SFC-3000 Filter Cart

User Manual



December 2019

V1.02

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Filtertechnik, 1 Central Park, Lenton Lane, Nottingham, NG7 2NR

Tel: +44 (0)115 9003 600 **Fax:** +44 (0)115 986 8875

Email: sales@filtertechnik.co.uk **Web:** www.filtertechnik.co.uk

Registered in England No: 03969985 VAT No: 760 821 731

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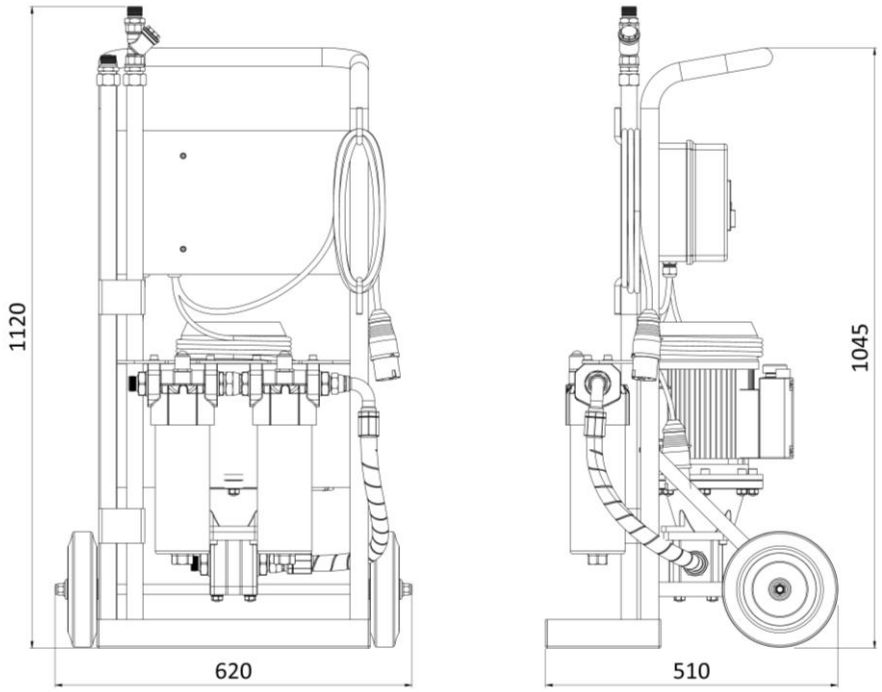
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Specifications

Specification	Detail			
	SFC-3000-110-18	SFC-3000-110-45	SFC-3000-240-18	SFC-3000-240-45
Dimensions	(w)620 mm x (d)510 mm x (h)1050 mm			
Weight	45 kg			
Frame	Mild Steel			
Finish	Powder Coated RAL 5004 (Black Blue) Satin			
Voltage	110 VAC (+10% to -6%)		230 VAC (+10% to -6%)	
Frequency	50 Hz (+/-2%)			
Current	11 Amps		5 Amps	
Power	550 Watts			
Pump type	Gear pump			
Flow rate (max)	18 ltr/min	45 ltr/min	18 ltr/min	45 ltr/min
Viscosity range	10 to 100 cSt			
Duty Cycle	Continuous			
Filtration	2 x 9” filter housings (14” available on request)			
Filter blocked indicator	Mechanical pop-up			
Filter bypass	2.8 bar (40 psid)			
Connections	1" BSP male hydraulic			
Suction hose	3m long x 1" BSP female swivel hydraulic (with strainer)			
Discharge hose	3m long x 1" BSP female swivel hydraulic			
Ambient temperature	-10°C to +60°C			
Maximum humidity	90% relative humidity, non-condensing			
Environment	IP55			



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Typical Applications

Typical applications for the filtration unit include:

- Filtering the fluid in a hydraulic reservoir periodically as a supplement to continuous filtration by system filters.
- Cleaning up your hydraulic system before restarting the system following component failure.
- Providing clean fluid when re-filling and adding fluid to the system reservoir.
- Reclaiming contaminated fluid.
- Pre-filling and cleaning up hydraulic systems on new or re-built machinery and equipment.
- Off line contamination of hydraulic systems.
- Emptying waste fluid quickly.

