

Interceptor®
Biological Safety Cabinet
Class II A2

**Maintenance and
Technical Manual**

INT-1100A2 & INT-1100A2-230

INT-1400A2 & INT-1400A2-230

INT-1700A2 & INT-1700A2-230

INT-2000A2 & INT-2000A2-230

INT-1100A2-1 & INT-1100A2-1-230

INT-1400A2-1 & INT-1400A2-1-230

INT-1700A2-1 & INT-1700A2-1-230

INT-2000A2-1 & INT-2000A2-1-230

KEWAUNEE®

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NOTICE:

The Interceptor® Biological Safety Cabinet offers many features to enhance performance, safety, and operator comfort.

Due to the nature of work performed in a Biological Safety Cabinet, it is very important to read the User and Operation Manual and Maintenance and Technical Manual and follow standard operating procedures to avoid infection and other potential injuries.

If this equipment is used in a manner not specified by the manufacturer in this manual, the protection provided by the equipment may be impaired.

Also, any maintenance or service to an Interceptor® product must be done according to the instructions contained herein. Maintenance of this product shall be carried out by technicians trained in the mechanical details of this unit.



WARNING

Class II A2 Biological Safety cabinets must be certified before initial use, after being moved, and after any service, including required annual recertification. Service must be performed by an NSF accredited certifier using NSF/ ANSI 49 criteria and should include, at minimum, the following test:

- **Downflow Velocity Profile Test**
- **Inflow Velocity Test**
- **Airflow Smoke Pattern Test**
- **HEPA Filter Leak Test**

CHAPTER 1

Technical Specifications for Interceptor®

Product Number	Width of Cabinet	Height of Cabinet	Depth of Cabinet	Fan Max HP	Fan & Light Max Current/ Power	Outlet Max Amps /HZ	Exhaust CFM
INT-1100A2/INT-1100A2-1 120 VAC	1100mm 43.3"	1610mm 63.4"	813mm 32"	0.9	10.6 Amps 1275 VA	9 Amps 60hz	272
INT-1100A2-230/ INT-1100A2-1-230 230 VAC					5.2 Amps 1275 VA	4.5 Amps 50/60hz	
INT-1400A2/INT-1400A2-1 120 VAC	1400mm 55.1"	1610mm 63.4"	813mm 32"	0.9	10.6 Amps 1275 VA	9 Amps 60hz	358
INT-1400A2-230/ INT-1400A2-1-230 230 VAC					5.2 Amps 1275 VA	4.5 Amps 50/60hz	
INT-1700A2/INT-1700A2-1 120 VAC	1700mm 66.9"	1610mm 63.4"	813mm 32"	0.9	10.6 Amps 1275 VA	9 Amps 60hz	444
INT-1700A2-230/ INT-1700A2-1-230 230 VAC					5.2 Amps 1275 VA	4.5 Amps 50/60hz	
INT-2000A2/INT-2000A2-1 120 VAC	2000mm 78.7"	1610mm 63.4"	813mm 32"	0.9	10.6 Amps 1275 VA	9 Amps 60hz	530
INT-2000A2-230/ INT-2000A2-1-230 230 VAC					5.2 Amps 1275 VA	4.5 Amps 50/60hz	

Table 1.1: Product Descriptions

NOTES:

All power values measured at 10 inch operating sash height.

The powered base stand, if ordered, will take an additional 8.6 amps at 120 VAC; 60 Hz or 4.3 amps at 230 VAC; 50 Hz.

The electrical outlets inside the Interceptor® are grounded. This is particularly important since all internal surfaces are stainless steel and conduct electricity. Under NO CIRCUMSTANCES use ungrounded plugs in these outlets. It is not recommended to use in excess of 1500 watts of power. Exterior power plugs must not be removed until unit fan and lights are turned off. The unit is to be disconnected from the main voltage by unplugging both plugs to remove power. For electrically-powered base stands, power for disconnect is also accomplished by plug removal from a waste-high or lower plug outlet.

The Interceptor® Cabinet has one power cord. If the Power Base is employed, a total of two power cords are used. When positioning the BSC, always connect BSC and stand power plugs in waste-high or floor-positioned outlets to facilitate disconnection in an emergency. Never block these outlets.

If UV option is on your BSC, be sure safety overrides are never immobilized! UV lamp should NEVER be on while sash is open.

continued on page 1.2

Notes: *(continued)*

Based on the following UL definitions, the Interceptor® may be used in a room with pollution degree 1 or pollution degree 2 conditions:

- Pollution Degree 1 No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.
- Pollution Degree 2 Normally only non-conductive pollution occurs. Occasionally, a temporary conductivity caused by condensation must be expected.
- Pollution Degree 3 Conductive pollution occurs, or dry, non-conductive pollution occurs which becomes conductive, which is expected.

Be aware that the dimensions of a Biological Safety Cabinet may exceed doorway limitations.

Sash Face Opening Chart

Model	Height	Width	Area
INT-1100	10"	37.3"	2.59 sq ft
INT-1400	10"	49.1"	3.41 sq ft
INT-1700	10"	60.9"	4.23 sq ft
INT-2000	10"	72.7"	5.47 sq ft

Table 1.2

CHAPTER 2

Replacement and Repair of Key Parts



Figure 2.1 BSC with Top Front Panel open

Conditions 1, 2 and 3 mentioned in this section are all behind the Air Chamber Panel, which is accessible by lifting the Top Front Panel. Before opening the Air Chamber Panel, a complete decontamination of the upper plenum area is required. This decontamination step is essential since the filters and surfaces of the upper chamber will be contaminated.



WARNING

Opening the Air Chamber Access Panel requires a complete decontamination of the upper plenum area. Decontamination may only be performed by an NSF Accredited Technician.

Air Chamber Maintenance Item Locations



Figure 2.2 BSC with Air Chamber Access Panel removed

Conditions Requiring Removal of the Air Chamber Access Panel

- 1) **Filter Replacement**
Loading of the filters to a level where an inflow face velocity of at least 100 FPM cannot be attained.
- 2) **Fan Failure**
Fan fails to operate.
- 3) **Pressure Transducer Failure**
The control panel displays **Sensor Error** and/or erratic velocity readings.



WARNING

Opening the Air Chamber Access Panel requires a complete decontamination of the upper plenum area. Decontamination may only be performed by an NSF Accredited Technician.

Filter Loading

Over time, as the Interceptor's filters load up, inflow velocity shown on the control screen will begin to drop. NSF 49 recommends that motor RPM be increased when this occurs until the control unit again shows 105 FPM.

Before considering filter replacement, the motor speed control should be adjusted to increase the air flow. Before considering filter replacement, the fan speed and top damper should be adjusted to increase the air flow. The Fan Speed adjustment is located under Settings | Cabinet Setup on the Control Monitor. Select Cabinet Setup from the menu. Fan Speed is a password protected feature. Additionally you can adjust the top damper and increase the fan speed to attain 105 FPM inflow velocity. Check the exhaust/downflow balance after such an adjustment is made. The steps must be performed by an NSF Certified Technician.



Figure 2.3a
Menu Screen



Figure 2.3b
Cabinet Setup Screen

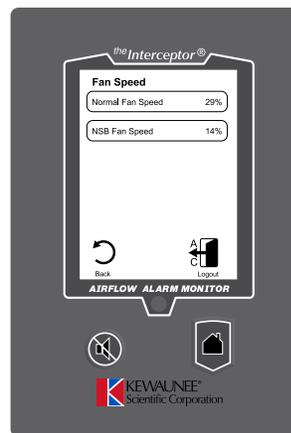


Figure 2.3c
Fan Speed Screen



Figure 2.3d
Set Normal Fan Speed
Screen

Filters should be changed when they load up to the point that further adjustment of the motor RPM will not increase face velocity to 100 FPM. NSF accepts a range of inflow between 100-110 FPM at operating height (10" for the Interceptor).

When the static pressure difference between the negative and positive pressure plenums reaches a certain level (generally between 1.4" and 1.8" wg depending on BSC size and calibration), the net inflow will continue to drop over time and no further adjustment of the motor voltage will bring the face velocity back to 105 FPM.

The Filters should be replaced at this time. An inability to maintain 100 FPM mandates filter change-out according to NSF 49.

See Chapter 3 for Filter Replacement procedures.

Fan Failure

Fan failure is uncommon. First check the Blower Speed Control and the Power Supplies which are located in the top junction box and can be replaced by a qualified electrician without opening the Air Chamber Access Panel.

