



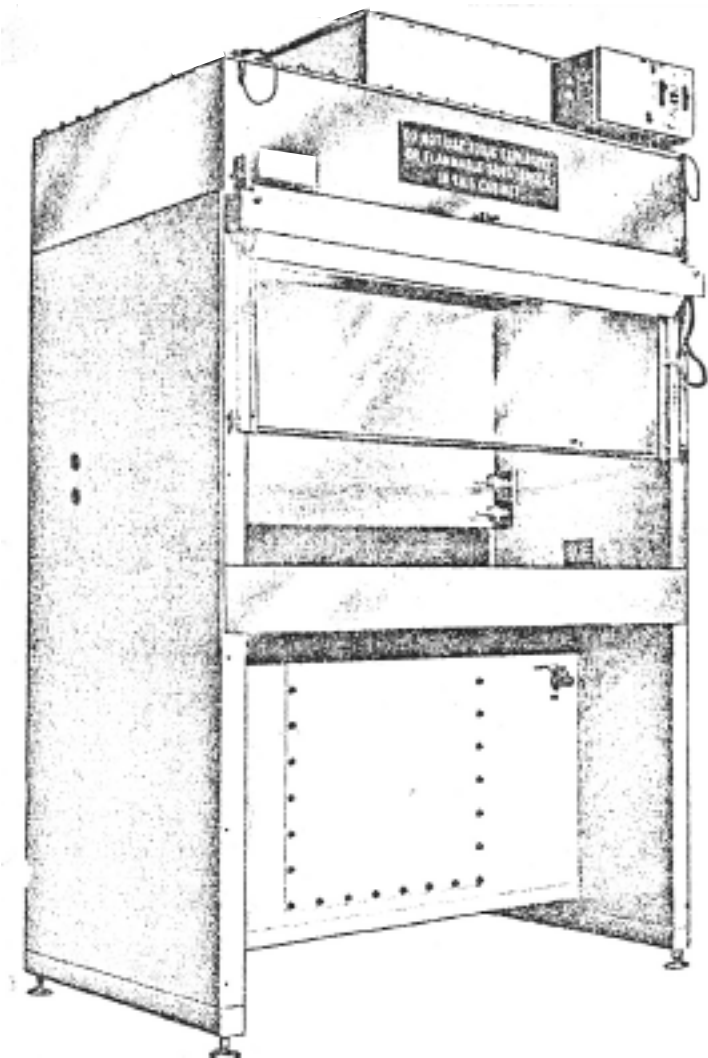
ThermoFisher
S C I E N T I F I C

Listening to your Biosafety Cabinet – Alarms, Response and Training

David S. Phillips, DM

The world leader in serving science

Early BSC Controls and Display



BLOWER



LIGHTS

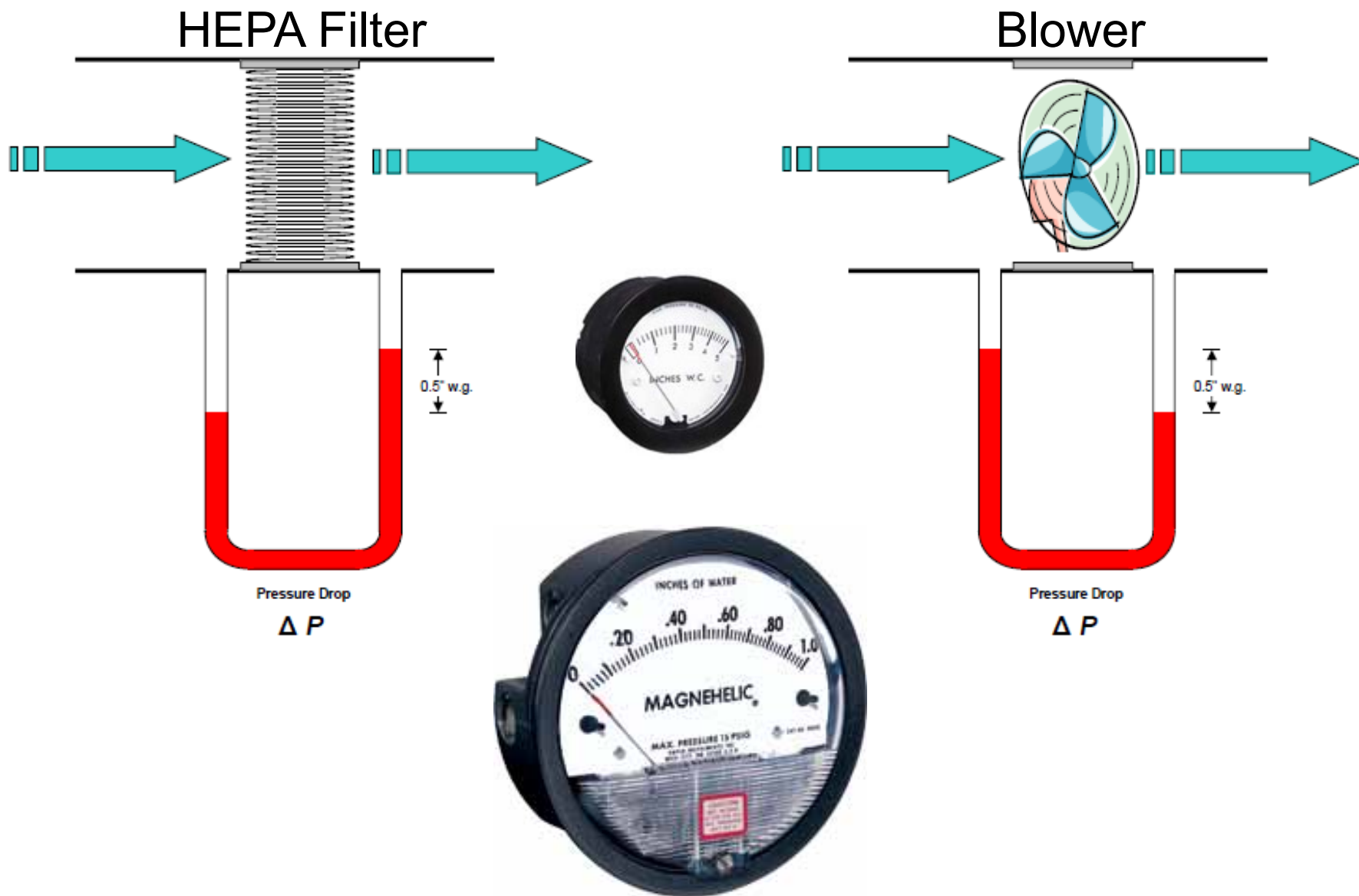


**CABINET
CIRCUIT
BREAKER**



**OUTLETS
CIRCUIT
BREAKER**

Pressure Gauges



**In a survey of
the same
model cabinet
at a facility**

9 readings

0.37" to 0.66" w.g.



0.37"	0.65"
0.50"	0.37"
0.37"	0.66"
0.55"	
	0.40"
0.40"	

Pressure Gauges – Manufacturer Guidance

- “When the reading increases by 50% from original measurement, cabinet airflow should be checked with a thermoanemometer. Replace the filters if proper airflow cannot be obtained.” ThermoForma 1284
- “The initial pressure reading will be approximately 0.5" w.g. + 0.1" w.g. depending on altitude from sea level. At each 0.1" w.g. increment increase, the cabinet airflow should be checked by a qualified technician, unless certified on a yearly (or sooner) basis.” NuAire NU425-400 Series 30
- “. . . check the reading on the analog pressure gauge; the displayed value should remain consistent with the recorded value in the most recent certification report. A significant change in pressure should be cause for investigation. This device is not intended to be used for air flow set-point verification.” Baker SG404



