



Calibre Solutions Ltd
37 Manurere Rise, Matakoho 0593

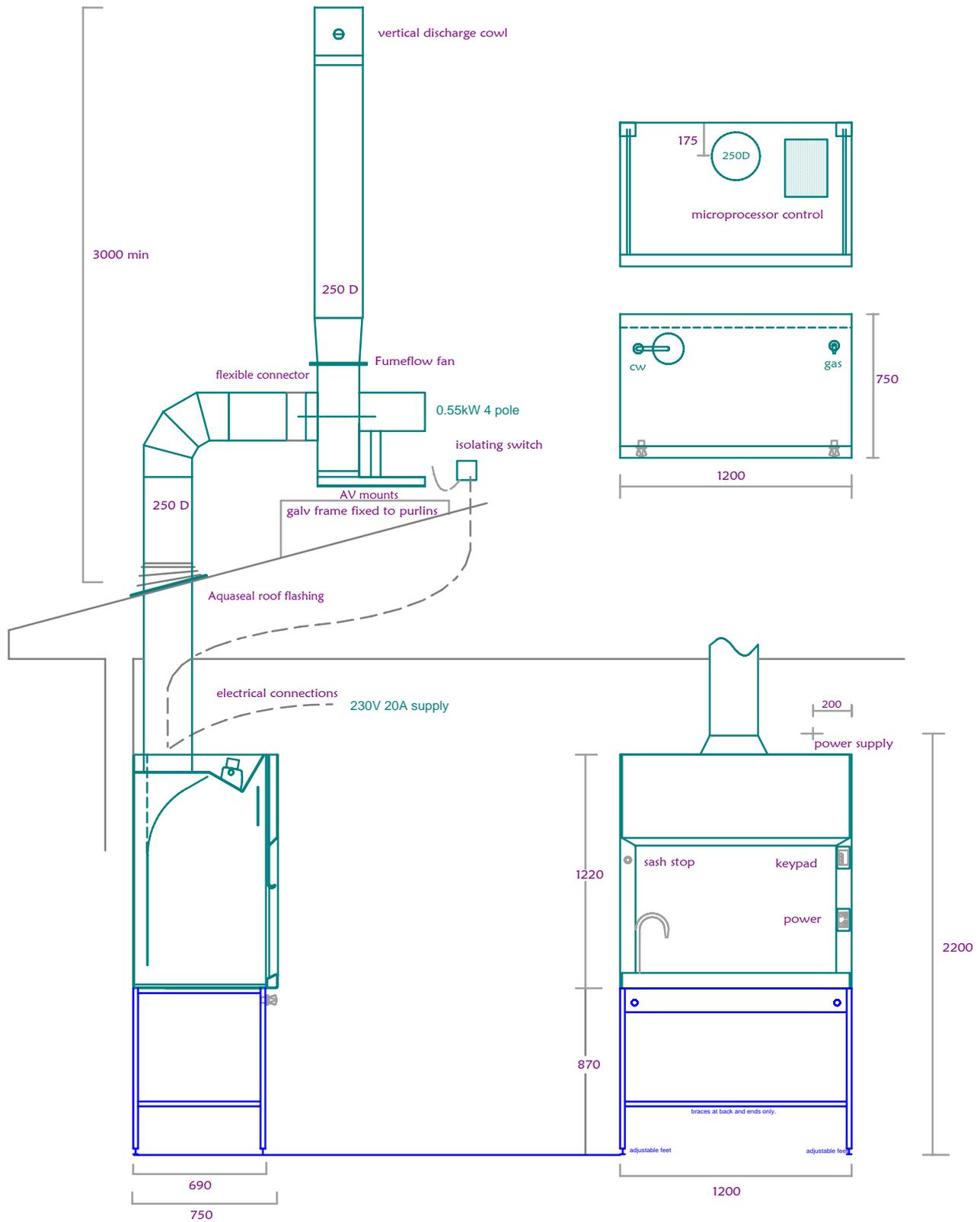
Freephone: 0800 422 542
Phone: +64 21 684 273
Fax: +64 9 813 1319