Health, Safety & Environmental Considerations

- This equipment should only be used for its intended purpose by competent and authorised persons, inappropriate use could cause serious injury or death.
- Prolonged contact with oil 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.
- Electrical cables and hoses 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 filters must be disposed of in accordance with local environmental requirements.

Basic Description

The SFC3000 portable filtration unit is a compact, self-contained filtration system, equipped with high efficiency, high capacity filter elements capable of removing particulate contaminants and/or water quickly, conveniently and economically. It is designed for on-site preventative maintenance and is fitted with two standpipes and hoses for efficient fluid transfer. The suction standpipe is fitted with a strainer to trap any large contaminants and protect the pump.

Best Efficiency

When used for recirculation filtration (as opposed to transfer filtration) position the ends of both the inlet and outlet standpipe as far apart as possible inside the reservoir in order to ensure proper recirculation and cleaning.

Cycle the hydraulic system thoroughly in order to flush the contaminated fluid from the lines and system components so that all the system fluid will be filtered through the unit.

Operate the filtration cart until the total volume of the system fluid passes through the filtration cart. For recirculation filtration, cycle the reservoir fluid through the filter cart six to eight times to ensure the total system fluid is filtered completely.

Precautionary Measures

- Never start up or run a dry pump. This will cause galling, seizing or destructive wear between the rotors, end plates and casing.
- The filtration unit is designed for hydraulic and lubrication oils only.
- It is not to be used for highly volatile fluids, such as gasoline, paint thinners etc.

CAUTION - DO NOT USE THE UNIT WITH THE FOLLOWING FLUIDS:

Fluids not to be used	Related dangers
Gasoline	Fire / Explosion
Inflammable liquids with PM <55°C	Fire / Explosion
Water	Oxidation
Corrosive chemicals	Oxidation / Injury to persons
Solvents	Fire / Explosion / Damage to gaskets

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

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

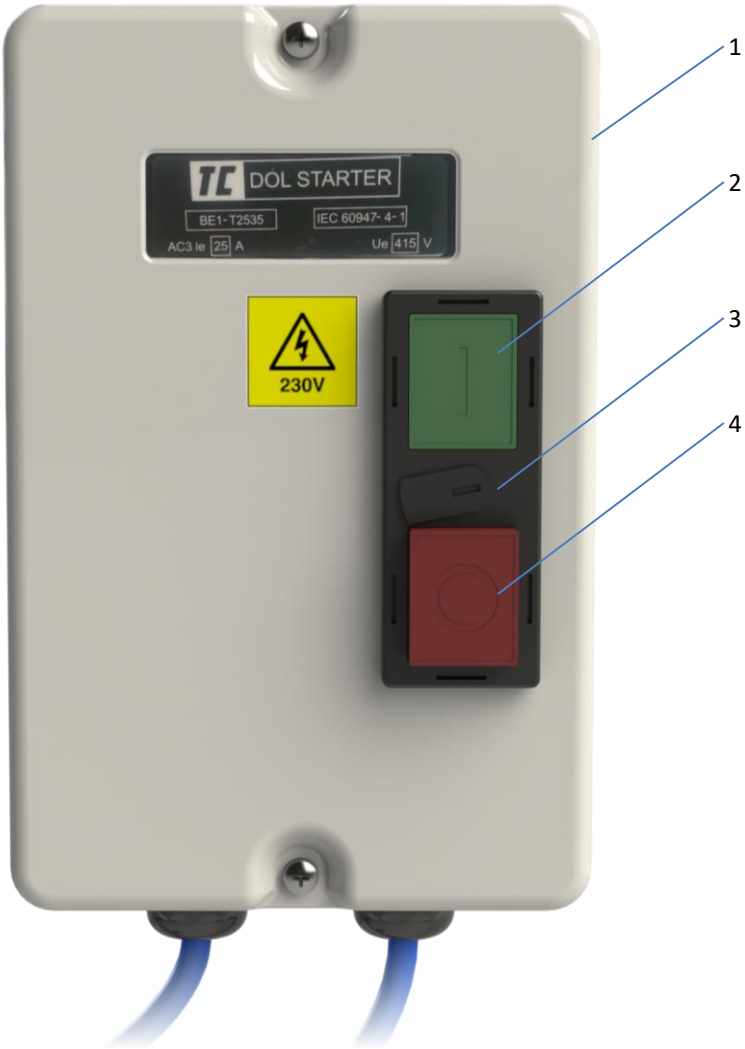


Key:

1.) Suction lance (with strainer)	6.) Mains plug
2.) Discharge lance	7.) DOL (Direct-On-Line) starter box
3.) Filter blocked indicator	8.) Motor
4.) Outlet port (1” BSP)	9.) Inlet port (1” BSP)
5.) Filter housing	10.) Pump head

Starting & Stopping – DOL (Direct-On-Line)

To start the unit, make sure it's plugged into a fused supply (with RCD when used outdoors) of the correct voltage rating and that the inlet and outlet hoses have been correctly attached. Before switching on the unit ensure hoses are connected to the fuel supply pipework and/or lances are securely inserted into the barrel/tank.



