FRB-96245

User Manual



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V1.01

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Registered in England No: 03969985 VAT No: 760 821 731 Certification No. UK002838

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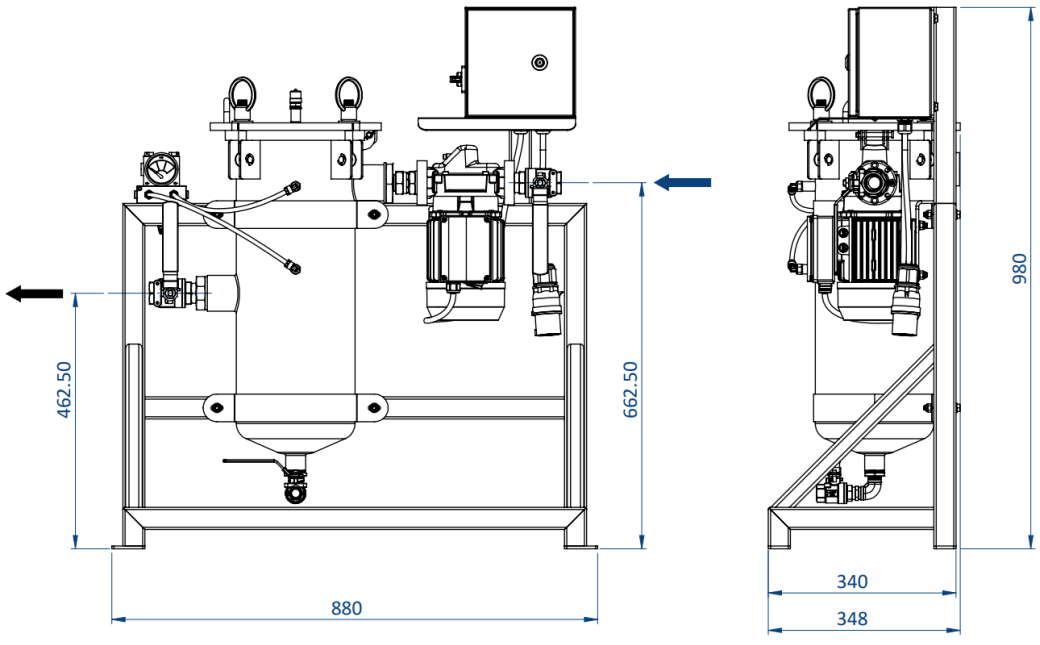
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Specifications

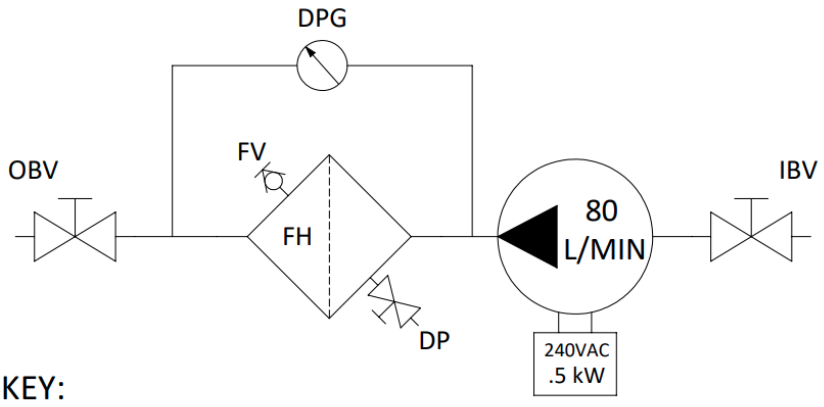
Specification	Detail
Dimensions	(w)880 mm x (d)348 mm x (h)980 mm
Weight	75 kg
Finish	Natural
Frame material	AISI 304 Stainless Steel
Voltage	240 VAC
Frequency	50 Hz ±2%
Current	16 Amp supply
Power	.5 kW
Pump	Self-Priming Vane Type
Duty cycle	Continuous
Noise level	<70dB @ 1 meter
Fluid compatibility	Diesel Fuel
Motor protection	Automatic thermal switch
Filtration	Particulate removal / water removal
System bypass	N/A
Filter indicator	Electronic front panel indication
Pressure	10 Bar max
Fluid temperature	-5 to 80°C
Flow	80 L/min
Fluid type	Diesel fuel
Environment	IP55
Connections	1” BSP Female Ball Valve