Installation Instructions **Fumeflush Fume Cupboard**

Refer drawings on next pages

1. Set under-bench frame in position. Check that the lower cross bar is at the rear, and the service panel is to front. Adjust the feet for level and height (870mm)
2. Place fume cupboard on under-bench frame. Dry fit a short length of 50mm waste pipe in the drain outlet at the left rear corner of the fume cupboard base to make sure the top rail of the frame does not obstruct the connection. Align the fume cupboard on the frame, and screw through lugs on frame into base of fume cupboard. Maximum screw length 20mm!
3. Unwrap tempered glass worktop and align with 30mm gap at front and sides.
4. **MOST IMPORTANT** for the following to be undertaken by TWO people, to avoid any damage to the scrubber sections. Raise the scrubber body with the window facing forward, and carefully lower it, keeping it square and level, into the socket on top of the fume cupboard. Ensure it is fully seated inside the socket, and along the back edge.
5. Make sure the grate is seated flat on the flanges inside the scrubber. Pour in the *Percolet* packing and spread it across the grate, filling to the lower edge of the window. Again using two people, fit the lid and demister stage on top of the scrubber, keeping square and level. Ensure it is fully seated all around the back and sides. Fit the clear window into the slot at the front of the scrubber, and secure with the two s/s machine screws.
6. Plumb up from top of fume cupboard for duct. Mark and cut 260mm dia hole through ceiling and roof.
7. Above the roof, and within about 1m of the hole, construct a level platform for the fan. The platform may be timber, or galvanised or stainless steel. The fan weighs 28kg, and the stack and cowl is about 17kg. (45kg total)
Place the fan on the platform with the inlet in line with the hole.
Mark out the four fixing points, and move the fan aside.
Fix the rubber mounts (provided with fan) to the platform.
Replace the fan in position and fix to the rubber mounts with s/s bolts provided.
8. The cowl must terminate 3m above the roof penetration. Temporarily place cowl on top of fan. Measure height above roof penetration and calculate length of stack required. Add 100mm for sockets.

Cut 250mm dia duct to length. Ensure ends are cut square. De-burr edges.
Fit the cowl and the duct to the fan outlet. Ensure the duct is plumb. Use PVC solvent cement, or hot-air welding.



Calibre Solutions
 SashDrive Fume Cupboard Installation

9. Temporarily place bend in line with fan inlet and roof penetration. Measure up from fume cupboard outlet to bend. Allow for sockets at each end. Cut 250mm dia duct to length. Ensure ends are cut square. De-burr edges.

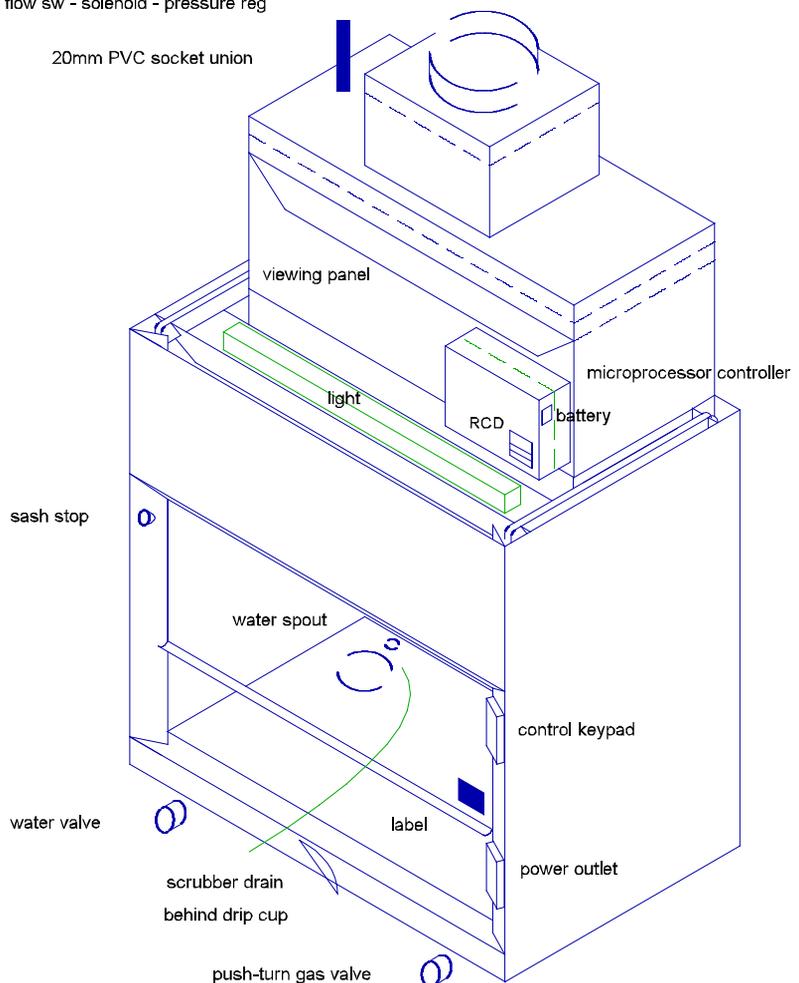
Lower duct through roof. Fit the ceiling flange over the bottom end of the duct, and fit the duct to the fume cupboard outlet. Fix the flange to the ceiling with screws or adhesive.