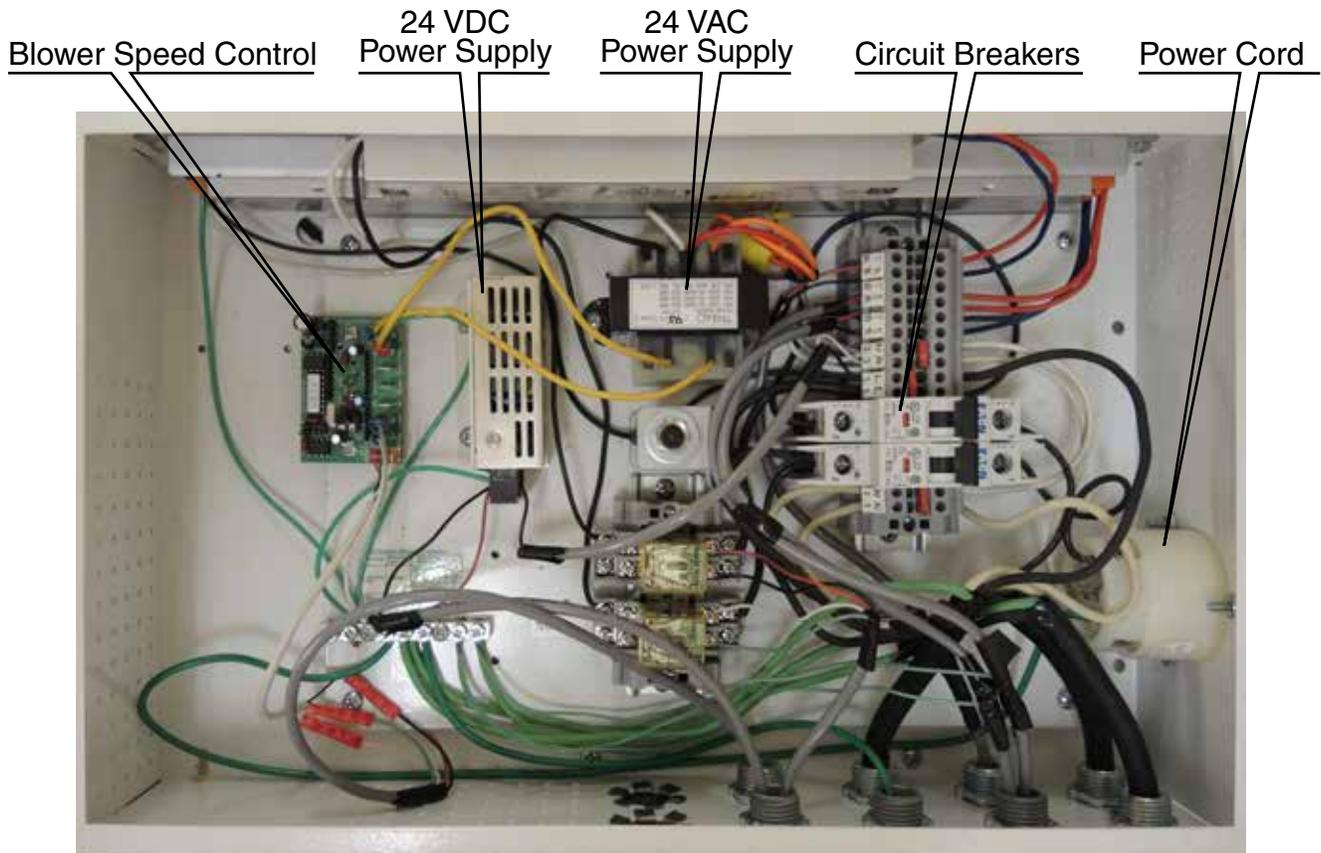


Figure 2.5 Electrical Junction Box – Blower Speed Control & Power Supplies

Once the Blower Speed Control and Power Supplies are verified and found normal, the Air Chamber Access Panel must be removed to inspect/replace the Fan.



WARNING

Opening the Air Chamber Access Panel requires a complete decontamination of the upper plenum area. Decontamination may only be performed by an NSF Accredited Technician.

Fan Removal and Replacement

Once the BSC is decontaminated and the Air Chamber Access Panel is removed, removal and replacement of the fan requires the unbolting of the fan from inside the Plenum Chamber as outlined in the steps below:

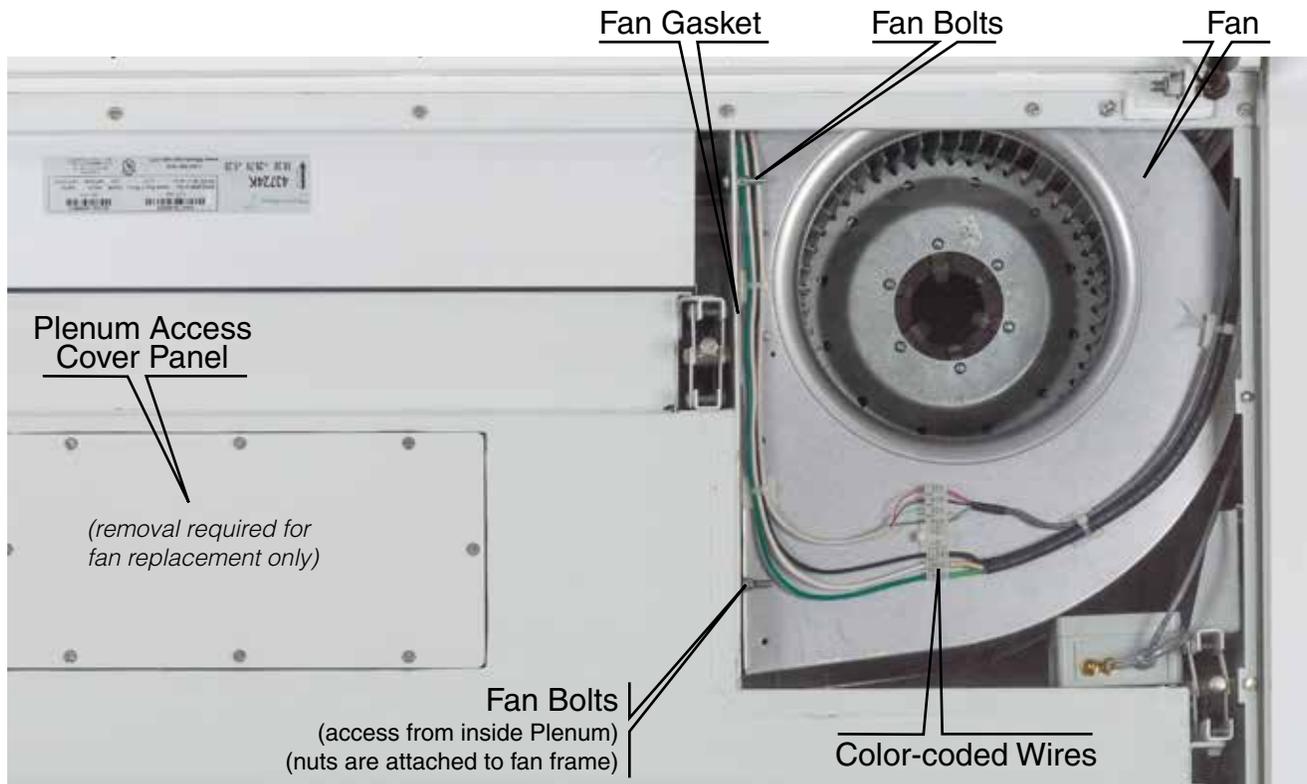


Figure 2.6 Attachment of Fan to Inner Plenum Chamber – (Model INT-1400 shown in photo)

- 1) Remove the exhaust filter (see filter replacement instruction)
- 2) Remove the Color-coded Wires from the Fan.
- 3) Remove the Plenum Access Cover Panel.
- 4) Remove the Bolts holding Fan in place. The two lower Bolts are accessible from inside the Plenum Chamber.
- 5) Carefully dislodge the Fan from its cushioned Gasket and remove from the Plenum.
- 6) Inspect the Fan mounting surface on the Plenum and remove any Gasket material that may have stuck to the surface.
- 6) Install replacement Fan by reversing the steps above. (Make sure new Fan has been fitted with attachment nuts and new Gasket).

Replacement fans are available from Kewaunee Scientific Corporation. See page 3.7 for part numbers.

Pressure Transducer Failure

Check the security of the connections at indicated locations on the BSC Control Board. If the connections are secure, proceed with replacing the transducer.

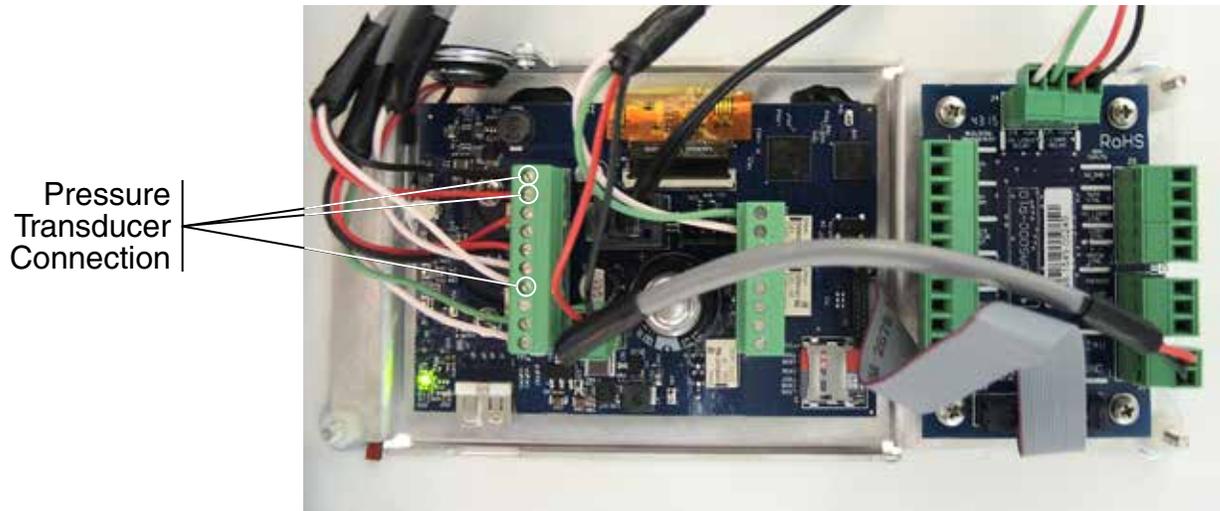


Figure 2.7 BSC Control Board with cover removed – located on back of Front Panel

Pressure Transducer Replacement

After removing the Air Chamber Access Panel, the Pressure Transducer is located in the far right hand side of the Air Chamber. Replacement requires disconnecting, then reconnecting all wires and the pressure hose.