Dimensions



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Fluid Circuit Diagram



KEY:

IBV.....INLET BALL VALVE 1" BSPF
FH.....FILTER HOUSING (SIZE 1)
FV.....FILTER VENT (1620 TESTPOINT)
DP.....FILTER DRAIN PORT (1/2" BSPF)
DPG.....DIFFERENTIAL PRESSURE GAUGE
OBV.....OUTLET BALL VALVE 1" BSPF

Product Overview

The FRB-96245 is a compact budget filtration system, equipped with high efficiency filter elements capable of removing particulate contaminants and/or water quickly, conveniently and economically.

The self-priming vane pump delivers contaminated fuel up to a very respectable 80 L/min, where it is then passed through a single filter vessel (Size 1) Before exiting the system.

The system is fitted with a differential pressure gauge which will display the remaining filter media life via a traffic light type system.

The system can be run manually or via the programmable timer inside the enclosure.

Achieving ISO Cleanliness Codes

Filtertechnik has a wide range of elements available to effectively achieve the required cleanliness level for the intended system. Maintaining the fluid at the required cleanliness level is a cost effective way of extending the service life of system components. The tables below can be used to determine the required micron rating of the filter to achieve the desired cleanliness code, understand the ISO 4406 contamination scale, conversion between the various cleanliness standards and understanding how the ISO 4406 scale relates to the NAS contamination scale.

Desired Cleanliness Level (ISO Code)	Recommended Filtration Media
20/18/15 – 19/17/14	25 µm
19/17/14 – 18/16/13	10 µm
18/16/13 – 15/13/10	5 µm
15/13/10 – 14/12/9	3 µm
14/12/9 – 13/11/8	1 µm

Table 1 – Filter Media Selection Guide

Number of Particles per 1ml of Fluid		ISO Scale Number
More Than	Up to and Including	
1,300,000	2,500,000	28
640,000	1,300,000	27
320,000	640,000	26
160,000	320,000	25
80,000	160,000	24
40,000	80,000	23
20,000	40,000	22
10,000	20,000	21
5,000	10,000	20
2,500	5,000	19
1,300	2,500	18
640	1,300	17
320	640	16
160	320	15
80	160	14
40	80	13
20	40	12
10	20	11
5	10	10
2.5	5	9
1.3	2.5	8
0.64	1.3	7
0.32	0.64	6
0.16	0.32	5
0.08	0.16	4
0.04	0.08	3
0.02	0.04	2
0.01	0.02	1
0.00	0.01	0

