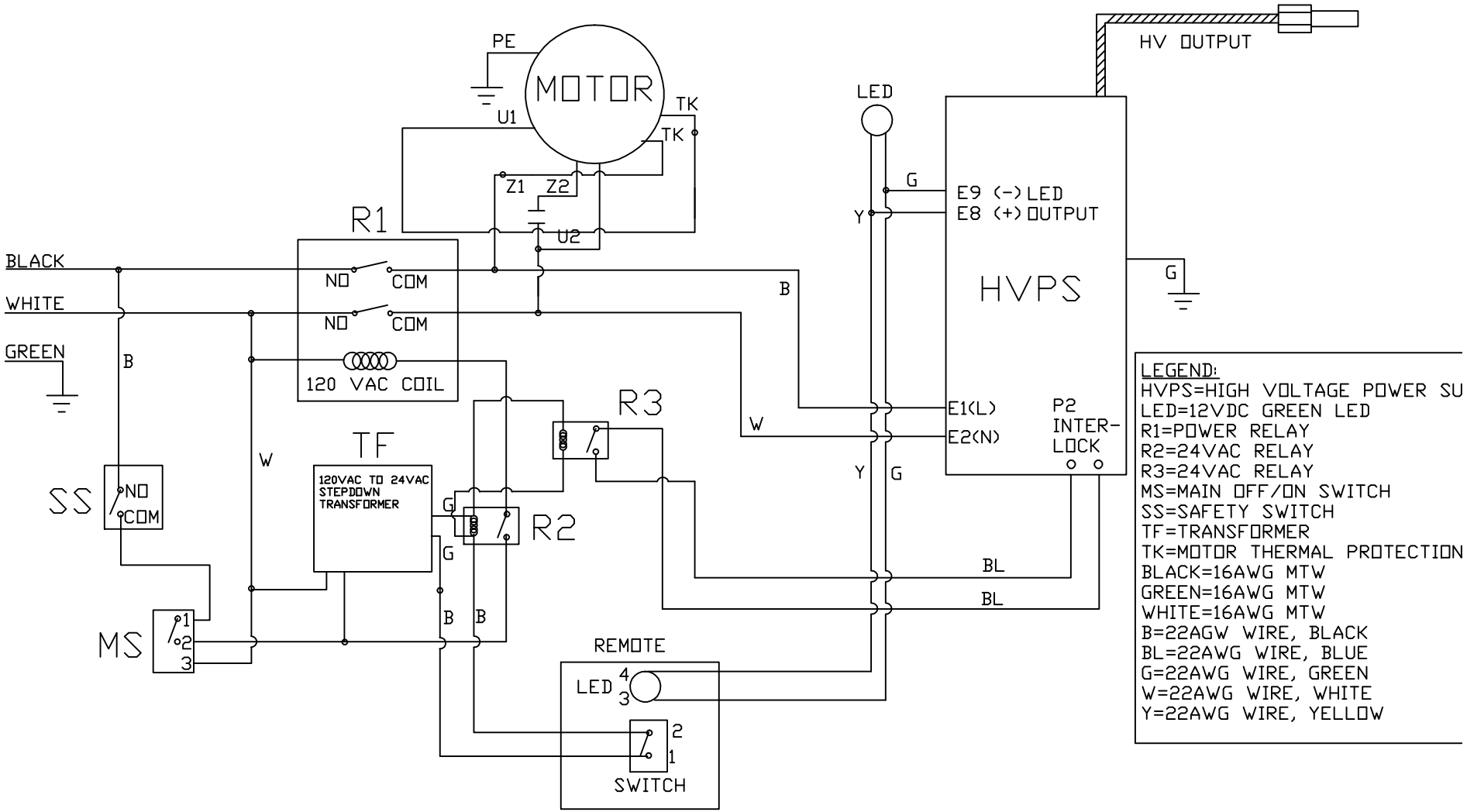


FIG. 3-2: MODEL 2000SC-220-1AL, 208-230VAC 50/60HZ, 1 PHASE ELECTRICAL SCHEMATIC, W/REMOTE

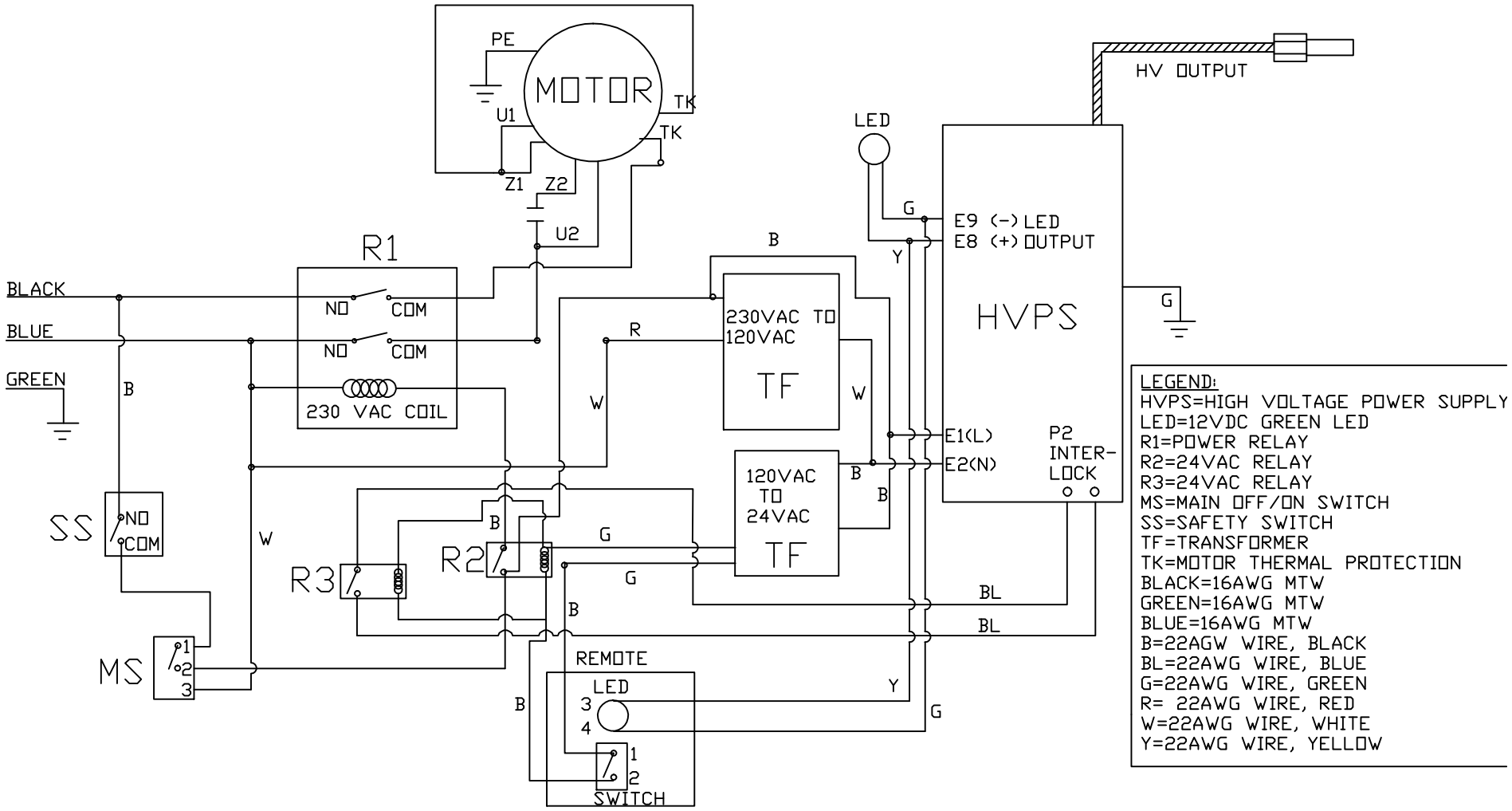
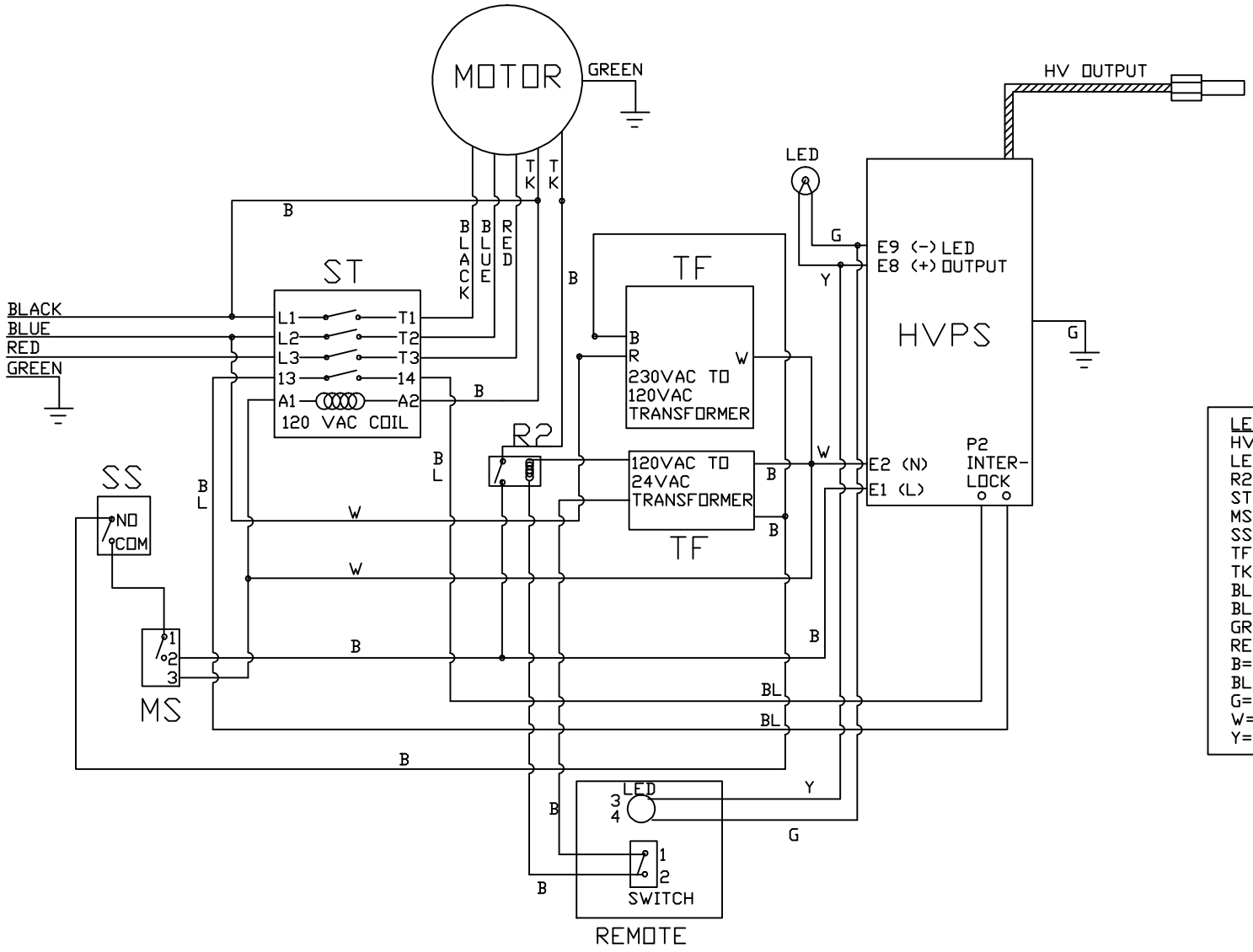


FIG. 3-3: MODEL 2000SC-220-3AL, 208-230VAC 50/60HZ, 3 PHASE ELECTRICAL SCHEMATIC, W/REMOTE




LEGEND:
HVPS=HIGH VOLTAGE POWER SUPPLY
LED=12VDC GREEN LED
R2=24VAC RELAY
ST=MOTOR STARTER
MS=MAIN OFF/ON SWITCH
SS=SAFETY SWITCH
TF=STEP-DOWN TRANSFORMER
TK=MOTOR THERMAL PROTECTION
BLACK=16AWG MTW
BLUE=16AWG MTW
GREEN=16AWG MTW
RED=16AWG MTW
B=22AGW WIRE, BLACK
BL=22AWG WIRE, BLUE
G=22AWG WIRE, GREEN
W=22AWG WIRE, WHITE
Y=22AWG WIRE, YELLOW

FIG. 3-4 MODEL 2000SC-440-3AL,440-460VAC 50/60HZ, 3 PHASE ELECTRICAL SCHEMATIC, W/REMOTE