WARNING

Opening the Air Chamber Access Panel requires a complete decontamination of the upper plenum area. Decontamination may only be performed by an NSF Accredited Technician.



Figure 2.8 Pressure Transducer Location

Pressure
Transducer
Location



Figure 2.9 Pressure Transducer

CHAPTER 3

Decontamination / Repairs

Decontamination

Upon leaving the factory, the BSC Control Monitor was calibrated and fan voltage adjusted to the proper values:

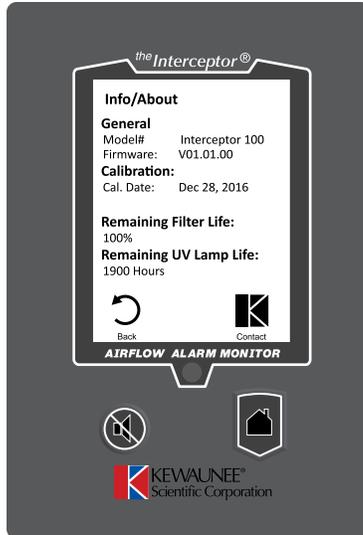


Figure 3.1 Control Monitor – Info Screen



Figure 3.2 Control Monitor – Face Velocity 105 FPM

When new, the Interceptor® Biological Safety Cabinet Control Panel shows key values on the display. Remaining Filter Capacity should be 100%; Face Velocity should read 105 FPM (± 2 FPM).

After much use, these values (remaining Filter Capacity and Face Velocity) will both decrease. When this inevitable change occurs, some adjustment of motor RPM can restore face velocity, but will not restore the filter capacity readout. (see Chapter 2)

Below the 50% filter capacity level, it may no longer be possible to achieve 105 FPM by simply raising the motor RPM. Since NSF 49 requires the minimum operating average face velocity be between 100 FPM and 110 FPM, velocity readings below 100 FPM require filter replacement.

Since both filters lie inside the contaminated Air Chamber, the BSC must be decontaminated before opening up the panel to replace these filters.



WARNING

Opening the Air Chamber Access Panel requires a complete decontamination of the upper plenum area. Decontamination may only be performed by an NSF Accredited Technician.

Filter Replacement

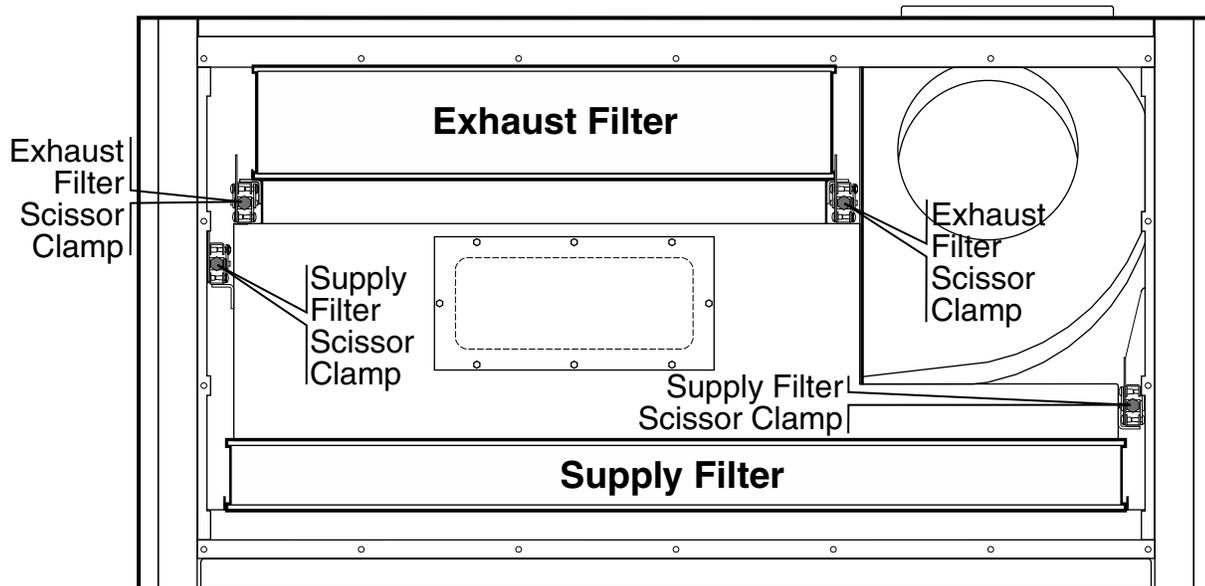


Figure 3.3 Filter Replacement Front View

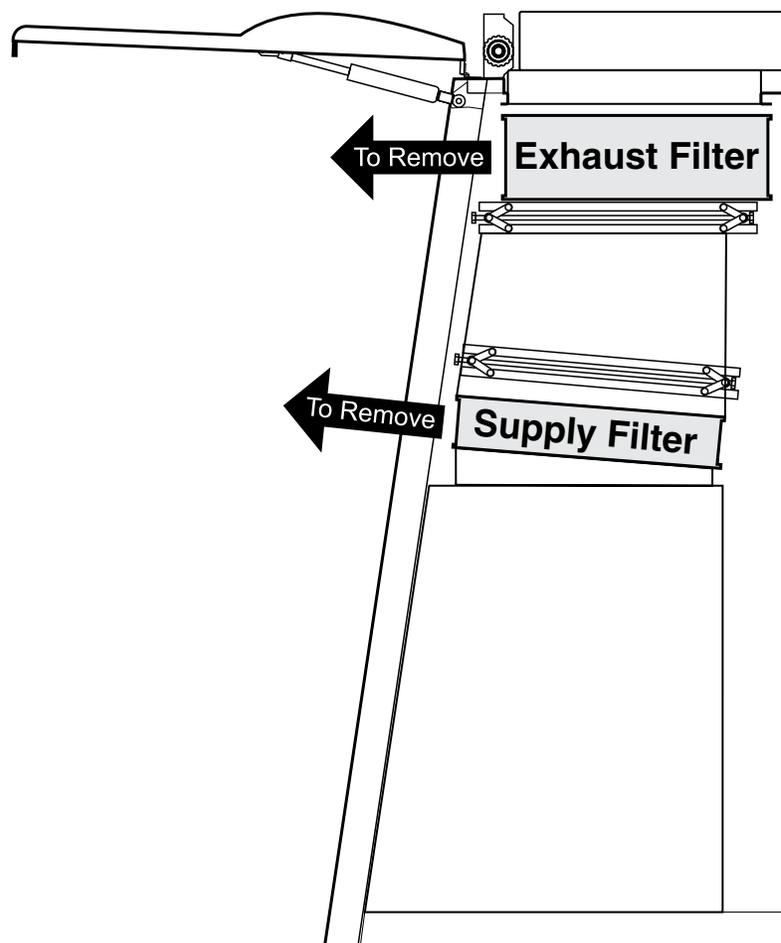


Figure 3.4 Filter Replacement End View

Supply and Exhaust Filter Removal Instructions

1. Lower sash to lowest position
2. Using a 5/16" hex driver, loosen and remove all hex head bolts and then remove access panel.

Exhaust Filter Removal/Replacement

1. Using a 1/2" socket, alternately loosen the two Exhaust Filter Scissor Clamps until Exhaust Filter can be easily removed by sliding forward.
2. Insert new Exhaust Filter and insure proper alignment.
3. Using the 1/2" socket, alternately tighten the two Exhaust Filter Scissor Clamps until the Exhaust Filter is securely contained.

Supply Filter Removal/Replacement

1. Using a 1/2" socket, alternately loosen the two Exhaust Filter Scissor Clamps allowing the Exhaust Filter to drop down 1/2 inch.
2. Using the 1/2" socket, alternately loosen the two Supply Filter Scissor Clamps until the Supply Filter can be easily removed by sliding forward.
3. Insert a new Supply Filter and insure proper alignment.
4. Using the 1/2" socket, alternately tighten the two Supply Filter Scissor Clamps until the Exhaust Filter is securely contained.
5. Using the 1/2" socket, alternately tighten the two Exhaust Filter Scissor Clamps until the Exhaust Filter is securely contained.

Replacement of Face Velocity Sensor

The thermal velocity sensor, located in the exhaust output box at the BSC top left, is designed to measure exhaust velocity and translate it into average face velocity at a 10" opening. If the velocity readout starts being irregular, the thermal sensor may need replacement.



Figure 3.5 Face Velocity Sensor

Be sure the sensor window openings are perpendicular to the exhaust plane. Repair and/or replacement of the thermal sensor can be done without decontamination by replacing the sensor with a new unit. Once this has been done, velocity must be recalibrated using the controller calibration program outlined in Chapter 5.

Thimble Connection (Canopy)

An Interceptor® Class II, A2 Biological Safety Cabinet can be used with minute quantities of volatile toxic chemicals or trace amounts of radionuclides when properly ducted through a Thimble Connection with Airflow Sensor. The Thimble mounts to the top of the exhaust filter guard with four (4) screws and connects to either a 8" or 10" exhaust duct. The Airflow Sensor connects to the cabinet's monitor to warn when the exhaust ventilation is not operating.