Table 2 – ISO 4406 Contamination Scale

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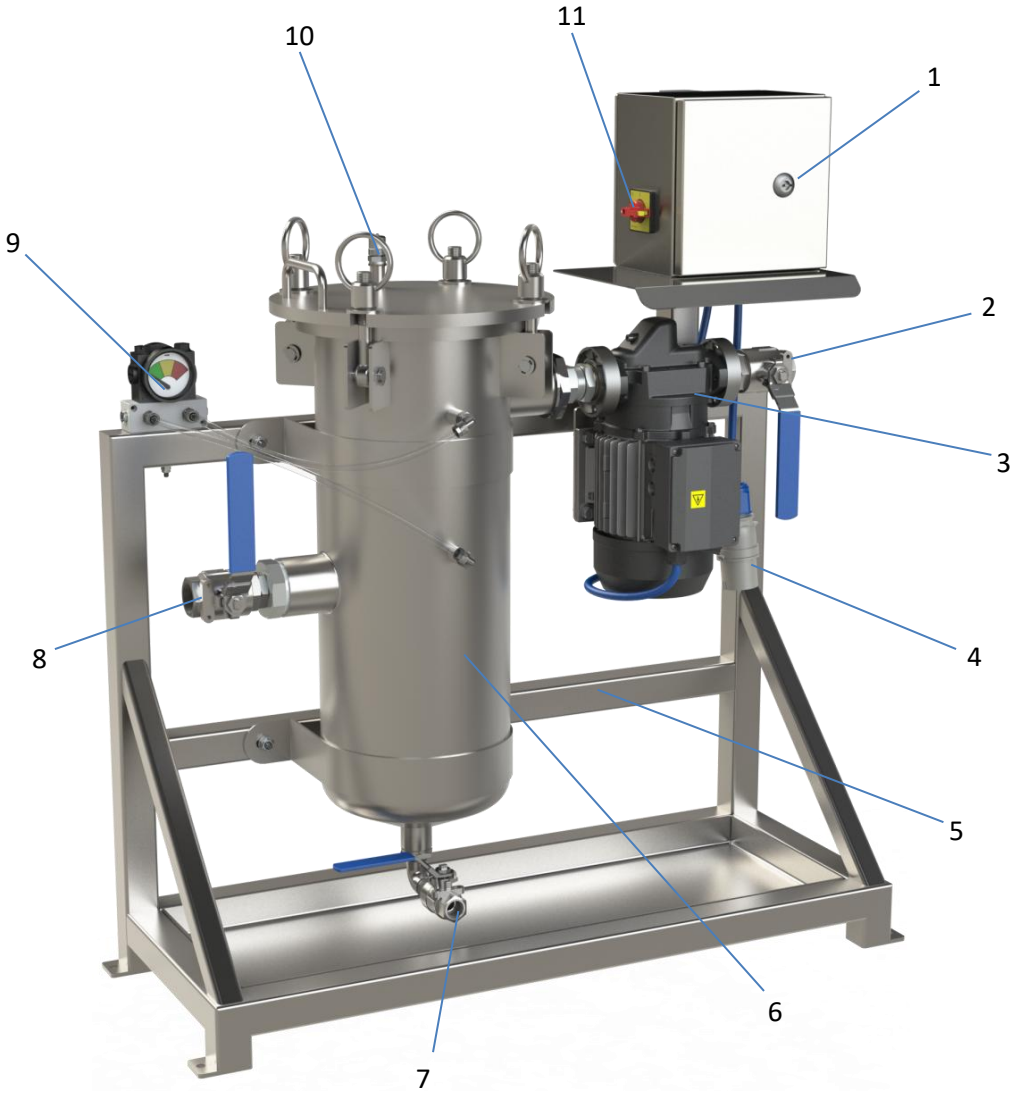
ISO 4406 Code 4µm / 6µm / 14µm	Mil Std. NAS 1638	Mil Std. 1246A	ACFTD Gravimetric Level mg/L	SAE Level
21/19/16	10			
20/18/15	9			6
19/17/14	8	300		5
18/16/13	7		1	4
17/15/12	6			3
16/14/12		200		
16/14/11	5			2
15/13/10	4		0.1	1
14/12/9	3			0
13/11/8	2			
12/10/8		100		
10/10/7	1			
12/10/6			0.01	
11/9/6				

Table 3 – Cleanliness Standards Conversion

Equivalent ISO 4406 Code (approx.)	NAS Code	Size Range in Microns (µm)				
		5-15	15-25	25-50	50-100	>100
-	00	125	22	4	1	0
-	0	250	44	8	2	0
10/12/7	1	500	89	16	3	1
13/11/8	2	1,000	178	32	6	1
14/12/9	3	2,000	356	63	11	2
15/13/10	4	4,000	712	126	22	4
16/14/11	5	8,000	1,425	253	45	8
17/15/12	6	16,000	2,850	506	90	16
18/16/13	7	32,000	5,700	1,012	190	32
19/17/14	8	64,000	11,400	2,025	360	64
20/18/15	9	128,000	22,800	4,050	720	128
21/19/16	10	256,000	45,600	8,100	1,440	256
22/20/17	11	512,000	91,200	16,200	2,880	512
23/21/18	12	1,024,000	182,400	32,400	5,760	1,020

Table 4 – ISO 4406 vs NAS 1638 Contamination

Component Identification



Key:

1.) Enclosure c/w Programmable Timer Inside	7.) Filter Drain Port ½" BSP c/w Ball Valve
2.) Inlet- 1" BSP Female c/w Ball Valve	8.) Outlet- 1" BSP Female c/w Ball Valve
3.) E80 Self Priming Vane Pump	9.) Differential Pressure Gauge
4.) Mains Power Connector 240 VAC – 16 Amp	10.) Filter Vessel Vent Port 1620 Testpoint
5.) AISI 304 Stainless Steel Frame with Bund	11.) Mains Isolator
6.) Size 1 Filter Vessel	

Operational Instructions

Connect the unit to a suitable 240 VAC Single Phase supply (minimum 5 Amp).
Move the external isolator switch to the ON position.
Make sure all physical hose/pipe connections are made.

