

Vertical Airflow Cabinet

Models

NU-126-600

NU-126-600E

Operation & Maintenance Manual

August, 2014
Series 21 & Up
Revision 4



230 VAC Only



115 VAC Only

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Operation & Maintenance Manual
Models
NU-126-600
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STANDARD DRAWINGS

BCD-13927	Airflow Schematic
BCD-13931	NU-126-600/E Specification Drawing
BCD-13928	Front Panel

ELECTRICAL DRAWINGS

BCD-14050	Electrical Schematic 115V AC
BCD-14051	Electrical Schematic 230V AC
BCD-14584	Electrical Schematic 115V EC
BCD-14585	Electrical Schematic 230V EC

Vertical Airflow Cabinet

Models NU-126-600 NU-126-600E

Operation & Maintenance Manual

1.0 General Description

- 1.1** The NuAire Vertical Airflow Cabinet Model NU-126/E is a cabinet whose unique configuration offers the benefits of vertical airflow around objects on the work surface and horizontal outflow through the work access opening acting as a barrier against contamination. A slanted viewing window not only provides an excellent view of the work in process but substantially protects the operator from direct contact with contaminants generated by the work.
- 1.2** The NuAire Vertical Airflow Cabinet NU-126/E is a cabinet that can be used where a sterile environment per Federal Standard 209d is required for the preparation of injectable drugs, IV solutions, tissue culture, optics, microelectronics, etc. The Station should not be used for any work that involves biological agents assigned a level of Risk 1 through 4 as classified by the Centers for Disease Control (CDC), Atlanta, Georgia since the Station airflow offers no personnel protection against these agents. The cabinet should only be used to protect the product from contamination. A significant number of design innovations give the NuAire laminar flow equipment superior performance qualities in airflow, lighting, noise levels and vibration.
- 1.3** Room air enters the Station through the prefilter drawn by a motorized impeller(s) which pressurizes the air causing airflow to flow vertically downward through the HEPA filter 99.99% efficient for removing particles larger and smaller than 0.3 mc. The clean air flows vertically into the work zone, splits as it flows against the Station work surface with most of the air flowing out through the work access opening, and with a much smaller amount flowing out of the perforated Backwall just above the work surface. The Backwall outflow prevents stagnation and minimizes turbulence in the back of the work zone (see Airflow Schematic).
- 1.4** The work zone of the station consists of all plastic panels: the back panel is white 1/4 inch (6mm) polycarbonate, the side panels are clear 1/2 inch (13mm) polycarbonate and the hinged front viewing panel is clear 1/4 inch (6mm) polycarbonate. The viewing panel provides a 10-inch (254mm) access opening when it is fully down. The viewing window can be raised to provide a 24-inch (610mm) opening.

1.5 Safety Instructions

These safety instructions describe the safety features of the Vertical Airflow Cabinet Model NU-126/E. The vertical cabinet has been manufactured using the latest technological developments and has been thoroughly tested before delivery. It may, however, present potential hazards if it is not used according to the intended purpose or outside of operating parameters. Therefore, the following procedures must always be observed:

- The vertical cabinet must be operated only by trained and authorized personnel.
- For any operation of this unit, the operator must prepare clear and concise written instructions for operating and cleaning, utilizing applicable safety data sheets, plant hygiene guidelines, and technical regulations, in particular.
 - which protective measures apply while specific agents are used,
 - which measures are to be taken in the case of an accident.
- Repairs to the device must be carried out only by trained and authorized expert personnel.
- Keep these operating instructions close to the unit so that safety instructions and important information are always accessible.
- Should you encounter problems that are not detailed adequately in the operating instructions, please contact your NuAire Representative of NuAire technical Services.

1.6 Explanation of Symbols



Safety alert symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.



Potential electrical hazard, only qualified person to access.



NOTE: Used for important information.

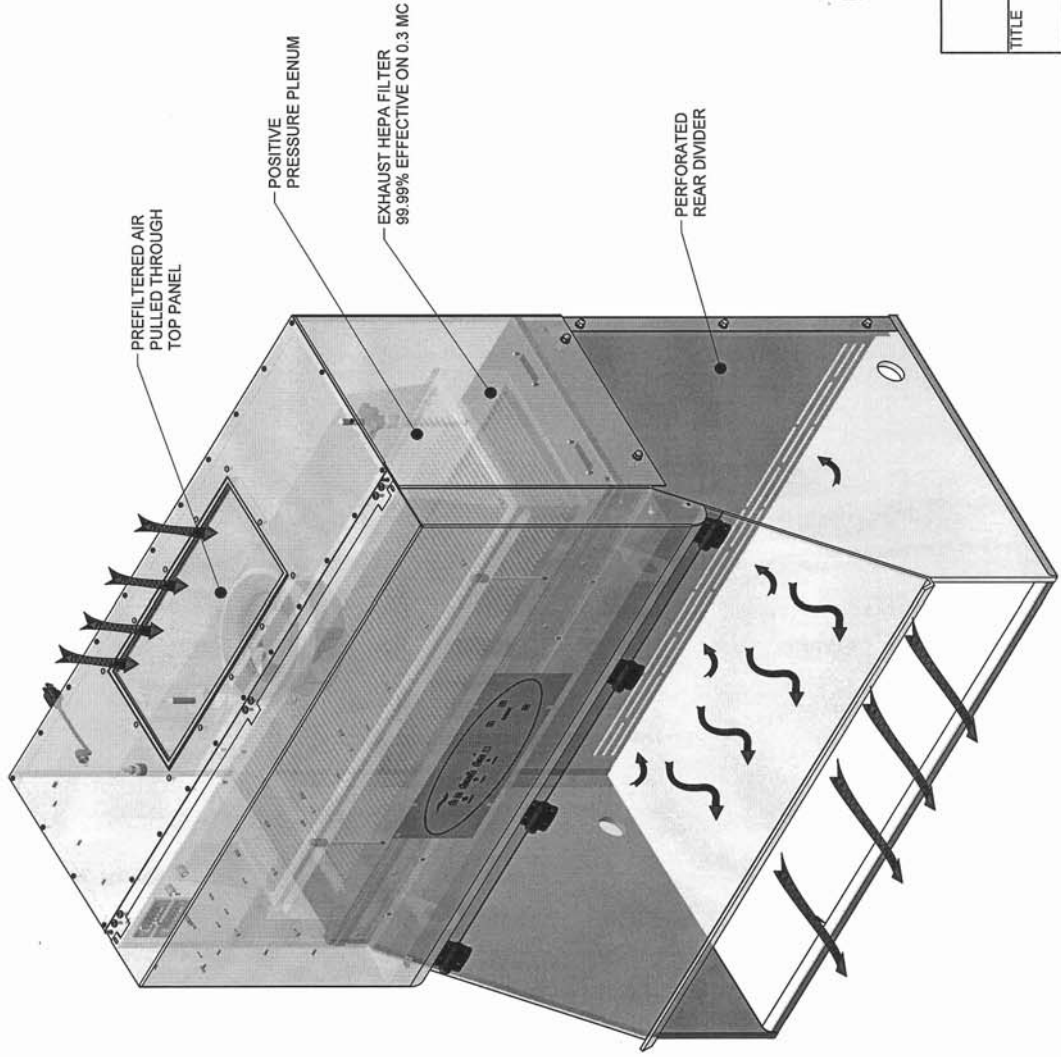


Ground, Earth




Lead Free

REV	ECO	DESCRIPTION	DATE	DFTM	CHKD
A	10890	RELEASED TO PRODUCTION	07/02/2010	DHH	MSS



ORIGINAL

						
TITLE						
NU-126 AIREFLOW SCHEMATIC						
DFTM	DATE	CHKD	SHEET	1	OF	1
DHH	6/16/2010	MSS				
DRAWING NUMBER		BCD-13927				
		A				

DOWN FLOW 80 - 100 FPM

2.0 Models & Features

The NU-126/E comes in standard size of 6 ft. (1829mm).