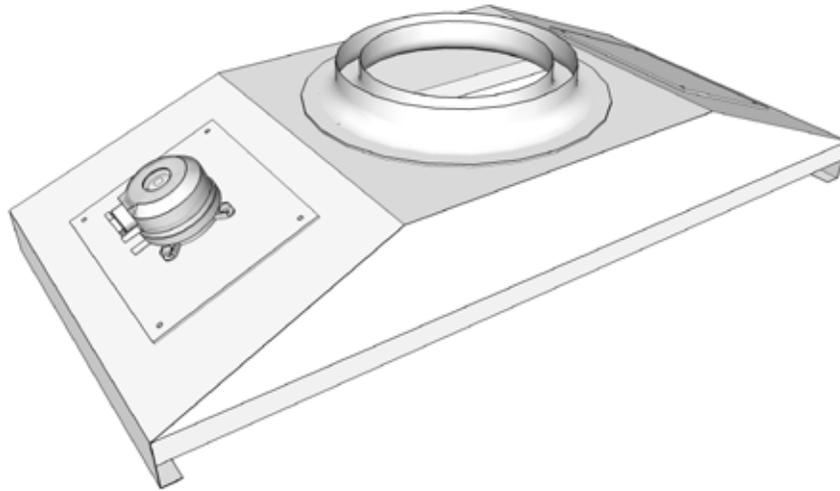


Figure 3.6 Thimble Connection with Airflow Sensor (Canopy)

Thimble Exhaust requirements

The building ventilation system must be verified that it can handle the required exhaust volumes of the cabinet before connection. Thimble Exhaust CFM should be 1.3 times (130%) of the Biological Safety Cabinet exhaust. (See instructions shipped with Thimble Connection for proper installation and connection procedures.)

Size of Biological Safety Cabinet	Biological Safety Cabinet CFM	Required Thimble Exhaust CFM
1100mm	272	354
1400mm	358	465
1700mm	444	577
2000mm	530	689

Table 3.3



WARNING

A hood connected to a building ventilation system with a Thimble Connection may become dysfunctional if the ventilation system fails. Check building ventilation system before using cabinet!

Replaceable Parts List

Parts	Part Numbers			
	INT-1100	INT-1400	INT-1700	INT-2000
24 VAC Transformer	F-7424-00	F-7424-00	F-7424-00	F-7424-00
24 VDC Power Supply	F-7241-00	F-7241-00	F-7241-00	F-7241-00
Motor Controller	F-7421-00	F-7421-00	F-7421-00	F-7421-00
Micro Switch	F-7242-00	F-7242-00	F-7242-00	F-7242-00
Fluorescent / UV Relay	F-7232-00	F-7232-00	F-7232-00	F-7232-00
20 Amp Circuit Breaker	F-7240-00	F-7240-00	F-7240-00	F-7240-00
10 Amp Circuit Breaker	F-7240-04	F-7240-04	F-7240-04	F-7240-04
0.3 Amp Circuit Breaker	F-7430-00	F-7430-00	F-7430-00	F-7430-00
UV Lamp	F-7249-18	F-7249-00	F-7249-00	F-7249-00
T5 Lamp	F-6347-34	F-6347-46	F-7248-00	F-7248-00
Removable Work Tray	050007-36	050007-48	050007-60	050007-72
Work Tray Chrome Knob	F-1145-00	F-1145-00	F-1145-00	F-1145-00
Bottom Intake Grille	052008-36	052008-48	052008-60	052008-72
Sash Glass with Handles Assembly	050009-36-FIN	050009-48-FIN	050009-60-FIN	050009-72-FIN
Exhaust HEPA filter	F-7275-36-FIN	F-7275-48-FIN	F-7275-60-FIN	F-7275-72-FIN
Supply HEPA filter	F-7276-36-FIN	F-7276-48-FIN	F-7276-60-FIN	F-7276-72-FIN
Removable Work Tray Support	052063-00	052063-00	052063-00	052063-00
Sash Sweeper Plate	052076-36	052076-48	052076-60	052076-72
Top Exhaust Balance Damper	052077-00	052077-00	052077-00	052077-00
Damper Telescoping Section	050166-00	050166-00	050166-00	050166-00
Downflow Perforated Grille	050079-36	050079-48	050079-60	050079-72
Arm Rest Bracket	050195-0A	050195-0A	050195-0A	050195-0A
Arm Rest Plastic End Cap	F-7279-00	F-7279-00	F-7279-00	F-7279-00
Aluminum Arm Rest	F-7280-36	F-7280-48	F-7280-60	F-7280-72
Drain Valve Plate	050110-00	050110-00	050110-00	050110-00
316 SS Pipe Fitting	F-7211-11	F-7211-11	F-7211-11	F-7211-11
316 SS Ball Valve	F-7211-00	F-7211-00	F-7211-00	F-7211-00
Safety Labels 120 VAC	F-8200-01	F-8200-01	F-8200-01	F-8200-01
Pressure Transducer	F-7433-00	F-7433-00	F-7433-00	F-7433-00
Velocity Sensor	F-7425-00	F-7425-00	F-7425-00	F-7425-00
Fan Assembly	F-7420-00	F-7420-00	F-7420-00	F-7420-00
Gas Spring Assembly	F-7224-00	F-7224-00	F-7223-00	F-7223-00
Belt Drive to Counterweight	F-6343-00	F-6343-00	F-6343-00	F-6343-00

Table 3.2

CHAPTER 4

Cabinet Operation

Theory of Operation

The Interceptor® is a Class II, A2 Biological Safety Cabinet. Its function is to isolate bacterial samples from cross-contamination and protect the user and the environment around the cabinet from being contaminated by biological or particulate material inside the cabinet.

It accomplishes this objective by bathing biological samples in HEPA filtered clean air while keeping contaminants contained by having a continuous substantial inflow of air through the 10” cabinet sash opening.

The BSC will safely operate at a temperature range of 55°F to 85°F (13°C - 29°C) and a relative humidity of 10% to 70%.

Class II, A2 Biological Safety Cabinets are made to safely contain bacterial samples that fall into the Biological Safety levels 1, 2, 3, and 4 if accompanied by level appropriate protection garments. The following is a description of each level as published in the *CDC BMBL 5th edition*:

“Biological Safety level 1 (BSL-1) is the basic level of protection and is appropriate for agents that are not known to cause disease in normal, healthy humans. Biological Safety level 2 (BSL-2) is appropriate for handling moderate-risk agents that cause human disease of varying severity by ingestion or through percutaneous or mucous membrane exposure. Biological Safety level 3 (BSL-3) is appropriate for agents with a known potential for aerosol transmission, for agents that may cause serious and potentially lethal infections and that are indigenous or exotic in origin. Exotic agents that pose a high individual risk of life-threatening disease by infectious aerosols and for which no treatment is available are restricted to high containment laboratories that meet biosafety level 4 (BSL-4) standards.”

WARNING

Class II A2 Biological Safety cabinets must be certified before initial use, after being moved, and after any service, including required annual recertification. Service must be performed by an NSF accredited certifier using NSF/ ANSI 49 criteria and should include, at minimum, the following test:

- **Downflow Velocity Profile Test**
- **Inflow Velocity Test**
- **Airflow Smoke Pattern Test**
- **HEPA Filter Leak Test**

Touch Pad Control Monitor

Home/Face Velocity Screen

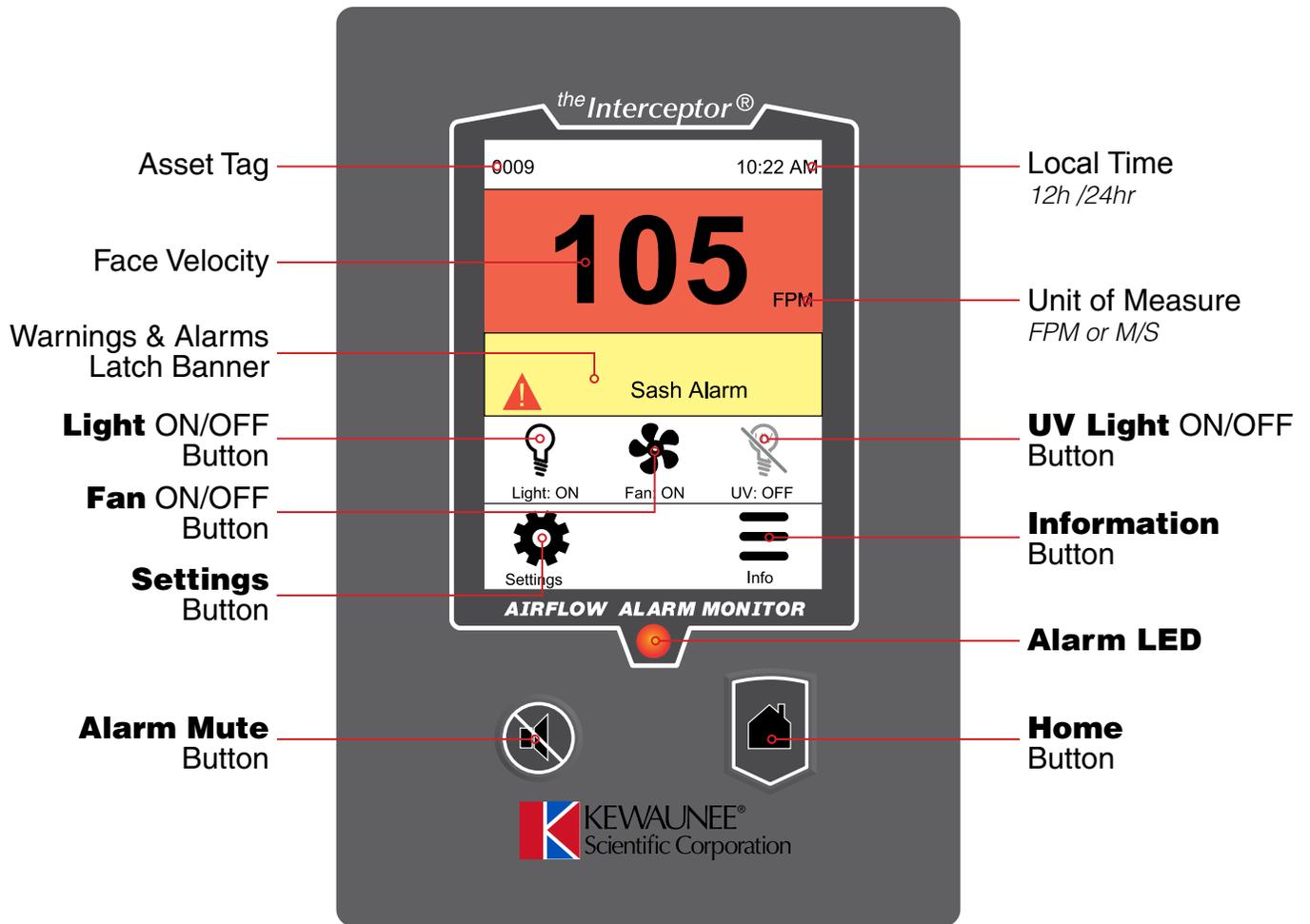


Figure 4.1 Touch Pad Control Monitor

Startup Procedure

Plug in the Power Cord to a properly sized electrical receptacle. Raise the vertical sash to the 10" operating line. The Control Monitor will show the Kewaunee Contact Screen, Figure 4.2, for several seconds and will then display Home/Face Velocity Screen. Clear the the Power Failure/Latched Banner, Figure 4.3, by touching the banner once.