The system is designed to run automatically from a user programmable 7-day timer switch located inside the panel. To access the timer, use the supplied panel key to unlock and open the enclosure door.
The system can be run manually for commissioning and testing purposes. To operate manually:

1. Press the ESCAPE (left hand) button.
2. Select MANUAL using the UP or DOWN arrows and confirm with the RETURN (right hand) button.
3. Confirm PERM ON with the RETURN button to start the permanently ON operating mode.
4. To end the permanently ON operating mode, confirm STOP PERM ON with the RETURN button.

To program the 7-day timer intervals, please refer to the timer switch manual available on the link below from page 97 onwards.

https://www.filtertechnik.co.uk/sites/default/files/2026-07/talento_easy_B1-C1_EN-1.pdf

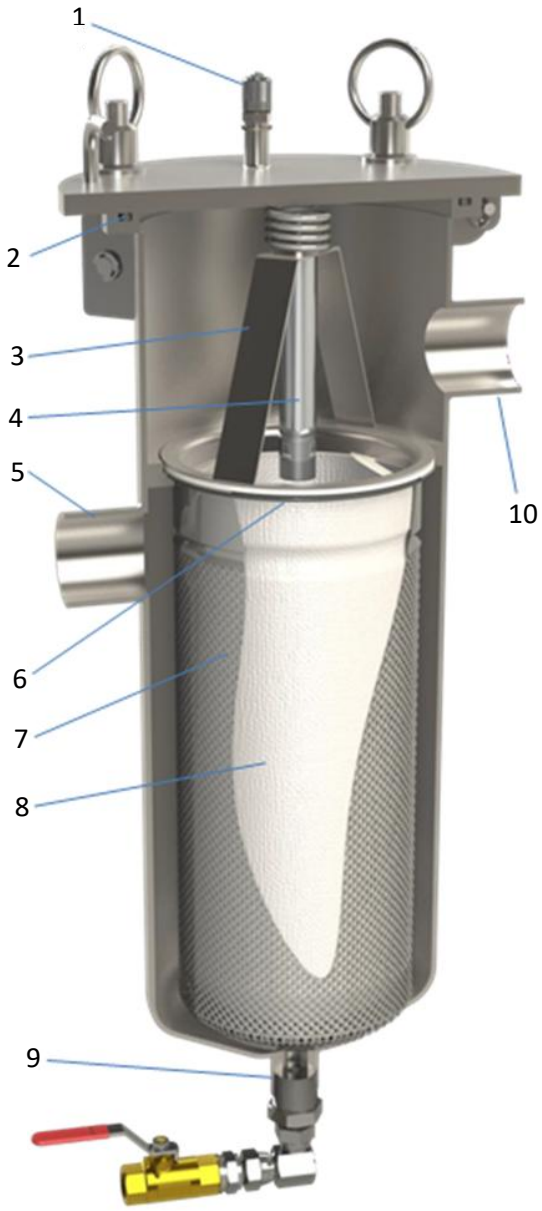


Filter Cell Housing

Changing a Filter Cell

As a guideline the following procedure can be used for changing a filter cell:

1. Ensure inlet and outlet pipework has been closed off to present siphoning
2. Relieve any excess pressure by briefly opening the drain valve or vent.
3. Loosen the 4 swing bolts and open the lid.
4. Remove the filter securing bracket (if the optional magnet is included, clean off any rust).
5. Lift out the filter cell via the strap handle. It is likely the filter basket will also come out.
6. Remove the filter cell from the basket and replace with a clean filter.
7. Refit the filter basket, making sure the basket O-ring is still in place and correctly seated.
8. Refit the filter securing bracket, making sure the spring is attached.
9. Close the lid, making sure the lid O-ring is correctly seated.
10. Gradually tighten each of the 4 swing bolts in a typical star/cross sequence to allow even seating of the lid onto the O-ring seal.