Example of current BSC interface

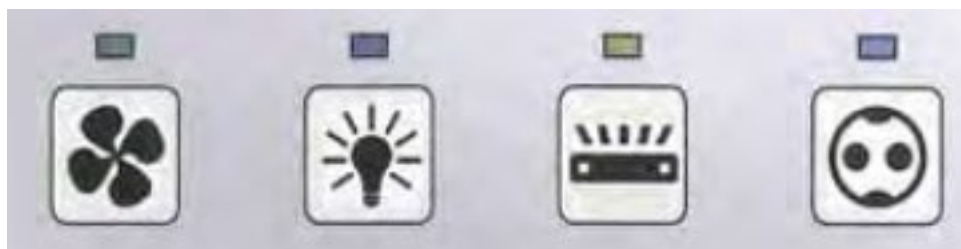
Blower ON
Blower pending

UV Light ON

Blower Alarm

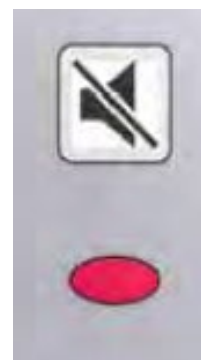
Light ON

Outlets ON



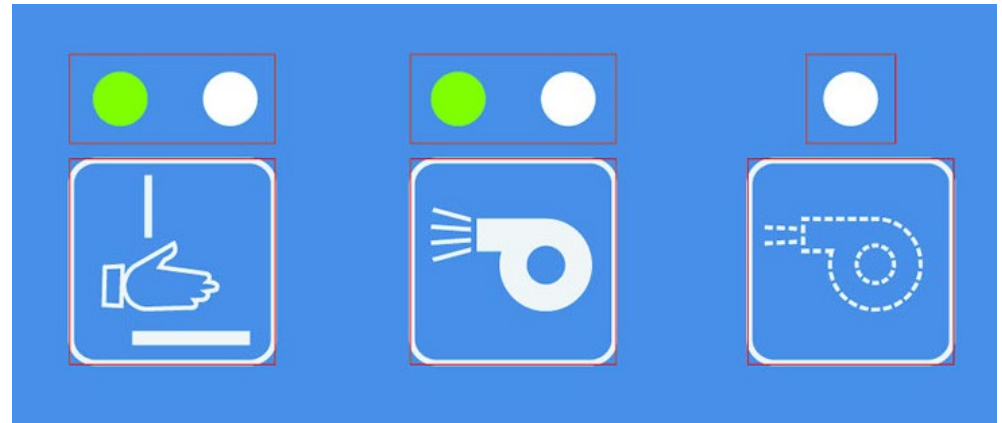
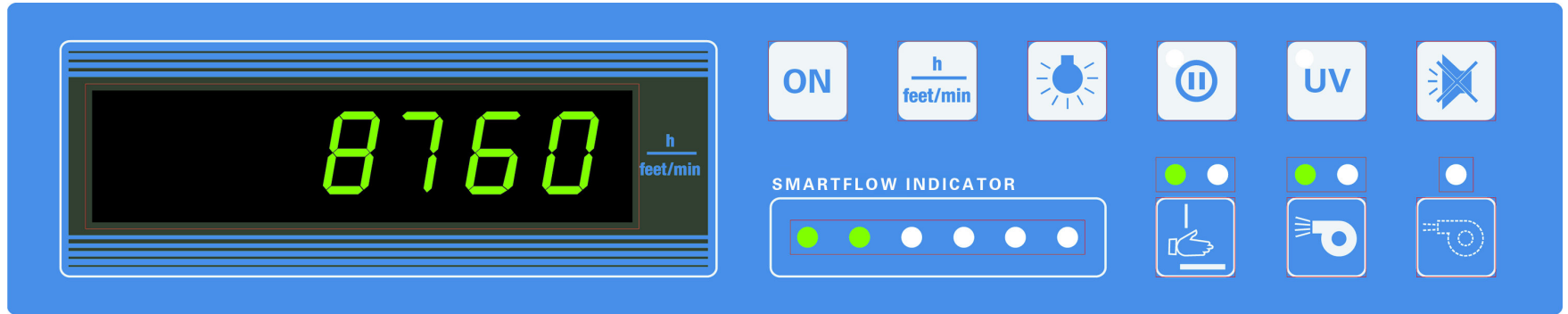
Alarms

- New Firmware Loaded
- Internal Board Failure
- Power on Reset
- Airflow Pressure Alarm
- Blower RPM Failure
- Window High
- Window Low
- Replace UV Light