Fit the "Dektite" flashing over the top end of the duct, and fix to the roof with sealant and screws or rivets.

Temporarily fit the bend to the riser duct. Measure from the socket of the bend to the fan inlet, allowing a gap of 100mm between the fan and duct for the flexible connector. Cut 250mm dia duct to length. Ensure ends are cut square. De-burr edges.

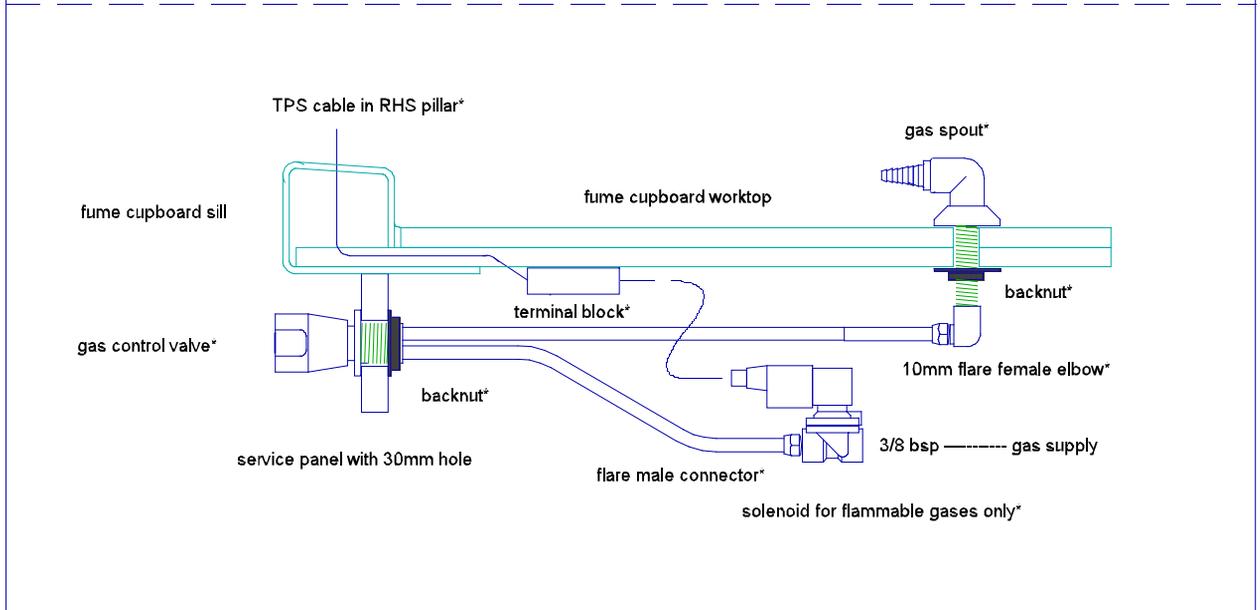
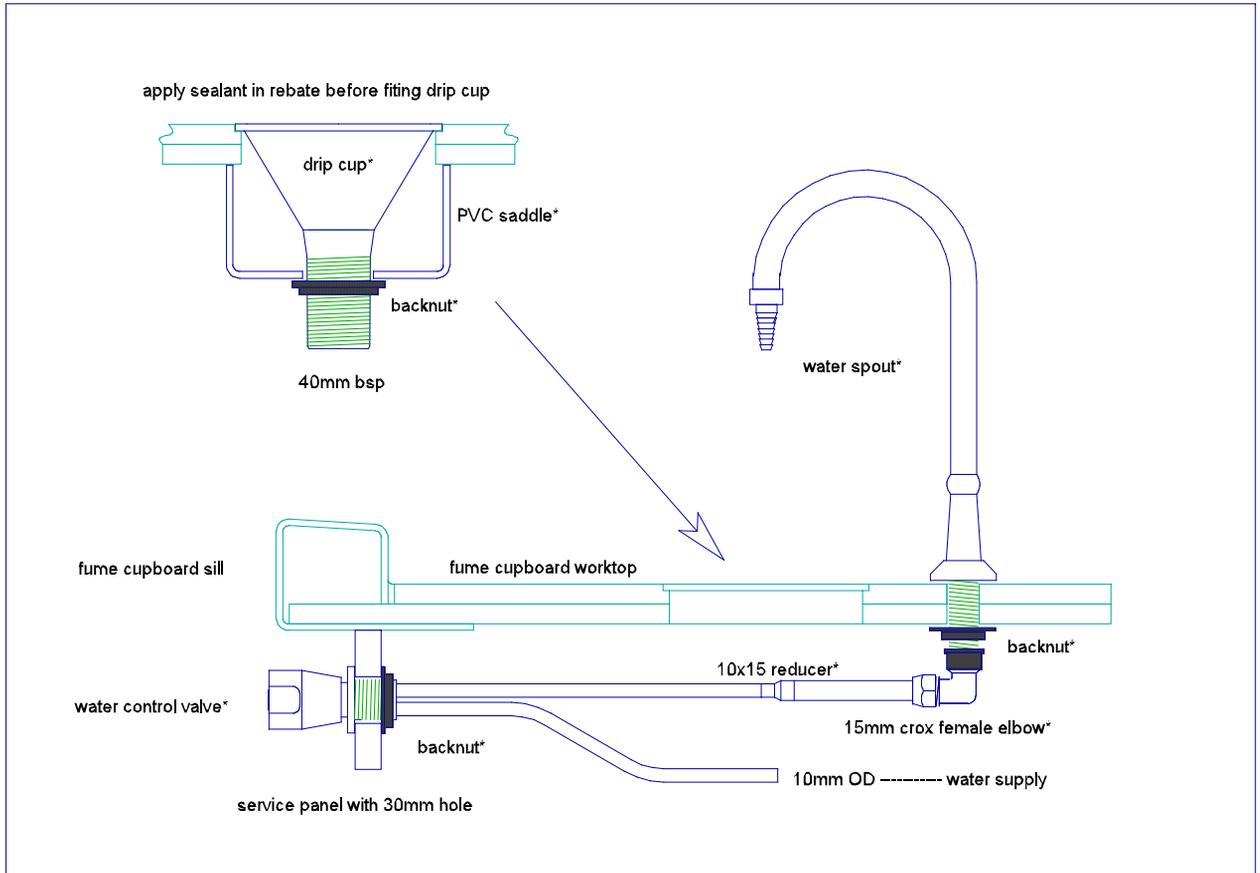
Fix the duct into the bend with PVC solvent cement, or hot-air welding, and connect the duct to the fan with the flexible connector. Fasten the stainless steel clamp bands.