Key:

1.) Vent (1620 test point)	6.) Filter basket O-ring
2.) Lid O-ring	7.) Filter basket
3.) Filter securing bracket	8.) Filter cell
4.) Magnet (optional)	9.) Drain port
5.) Outlet port	10.) Inlet port

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Cleaning the Magnet (Optional)

An optional magnet can be installed into the filter housing bracket clamp for removal of ferromagnetic material, extending the useful life of the filter cell.



Removal of ferromagnetic material can be carried out using a suitable tool as shown above (Filtertechnik part number FT-RRT01).

The tool is to be located at the top of the magnet and downward force applied to push the material off the magnet. This waste material can then be disposed of or recycled.

Differential Pressure Gauge

The filter cell is monitored by a visual differential pressure indicator, displaying the filters condition via a green, yellow and red traffic light system.



Colour	Pressure Range	Notes
Green	0-15 psid	Indicates a clean and healthy filter
Yellow	16-22 psid	Indicates the filter is starting to become blocked and requires more frequent monitoring
Red	23-30psid	Indicates the filter is now fully blocked and requires changing

Purging Air from the Filter Housing

When starting the system for the first time or after a filter cell change air will be trapped within the upper section of the filter housing and requiring purging. Failure to remove all the air can result in aeration of the fuel and reduced filtration performance.



When the system is turned on the sampling / vent tube and be screwed onto the vent port, where the remaining air will be pushed out of the filter housing. The end of the tube should be inserted into a sample bottle or cloth to prevent any fluid from spraying towards the operator.

Once all the air has been removed make sure the sampling / vent tube is disconnected to prevent siphoning or spillage of fluid.

Replacement Elements

Description	Part Number
1 µm disposable polypropylene	FT-19PP001-1GYEP
5 µm disposable polypropylene	FT-19PP005-1GYEP
10 µm disposable polypropylene	FT-19PP010-1GYEP
25 µm disposable polypropylene	FT-19PP025-1GYEP
50 µm disposable polypropylene	FT-19PP050-1GYEP
100 µm disposable polypropylene	FT-19PP100-1GYEP
200 µm disposable polypropylene	FT-19PP200-1GYEP
10 µm recleanable nylon	FT-19NM010-1GYEP
25 µm recleanable nylon	FT-19NM025-1GYEP
50 µm recleanable nylon	FT-19NM050-1GYEP
75 µm recleanable nylon	FT-19NM075-1GYEP
100 µm recleanable nylon	FT-19NM100-1GYEP
200 µm recleanable nylon	FT-19NM200-1GYEP
300 µm recleanable nylon	FT-19NM300-1GYEP
400 µm recleanable nylon	FT-19NM400-1GYEP
600 µm recleanable nylon	FT-19NM600-1GYEP
800 µm recleanable nylon	FT-19NM800-1GYEP
1 µm high efficiency disposable polypropylene	FT-19HE001-1GYEP
5 µm high efficiency disposable polypropylene	FT-19HE005-1GYEP
FiltaSorb2 high performance water removal cell	FT-FA-01-002
Filtertechnik 1 µm Absolute Filter Element	FT-CE-01-Z01

Health, Safety & Environmental Considerations

- This equipment should only be used for its intended purpose by competent and authorised persons, inappropriate use of electrical and mechanical equipment could cause serious injury or death.
- Children and minors should NEVER be permitted to operate or move this equipment.
- Do not attempt to open the electrical panel unless you are qualified to do so, risk of electric shock or death.
- Prolonged contact with oil or diesel fuel can cause damage to the skin. Appropriate PPE (personal protective equipment) should be worn when operating the unit e.g. protective gloves, safety glasses, safety shoes etc. Always observe local health and safety requirements.
- The unit should only be used on a flat, even surface and be attended at all times.
- Do not operate switches with wet hands.
- The unit must always be disconnected from the mains supply before carrying out any routine maintenance or repairs.
- Never start or stop the unit by inserting/removing the power supply or other plugs.
- Electrical cables and tubes should be checked for any signs of damage before starting the unit.
- Ensure a spill kit is available in case of any accidental spills.
- Used samples must be disposed of in accordance with local environmental requirements.
- Ensure any water drained from this equipment is disposed of in a responsible manner and in accordance with local environmental requirements.