3.0 Warranty

NuAire, Inc. warrants that it will repair F.O.B. its factory or furnish without charge F.O.B. its factory, a similar part to replace any material in its equipment within 36 months after the date of sale if proved to the satisfaction of the company to have been defective at the time it was sold provided that all parts claimed defective shall be returned, properly identified to the company and its factory, charges prepaid. Factory installed equipment or accessories are warranted only to the extent guaranteed by the original manufacturer, and this warranty shall not apply to any portion of the equipment modified by the user. Claims under this warrant should be directed to NuAire, Inc. setting forth in detail the nature of the defect, the date of the initial installation and the serial and model number of the equipment.

This warranty shall not apply to any NuAire product or part thereof which has been subjected to misuse, abuse, accident, shipping damage, improper installation or service, or damage by fire, flood or acts of God. If the serial number of this product is altered, removed or defaced as to be illegible, the warranty shall be null and void in its entirety.

The warranty is for the sole benefit of the original purchaser and is not assignable or transferable. Prior to returning any item, for any reason, contact NuAire for a Return Authorization Number. This number must accompany all returns. Any product shipped to NuAire without this number will be returned, refused shipment or collect freight.

4.0 Shipments

NuAire takes every reasonable precaution to assure that your NuAire cabinet arrives without damage. Motor carriers are carefully selected and shipping cartons have been specially designed to insure your purchase. However, damage can occur in any shipment and the following outlines the steps you should take on receipt of a NuAire cabinet to be sure that if damage has occurred, the proper claims and actions are taken immediately.

4.1 Damaged Shipments

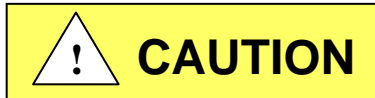
- 4.1.1** Terms are factory, unless stated otherwise. Therefore, it is important to check each shipment before acceptance.
- 4.1.2** If there is visible damage, the material can be accepted after the driver makes a notation on the consignee's copy of the freight bill. Then an inspection must be made to verify the claim against the carrier. This inspection is the basis of your filing the claim against the carrier.
- 4.1.3** If concealed damage is found, it is absolutely necessary to NOTIFY THE FREIGHT AGENT AT ONCE and request an inspection. Without this inspection, the transportation company may not perform the inspection; an affidavit must be prepared stating that he was contacted on a certain date and that he failed to comply with the request. This along with other papers in the customer's possession will support the claim.

5.0 NU-126/E Installation Instructions

Within the laboratory, pharmacy, etc., the ideal location of the Vertical Airflow cabinet is away from personnel traffic lanes, air vents, (in or out), doors and/or any other sources of disruptive air currents.

If drafts or other disruptive air currents exceed the outflow velocity of the cabinet through the access opening, the potential exists for contaminated air to enter the cabinet. It depends on the severity of the air current.

Where space permits, a clear twelve (12) inch (305mm) area should be permitted on each side of the cabinet for maintenance purposes. The electrical outlet into which the cabinet is connected should be readily accessible for maintenance purposes. A minimum clearance of 6 inches (152mm) is required from the top of the cabinet to the ceiling for proper air entry.



THIS UNIT CONTAINS ELECTRONIC BALLASTS FOR THE FLUORESCENT LIGHTING. ELECTRONIC BALLASTS OPERATE WITH HIGH INRUSH CURRENT. IT IS NOT RECOMMENDED TO USE THIS PRODUCT WITH GROUND FAULT CIRCUIT INTERRUPTERS (GFCI'S) BECAUSE THE BALLASTS MAY CAUSE THE GFCI TO TRIP.

Do not position the cabinet to prevent access to the power cord. The power cord plug serves as the disconnect and should remain readily accessible. If the outlet is inaccessible, such as a conduit (hardwired) connection, then an appropriate warning label should be applied near the cabinets on/off switch to indicate the circuit breaker on the power distribution panel to be used.

6.0 Certification

After installation and prior to use, NuAire recommends that the cabinet be recertified to factory standards. At a minimum, the following tests should be performed:

1. HEPA Filter Leak Test
2. Airflow Velocity (outflow)

The testing methods and equipment required are specified on the factory inspection report included with this manual.

 **NOTE: IT IS RECOMMENDED THAT THESE TESTS BE PERFORMED BY A QUALIFIED TECHNICIAN WHO IS FAMILIAR WITH THE METHODS AND PROCEDURES FOR CERTIFYING BIOLOGICAL SAFETY CABINETS.**

 **NOTE: AFTER THE INITIAL CERTIFICATION, NUAIRE RECOMMENDS THAT THE CABINET BE RECERTIFIED AT A MINIMUM ON AN ANNUAL BASIS AND AFTER EVERY FILTER CHANGE OR MAINTENANCE ACTION OR ANY TIME THE OPERATOR FEELS IT IS NECESSARY.**

Note that the Vertical Airflow cabinets, filters and seals provide premium performance; Quality Control in both design and manufacturing assure superior reliability. However, protection to both product and operator is so vital that certification to the performance requirements should be accomplished as stated to ensure biological safety established by the factory standards.

7.0 Operating the NU-126/E

7.1 Operator Controls & Indicators

The following is a description of the controls and indicators (see Drawing BCD-13928).

7.1.1 Blower Keys

The blower key indicate and control ON/OFF power to the blower.

7.1.2 Light Keys

The light keys indicate and control ON/OFF power to the fluorescent light.

7.1.3 Outlet Keys (optional)

The outlet keys indicate and control ON/OFF power to the optional outlets.

7.1.4 Window Alarm LED

The window alarm LED indicates when the hinged window is lowered and the UV panel is in place. This will allow operation of the UV light (optional).

7.1.5 Flow Gard Arrow Adjustment Keys

The arrow adjustment keys allow user interaction for various functions.