Any alarm
condition

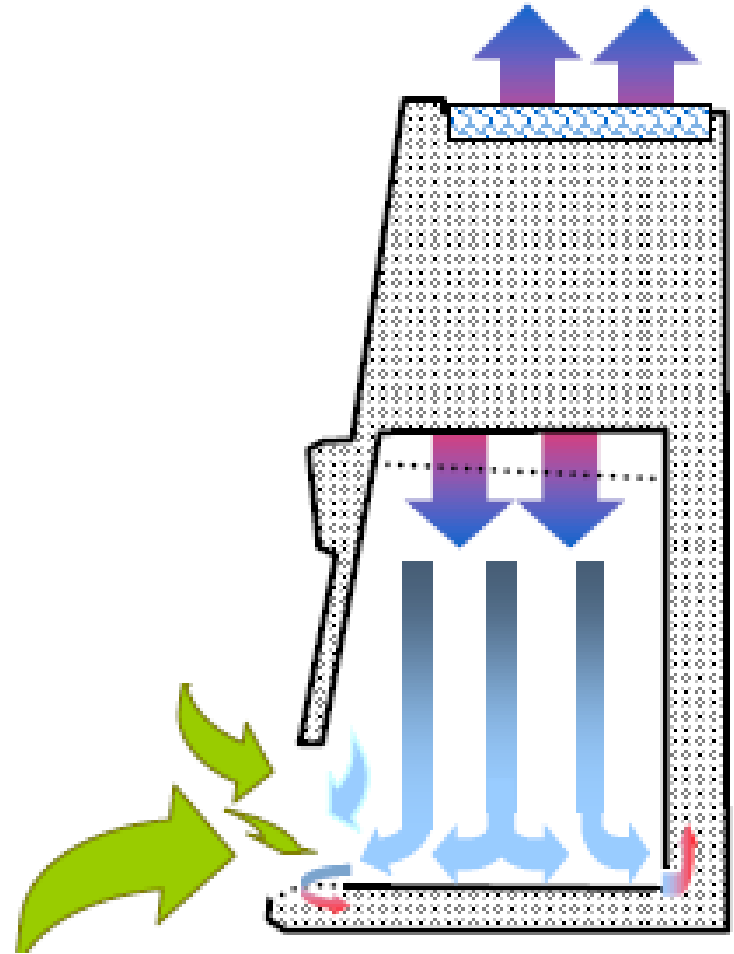
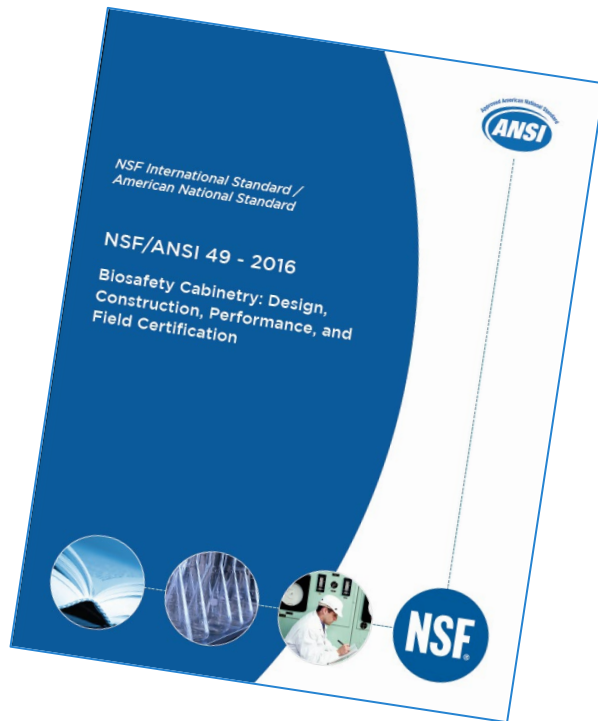
Example of current BSC interface



