

O & M INSTRUCTION

PRODUCT GROUP 1007 – HORIZONTAL, REVERSE FLOW LAMINAR AIR CABINET Serial No: AB1

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1.0 Safety

1:1 This equipment is served by 220/240 volt 50Hz power supply. It is strongly recommended that the service of this equipment is carried out by a competent electrician.

1:2 This Horizontal, Reverse Flow, Laminar Air Cabinet has been designed to be dismantled for ease of installation. Prior to the operation of the equipment ensure that the fixing bolts and screws are fitted. All screws defined must be securely positioned.

1:3 If it is intended to use liquids as a part of any process it is important to ensure that this is not drawn into the cabinet by the fan. High moisture levels can be hazardous to the equipment and to the operator. If this situation is likely to arise consult us so that we can advise if a alternative filter media can be recommended.

1:4 As this equipment vents filtered air into the working area it is important to ensure that no harmful or Toxic fumes pass into the working area as a result of processes used by the purchaser of this equipment. Correct filtration will in most cases prevent this occurring.

1:5 Ensure that this manual is read and that it is complete with all documentation and is outlined in the index. If you have any queries or need advice please ring or fax us. All our staff are intent on giving you, our valued customer, the quality of service and product you require.

1:6 Filtered air is ejected into the working area at the rear of the cabinet. This must not be situated in close proximity to any obstruction, as a back pressure will be created impairing the efficiency of filtration and create, possible early fan failure. Ensure that the rear of the cabinet is a minimum of 250mm from any wall and cannot be accidentally moved or pushed closer.

1:7 We draw to your attention that this equipment has been designed to be used when the fan is running. Because of this the lighting circuit will only operate when the fan is running. Should the motor or the motor fuse fail, the lighting will not work.

1:8 It is recommended that industrial gloves, overalls, eye protection and nuisance dust masks are utilised when changing filters which have been subjected to natural air, as opposed to air drawn from processes, where full risk assessments should be performed prior to changing. For some filters, an assessment regarding manual handling will need to be made.

1:9 Changing of Absolute (HEPA) filters should be carried out by experienced or trained personnel, in accordance with safety requirements as defined by the "Control of Substances Hazardous to Health" (COSHH) Regulations.

2.0 General

In line with the company's policy of continually improving our products and product range, we reserve the right to make changes to specification and product range without notice.

2:1 After the receipt of equipment, at the earliest opportunity, the equipment must be visually inspected for any obvious signs of accidental damage, shortages or defects. Any damage, shortages or defects must be notified to Airclean Ltd within 5 working days of receipt of equipment. Failure to do so may hinder our rights of redress against the carrier.

2:2 If any visual damaged is observed upon receipt, ensure that the carrier's delivery note is amended too record "Goods received damaged", and signature the delivery note.

2:3 Remove the external packing and identify any lifting points. If required they will be marked on the lower surfaces of the cabinet. These will be in the form of self adhesive arrows, pointing to the unit base. These will be in close proximity of any of jacking screws.

2:4 The equipment has two metres of dual insulated three core cable. The lead is supplied without termination. The customer can connect the lead to a standard 13 amp socket or a fused isolator. The fuse rating to be 10 amp. It is advisable that the shortest cable length required be used by cutting any surplus from the cable.

2:5 Filtered air is ejected into the working area at the rear of the cabinet. This most not be situated in close proximity to any obstruction as a back pressure will be created impairing the efficiency of the filtration and create possible early fan failure. Ensure that the rear of this equipment is a minimum of 250 mm from any wall and cannot be pushed or eased closer.

2:6 For the efficient operation of the equipment the motor speed Variac needs to be set at 60% of scale when the filter is new. Fine adjustment can be made by adjusting

the air flow rates to 0.45 m/s. regular monitoring and the maintenance of flow rates will ensure optimum filtration efficiency. When the Variac has been adjusted to 95% of power, order a new filter and replace as described in sections 4 & 5.

2:7 Drawing 80425 gives the overall dimensions of the unit and furniture. Drawings 80425-1 and 80425-2 are for assistance by reference to the relevant sections defined in the index and during the servicing of the equipment.