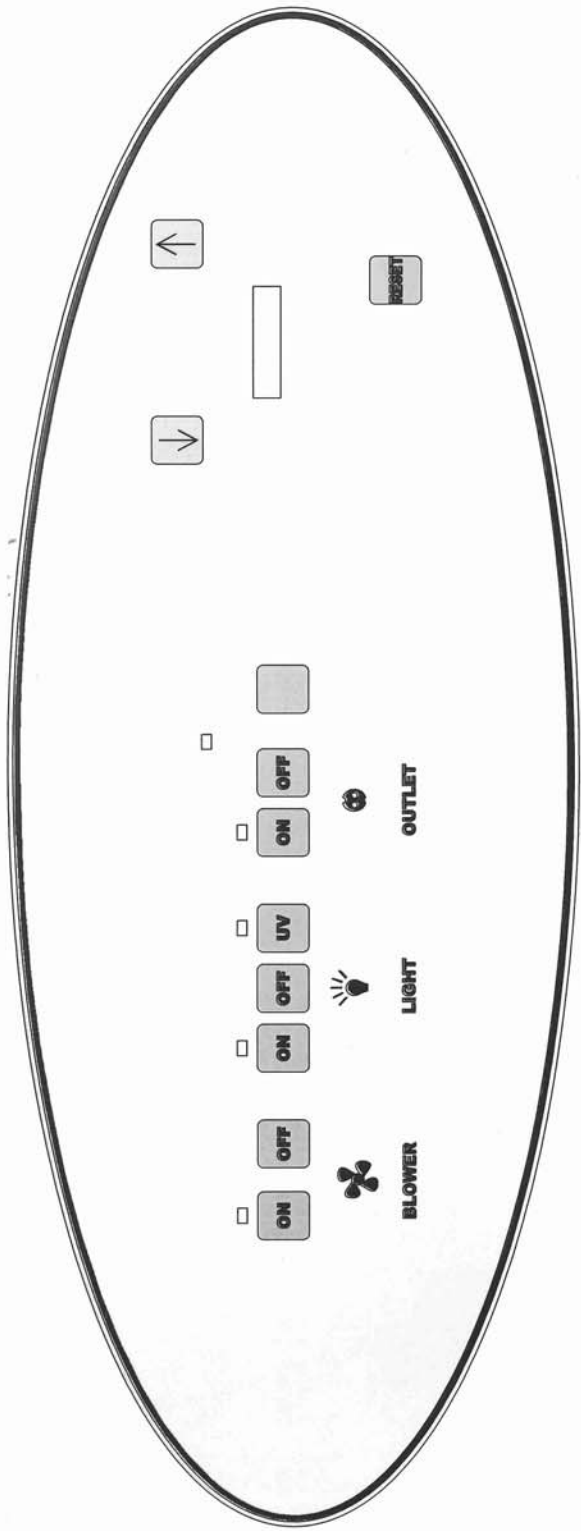
7.1.6 Flow Gard LED Display

The Flow Gard LED display indicates the system running condition. Green is normal; yellow is caution and red is alarm.

7.1.7 Flow Gard Reset Key

The Flow Gard reset key allows various user interaction for various functions.

REV	ECO	DESCRIPTION	DATE	DFTM	CHKD
A	10890	RELEASED TO PRODUCTION	6/22/2010	DHH	MSS



ORIGINAL

TITLE						
NU-126 CONTROL PANEL						
DFTM	DATE	CHKD	SHEET	1	OF	1
DHH	6/16/2010	MSS				
DRAWING NUMBER		BCD-13928		A		

7.2 Run Mode Operation

Operation of the cabinet is initiated by plugging the power cord into the appropriate line power. In the power off condition (cabinet is unplugged); all calibration and running parameters will be stored in the microprocessor's EEPROM memory. During the power on condition (cabinet is plugged in), the cabinet's blower, lights, and outlet may be turned on. The optional Flow Gard monitor will automatically turn on when the blower is on.

7.2.1 Airflow Control

The operating airflows within the cabinet (i.e. 80 LFPM (.41 m/s)) are controlled by a potentiometer (see Section 7.5). The potentiometer, located on the main control module, controls the operating voltage applied to the motor/blower. The potentiometer is adjustable over 270 degrees with a slotted screwdriver, which varies the applied voltage. **THIS ADJUSTMENT SHOULD ONLY BE MADE BY A QUALIFIED TECHNICIAN EMPLOYING THE PROPER INSTRUMENTS IN ORDER TO INSURE AIRFLOWS PER MANUFACTURERS SPECIFICATIONS.**

7.2.3 Blower Password Protection

The blower may be operated by using a password. A combination of 3 jumpers on the control board will activate a password sequence of the front membrane panel. The jumpers are labeled JP1, JP2, and JP3 on the control board and the hidden key is the blower symbol on the front membrane panel. The other keys are the blower on and blower off switch. If all three jumpers are on or off, the blower on/off switch will function with no password protection.

The code for using a sequential password is:

Jumpers			Password Sequence		
JP1	JP2	JP3			
+	-	-	on	off	hidden
-	+	-	on	hidden	off
+	+	-	off	on	hidden
-	-	+	off	hidden	on
+	-	+	hidden	on	off
-	+	+	hidden	off	on

7.3 Flow Gard Operation

7.3.1 Overview

The Flow Gard monitor uses a digital pressure transducer to monitor the cabinet's positive pressure plenum. The Flow Gard monitor indicates through LED's normal operation (green), as well as high/low alarm status (red).

The Flow Gard functions only when the cabinet blower is on. When the Flow Gard is turned on, it will go through a 4-minute warm-up period indicated by a series of blinking LED's. When the warm-up period is complete, the LED indicator will stop blinking and remain on.

All user interaction is accomplished through the arrow and reset keys.



NOTE: IT IS RECOMMENDED THAT THE FLOW GARD BE CALIBRATED ANNUALLY DURING THE CERTIFICATION PROCESS.

7.3.2 Nominal Airflow Calibration

To calibrate the Flow Gard monitor, the cabinet must first be certified or set to nominal airflow values. Once the cabinet nominal airflows are set, perform the following procedure:

- Press and hold [↑] and [↓] arrow keys simultaneously for 3 seconds until the center green LED blinks.
ALLOW UNIT TO RUN FOR A MINIMUM OF 2 MINUTES with the center green LED blinking.
- Press [RESET] key to enter the nominal airflow value (green LED will stop blinking and display normal).

Please note, after the initial calibration, the Flow Gard LED display will bounce around more than normal. After a few hours, the Flow Gard LED display will steady due to fuzzy logic or a learning program that averages the normal display.

Once the Flow Gard has been calibrated, the high/low alarm limits are defaulted to the standard tight tolerance to activate with a pressure deviation of ± 0.04 inches (3mm) water gage from nominal. The pressure deviation translates to a reduction in airflow that is well within the operational tolerances of the cabinet.

7.3.3 Independent High/Low Alarm Calibration

If desired, the Flow Gard high or low alarm limit may be adjusted. However, to adjust the high or low alarm setpoint, the cabinet airflow must be altered to the desired alarm setpoint before the individual calibration point can be entered into the monitor. Once the cabinet high or low alarm limit airflows are set, perform the following procedure:

- Press and hold either the [↑] key for high alarm or [↓] key for low alarm for three seconds until the Hi or Lo red LED blinks respectively.
- Press [RESET] key to enter the high or low alarm setpoint.
- Re-adjust airflow back to the nominal values.