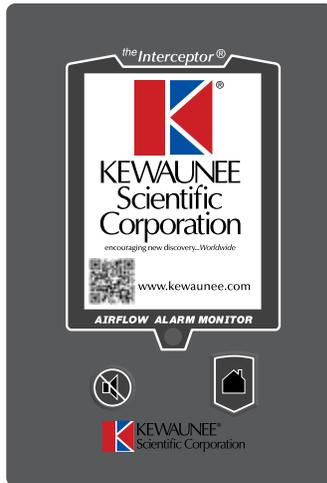


Figure 4.2 Kewaunee Contact Screen



Figure 4.3 Home/Face Velocity Screen - Latched/Power Failure

The Latched Banner is provided to inform the user that an unsafe condition has taken place within the BSC. The Latched Banner will display until user clears it from the screen.

Important: Cabinet must be certified before being put into service.

Press the **Fan** button once and the fan motor will start. As the fan spins up, the face velocity will increase until the operating face velocity is reached and the cabinet is safe to use Figure 4.4 - 4.6. The Interceptor® is now intercepting all dust, bacteria, and viral matter and delivering HEPA filtered, clean air to the Biological Safety Cabinet. The air flow pattern is shown in Figure 4.7 on following page.



Figure 4.4 Home/Face Velocity Screen - Fan Start



Figure 4.5 Home/Face Velocity Screen - Fan Warm-Up



Figure 4.6 Home/Face Velocity Screen - Safe Operating Condition

Interceptor Class II, A2 Air Flow Patterns

It is recommended that the cabinet fan be turned on and allowed to operate for several minutes removing any suspended particulates. Cabinet interior should then be wiped down with 70% ethanol (EtOH), or other approved disinfectant.

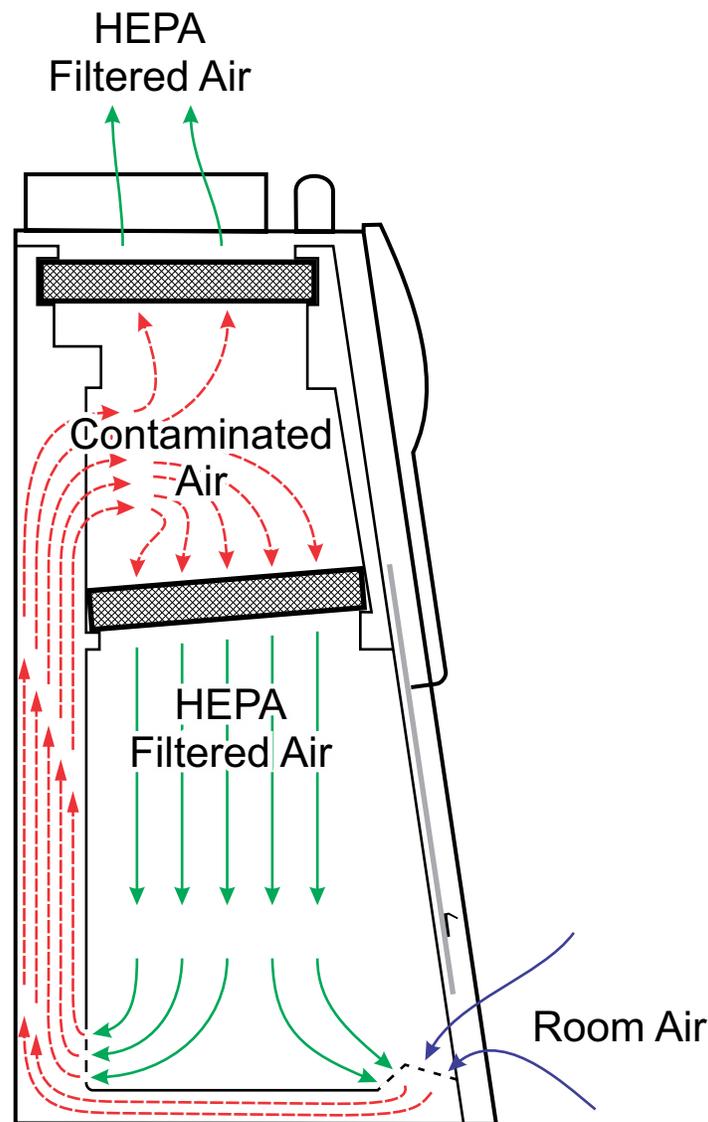


Figure 4.7 Interceptor Biological Safety Cabinet Air Flow Patterns

Suggested or Recommended Workflow

Once skilled in your lab's Standard Operating Procedure (SOP), don appropriate protective garments and gear suitable to the level of safety required. Place items for use in the procedure in the left section of the work area. Place equipment in the center of the work area. Designate the right section of the BSC for waste to be disposed of at the procedure's end.

As you perform the procedure, waste materials will accumulate on the right side of the cabinet.

After the procedure is finished, remove waste materials, disinfect as is customary at your facility, and place materials away. Each time the unit is used, it should be left clean. Follow your SOP for shut down or night setback procedures.

Night Setback/Low Flow Mode

The Interceptor® Biological Safety Cabinet is equipped with a two-speed motor to save energy when it is not being used for active procedures. The cabinet is placed into Night Setback/Low Flow Mode by closing the sash to a 1" opening. At 1", the cabinet exhausts about 50% of the air the unit processes at a 10" opening. **Do not run active experiments at this 1" sash height.**

When the sash is moved to a 1" opening, Night Setback/Flow Flow Mode, the Control Monitor will look like Figure 4.11 below.



NOTE: Low flow is set to 50% of run speed. It is not necessary to calibrate the BSC for this position.

Figure 4.11 Home/Face Velocity Screen-
Night Set-back/Low Flow Mode

Control Monitor

The Control Monitor Home/Face Velocity Screen can alert you to several possible problems as you proceed:

- 1) High inflow velocity (face velocity).
- 2) Low inflow velocity (face velocity).
- 3) Sash Height Alarm – Always set the sash at the 10" line when conducting experiments. This is the setting that has received NSF certification.
- 4) UV Light on and Fan on.



Figure 4.12 Home/Face Velocity Screen
Warning – Check Sash Height

UV Light

The UV germicidal disinfecting light may be used if one has been installed; fully close the sash, and turn on the light using the UV Light button. Because UV rays are dangerous, the light will not operate unless the sash is fully closed. Glass stops UV radiation. If the UV light is not turned off before the sash is raised, the safety interlock will disable the UV light.



WARNING

If the UV option is on your BSC, be sure safety overrides are never immobilized! UV light should NEVER be on while sash is open.

Control Monitor Messages and Meanings

Variable	Measurement Method	Importance	Recommended Action
Airflow (optimal value is 105 FPM)	Since the inflow at any point of the 10" sash opening can vary widely, it is the average inflow (CFM/sq ft) that is actually measured. Since the "air in" through the 10" sash opening exactly equals "air out", the exhaust port, the Interceptor® converts the FPM exhaust port velocity into FPM inflow velocity at the sash opening.	Proper inflow at 10" assures containment of contaminants within the cabinet. NSF 49 requires a minimum inflow velocity of 100 FPM.	The Home/Face Velocity Screen shows airflow. Any velocity between 100 FPM and 110 FPM is acceptable. If face velocity falls below 100 FPM, discontinue work and contact your Accredited Technician for remediation.
Remaining Filter Life	The static pressure differential between the negative and positive pressure is proportional to filter loading. It is measured by the Pressure Sensor and converted by the Control Module to a filter loading percentage.	The Interceptor® exceeds NSF requirements for maximum static load.	An Accredited Technician may need to adjust fan speed to maintain face velocity or change filter.
Sash Alarm Banner	A micro switch interaction with the counterweight activates this warning.	The cabinet is designed to be used at a 10" sash opening. Any other opening is inappropriate. If the fan is on at any height other than 10", the Yellow Sash Alarm Banner displays.	Return the sash to 10" or turn the unit off and close the sash.
UV Light (when installed)	When the sash is closed and the fan is off, the disinfecting UV Light may be activated using the UV Light button on the Control Panel Touch Pad.	Be sure UV Light Safety Overrides are never immobilized! UV light should NEVER be on while sash is open.	Close sash and turn fan off to reactivate UV.
Remaining UV Lamp Life	Internal countdown timer. Setting of 2000 hours can be reset to manufacturers recommendations.	When the hood UV light is on, it is important to know how much life is remaining in the UV lamp before its UV output diminishes. The remaining UV lamp life notation is displayed in the Info/About screen.	Replace UV lamp, even if it still glows, when '0' hours remaining is indicated.