3.0 Re-assembly and installation

The power required is 220/240 volts 50Hz fused 10 amp supply. Two metres of dual insulated cable is available to connect to the fuse supply. The following assumes that the equipment has been assembled for ease of transport and assembly. Refer to drawing 80425-1 & 80425-2 during the assembly instructions detailed below.

3:1 Identify that the equipment supplied in component form is in accordance with the schedule as detailed in section 10.

3:2 Position the fan box item 2 and the two front support feet, item 1 in the area where the equipment is to be finally assembled. Secure the support feet with 2 off M6, hexagon head screws per support, assemble by removing the fan service panel; to gain access for inserting the screws.

3:3 Remove the 4 off screws securing the pre-filter and grill assembly from the filter.

3:4 Lift the filter box item 3 onto the fan box over the collar. Position firmly and secure by inserting and tightening the 3 off M6, pan head screws into the pre-drilled holes inside the collar. Feed the mains cable through the cable fixing ties in the fan box and terminate by connecting the cable to the outlet terminal box.

3:5 Fit the light box to the filter box with 3 off M10, screws. Secure the free 8 pin plug from the control panel into the fan box socket.

3:6 Feed the 3 singularly insulated cables through the cable ties and make the electrical connection to the motor ensuring that the coloured cable wires are fitted to the relevant motor terminal connections.

3:7 Tighten all cable ties, inspect the seals for the fan box, rectify if required and secure the fan box cover with, 4 off M4, 7 pan head screws.

3:8 Ensure that the two fluorescent tubes are undamaged. Secure the fluorescent tube diffusers with 8 off No.10 self tapping screws through the aluminium to the light box.

3:9 Remove the 16 screws holding the 8 off filter clamping brackets to the filter box. Ensure that the 8 off clamping screws have been fully withdrawn. Inspect the filter sealing surface for damage and rectify if required. Carefully place the filter supplied

into the filter housing. Replace the filter brackets and tighten the 8 off screws. See section 4.

3:10 Replace the 8 off screws and the pre-filter assembly complete with the pre-filter supplied. See section 5.

3:11 Ensure that both power and light switches are off (press the upper most part of the switch). Rotate the Variac knob fully anti-clockwise. Connect the cabinet lead to a fused power supply. After all electrical checks turn the main power ON. Turn the cabinet mains switch ON. Press the fan switch on and switch on and switch will illuminate red slowly rotate the Variac clockwise and the fan motor will start. Turn the light switch ON. The switch will illuminate green and both fluorescent tubes illuminate. Continue to rotate the Variac slowly clockwise and observe the fan speeds up and the air drawn into the filter increases in velocity. After this test rotate the Variac to 60% of scale reading.

3:12 Rotate the Variac to 60% of scale which approximates correct fan speed for new filters. HEPA filter velocities should be set to 0.45m/s using a Vane Anemometer.

4.0 Changing Pre-Filter

4:1 Remove the front grill assembly by removing the 4 securing screws, carefully remove the assembly from the filter box.

4:2 Disengage the filter and carefully remove the pre-filter from the filter frame.

4:3 Examine the frame for signs of damage. Replace any damaged parts. Spares list in section 8.

4:4 If the filter is a washable filter, wash in clean soapy water, then rinse in clean water. Dry in hot air or naturally. If the filter is a replacement filter, discard it safely.

4:5 Carefully replace the new or dry filter, into the frame assembly. Ensure that the filter retaining clips correctly secure the filter in position within the frame.

4:6 Replace the filter and frame assembly into the filter box. Insert and tighten the 4 securing screws through the filter frame into the filter box.

Care should be exercised when servicing the pre-filter to prevent damage occurring to the main filter. Ensure that tools and other objects are not placed within the filter box chamber.

5.0 Changing H.E.P.A. Filters

5:1 Remove the pre-filter assembly as described in sections 4:1 to 4:4 inclusive.

5:2 Remove the four filter hex. hd . clamping screws.

5:3 Remove the four angle bracket retaining screws and remove the 8 angle bracket assemblies.

5:4 Withdraw the H.E.P.A. filter horizontally from the filter box housing and discard in a safe manner dependant on the service usage.