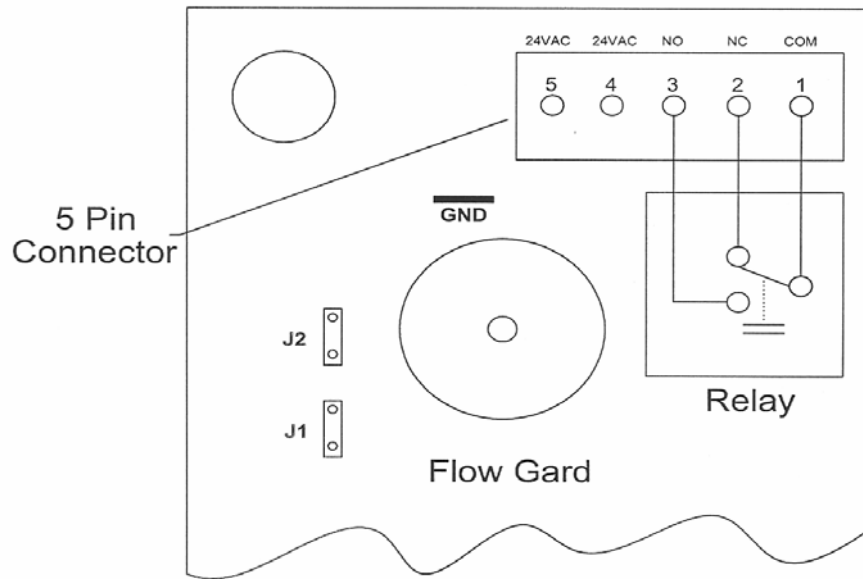
The high or low alarm limit may be verified by adjusting the airflow to the alarm limit to induce an alarm condition.

7.3.4 Audible Pressure Alarm

The audible alarm should be activated whenever the pressure reaches the high or low alarm setpoint. However, once the alarm pressure is reached, it must stay on the alarm limit for 5 seconds consistently or it will not recognize it as an alarm. If at any time, the pressure returns to acceptable limits, the alarm would be reset and silenced. Once the 5 second period of constant alarm is present, the audible will sound for 30 seconds, then ring back 1 second every 10 seconds. If the Reset key is pressed, the alarm will be silenced for 5 minutes, then continue to ring back for 1 second every 10.

7.3.5 Remote Alarm Relay/Function Jumpers

Every Flow Gard is equipped with an alarm relay rated 2 Amps/250 VAC, (Reference sketch below) which can be used to activate a remote alarm.



There is continuity between pin #1 and pin #2 (of the 5 pin connector) thru the relay **during the warm-up period and normal run-mode.**

There is continuity between pin #1 and pin #3 (of the 5 pin connector) thru the relay **during an alarm of the Flow Gard.**

The Flow Gard has a set of jumpers on the board that controls both the alarm setpoint pressure range and audible alarm function. Jumper (J1) normally not connected will allow audible alarm to be silenced during an alarm condition. If jumper (J1) is installed, the audible alarm cannot be silenced. Jumper (J2) not installed will use the standard alarm setpoint range of ± 0.13 "w.g. Jumper (J2) normally installed, the standard tight tolerance alarm setpoint range of ± 0.04 "w.g. would be in use.

8.0 Operating Guidelines

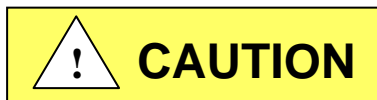
- 8.1** Operate the Vertical Airflow Cabinet continuously. The unit will then remain in its initially clean condition. If for any reason the unit is turned off for some time (say a week) the face of the protective screen in horizontal airflow units should be cleaned, preferably with a small brush. Clean the interior surfaces with lukewarm water and a mild detergent. Turn the unit on and permit to operate for 15 minutes before resuming operations.
- 8.2** Allow only essential items in the work station. New items introduced into the work area should be placed downstream of items already in the work zone for several minutes to allow contaminants to flush off. Note that plastic parts may carry a static charge which may require special handling in order to remove contaminants.
- 8.3** Particular care must be exercised in placing equipment within the work space. Where possible, equipment should be placed on perforated platforms to allow air movement under, as well as around the object.
- 8.4** All work should be performed with the operator's hand downstream of the critical process points. Unnecessary movement with the work station should be kept to a minimum.

8.5 Operating Sequence:

8.5.1 Start-up

Turn on cabinet blower and lights, check air intake port of the cabinet to make sure it is unobstructed. Blower speed must only be readjusted by qualified maintenance technicians.

- 8.5.2** Good procedure includes the decontamination or wipe down of cabinet surfaces with chemical disinfectant before work commences.



USE OF CHLORINATED OR HALOGEN MATERIALS IN THE CABINET MAY DAMAGE STAINLESS STEEL, IF APPLICABLE.

- 8.5.3** Allow blower to operate for a minimum of 5 minutes before aseptic manipulations are begun in the cabinet. An additional advantage is obtained from purification (filtration) of the room air circulated through the equipment. Because of the characteristics contributed to the quality of the laboratory environment, some owners leave them in operation beyond the time of actual use.
- 8.5.4 Minimize Room Activity**
Activity in the room itself should be held to a minimum. Unnecessary activity may create disruptive air currents as well as interfere with the work of the operator. A person walking past the front of the cabinet can cause draft velocities up to 175 FPM (.88 m/s) which are sufficient to disrupt the air balance of the Vertical Airflow Cabinet.
- 8.5.5 Utilize Unidirectional Airflow**
The operator must keep two important facts in mind:
- The air as supplied to the work area through the HEPA filter is contaminant free.
 - Airborne contamination generated in the work area is controlled by the unidirectional flow of parallel air streams. A solid object placed in a laminar air stream will disrupt the parallel flow and consequently, the capability of controlling lateral movement of airborne particulates. A cone of turbulence extends behind the object and laminarity of the air stream is not regained until a point is reached downstream, approximately equal to three to six times the diameter of the object. Within the parameters of this cone, particles may be carried laterally by multidirectional eddy currents.
- 8.5.6 Terminal Purging & Wipe down**
Following completion of the work, allow the hood to run for a 2-3 minute period without personnel activity to purge the unit. The decontamination of the interior surfaces should be repeated after removal of all materials, culture, apparatus, etc. A careful check of grills and diffuser grids should be made for spilled or splashed nutrients which may support fungus growth and resulting spore liberation that contaminates the protected work environment.
- 8.5.7 Shut Down**
Turn off blowers and lights. Do not use cabinet as a depository for excess laboratory equipment during periods of non-operation.

9.0 Optional Equipment

9.1 Ultraviolet Lamp

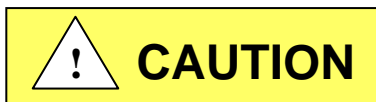
9.1.1 Overview

The germicidal ultraviolet is primarily intended for the destruction of bacteria and other microorganisms in the air or on directly exposed surfaces. Approximately 95% of the ultraviolet radiations from germicidal tubes are in the 253.7 nanometer region. This is a region in the ultraviolet spectrum which is near the peak of germicidal effectiveness. The exposure necessary to kill bacteria is the product of time and intensity. High intensities for a short period of time, or low intensities for a longer period are fundamentally equal in lethal dosage on bacteria (disregarding the life cycle of bacteria). The intensity of light falling on a given area is governed by the inverse law; that is the killing intensity decreases as the distance increases from the tube.