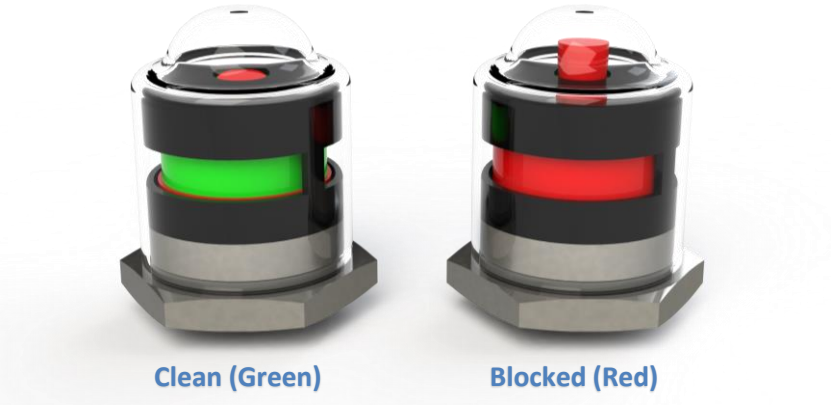
Key:

1.) D.O.L starter box case	3.) Off button locking tab
2.) "On" push button	4.) "Off" push button

The unit is supplied with a DOL (Direct-On-Line) starter box. Once connected to the mains supply the unit can be switched on and off via the two push buttons. If for any reason the power supply cuts out, the internal contactor will unlatch to prevent accidental spillage once power is restored.

Filtration

The unit is equipped with two filter housings which can be fitted with a range of media for removing particulate and water contamination from oils.



Each filter is monitored by a visual pop up indicator, where a small red indicator will rise once the filter media becomes blocked (40 psid / 2.8 bard) and requires changing. Note that once blocked the filter media shall be bypassed to prevent rising internal pressures, so the system can continue running without damage.