Table 4.1

Monitor Screen Displays

The Kewaunee Interceptor® Biological Safety Cabinet employs a sophisticated control system using a built in tough screen Control Monitor to display menus and options. The following pages illustrate the different states of the monitor with illustrations of the various screens and schematics of each of the menus. The schematic charts show all options for each menu item as well as the factory setting.

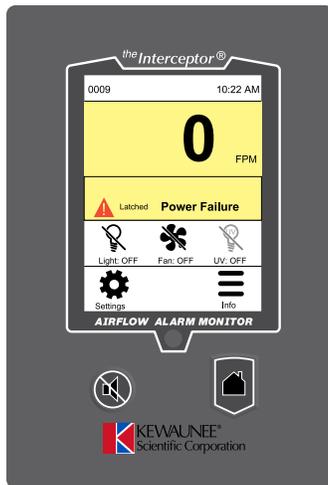


Figure 4.13

Startup Home/Face Velocity Screen

displays when cabinet is plugged in

Press **Power Failure** banner to clear
Press **Settings** for Configuration

Monitor Screen Displays

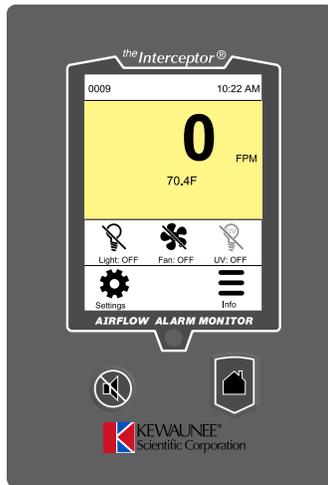


Figure 4.14

Home/Face Velocity Screen

Fan OFF

displays when Fan is Off

Press Fan Switch to Start



Figure 4.15

Home/Face Velocity Screen

Fan Warmup

displays when Fan is On during warmup period



Figure 4.16

Home/Face Velocity Screen

Fan On

displays when Fan is On after warmup period

Press **Light** button to turn on light

Monitor Screen Displays



Figure 4.17

Settings Menu

Used for User Settings and Cabinet Setup and Calibration

Press **System** for User Settings

Press **Cabinet Setup** for Cabinet Setup and Calibration



Figure 4.18

System Menu

Use to set User Settings

Press **Alarms/Sound** to adjust alarm and volume settings

Press **Airflow Settings** to adjust Sensor sensitivity and Airflow Resolution

Press **Advanced** to Configure Asset Tag and Change Passwords



Figure 4.19

Change Password Menu

Use to change Passwords

Press **Admin Password** to change

Press **Certifier Password** to change

Monitor Screen Displays



Figure 4.20

Cabinet Setup Menu

Use to Setup Cabinet

Press **Time** to set date/time

Press **Fan Speed** to adjust airflow

Press **Sensor Calibration** to calibrate airflow sensor

Press **UV Settings** to adjust UV Timer



Figure 4.21

Calibration Setup Menu

Use to Calibrate Monitor Screen at time of installation and after filter changes (only required if actual airflow velocity does not match displayed airflow velocity)

Press **Calibrate** and follow prompts

Note:
To Be Performed by Certified Technician Only

Monitor Menu Schematics

Settings Menu

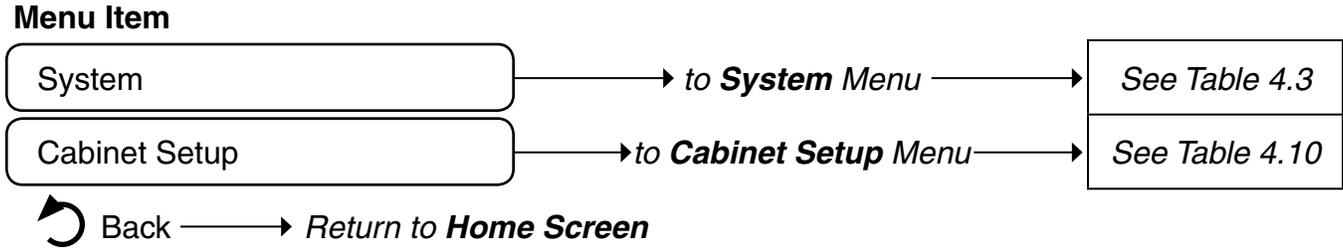


Table 4.2

System Menu

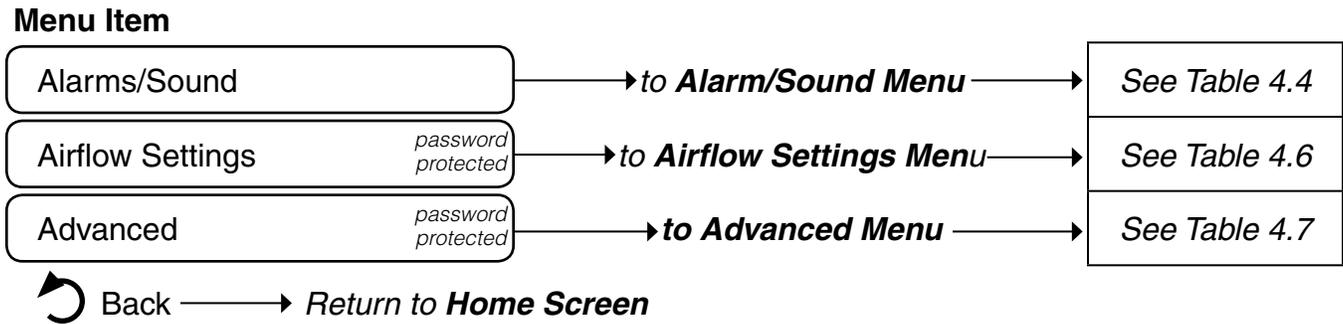


Table 4.3

Alarms/Sound Menu

Menu Item	Input Option	Factory Setting
Device Volume	Hi, Med, Low	Med
Key Beep	On, Off	On
Set Minimum Volumes <small>password protected</small>	Hi, Med, Low	Low
Alarm Controls <small>password protected</small> → to Alarm Controls Menu →		See Table 4.5

↶ Back → Return to **System Menu**

Table 4.4

Alarm Controls Menu (password protected)

Menu Item	Input Option	Factory Setting
Ringback	Off, 10s, 30s, 1min, 5min, 10min, 60min	1min
Alarm Delay	1s, 2s, 5s, 10s	1s
Startup Delay	30s, 1min, 2min, 5min	30s

↶ Back → Return to **Alarms/Sound Menu**

Table 4.5

Monitor Menu Schematics

Airflow Settings Menu *(password protected)*

Menu Item	Input Option	Factory Setting
Sensitivity	Low, Med, Hi	Med
Airflow Resolution	1 FPM, 2 FPM, 5 FPM	1 FPM

 Back → Return to **System Menu**

Table 4.6

Advanced Menu *(password protected)*

Menu Item	Input Option	Factory Setting
Configure Asset Tag	→ to Configure Asset Tag Menu →	See Table 4.8
Change Password	→ to Password Menu →	See Table 4.9

 Back → Return to **System Menu**

Table 4.7

Configure Asset Tag Menu *(password protected)*

Menu Item	Input Option	Factory Setting
Change Asset Tag	#####	none
Show Asset	On, Off	ON

 Back → Return to **Advanced Menu**

Table 4.8

Change Password Menu *(password protected)*

Menu Item	Input Option	Factory Setting
Admin Password	Enter Old Password - Admin Enter New Password - Admin Enter Confirm Pass - Admin	9999
Certifier Password	Enter Old Password - Certify Enter New Password - Certify Enter Confirm Pass - Certify	1001

 Back → Return to **Advanced Menu**

Table 4.9

Monitor Menu Schematics

Cabinet Setup Menu

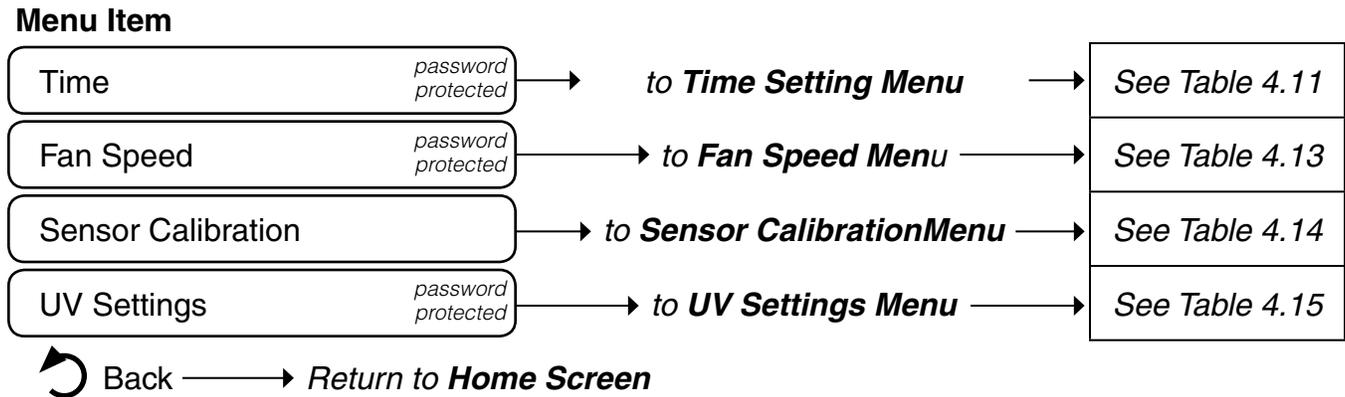


Table 4.10

Time Setting Menu (password protected)