 **NOTE: The germicidal tube is placed in the cabinet to provide an average intensity of 100 microwatts per centimeter (for a new tube) falling on a horizontal plane defined by the bottom of the work surface. The minimum requirement per paragraph 5.12 of NSF Standard 49 is 40 microwatts per square centimeter (ref. NSF Std. #49, June, 1976).**

9.1.2 Operation

The operation of the ultraviolet lamp is accomplished by placing the UV shield over the front access opening and pressing the UV switch located on the front panel. The UV shield is interlocked to the ultraviolet lamp so, when the shield is removed, the ultraviolet lamp will turn off.



ALWAYS OPERATE THE UV LIGHT WITH THE HINGED VIEWING WINDOW DOWN AND THE UV SHIELD IN PLACE.

9.1.3 Precaution

The rays from germicidal tubes may cause a painful but temporary irritation of the eyes and reddening of the skin, if of sufficiently high intensity, or if exposure covers a prolonged period of time. For this reason, one should avoid direct eye and skin exposure to ultraviolet light. If exposure cannot be avoided, it is necessary for personnel to wear eye goggles or face shields, and long sleeve gowns with rubber gloves.

9.1.4 Maintenance

The output of an ultraviolet lamp deteriorates with burning age. The useful life of the lamp is approximately 7000 hours under specific test conditions. If the tube is turned on every day for 12 hours, the tube will last approximately one year.

It is recommended that either a time schedule be established or the tube's output be measured periodically and the tube replaced when its output falls below 40 microwatts per square centimeter or exceeds 7000 hours of operation. Lamps should be allowed to operate approximately 5 to 10 minutes (longer when the lamp is in low temperatures) to warm up sufficiently and wiped clean of dust or dirt before reading the output with a meter. Even minute amounts of dust will absorb ultraviolet energy. The lamp may be cleaned with a lint-free cloth dampened with alcohol or ammonia and water.

Energies Required to Destroy Some Microorganisms by Ultraviolet Radiations (e)

Mold Spores	Microwatt seconds per cm/2	Protozoa	Microwatt seconds per cm/2
Penicillium roqueforti	26,400	Paramecium	200,000(a)
Penicillium expansum	22,000		
Penicillium digitatum	88,000	Nematode Eggs	40,000(b)
Aspergillus glaucus	88,000		
Aspergillus flavus	99,000	Algae	22,000(c)
Aspergillus niger	330,000		
Rhizopus nigricans	220,000	Virus	
Mucor racemosus A	35,200	Bacteriophage (E. Coli)	6,600
Mucor racemosus B	35,200	Tobacco Mosaic	440,000
Oospora lactis	11,000	Influenza	3,400(d)
Yeasts			
Saccharomyces	13,200		
ellipsoideus	17,600		
Saccharomyces cerevisiae	13,200		
Brewers' yeast	6,600		
Baker's yeast	8,800		
Common yeast cake	13,200		
Bacteria			
Streptococcus lactis	8,800		
Strep. hemolyticus (alpha type)	5,500		
Staphylococcus aureus	6,600		
Staphylococcus albus	5,720		
Micrococcus sphaeroides	15,400		
Sarcina lutea	26,400		
Pseudomonas fluorescens	7,040		
Escherichia coli	7,040		
Proteus vulgaris	7,480		
Serratia marcescens	6,160		
Bacillus subtilis	11,000		
Bacillus subtilis spores	22,000		
Spirillum rubrum	6,160		

References:

- (a) Luckiesh, Matthew (1946) Application of Germicidal, Ethyemal and Infrared Energy, D. Van Nostrand o., New York, New York, pp. 253
- (b) Hollaender (1942) Aerobiology, A.A.A.S. (for 90% inactivation), pp. 162
- (c) Ellis, C. and Wells, O.O. (1941) The Chemical Action of Ultraviolet Rays, Reinhold Publishing Corp., pp. 713-714
- (d) Hollaender, A., Oliphant, J.W. (1944) The inactivation effect of monochromatic ultraviolet. Radiation on Influenza Virus (for 90% inactivation) Jour. of Bact. 48, pp. 447-454
- (e) This table, "Energies Required to Destroy Some Microorganisms by Ultraviolet Radiations" comes from Westinghouse brochure entitled - "Westinghouse Sterilamp Germicidal Ultraviolet Tubes"

10.0 General Maintenance

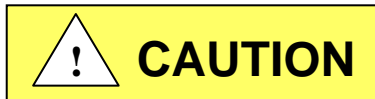
Normally, no preventative maintenance is required on the interior of the station. The motor is lubricated for life and is thermally protected with automatic reset. The entire lamp assembly is external. Motor controls and cabinet switches are located in the clean area of the hood.

It is recommended that the Station have the integrity of the HEPA filters verified by a qualified technician after the unit has been initially installed. Thereafter, certification per Section 7.0 should be performed on an annual basis, or whenever the operator has reason to believe it is necessary.

10.1 Cleaning

10.1.1 Exterior Cleaning

The baked urethane, Formica work surface and acrylic panels are easily cleaned with any mild household detergent. Use a soft cloth on the panels. Special cleaners are available for Plexiglas if desired.



DO NOT USE ORGANIC SOLVENTS SUCH AS ALCOHOL, KETONES, ACETONE, TOLUOL, ETC. ON THE ACRYLIC - IT CAN CRAZE THE SURFACE UNDER CERTAIN CONDITIONS OF SURFACE STRESS AND HUMIDITY.

10.2 Fluorescent Lamp Bulb Replacement

The fluorescent bulbs are cool white and located in the fixture outside of the viewing window. The life rating of the bulb is 9000 hours based on three hour burning cycles.

10.2.1 To Replace a Bulb:

- First, switch the cabinet light switch off.
- Second, remove the two thumbnuts at the top of the cabinet and the two Phillips screws on the sides of the control center. Swing the control box up and re-install the thumbnuts to hold the control box in place.
- The lamp bulbs are removed by displacing the bulb to one side against the compressible bulb holder.
- Reverse the procedure to reinstall the lamp assembly.

10.3 HEPA Filter Replacement

10.3.1 To replace the HEPA filter, it is necessary to remove the filter/blower module from the cabinet walls, place it upside down and proceed to remove the filter. Constant pressure spring type clamps are used to hold the filter tightly in place to counteract gasket relaxation.

10.3.2 The HEPA for the Vertical Airflow Cabinet employs a closed cell neoprene gasket material as described in MIL-F-51068C, Paragraph 3.2.2. To install filters, grease the top gasket of the filter with silicone grease and carefully insert against the seal frame. Position the filter symmetrically within the outside walls. Tighten the spring-type clamps depressing the gasket material by 1/8" (3mm).

10.3.3 When installing new filters, use only filters of the same rated flow and size as originally installed (see Replacement Parts List).

10.4 Motor/Blower Replacement

10.4.1 The motor/blower assembly should never need any preventative maintenance, but in case of a malfunction, the following steps should be taken. To replace the motor/blower, remove the top panel to gain access and disconnect the electrical wires to the motor. For an AC motor, unscrew the Phillips screws holding it to the plenum. For an EC motor, the plenum will have to be removed.