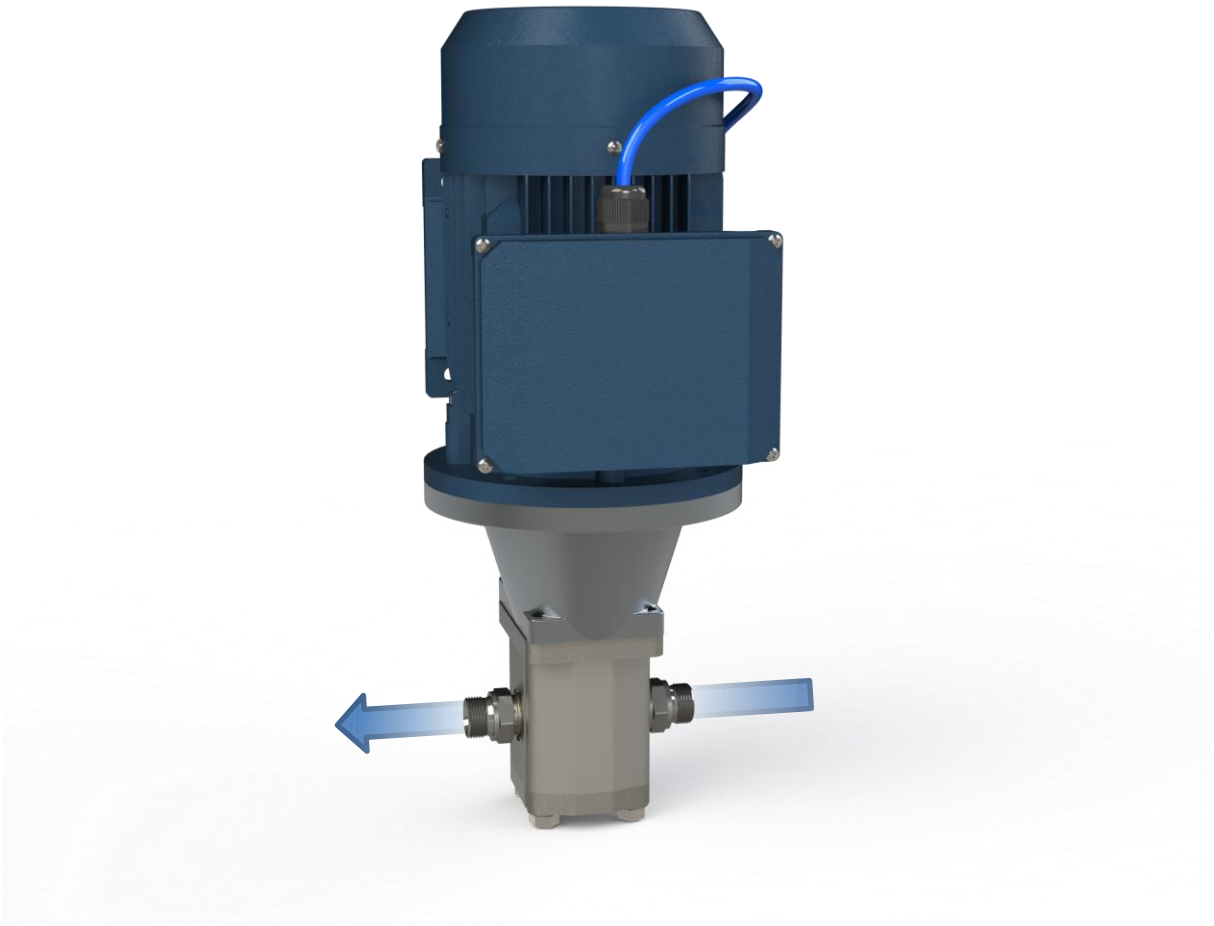
To change a filter element, support the head of the filter housing and using a 32mm spanner on the hex nut unscrew the filter bowl.

Pull the element away from the filter head and dispose of in accordance with the local environmental policy.

When fitting the replacement filter element and bowl make sure all parts are correctly seated. The bowl should be torque tightened to 54 N.m (40 lb.ft).

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Pump & Motor



The filter unit is equipped with either an 18 or 45 ltr/min gear pump coupled to a motor.

If the suction hose is disconnected during storage ensure the 1" BSP hydraulic fitting is capped off to prevent ingress of contaminants.

At no point should the fan cowl be covered, this will overheat the motor causing the unit to trip.

Hoses & Lances

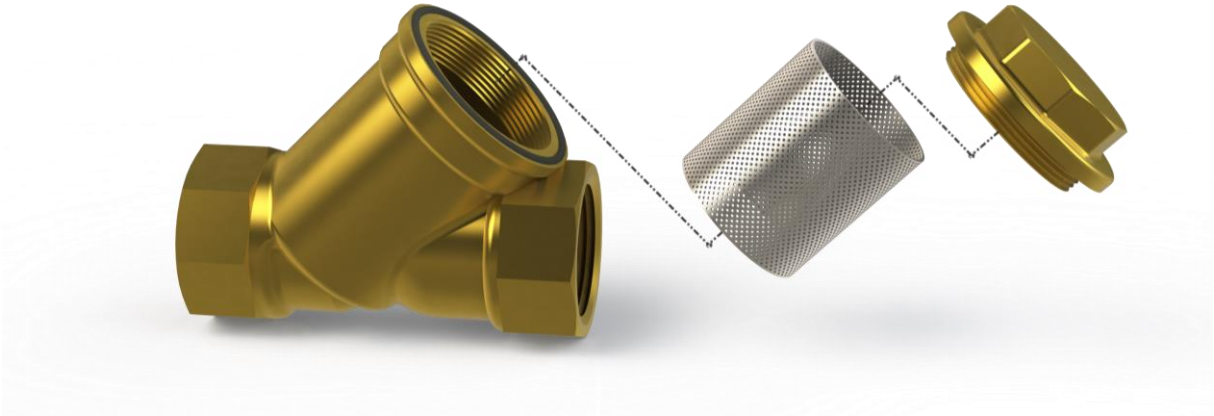
The unit is supplied with two 1" lances, a suction lance with strainer to protect the pump and a discharge lance. Each lance is 1000mm long.