ball valve - strainer - check - flow sw - solenoid - pressure reg



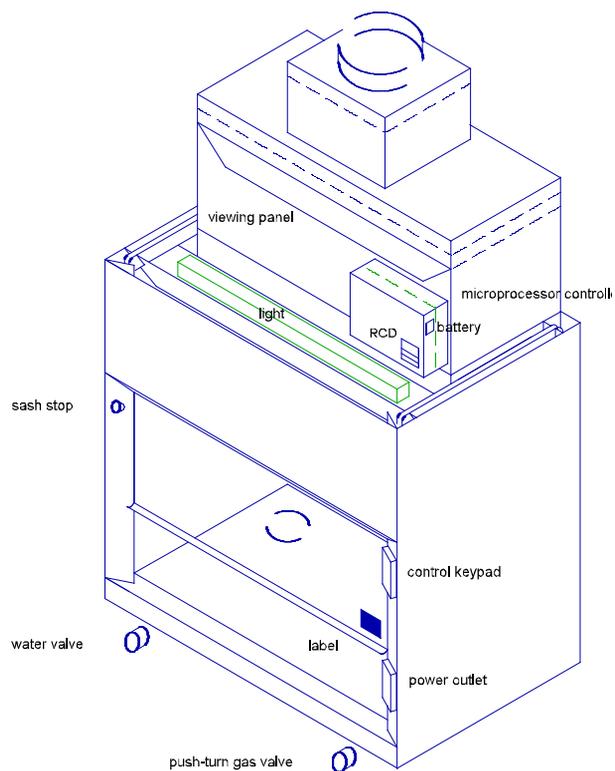
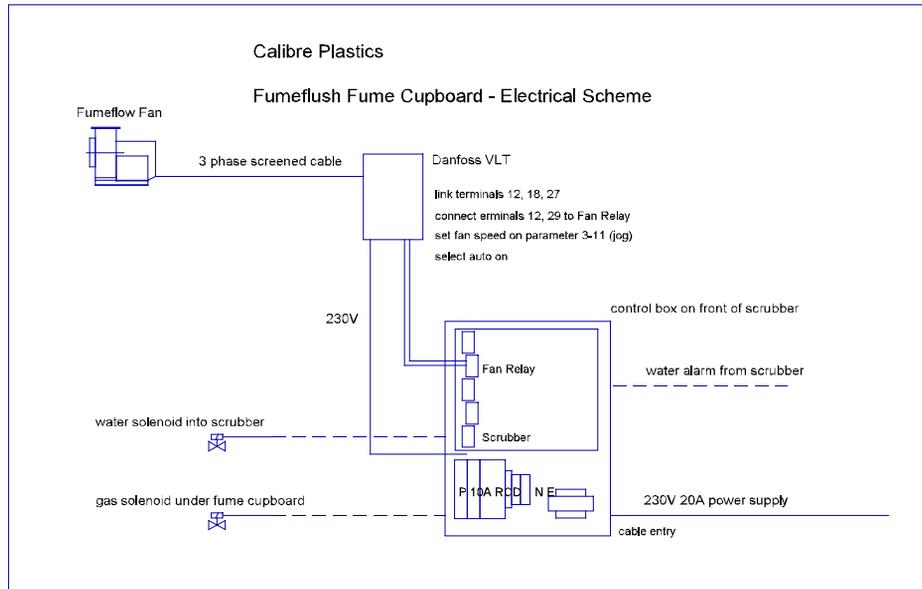
Plumbing Connections

1. Connect water control manifold (ball valve, solenoid valve, water sensor, pressure regulator) to inlet on top of scrubber using PVC socket union supplied.
2. Fit water taps and drip cup inside fume cupboard as diagram below.
3. Connect water supply to scrubber water control manifold and taps. Please note that the scrubber water demand is 8L/min, and is fitted with a low flowrate alarm. Please ensure that water reticulation is of adequate size. At least 20mm main is recommended.
4. Note there is a 50mm PVC drain socket behind the drip cup. Connect this drain socket AND the drip cup to the drain.



* fittings supplied with fume cupboard

Electrical Connections for Fumeflush Fume Cupboard



Electrical Connections for Smoothflow Fume Cupboard

The control box is a grey plastic enclosure located on the front of the scrubber. Refer the diagram. The control box contains

- a local isolator,
- a 10A circuit breaker for the light and fan drive (Danfoss VLT),
- an RCD circuit breaker for the power socket
- a grey fuse holder (500mA)
- coloured strip connectors for Neutral and Earth
- a transformer
- a printed circuit board with a row of relays along the (left) side
- a pressure switch (in the lid)
- a 9v battery drawer

The Danfoss VLT requires a 230V single phase power supply, a signal pair from the controller, and a three phase shielded connection to the fan motor. (see diagram)
Mount the VLT in an accessible place for programming.

Provide and terminate a 230V 3 core cable $\geq 1\text{mm}^2$ from the VLT to the fume cupboard controller.

The fume cupboard controller has a cable entry at the right.