10.4.2 To install motor/blower, reverse the above procedure.

10.5 Airflow Adjustment

- 10.5.1** Adjustments to airflow within the cabinet should be done only by a qualified technician who can measure the airflow with a suitable velometer.
- 10.5.2** In order to measure the airflow velocity, use a thermo anemometer, TSI 8355 type or equal, the air velocity measurements shall be taken at multiple points in the horizontal plane 6 inches (152mm) from the diffuser on a grid with the points approximately four (4) inches (102mm) apart. Use filter grid as described below. Nominal setting is 90 ± 10 FPM ($.46 \pm .05$ m/s).

Filter Grid:

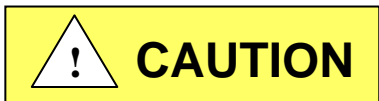
The airflow velocity measurements shall be taken using the grid below in the horizontal plane 6 inches (152mm) from the filter surface.

Inches (mm) (measurements taken from the inner edge of the filter frame):

600/E	7.50 (191)	11.50 (292)	15.50 (394)	19.50 (495)	23.50 (597)	27.50 (699)	31.50 (800)	35.50 (902)	39.50 (1003)	43.50 (1105)	47.50 (1207)	51.50 (1308)	55.50 (1410)	59.50 (1511)	63.50 (1613)
7.00 (178)															
11.00 (280)															

10.6 Filter Integrity Check

In order to check filter and seal integrity, the HEPA filter media and seals must be directly accessible by the measuring instrument. Measurements on the filter must be taken directly below the filter with the diffuser removed.



Failure to calibrate airflow to the specified requirements may result in unsafe conditions of performance (i.e. product and/or personnel protection, noise and vibration)

11.0 Polycarbonate Material Compatibility

11.1 Polycarbonate sheet is resistant at 70° to these chemicals.

Amyl alcohol	Formic acid (10%)	Nickel sulphate	Silicone oil
Aluminum chloride	Formalin (30%)	Nitric acid (10%)	Silver nitrate
Aluminum sulphate		Nitric acid (20%)	Sodium bicarbonate
Ammonium chloride	Glycerine		Sodium bisulphate
Ammonium nitrate		Oleic acid	Sodium carbonate
Ammonium sulphate	Heptane	Oxalic acid	Sodium chloride
Antimony trichloride	Hydrochloric acid (10%)		Sodium hypochlorite
Arsenic acid	Hydrogen peroxide (30%)	Pentane	Sodium sulphate
	Hydrofluoric acid (10%)	Phosphoric acid (10%)	Stannous chloride
Butyl alcohol		Potassium bromate	Sulfur
	Isopropyl alcohol (70%)	Potassium bromide	Sulfuric acid (>10%)
Calcium nitrate		Potassium nitrate	Sulfuric acid (50%)
Chlorinated Lime Paste	Lactic acid (20%)	Potassium perchlorate	Tartaric acid (30%)
Chrome alum		Potassium permanganate	Zinc chloride
Chromic acid (20%)	Magnesium chloride	Potassium persulphate	Zinc sulphate
Citric acid (40%)	Magnesium sulphate	Potassium sulphate	
Copper chloride	Manganese sulphate		
Copper sulphate	Mercuric chloride		

11.2 Polycarbonate sheet is not resistant to these chemicals.

Acetaldehyde	Cresol	Nitrobenzene
Acetic acid (conc.)	Cutting oils	Nurocellulose lacquer
Acetone	Cyclo hexanone	
Acrylonitrile	Cyclohexene	Ozone
Ammonia		
Ammonium fluoride	Dimethyl formamide	Phenol
Ammonium hydroxide	Dioxane	Phosphorous hydroxy chloride
Ammonium sulfide		Phosphorous trichloride
	Ethane tetrachloride	Propionic acid
Benzene	Ethylamine	Pyridine
Benzoic acid	Ethylene dichloride	
Benzyl alcohol	Ethyl ether	Sodium sulfide
Brake fluid	Ethylene chlorohydrin	Sodium hydroxide
Bromobenzene		Sodium nitrate
Butylic acid	Formic acid (conc.)	Sulfuric acid (1%)
	Freon (refrigerant & propellant)	
Carbon tetrachloride		Tetrahydronaphthalene
Carbon disulfide	Gasoline	Thiophene
Carbolic acid		Toluene
Caustic potash solution (5%)	Lacquer thinner	Turpentine
Caustic soda solution (5%)		
Chloroform	Methyl alcohol	Xylene
Chloroethene	Methylene chloride	
Chlorobenzene		

12.0 Electrical/Environmental Requirements

12.1 Electrical: (Supply voltage fluctuations not to exceed +/- 10%)


*NU-126-600	115 \pm 10% VAC,	60 Hz,	1 Phase,	5 Amps
**NU-126-600E	230 \pm 10% VAC,	50 Hz,	1 Phase,	5 Amps

*UL Listed / **CE Certified

Note: Cabinet shall be connected to a reliably grounded source/outlet.

12.2 Operational Performance - Indoor Use Only

Environment Temperature Range:	60°F - 77°F (15.6°C - 25°C)
Environment Humidity:	20% - 60% Relative Humidity
Environment Altitude:	(2000 Meters) Maximum

 **NOTE:** If equipment is being used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

12.3 Light Exposure

Standard Fluorescent Lighting @ 150 ft. candles (1614 LUX) maximum intensity.

12.4 Installation Category: II

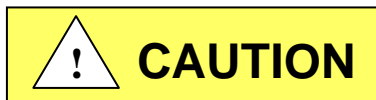
Installation category (overvoltage category) defines the level of transient overvoltage which the instrument is designed to withstand safely. It depends on the nature of the electricity supply and its overvoltage protection means. For example, in CAT II, which is the category used for instruments in installations supplied from a supply comparably to public means, such as hospital and research laboratories and most industrial laboratories, the expected transient overvoltage is 2500V for a 230V supply and 1500 V for a 120 V supply.

12.5 Pollution Degree: 2.0

Pollution degree describes the amount of conductive pollution present in the operating environment. Pollution degree 2 assumes that normally only non-conductive pollution such as dust occurs with the exception of occasional conductivity caused by condensation.

12.6 Chemical Exposure

Chemical exposure should be limited to antibacterial materials used for cleaning and disinfecting. Chamber decontamination can be accomplished by paraformaldehyde, vapor phased Hydrogen Peroxide or Ethylene Oxide without degradation of cabinet materials.



CHLORINATED AND HALOGEN MATERIALS ARE NOT RECOMMENDED FOR USE ON STAINLESS STEEL SURFACES.

12.7 EMC Performance (classified for light industrial)


Emissions:	EN61326
Immunity:	EN61326



The EMC performance requirements are generated within the product enclosure.
The enclosure will be all metal grounded to earth.

13.0 Disposal and Recycle

Cabinets that are no longer in use and are ready for disposal contain reusable materials. ALL components with the exception of the HEPA filters may be disposed and/or recycled after they are known to be properly disinfected.

 **NOTE:** Follow all local, state and federal guidelines for disposal of HEPA filter solid waste.



Prior to any disassembly for disposal, the cabinet must be decontaminated.