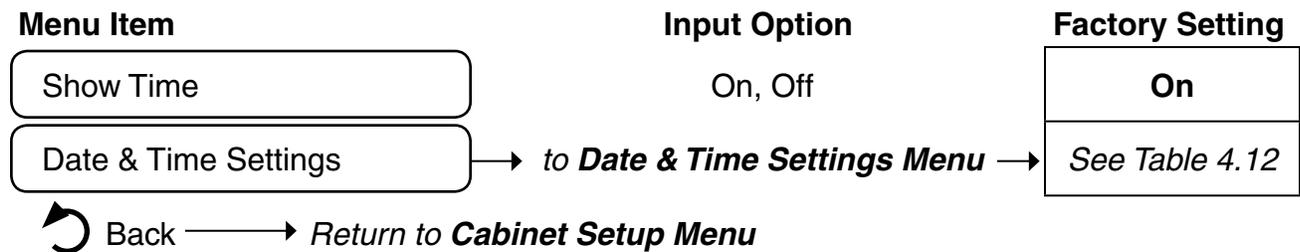


Table 4.11

Date & Time Setting Menu (password protected)

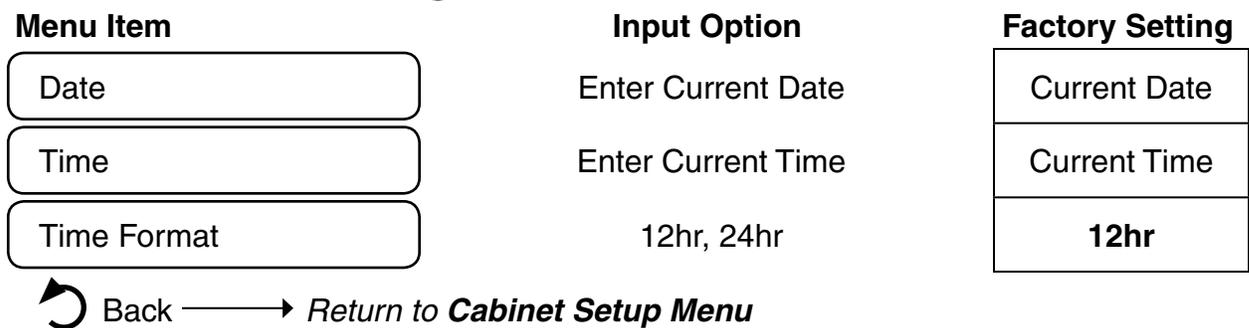


Table 4.12

Fan Speed Menu (password protected)

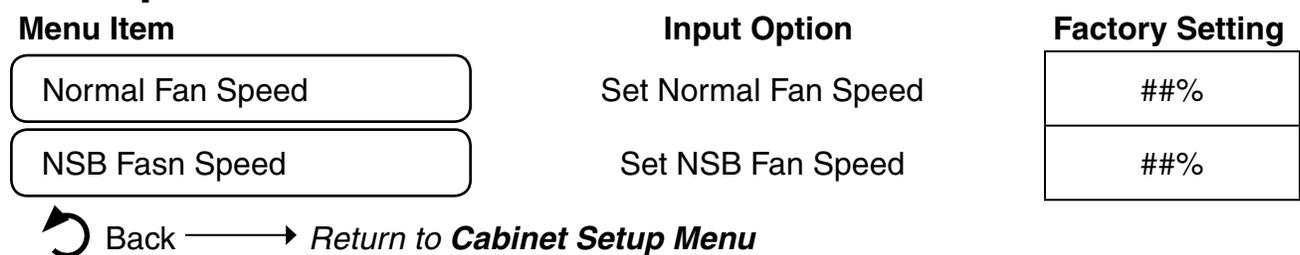


Table 4.13

Monitor Menu Schematics

Sensor Calibration Menu

Menu Item

Calibration Info	Calibration Date: <i>(Date Last Calibrated)</i>	MMM DD, YYYY
Calibrate Sensor <small><i>password protected</i></small>	→ to Sensor Calibration Instructions →	See Page 5.2
 Back → Return to Cabinet Setup Menu		

Table 4.14

UV Settings Menu *(password protected)*

Menu Item

Input Option

Factory Setting

UV Timer	30min, 60min, 90min, 2hr, 4hr, 6hr	30min
UV Lamp Life	#### <i>(in hours)</i>	2000hrs
Reset UV Lamp Life	Okay, Cancel	

 Back → Return to **Cabinet Setup Menu**

Table 4.15

CHAPTER 5

Troubleshooting

Problem	Possible Cause	Recommended Fix
No lights or fan	<ul style="list-style-type: none"> a. Unit unplugged b. BSC breaker open c. Building breaker open 	<ul style="list-style-type: none"> Plug it in Reset breaker Check outlet breaker
No fan	<ul style="list-style-type: none"> a. Sash not at operating height b. Sash microswitch not activated c. Motor control broken 	<ul style="list-style-type: none"> Move sash to operating height Adjust microswitch position so switch is activated when sash is at operating height Replace motor control. If condition persists, motor may need replacement. Contact Kewaunee for assistance.
Fluorescent light not working	<ul style="list-style-type: none"> a. Lamp burnt out (look for dark rings at opposite ends of glass fluorescent tube) b. Lamp wiring defective c. Bad lamp ballast (symptom is intermittent light) 	<ul style="list-style-type: none"> Replace lamp Inspect and repair Replace ballast located inside rooftop circuit box
UV light does not illuminate	<ul style="list-style-type: none"> a. Sash must be closed for UV light to work (regular glass blocks UV rays) b. Lamp burnt out c. Lamp wiring defective d. Bad lamp ballast (symptom is intermittent light) 	<ul style="list-style-type: none"> Close sash Replace lamp Inspect and repair Replace ballast located in electrical box
Reduced face velocity	<ul style="list-style-type: none"> a. HEPA filter loaded b. Towels have clogged towel screen or visible baffle louvers c. Exhaust outlet clogged with debris 	<ul style="list-style-type: none"> Increase motor RPM or replace filter if 100 fpm face velocity is no longer achievable Clean towel screen (see Chapter 5 User & Operation Manual) Clear outlet

Table 5.1

Technical Support

For further technical assistance, contact Kewaunee at 704-873-7202 or www.kewaunee.com.

Cabinet Calibration Instructions

Primary Method

Setup and Measurements

1.	Install a Flow Hood on Interceptor® BSC per NSF #49 methodology A9.3.
2.	Turn on Interceptor® fan and let cabinet stabilize 30 seconds.
3.	Press Settings button on Home Screen .
4.	Press Cabinet Setup on Settings Menu .
5.	Press Fan Speed on Cabinet Settings Menu .
6.	Enter Certifier Password. (<i>default password 1001</i>)
7.	Press Normal Fan Speed .
8.	Adjust Normal Fan Speed to set Inflow CFM based on data label on left facia.
9.	Press Back to return to Fan Speed Menu .
10.	Press NSB Fan Speed .
11.	Adjust Night Setback Fan Speed to 50% of Normal Fan Speed .
12.	Press Back to return to Cabinet Settings Menu .
13.	Remove Flow Hood.

Confirm **Downflow CFM** matches data label. Adjust as required by sliding exhaust damper on top of cabinet.

Calibration

14.	Press Sensor Calibration on Cabinet Setup Menu .
15.	Press Calibrate .
16.	Follow instructions on Control Screen to complete Calibration process.
17.	Step 1: Fan will turn off. Press Continue when Airflow Uniformity stabilizes.
18.	Enter fan off face velocity. Typically 0. Press Enter .
19.	Step 2: Fan speed will increase to Normal Fan Speed setting (from step 8 above). Press Continue when Airflow Uniformity Statbilizes.
20.	Cabinet control will flash Calibration Success and then display Calibration Settings .
21.	Press Back to return to Cabinet Setup Menu or Home Button to return to Home Screen .
22.	Calibration is complete.

Cabinet Calibration Instructions

Secondary Method

Setup and Measurements

1.	Turn on Interceptor® fan and let cabinet stabilize 30 seconds.
2.	Take inflow readings at 3" sash opening per NSF 49 section A.9.3.4.2. Readings shall be taken using the Secondary Inflow Measurement Method listed on the next page. <i>(Be sure to adjust readings using air density corrections for Temperature, Pressure, and Humidity, or use an instrument that makes the adjustments automatically.)</i> Average the readings and then calculate the Alternate Face Velocity (V_{alt}), using the formula: $V_{alt} = 3/10 \times CF \times V_{av}$. <i>(If the Alternate Face Velocity is 105 ±5 FPM skip to step 13.)</i>
3.	Press Settings button on Home Screen .
4.	Press Cabinet Setup on Settings Menu .
5.	Press Fan Speed on Cabinet Settings Menu .
6.	Enter Certifier Password. <i>(default password 1001)</i>
7.	Press Normal Fan Speed .
8.	Adjust Normal Fan Speed and then repeat Steps 2 through 8 until a Face Velocity of 105 ±.5 FPM is achieved.
9.	Press Back to return to Fan Speed Menu .
10.	Press NSB Fan Speed .
11.	Adjust Night Setback Fan Speed to 50% of Normal Fan Speed .
12.	Press Back to return to Cabinet Setup Menu .

Confirm **Downflow CFM** matches data label. Adjust as required by sliding exhaust damper on top of cabinet.