Terminate the VLT Neutral conductor at the blue terminal block

Terminate the VLT Earth conductor at the yellow/green terminal block

Terminate the VLT Active conductor at the 10A MCB

Link terminals **12, 18 & 27** of the Danfoss VLT.

Provide a signal pair from terminals **12 & 29** of the VLT to the **Fan Relay**

FAN The fan is located above the roof.

The fan has a 3 phase motor

Ensure the motor is configured in delta for 230V

Optionally provide a weatherproof isolating switch by the motor

Provide and terminate a 4 core shielded cable from the fan to the VSD output terminals.

Ground the cable shield either to the motor or the VSD but not both.

FUME CUPBOARD POWER SUPPLY

Required supply is 230V 50Hz, 20A

Provide and terminate a 3 core cable $\geq 2.5\text{mm}^2$ from the mains distribution board to the fume cupboard controller.

This circuit should be fused at 20A.

The fume cupboard controller has a cable entry at the front right.

Terminate the fan Neutral conductor at the blue terminal block

Terminate the fan Earth conductor at the yellow/green terminal block

Terminate the fan Active conductor at the isolator switch P (see diagram)

SCRUBBER

Connect the water solenoid to the controller **Scrubber relay** (see diagram)

Connect the scrubber water alarm to the controller water alarm input

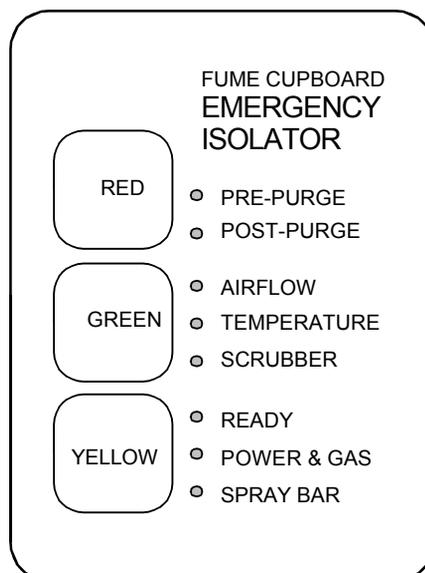
CHECK Check that all screw terminals are tight

Check the air flow pilot tube is not kinked

Check that installation of the duct and fan is complete

Read the operating instructions before switching on the power.

Check the **fan rotation**.



OPERATING THE FUME CUPBOARD

- Start up** Press the green button
The fan and light turn on
The **TEMPERATURE LED** will be green
The controller waits 7 seconds for airflow
- Pre-purge** The **AIRFLOW LED** turns green
The **PRE-PURGE LED** will be amber for 50 seconds
then flash for another 10 seconds, then go out
- Ready** The **READY LED** turns green
Four beeps sound
- Active** Press the yellow button
The **POWER & GAS LED** turns green
The fume cupboard is now operational -
power & gas can be used
- Isolate / Ready** Press the red button
Power & Gas turn off automatically
The **POWER & GAS LED** goes out
The **READY LED** turns green
Press the yellow button to re-activate, or
- Shut down** Press the red button again
- Post-purge** The fan and light continue to operate
The **POST-PURGE LED** will be amber for 15 minutes
then flash for another 5 minutes, then go out.
The light and fan turn off automatically
- Re-start** Press the green button to return from
post-purge to pre-purge

Operation of FUMEFLUSH SCRUBBER

Start Scrubber When the **PRE-PURGE LED** is amber
Press the green button again
The **SCRUBBER LED** turns green.
The scrubber turns on, and remains on
until the end of the post-purge cycle
Inspect the scrubber spray pattern

FAULT ALARMS

If the **Power** is cut, an alarm will sound a slow beep
The **READY LED** will flash red
Press the red button to mute the alarm
A long beep will sound as the controller shuts down.

When the **Power** is restored,
The fan will automatically turn on for 20 minutes then turn off;
An alarm will sound for 30 seconds, then turn off
The **LED**'s will keep flashing.
Press the red button to reset the controller and stop the fan.
Press the green button for normal start up.

If the **Airflow** gets low, the screen will display FAULT and AIR FAIL
An alarm will sound , and the red LED will flash
Press the red button to mute the alarm
The fume cupboard will go into normal post-purge,
but the alarm message and LED will stay on
Check out what caused the alarm.
Get it fixed before using the fume cupboard again.