Permitted Fluids

Diesel fuel at a viscosity from 2 to 5.35cst (@ 37.8°C)

Minimum flashpoint of 55°C

Fluids not permitted	Related dangers
Gasoline	Fire / Explosion
Liquids with a viscosity >20cSt	Motor overload
Water	Pump oxidation
Food liquids	Fluid contamination
Corrosive chemical products	Pump & system corrosion / Injury to persons
Solvents	Fire / Explosion
Inflammable liquids with a flashpoint >55°C	Damage to gasket seals

Initial Start Up

- Check that the quantity of diesel fuel in the suction tank is greater than the amount you wish to filter.
- Make sure that the residual capacity of the delivery tank is greater than the quantity you wish to filter.
- Do not run the pump dry. This can cause serious damage to its components.

Attention

Extreme operating conditions can raise the motor temperature and, consequently, cause the thermal protection switch to stop it.

Turn off the pump and wait for it to cool before resuming use.

The thermal protection automatically turns off when the motor is sufficiently cool.

In the priming phase the pump must blow the air initially present in the entire installation out of the delivery line. Therefore it is necessary to keep the outlet open to permit the evacuation of the air.

Attention

The priming phase can last from several seconds to a few minutes, as a function of the characteristics of the system. If this phase is prolonged, stop the pump and verify:

- That the pump is not running completely dry;
- That the suction tubing is not allowing air to seep in;
- That the suction filter is not clogged;
- That the suction height is not greater than 2 meters (if the height is greater than 2 meters, fill the suction tube with fluid)
- That the delivery tube is allowing the evacuation of the air.

When priming has occurred, verify that the pump is operating within the anticipated range, in particular:

- That under conditions of maximum back pressure, the power absorption of the motor stays within the values shown on the identification plate;
- That the suction pressure is not greater than 0.5 bar;
- That the back pressure in the delivery line is not greater than the maximum back pressure anticipated for the pump.

Warranty Statement

All products manufactured or distributed by Filtertechnik Ltd are subject to the following, and only the following, Limited Express Warranties, and no others:

For a period of one (1) year from and after the date of delivery of a new Filtertechnik product, Filtertechnik warrants and guarantees only to the original purchaser/user that such a product shall be free from defects of materials and workmanship in the manufacturing process. The warranty period for pumps and motors is specifically limited to ninety (90) days from the date of delivery. A product claimed to be defective must be returned to the place of purchase. Filtertechnik, at its sole option, shall replace the defective product with a comparable new product or repair the defective product. This express warranty shall be inapplicable to any product damaged or impaired by external forces or used for any purpose other than that for which it was originally sold.

THIS IS THE EXTENT OF WARRANTIES AVAILABLE ON THIS PRODUCT. FILTERTECHNIK SHALL HAVE NO LIABILITY WHATSOEVER FOR CONSEQUENTIAL DAMAGES FOLLOWING THE USE OF ANY DEFECTIVE PRODUCT OR BY REASON OF THE FAILURE OF ANY PRODUCT. FILTERTECHNIK SPECIFICALLY DISAVOWS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ALL WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE (EXCEPT FOR THOSE WHICH APPLY TO PRODUCT OR PART THEREOF THAT IS USED OR BOUGHT FOR USE PRIMARILY FOR PERSONAL, FAMILY OR HOUSEHOLD PURPOSES), WARRANTIES OF DESCRIPTION, WARRANTIES OF MERCHANTABILITY, TRADE USE OR WARRANTIES OF TRADE USAGE.

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EC Declaration of Conformity

Filtertechnik
Filtration, Purification & Separation Solutions

EC DECLARATION OF CONFORMITY

Machinery Description

Machine Type	FRB-96245
Serial Number	

Applicable Directives

Low voltage Directive 73/23/EEC (as ammended by 93/68/EEC)
Electromagnetic Compatibility Directive 2004/108/EC
Machinery Directive 98/37/EC

Declaration

We, Filtertechnik Limited, decalre that the above referenced product(s), to which the declaration relates, is in conformity with the provisions of the Directives listed above

IMPORTANT

This declaration is only valid when the machinery has been installed, operated and maintained in accordance with the applicable Installation, Operation and Maintenance Instructions and safety guidelines contained within as well as instructions supplied for equipment assembled with or intended for use with this equipment.

The technical construction file for this product is maintained at the address given below.

Mr D Whittaker, Engineering Director
Filtertechnik Limited, 1 Central Park, Lenton Lane, Nottingham, NG7 2NR England.