NSF/ANSI 49 Alarm and Interlock Requirements

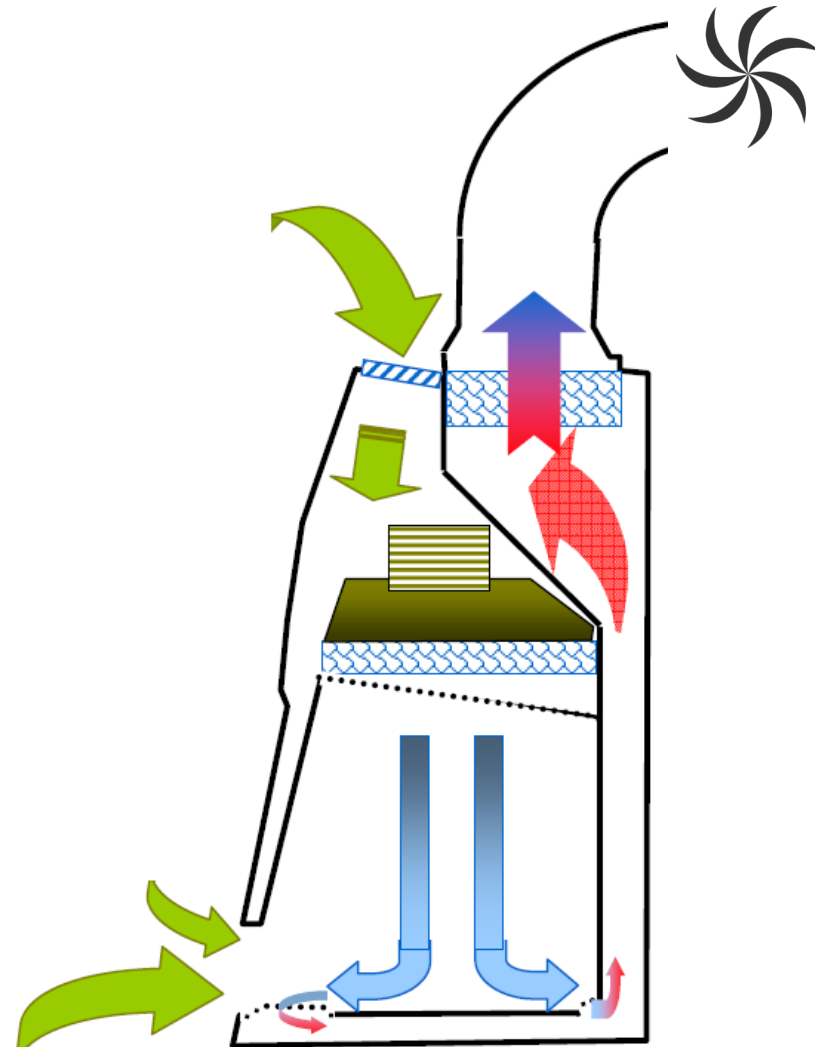
- **Sliding Window Alarm**

- Audible and Visual - 1 inch (25 mm) above 1 inch (25 mm) below



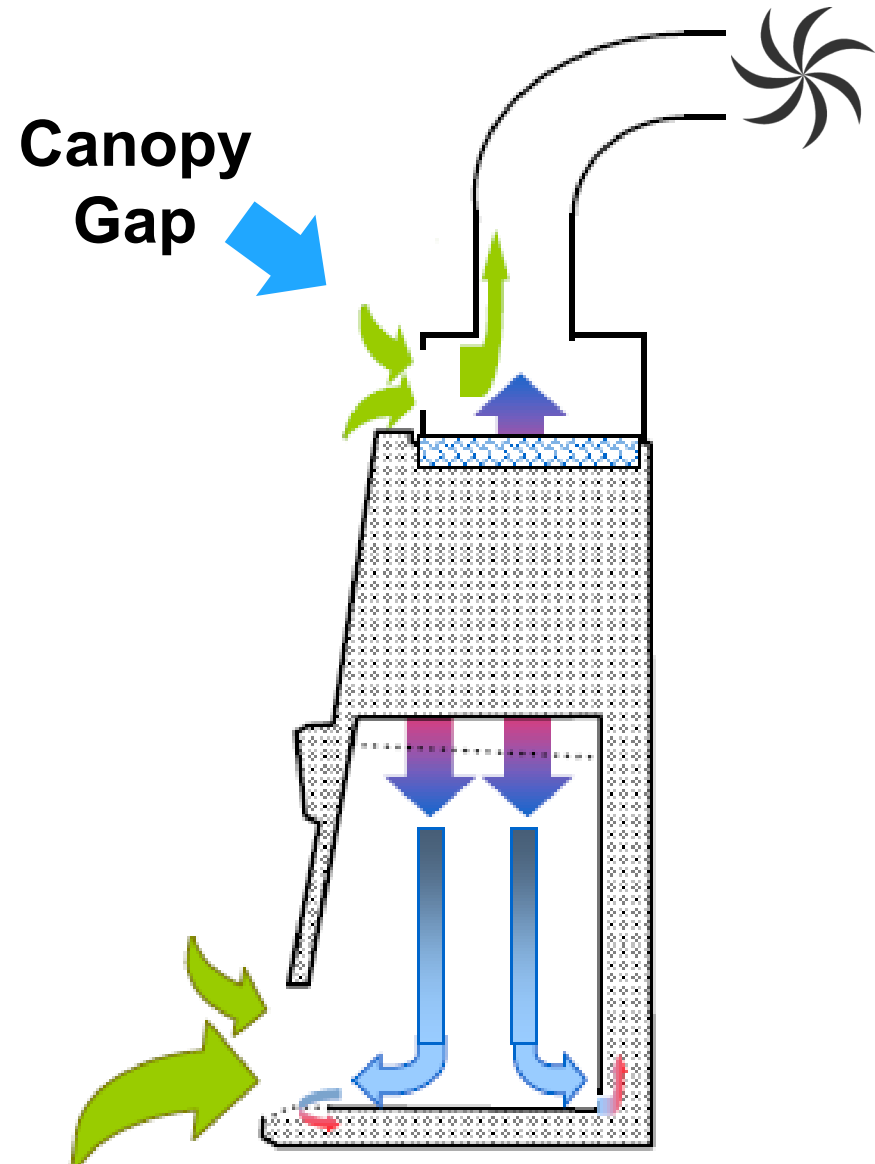
- **External Exhaust alarms**

- For B1 and B2 - Audible and Visual alarm and cabinet interlock shut-down within 15 seconds of exhaust volume loss exceeding 20%.
- For Canopied A1 and A2 - Audible and Visual alarm within 15 seconds of a loss of capture of room air at the canopy air intake(s). Cabinet continues to operate.