If the **Temperature** inside the fume cupboards gets high
The fault LED will flash slowly
The screen will display TEMP WARM
Turn down the heat inside the fume cupboard.

If the temperature inside the fume cupboards gets higher
The screen will display FAULT and TEMP HIGH
An alarm will sound , and the red LED will flash
Press the red button to mute the alarm
The fume cupboard will go into normal post-purge,
but the alarm message and LED will stay on
Check out what caused the alarm.
Get it fixed before using the fume cupboard again.

The temperature sensor works even when the fume cupboard is turned off.
Press the red button to mute the alarm

If the **Scrubber** water flow gets low
An alarm will sound , and the **SCRUBBER LED** will flash
Press the red button to mute the alarm
The fume cupboard will go into normal post-purge,
but the **SCRUBBER LED** will be red
Check out what caused the alarm.
Get it fixed before using the fume cupboard again.

TROUBLE SHOOTING

No power at power socket

Power is made available to the socket outlet only during “Active” status. Refer operating instructions. After the pre-purge is complete and ‘Ready’ status is displayed, press the yellow button to activate the power outlet.

If ‘Active’ status is displayed and there is still no power, check the RCD breaker (the blue switch visible in the lid of the control box on top of the fume cupboard).

If the switch will not latch on, there is an electrical fault in the circuit. Call an electrician.

No gas at gas outlet

Gas is made available to the outlet only during “Active” status. Refer operating instructions. After the pre-purge is complete and ‘Ready’ status is displayed, press the yellow button to activate the power outlet.

If ‘Active’ status is displayed and there is still no gas, check the RCD breaker (the blue switch visible in the lid of the control box on top of the fume cupboard).

If the switch will not latch on, there is an electrical fault in the circuit. Call an electrician.

If the power socket is live but there is still no gas, the gas mains may be isolated. Some laboratories have a master gas isolator.

Controller does not respond to keypad

If the control sequence has become corrupted, the controller needs to re-load the program from memory, which happens automatically on power restore.

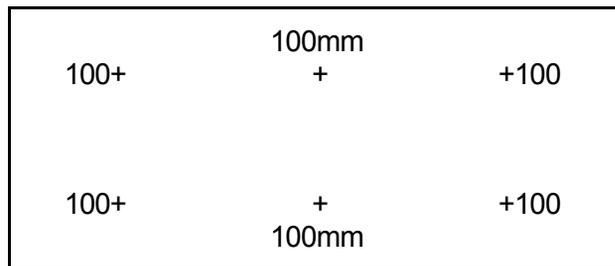
The mains isolator switch is visible in the lid of the control box on the fume cupboard. Turn off mains supply to the fume cupboard controller. Wait 5 seconds, then turn the mains isolator on again. The processor will reboot, and signal a power restore alarm (see operating instructions) Press the red button to reset the controller, and start the fume cupboard as normal.

COMMISSIONING

Refer the operating instructions appended
Turn the power on and reset the controller.
Manually start the VSD, and check fan rotation.

Measure the airflow

Raise the sash to the maximum operating position (sash stop)
Measure the air velocity in the plane of the sash at six (6) positions



The average velocity (sash open) should be more than 0.5m/sec

Adjust fan speed by adjusting the potentiometer on the VSD
Observe and record the VSD output frequency for ≥ 0.5 m/sec airflow
Program parameter 3-11 (jog speed) to this frequency value
Press the "Auto On" button on the VSD
Start the fume cupboard controller
Measure the airflow
Record the velocity measurements in a commissioning report.
Conduct a smoke test (AS 2243.8) and record the observations.

Adjust the airflow alarm sensor (pressure switch):

The pressure switch is mounted in the lid of the fume cupboard controller.
Adjust the white plastic cross-head screw clockwise to raise the set point (more sensitive) or anticlockwise to reduce the set point (less sensitive).

A practical guide:

1. Turn the set point up until the Airflow alarm sounds
2. Press the red button to mute the alarm.
3. The Airflow LED should still be red.
4. Turn the set-screw down until the LED turns green.

To check the alarm, pull the clear PVC pilot tube out of the duct.
The alarm should sound after 2-3 seconds.
Ensure the pilot tube is re-fitted in the duct.