

THE COMPLETE FUMECUPBOARD SERVICING PROGRAMME



Simple everyday work in a chemical laboratory such as mixing, decanting, heating, evaporating, etc., can yield all kinds and types of fumes, vapours and gases which can be dangerous or even fatal to the operator. These tasks can be safely done within the confines of a properly designed and constructed fumecupboard. The fumecupboard should draw the fumes, vapours and gases away from the operator offering a safe environment to work in. The operation of the fumecupboard must be efficient, functional and conducive to the user and yet do not interfere with the experiment. Given the importance of the fumecupboard in the laboratory, it should be properly inspected and serviced periodically to ensure optimum function and performance. Proper maintenance will ensure longer life and checks any deterioration to the fumecupboard.

FUMECUPBOARD

Should be serviced every 3-6 month or more frequently if they are heavily used.

SPECIAL NOTE

In Fumecupboard and Fume Extraction System where toxic and dangerous chemical, biological or radioactive work is done, the decontamination should be carried out by specialist constructor or by the users personnel, under the supervision of a Safety Officer. The personnel should wear appropriate protective clothing and if necessary breathing apparatus.

EXTERIOR SURFACES

of the fumecupboards and supporting furniture can be cleaned with warm water and detergent.



Can be accessed by removing the baffle from its position. Pull baffle forward and down to release. Bring bottom edge forward and away at the same time. Exercise care to avoid damage to interior lining and baffle.

INTERIOR LINER AND BAFFLE

SPECIAL MAINTENANCE REQUIREMENT

Aluminium Liners : check for paint damage. Clean damaged areas and paint over with epoxy paint (white) Stainless Steel Liners : check surfaces for corrosion. Remove any patches with Scotchbrite Pad, Stainless Steel Wool or Amway Metal Cleaner. If serious corrosion has occurred and is likely to cause holes in liners, items should be replaced immediately.

BENCHTOPS



should be washed down with warm water and detergent, scratches can be rubbed out with nylon scourer (Scotchbrite) and washing up liquid. Dry off surface and apply wax polish or machine oil to repaired area.



Check for blockage to sink unit. Clean out waste trap and refit. Check for blockage along pipe, clean out blockage and refit if blockage occurs. Test and ensure no leaks after maintenance.

UNDERBENCH PLUMBING

Check On/Off function of service fittings to ensure smooth and proper operation. Replace if defective.

Service fitting commonly found in fumecupboards are:

1. Electrical sockets
2. Low pressure gas supply
3. Water supply and
4. Compressed air.



SERVICE FITTINGS

SASHES AND LIGHT GLASS

should be cleaned with proprietary window cleaner or menthylated spirit and polish with soft cloth.



SASH CABLES

should be inspected for fraying or other damage. Replace if necessary . Check run of cable over pulleys and ensure free running. Grease or lightly oil pulley bearing if necessary.

LIGHTING

is fitted in a cowl on Fumecupboard top panels. Twin or 2 single lamps are fitted. Fumecupboard have twin 20 watts units. Operate light switch and check that lamps are working, to replace tubes, first isolate power supply. Close sash and loosen two wing nuts at end of cowl and lift off. Replace faulty tube, replace cowl, switch on power and re-check.



should be inspected every 3-6 months, system should be shut down before inspection are carried out. The PVC system can only be thoroughly checked by a visual inspection from the out-side. Check for breakages, cracks and spilt especially at duct joints, fabricated sections adjacent to fans. In vicinity of



FUME EXTRACTION SYSTEM

duct brackets. On site repairs can be carried out with a hot air gun (300 degree Celcius) using 3mm diameter PVC welding rod. Vee-out along crack and fill with weld. Apply heat along lower end of rod and crack as welding proceeds. Overheating will result in burning and mealting of PVC pipe, a slight evidence of singeing on edges of weld is acceptable as evidence of proper weld.

SUPPORT BRACKETS



Must be inspect for wear and tear. Tighten loose fittings, repairs as necessary and paint.



Remove dirt and grime from damper. Remove rust from metal component where necessary. Ensure damper in good operation condition.

DAMPER

AIR FILTERS



Open access door to gain access to filter banks. Pull out filter bank and clean out the filter. Check filter medium for leakages. Minor leakages may be repaired with silicon sealant. If damages are extensive, replace filter medium. Replace, refit and check for proper operation.

Check blockages, corrosion and breakages along entire auxillary air duct. Repair where necessary. Clean out auxillary air fan and refit. Test and ensure satisfactory performance of auxillary air.



AUXILLARY AIR

EXTRACT FAN 6-MONTHLY INTERVALS

Using a suitable instrument check that satisfactory extract rates are being achieved from the equipment connect to the extract system. Check that all the nuts and bolts are secure. Lift of motor cover (by releasing the 4 ball nuts) and check the motor cover for

signs of external rust. Rectify as necessary. NOTE: The motor cover is light and therefore should be secured if windy conditions prevail. Check PVC fabrications for sign of failure. Having replaced motor cover run the fan and check for excessive vibration. (if vibration is considered excessive see following instruction)

EXTRACT FANS 12-MONTHS INTERVALS

Carry out 6 monthly checks. Lightly grease motor bearings if grease nipples are provided. Those motor which have no grease nipples have pre-packed bearings sealed for life therefore lubrication is unnecessary.

EXTRACT SYSTEM FAILURE



Partial to total extract system failure will usually be caused by one of more of the following:

1. Blockage within duct work.
2. Blockage within the fan impeller unit which may/may not cause vibration.
3. Electrical supply failure.
4. Fan motor failure.



Before assuming that the fan motor has failed ensure that the electrical supply to the motor satisfactory. If after the check it is established that the motor has failed a service exchange unit will be required.

ELECTRICAL FAILURE

DISMANTLING THE FAN



The fan unit comprises 3 basic assemblies ; motor cover, motor backplate and impeller assembly and fan body. Dismantling of the unit is as follows:

1. Disconnect or isolator the electrical supply to the fan.
 2. Remove the motor cover by releasing the 4 ball nuts and secure the cover so that is not blown away.
 3. Ensure that there is sufficient loose cable to facilitate removal of the motor assembly or disconnect the electrical cable to the motor having noted the electrical connections.
 4. Remove the stainless steel nuts, retaining the motor backplate to the fan body.
 5. Carefully lift off the motor, backplate and impeller assembly from the fan body.
- The mechanism is now available for inspection.

If however, it is intended to remove the complete fan from the extract system prior to inspections, the procedure is as follows:

- a) Complete items 1 and 2 above.
- b) Disconnect the cable from the motor having noted the electrical connections and withdraw the cable through the access hole in the corner of the fan body.
- c) Undo the retaining bolts securing the fan unit to the roof upstand.
- d) Lift off the complete fan unit.
- e) Remove the motor, backplate and impeller assembly as in item 5

EXCESSIVE VIBRATION

Each motor/impeller assembly is dynamically balanced and tested before dispatch. Excessive vibration will therefore be caused by :

1. Build up of condensates or deposits on the impeller which can be rectified by general cleaning or
2. Physical damage to the impeller which will require a service exchange motor, backplate and impeller assembly.

MECHANICAL FAILURE

If electrical checks indicate that the supply and the motor windings are satisfactory, disconnect the electrical supply, remove the motor backplate impeller assembly and check that the impeller will rotate freely. If the unit has seized, a service exchange assembly will be required. Each fan unit carries a serial number plate which is located under the motor cover on top face of the fan body. All correspondence or request for information relating to the unit should include this serial number in order to ensure that the correct information or replacement parts are provided.

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