5:5 Inspect the sealing surface of the filter box to ensure no sealing material is left adhering to the surface after removing the H.E.P.A filter. Any residue must be removed carefully without causing damage to the seal.

5:6 Ensure that the filter box chamber is clean. Carefully slide in the new H.E.P.A. filter in position with the sealing surface innermost.

5:7 Replace the 8 angle bracket assemblies and secure by inserting the 16 bracket retaining screws. Do not touch any part of the H.E.P.A. filter surface as this may damage and impair the efficiency of the filter. Tighten the 8 clamping screws in diagonal sequence in a clockwise manner. Do not over tighten as damage may occur to the filter or the filter seal. If the seal subsequently shows sign of leakage tighten the clamping screws in the manner described above through 180 degree intervals, then re-test the seal. Repeat until an effective seal is made. If the clamping screws are tightened two complete turns of the screw dismantle and investigate cause. Repeat as above to make the seal effective.

5:8 Replace or service, pre-filter assembly as described in sections 4:5 and 4:6.

6.0 Changing Fluorescent Tubes

6:1 Turn off the power to the Reverse Flow Laminar Air Cabinet.

6:2 Remove the fluorescent tube diffuser assembly by removing the 8 screws securing the diffuser assembly to the light box assembly.

6:3 Remove the defective tube or starter and fit the replacement part. Clean the area and existing fluorescent tube.

6:4 Replace the 8 screws securing the diffuser assembly to the light box assembly.

6:5 Turn on the power to confirm that parts are effective.

Changing the Combined Fan and Motor Assembly

7:1 Turn off the power to the Reverse Flow Laminar Air Cabinet.

7:2 Remove the 4 screws holding the fan service panel to the fan box assembly.

- 7:3 Disconnect the electrical cables from the terminal box adjacent to the motor.
- 7:4 Remove the 4 upper nuts securing the fan and motor to the 4 anti- vibration mounts.
- 7:5 Remove the fan and motor assembly from the mounts.
- 7:6 Replace the new fan and motor, secure the anti-vibration mounts with the 4 nuts. Fit the rubber gasket to the rear outlet in the lower rear of the cabinet, between the cabinet and the fan motor assembly.
- 7:7 Reconnect the electrical cables taking care to ensure correct polarity. Then replace the fan service panel and insert the 6 securing screws.
- 7:8 Turn on the power and ensure the equipment functions correctly as described in section 3.

REPLACEMENT PARTS AND SPARES

8:1 762 X 762 X 150 mm H.E.P.A Filter

Ref:CK/H13/D 1 off per unit.

8:2 Pre-filter element. 1 off per unit.

8:3 Centrifugal fan and motor. 1 off per unit.

8:4 Motor capacitor. 1 off per unit.

8:5 Starter for 600 mm Fluorescent tubes. 2 off per unit.

8:6 5 amp Fuse 0.25" x 1.25" long. 1 off per unit.

8:7 1 amp Fuse 1 off per unit.

To obtain the correct spares for this equipment specify the serial No. of the machine and the replacement part No. We will then quote you the current price.

Example: Centrifugal Fan Code No.80425/ 8:2

Servicing and Service Contracts

We offer a range of service contracts. These can be from a simple part ordered over the telephone, to an annual inspection service and replacement contract. These contracts are arranged by areas. This enables us to visit several customers within this area, allowing the traveling and costs to be apportioned between several customers,

reducing the total billing to our customers. Ring our sales office to find out how to satisfy your Quality Audit requirements.

Schedule of Drawings

Should the plug and socket assembly situated between the light box and the filter box be damaged, need replacement or be dismantled the correct wiring details are as follows. Always ensure that an adequate earthing is always made within this equipment and from the incoming supply.

PIN AND SOCKET DETAILS

Pin 1 - Earth to Variac

Pin 2 - Live mains to Isolator

Pin 3 - Neutral to mains Isolator

Pin 4 - Live to motor from Variac

Pin 5 - Neutral to motor from Variac

Pins 6 and 7 are not used

Pin 8 - Earth from Variac to motor

For further information please contact Airclean Ltd.