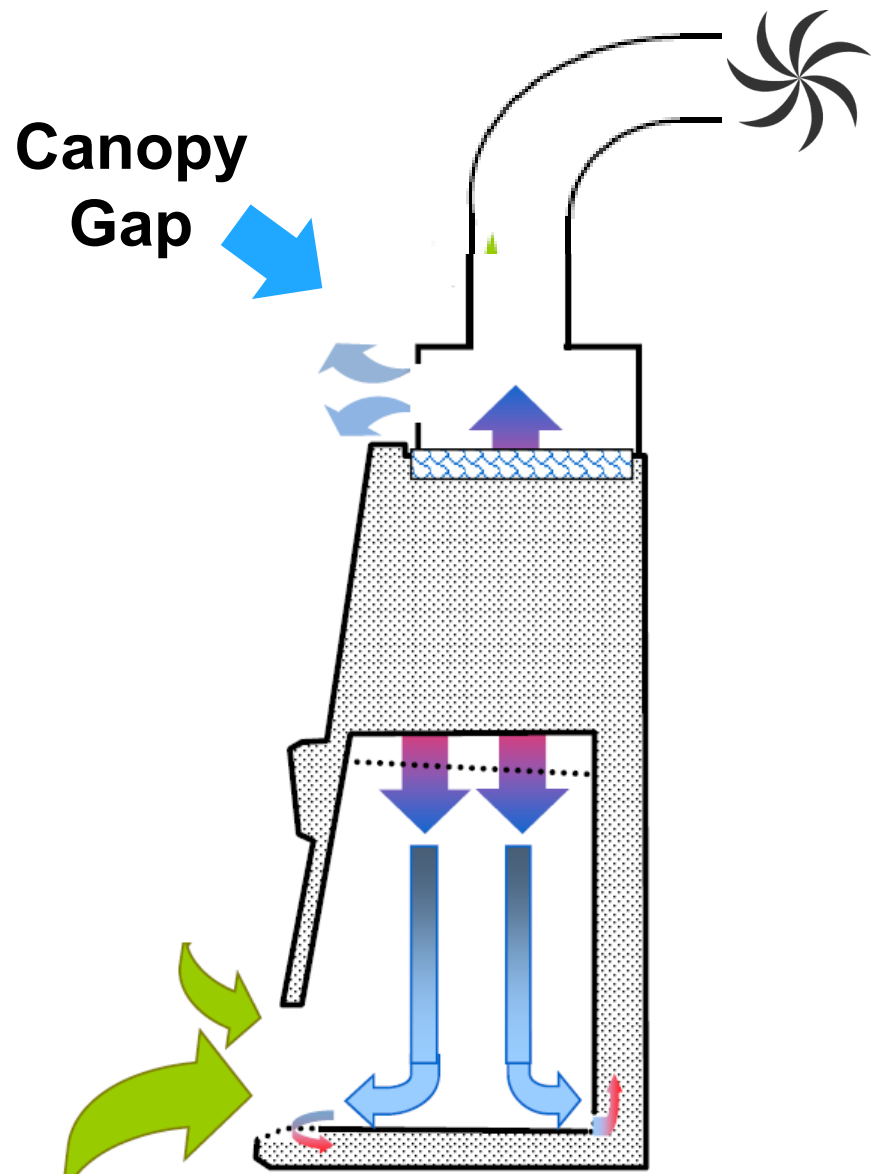
- **External Exhaust alarms**

- For B1 and B2 - Audible and Visual alarm and cabinet interlock shut-down within 15 seconds of exhaust volume loss exceeding 20%.
- For Canopied A1 and A2 - Audible and Visual alarm within 15 seconds of a loss of capture of room air at the canopy air intake(s). Cabinet continues to operate.

