

AAC LF1000 & LF2000 - For Site Spillage & Remediation Applications

Introduction

The **AAC LF1000 & LF2000** are modular filter units designed to control emissions from a wide range of liquid applications i.e. wastewater, groundwater treatment and process liquor purification. Designed for the efficient removal of a wide range of organic compounds the **LF1000 & LF2000** are ideal for semi-static operations i.e. emergency and temporary situations such as site remediation and spillage scenarios.

Simple and easy to use the **LF1000 & LF2000** have been designed to allow the even distribution of liquid across the carbon filter bed, thus enabling maximum exposure to the filter bed to provide improved efficiency and maximum operational life. As the filter bed is permanently saturated with liquid during operations, the media is always ready for service, even in intermittent use applications. The internal liquid distributor has been configured to enable the **LF1000 & LF2000** to be serviced in backwash conditions.

Activated Carbon - AAC LF1000 & LF2000

The type of activated carbon used within the **LF1000 & LF2000** can be selected depending on the specific function that the filter is required to perform



AAC LF2000 UNIT

i.e. to provide optimum adsorption capability for a range of contaminants or for the specific removal of individual contaminants such as ozone, chlorine or halogen compounds.

AAC LF1000 & LF2000 Modular Filter Units

The modular nature of the **LF1000 & LF2000** enables the units to be arranged in parallel to increase treatment rates or in series to improve removal efficiency. The **LF1000** filter contains 1000 litres of activated carbon and at peak volume flow rates of 6m³/h an Empty Bed Contact Time (EBCT) of 10 minutes can be achieved. The **LF2000** filter contains 2000 litres of activated carbon and at peak volume flow rates of 12m³/h an Empty Bed Contact Time (EBCT) of 10 minutes can be achieved.

Technical Details

Parameter	1000 Detail	2000 Detail
Height (mm)	1760	3160
Diameter (mm)	1220	1220
Inlet/Outlet	2" PN16	2" PN16
Weight (kg clean)	kg	kg
Maximum flow (m ³ /h)	6	12
Minimum flow (m ³ /h)	2	2
Pressure drop (mbar)*		
@min. flow	30	30
@1.0 m ³ /h	52	52
@max. flow	60	60

*Based on use of 12x40 USS particle size

1000 Adsorption Capacity (mg/g)**	1 mg/l	10mg/l	100mg/l
Styrene	60	220	850
Trichloroethylene	7.5	95	700
Toluene	13	36	105

2000 Adsorption Capacity (mg/g)**	1 mg/l	10mg/l	100mg/l
Styrene	120	440	1700
Trichloroethylene	15	190	1400
Toluene	26	73	210

** based on AAC AS 2002

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Preparation Instructions

1. Fill the media to the filter either manually or by hydroductor, taking care to protect the internal distributors and pipework. Place the media directly into the filter. Please note that the media will 'bridge' if dry filled and the carbon should be distributed manually in this case.

2. When the filter is filled, place the manway lid on top of vessel, sealing with 445mm OD rubber nitrile gasket and secure with M14 nuts and washers.

3. Fill vessel with clean water in reverse flow (backwash mode) with manway 1" ball valve open to remove any trapped air, close when liquid appears at this point. Stop the flow and close outlet valve. Re-open the air release valve. Leave vessel to stand for 12-24hrs to de-gas.

4. After 24 hours, the filter is ready for use. Drain the filter and discard the water. Backwash the filter for a double wash cycle or until the wash water clears of entrained particles. Ensure the air release valve is closed prior to starting backwash procedure.

Note: Wet activated carbon depletes oxygen and entry into an enclosed vessel should only be made with an external breathing air supply.

Backwash during commissioning

It is necessary, following de-gassing of the carbon to remove any fines or dust present in the carbon media and to correctly segregate the media. The normal procedure is as follows:

1. Backwash water should be fed to the filter at a maximum rate as indicated in the table below. This rate is relative to the carbon type, granulometry and water temperature used and should be determined from backwash expansion curves available by contacting **AAC Eurovent**. During commissioning, a minimum bed expansion of 20% is recommended in order to correctly clean and segregate the carbon filter bed;
2. Backwash is continued for approximately 30 minutes (2 to 3 times that required during normal operation) or until the effluent is clear of entrained particles and dust;
3. The backwash flow should be reduced gradually over a period of 5-7 minutes.

Backwashing during operation

The differential pressure build-up across the filter bed should be monitored on at least a weekly basis. Excessive pressure build-up can cause damage to the filter media contained in the filters and restrict the

flow of water to the process. In addition, the passing of fines into the process water can cause contamination and damage pumps. The backwashing procedure for each filter is as follows:

1. The inlet water should be stopped and the filter should be allowed to drain of water so that the media bed does not retain excessive amounts of water (the water contained in the filter bed is not present between the backwash inlet and the top of the media bed). The absence of water in the normal outlet is evidence of this.
2. Backwash water should be fed to the filter at a maximum rate as indicated in the technical details. This rate is relative to the carbon type, granulometry and water temperature used and should be determined from backwash expansion curves. During commissioning, a minimum bed expansion of 20% is recommended in order to correctly clean and segregate the carbon filter bed.
3. Backwash is continued for approximately 10 minutes or until the effluent is clear of entrained particles and dust.
4. The backwash flow should be reduced gradually over a period of 5-7 minutes.
5. The inlet supply of water should be applied once more and 2-3 bed volumes of water discarded to drain (rinse step).
6. The filter can now be placed back into service.

Backwashing should only be conducted with fresh water (not recirculated) and all effluent water from the backwashing process should be disposed of to prevent the re-introduction of carbon fines to the bottom of the bed.

Instructions to carry out the decommissioning or preparation for media replacement are contained in a separate bulleting available from **AAC Eurovent** on request.

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