Calibration

13.	Return Sash to 10" Operating Position
14.	Press Sensor Calibration on Cabinet Setup Menu .
15.	Press Calibrate .
16.	Follow instructions on Control Screen to complete Calibration process.
17.	Step 1: Fan will turn off. Press Continue when Airflow Uniformity stabilizes.
18.	Enter fan off face velocity. Typically 0. Press Enter .
19.	Step 2: Fan speed will increase to Normal Fan Speed setting (from step 8 above). Press Continue when Airflow Uniformity Statbilizes.
20.	Cabinet control will flash Calibration Success and then display Calibration Settings .
21.	Press Back to return to Cabinet Setup Menu or Home Button to return to Home Screen .
22.	Calibration is complete.

Secondary Inflow Measurement Method

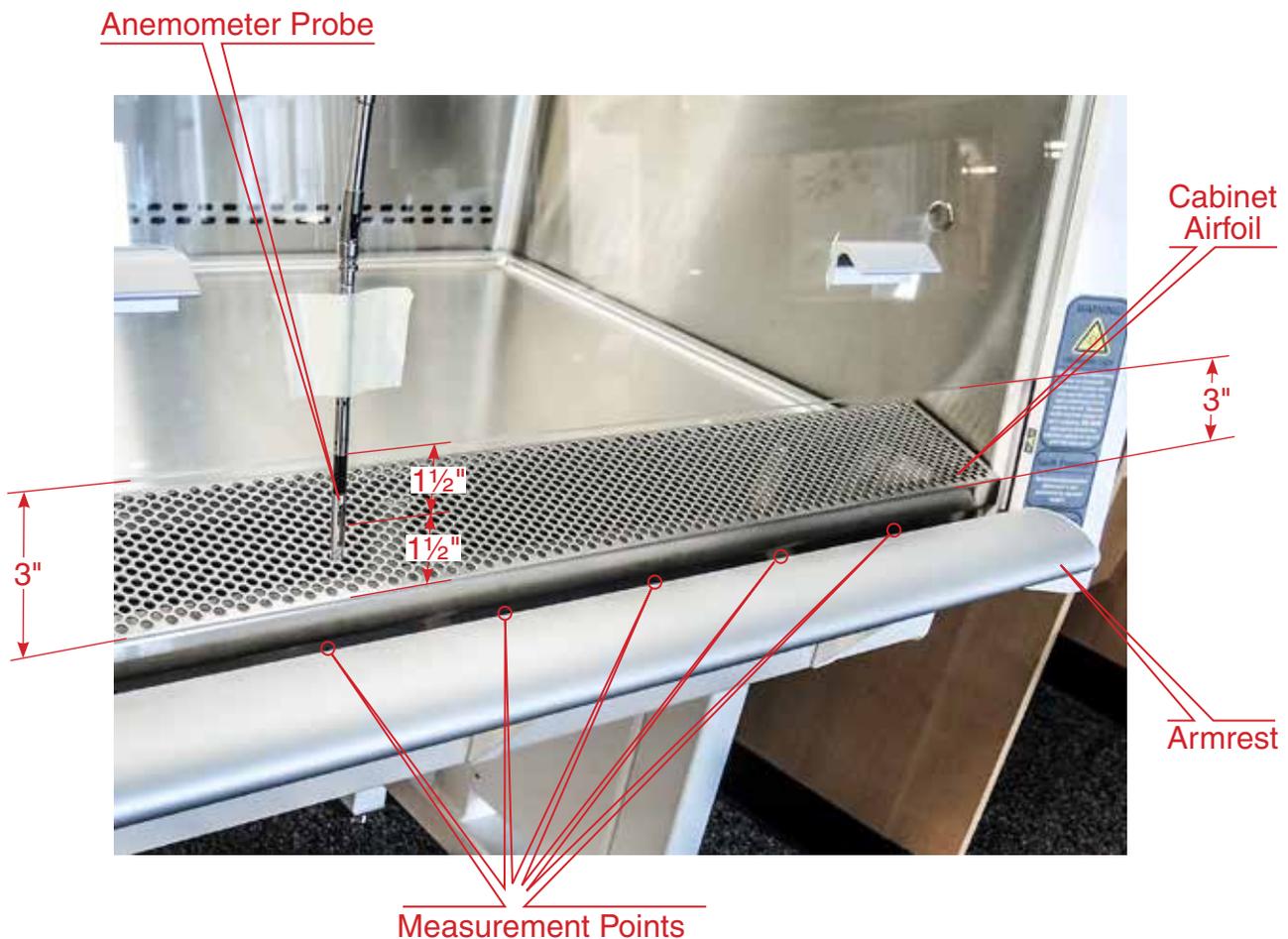
1. Secure the Anemometer Probe to the outside of the sash glass using tape so that the probe is positioned vertically, facing down. Position the center of the sensing element 1.5" below the top of the 3" opening, directly above the Measurement Point. (as shown below)
2. Record the Velocity Reading.
3. Repeat for all the Measurement Points as shown on the chart below and as marked on the lower face of the Cabinet Airfoil behind the Armrest. Measurement Points are marked with small vertical slots .

Note: Armrest must be in place for testing and daily operation.

Secondary Method Measurements

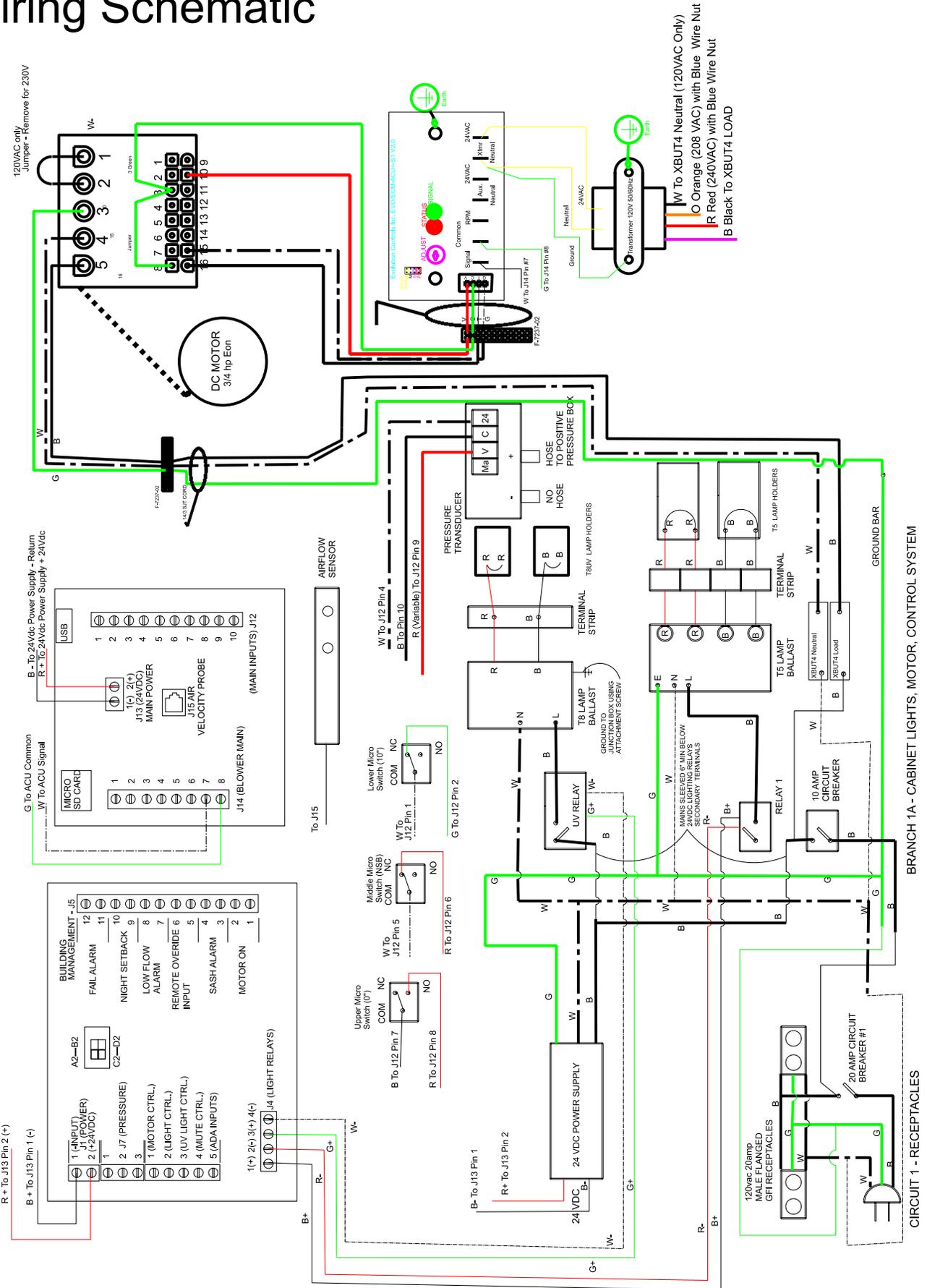
Model Number	Dimension from Sides	Dimension Between Points	Correction Factor (CF)
INT-1100A2	4.61"	4.63"	1.31
INT-1400A2	4.44"	4.00"	1.29
INT-1700A2	5.10"	5.05"	1.28
INT-2000A2	4.25"	4.00"	1.16

Table 5.2



Wiring Schematic

BSC rooster DC EVO/ECM-ACU+S1 V2.0 120/230VAC 50/60HZ Blower





LABORATORY PRODUCTS GROUP
P.O. Box 1842 • Statesville, NC 28687-1842
Phone: 704-873-7202 • Fax: 800-932-3296
Email: kscmarketing@kewaunee.com
Website: www.kewaunee.com