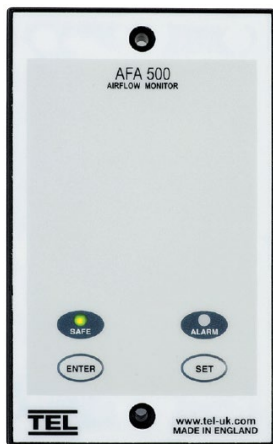


- **External Exhaust alarms**

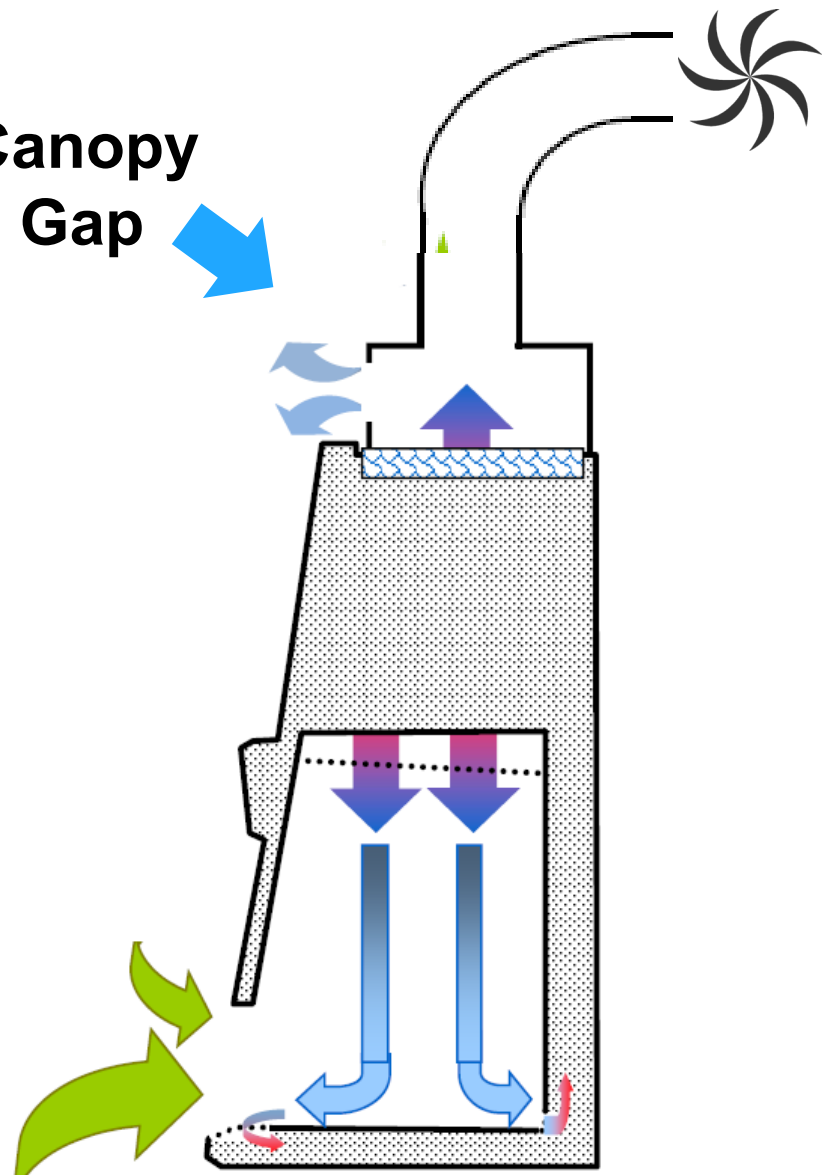
- For B1 and B2 - Audible and Visual alarm and cabinet interlock shut-down within 15 seconds of exhaust volume loss exceeding 20%.
- For Canopied A1 and A2 - Audible and Visual alarm within 15 seconds of a loss of capture of room air at the canopy air intake(s). Cabinet continues to operate.