When not in use it is advisable to plug the hoses and cap off the lances to prevent ingress of dust or other contaminants.

Lances should be cleaned prior to inserting in the tank/barrel being cleaned.



Suction Strainer



The suction strainer will periodically need cleaning by unscrewing the cap, removing the mesh strainer and cleaning this out with a fluid suited for the units intended purpose e.g. hydraulic oil.

Fluid Viscosity vs Temperature

The SFC-3000 is designed to handle a fluid viscosity of up to 320 cSt. It's possible to pass high viscosity oils through the unit if they are preheated as per the below table.

Note:
As a pre-heated oil passes though the unit it will cool, therefore increasing its viscosity and strain on the pump. Always flush any viscous oils from the unit after filtering.

Temperature °C	Viscosity (cSt)									
	ISO 32	ISO 46	ISO 68	ISO 100	ISO 150	ISO 220	ISO 320	ISO 460	ISO 680	ISO 1000
10.0	161	262	442	711	1185	1921	2911	4827	8042	12448
12.0	141	227	379	605	1001	1611	2435	3991	6588	10163
14.0	124	198	327	518	850	1358	2048	3318	5427	8345
16.0	109	173	283	446	726	1150	1730	2774	4496	6890
18.0	97	152	246	385	622	979	1469	2331	3745	5719
20.0	86	134	215	334	536	838	1254	1968	3135	4772
22.0	77	118	188	291	464	720	1074	1670	2638	4002
24.0	69	105	166	255	403	621	925	1423	2230	3372
26.0	62	94	147	224	352	538	799	1219	1894	2854
28.0	56	84	130	198	308	469	694	1048	1616	2427
30.0	51	75	116	175	271	409	604	905	1385	2073
32.0	46	68	103	155	239	359	528	784	1192	1778
34.0	42	61	93	139	212	316	464	683	1030	1531
36.0	38	56	83	124	188	279	408	596	894	1323
38.0	35	50	75	111	168	247	361	523	778	1148
40.0	32	46	68	100	150	220	320	460	680	1000
45.0	26	37	54	78	115	166	240	339	493	719
50.0	21	30	43	62	90	128	183	255	365	527
55.0	18	25	35	49	71	100	143	195	275	394
60.0	15	21	29	40	57	80	112	151	211	300

Troubleshooting

Symptom	Problem	Solution
Does not start	On/Off switch No electrical power	Turn switch on Check fuses
Erratic motor noise	Defective motor Motor overheated Worn motor bushes	Replace motor Allow motor to cool Replace motor bushes
Intermittent start/stop operation	High viscosity fluids	H.V fluids cause the motor to overheat intermittently
Hot motor	Pumping heavy load	Motor will heat up, allow to cool
No flow	No oil in filter housing	Run the unit for a few seconds
Erratic pump noise	Suction leak	Check inlet fittings and hoses
No suction	Blocked strainer	Clean or replace strainer
Reduced oil flow	High viscosity Element dirty Obstruction in hoses Suction leak Worn gears	Normal for H.V fluids Replace element(s) Clean hoses Check tightness of fittings Replace gears
Element indicator shows red	Element dirty Oil extremely cold Oil viscous Obstructed outlet Defective indicator	Replace or clean element Allow system time to heat up Increase element micron size Clear outlet obstruction Replace indicator
Indicator does not move	No element fitted Defective indicator	Install element Replace indicator
Hoses discolour	Fluid Compatibility	May occur over time, should not impair performance
Hoses becoming rigid	Fluid Compatibility	Brittle hoses would require replacement
Oil spills under unit	Defective shaft seal Hose leaks	Replace seals where necessary Tighten all joints

Spare Parts List

Description	Part Number	
	9” Filter Element	14” Filter Element
1 µm Absolute	9VZ1	14VZ1
3 µm Absolute	FTB-03	14VZ3
5 µm Absolute	FTB-05	14VZ5
10 µm Absolute	FTB-10	14VZ10
25 µm Absolute	FTB-25	14VZ25
150 µm Recleanable	9VM150	14VM150
Water Removal	9VW	14VW

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.

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EC Declaration of Conformity

Filtertechnik
Filtration, Purification & Separation Solutions

EC DECLARATION OF CONFORMITY

Machinery Description

Machine Type	SFC-3000 FILTER CART
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.