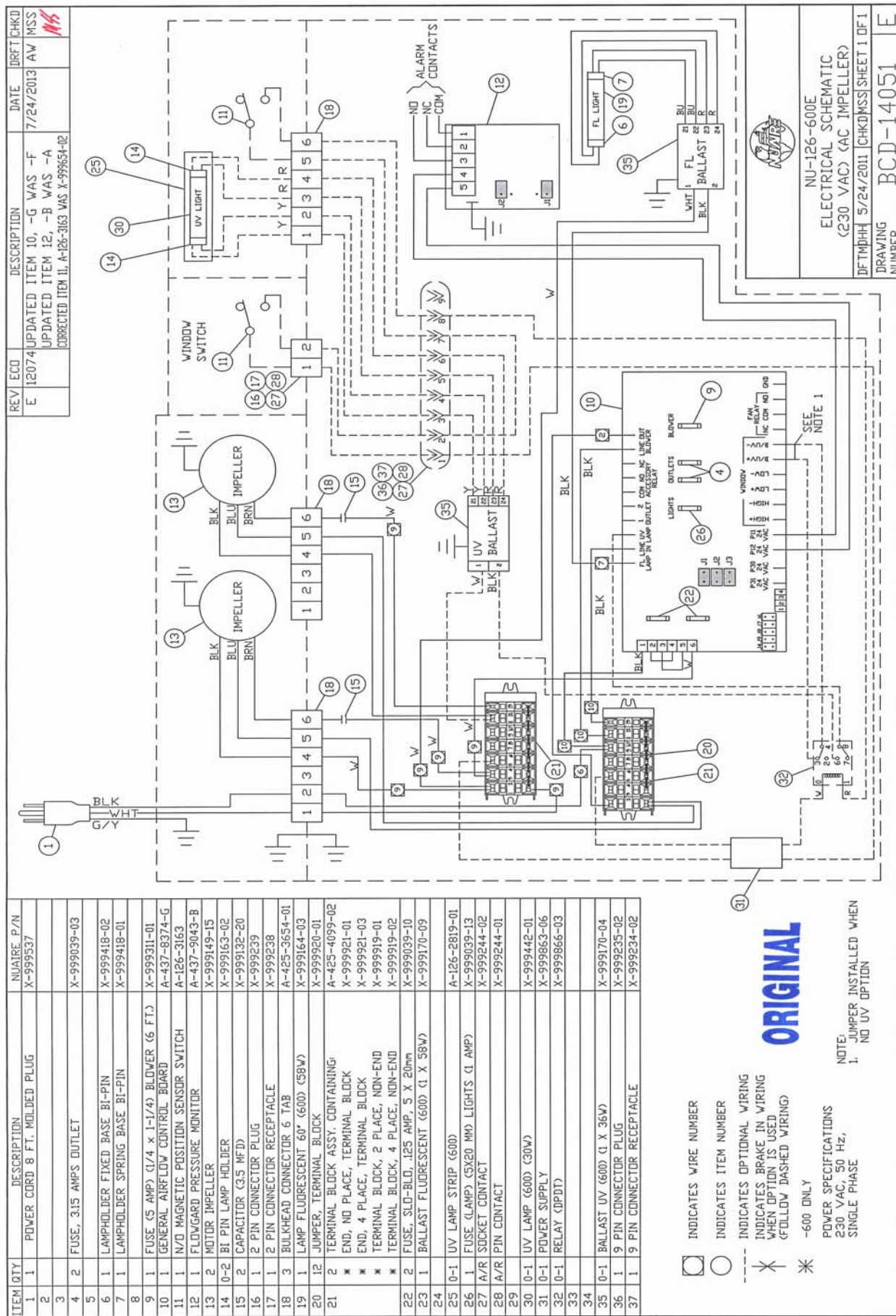
RECYCLE



LEAD FREE

<u>Component</u>	<u>Material</u>
Top Cabinet	Painted Steel
Work surface	Wood/Stainless Steel
Window	Polycarbonate
Control Center	Painted Steel
Supply Diffuser	Aluminum
Exhaust Filter	Aluminum
HEPA Filter Frames	Painted Steel
Blower Wheel	Plastic or Aluminum
Motor	Various Steel/Copper
Printed Wiring Assembly	Lead Free Electronic
Wire	PVC Coated Copper
Ballasts	Various Steel, Electronic
Connectors	Nylon
Hardware	Stainless Steel and Steel
Work zone Side Panels	Polycarbonate
Work zone Rear Panels	Polycarbonate

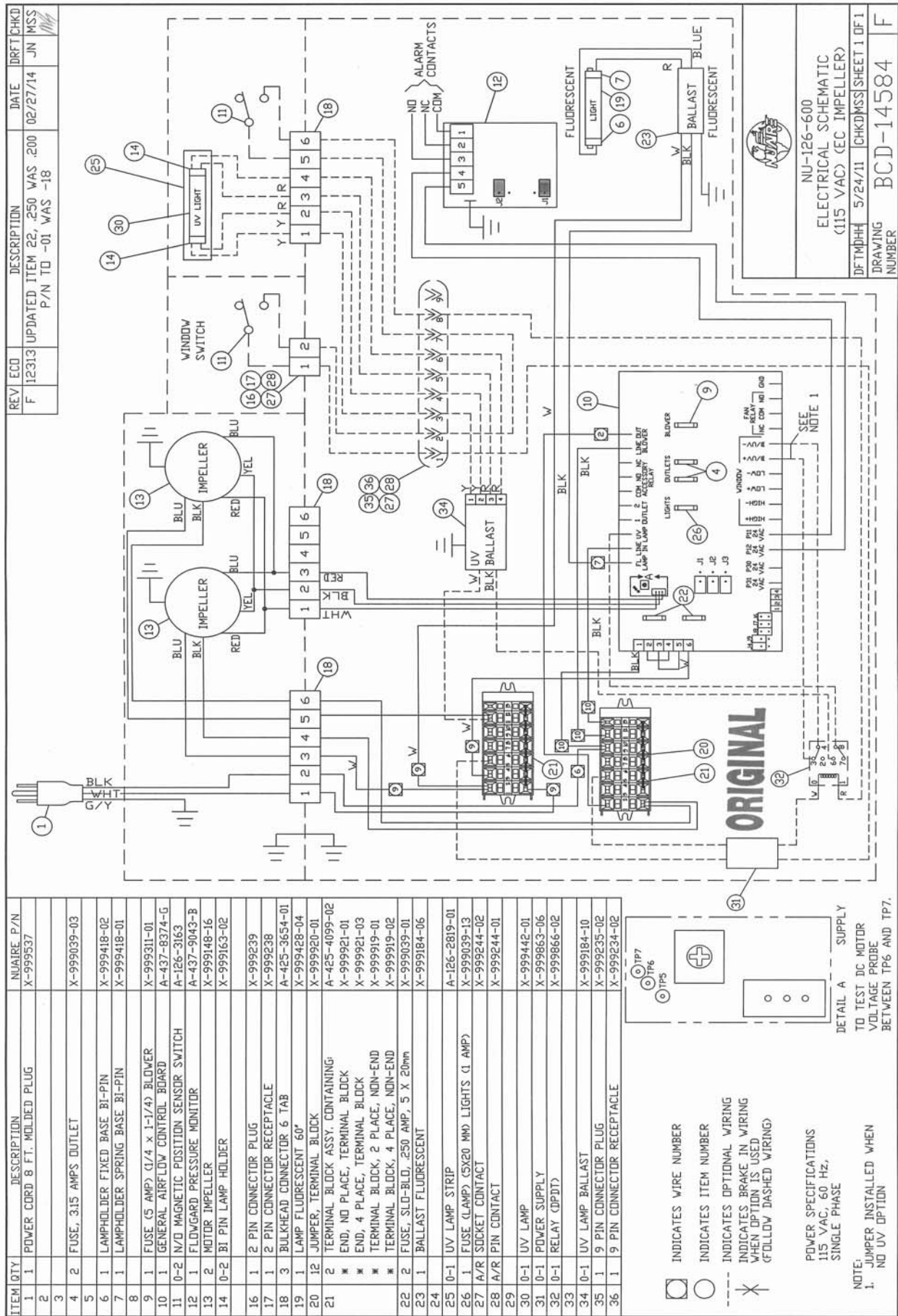
 **NOTE:** Material type can be verified with use of a magnet with stainless and aluminum being non-magnetic.