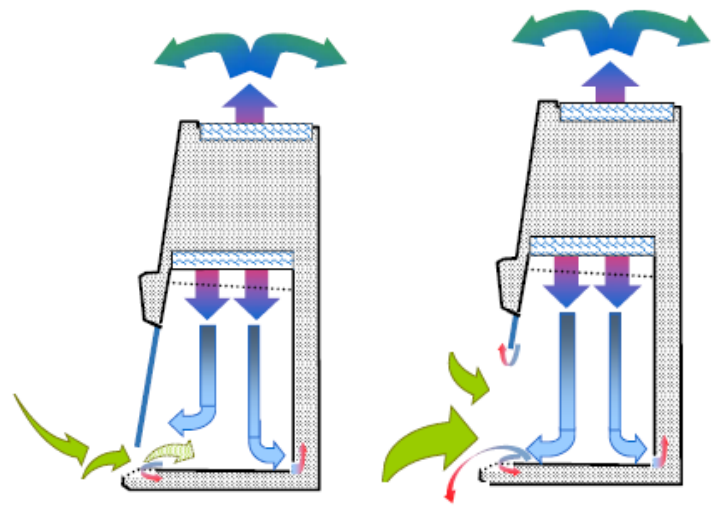
Canopy Alarms



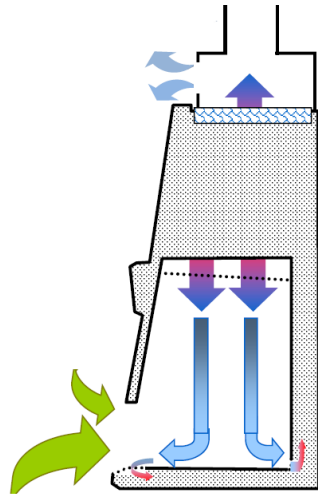
Canopy
Gap



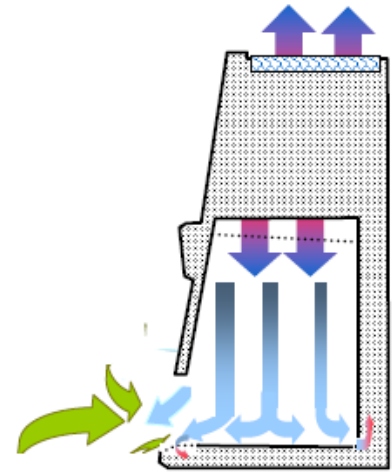
BSC Alarm Overview



Window Position



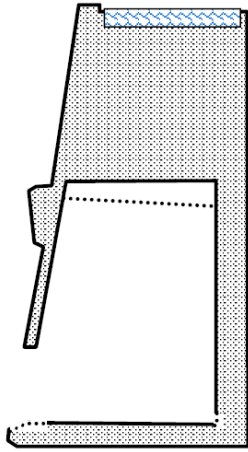
Exhaust



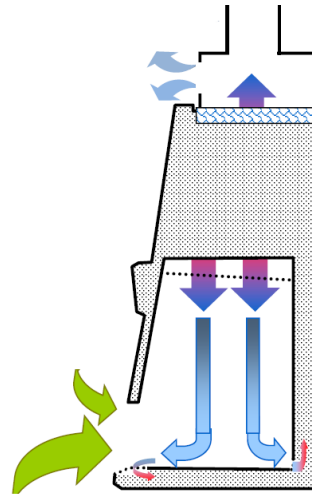
Inflow



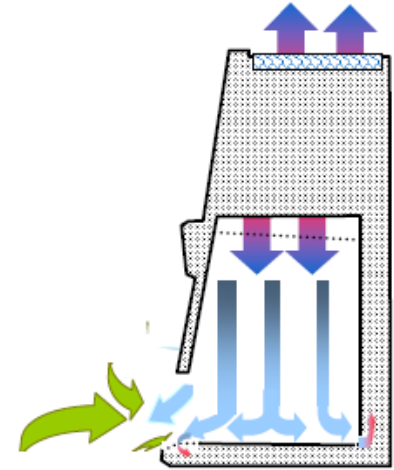
BSC Alarm Overview



Shut Down

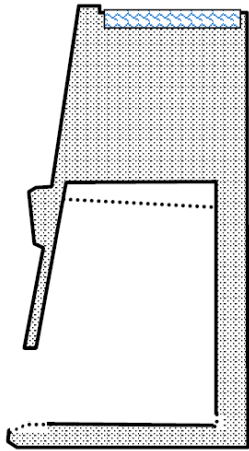


Exhaust



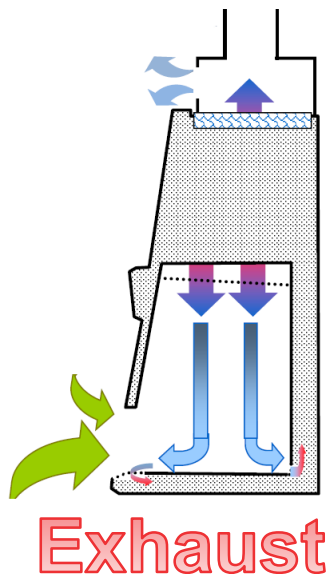
Inflow



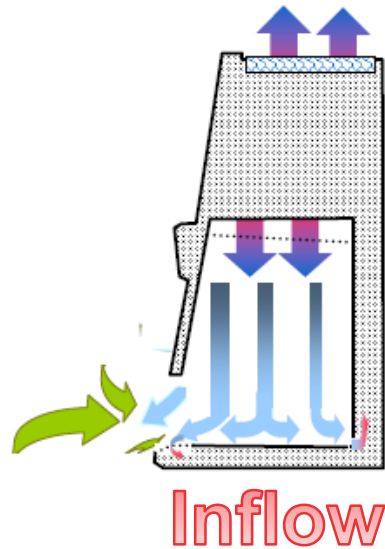


- Do not make rapid movements
- Cover exposed materials
- Secure work area
- Close window
- Wash hands and clean up

Shut Down



If not working with volatile toxic chemicals, you can continue working. Probably you will want to finish up because of the noise.



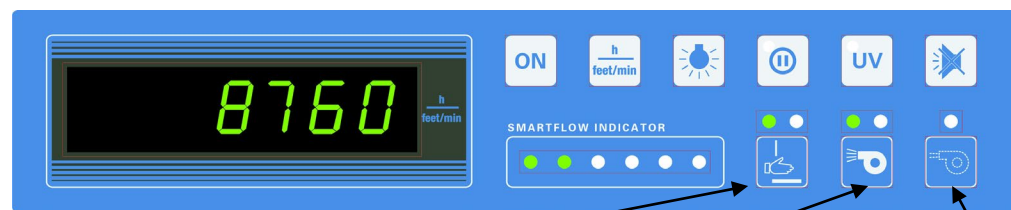
If not working with hazardous materials, you should finish up within 5 minutes.

If working with hazardous materials,
Do not make rapid movements
Cover exposed materials
Secure work area
Close window
Wash hands and clean up

- **Quick Guide and Table of Responses**



External Exhaust
(for fumes)



Window
Position

Blower
(normal)

Blower
(Stand-by)



Class II BSCs are great!



“Why don’t I get a respirator?”

Dave Phillips

david.phillips@thermofisher.com