REV	ECD	DESCRIPTION	DATE	DRFT	CHKD
E	112074	UPDATED ITEM 10, -G WAS -F UPDATED ITEM 12, -B WAS -A CORRECTED ITEM 11, A-126-3163 WAS X-999534-02	7/24/2013	AW	MSS

NU-126-600E
 ELECTRICAL SCHEMATIC
 (230 VAC) (AC IMPPELLER)

DFTMDDH 5/24/2011 (CHKD)MSS SHEET 1 OF 1
 DRAWING NUMBER BCD-14051 E

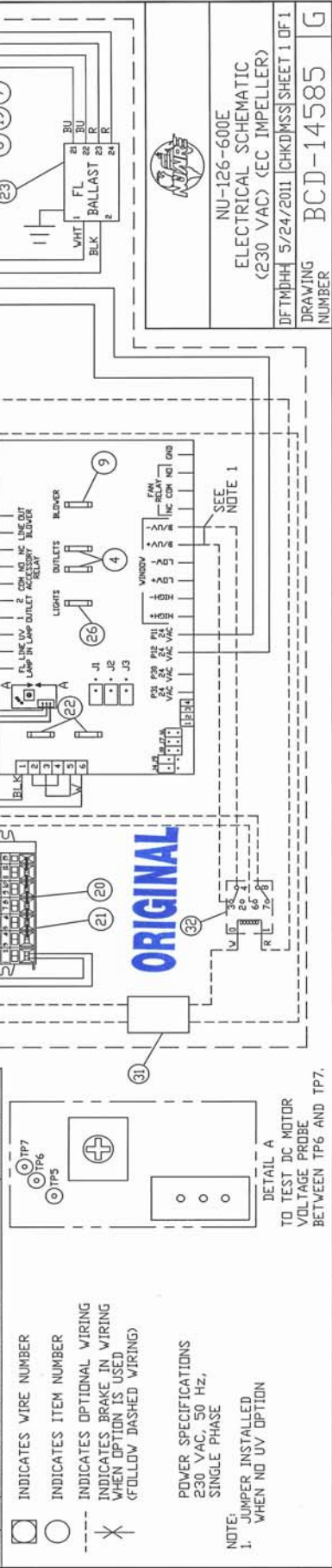


NUJ-126-600
ELECTRICAL SCHEMATIC
(115 VAC) (EC IMPELLER)

DFTMDHH 5/24/11 [CHKD/MSS] SHEET 1 OF 1
DRAWING NUMBER BCD-14584 F

REV	ECD	DESCRIPTION	DATE	DRFT	CHKD
G	12074	UPDATED ITEM 10, -G WAS -F	7/24/2013	AW	MSS

ITEM QTY	DESCRIPTION	NUAIRE P/N
1	POWER CORD 8 FT. MOLDED PLUG	X-999543-02
2		
3		
4	FUSE, 3.15 AMPS OUTLET	X-999039-03
5		
6	LAMPHOLDER FIXED BASE BI-PIN	X-999418-02
7	LAMPHOLDER SPRING BASE BI-PIN	X-999418-01
8		
9	FUSE (5 AMP) (1/4 x 1-1/4) BLOWER	X-999311-01
10	GENERAL AIRFLOW CONTROL BOARD	A-437-8374-G
11	N/O MAGNETIC POSITION SENSOR SWITCH	A-126-3163
12	FLOWGARD PRESSURE MONITOR	A-437-9043-B
13	MOTOR IMPELLER	X-999149-18
14	0-2 BI PIN LAMP HOLDER	X-999163-02
15	0-1 BALLAST UV (1 X 36V)	X-999170-04
16	1 2 PIN CONNECTOR PLUG	X-999239
17	2 PIN CONNECTOR RECEPTACLE	X-999238
18	BULKHEAD CONNECTOR 6 TAB	A-425-3654-01
19	1 LAMP FLUORESCENT 60"	X-999920-01
20	12 JUMPER, TERMINAL BLOCK	
21	2 TERMINAL BLOCK ASSY. CONTAINING: * END, NO PLACE, TERMINAL BLOCK * END, 4 PLACE, TERMINAL BLOCK * TERMINAL BLOCK, 2 PLACE, NON-END * TERMINAL BLOCK, 4 PLACE, NON-END	A-425-4099-02 X-999921-01 X-999921-03 X-999919-01 X-999919-02
22	2 FUSE, SLO-BLO, .125 AMP, 5 X 20mm	X-999039-10
23	1 BALLAST FLUORESCENT (1 X 58V)	X-999170-09
24		
25	0-1 UV LAMP STRIP	A-126-2819-01
26	1 FUSE (LAMP) (5X20 MM) LIGHTS (1 AMP)	X-999039-13
27	A/R SOCKET CONTACT	X-999244-02
28	A/R PIN CONTACT	X-999244-01
29		
30	0-1 UV LAMP (30W)	X-999442-01
31	0-1 POWER SUPPLY	X-999863-06
32	0-1 RELAY (DPDT)	X-999866-03
33		
34		
35	1 9 PIN CONNECTOR PLUG	X-999235-02
36	1 9 PIN CONNECTOR RECEPTACLE	X-999234-02



INDICATES WIRE NUMBER
 ○ INDICATES ITEM NUMBER
 - - - INDICATES OPTIONAL WIRING
 * INDICATES BRAKE IN WIRING WHEN OPTION IS USED (FOLLOW DASHED WIRING)

POWER SPECIFICATIONS
 230 VAC, 50 Hz,
 SINGLE PHASE

NOTE:
 1. JUMPER INSTALLED WHEN NO UV OPTION

DETAIL A
 TO TEST DC MOTOR VOLTAGE PROBE BETWEEN TP6 AND TP7.

NU-126-600E
 ELECTRICAL SCHEMATIC
 (230 VAC) (EC IMPELLER)

DFTMDDH 5/24/2011 (CHKD)MSS SHEET 1 OF 1
 DRAWING NUMBER BCD-14585 G