

High Viscosity Filtration System

User Manual



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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



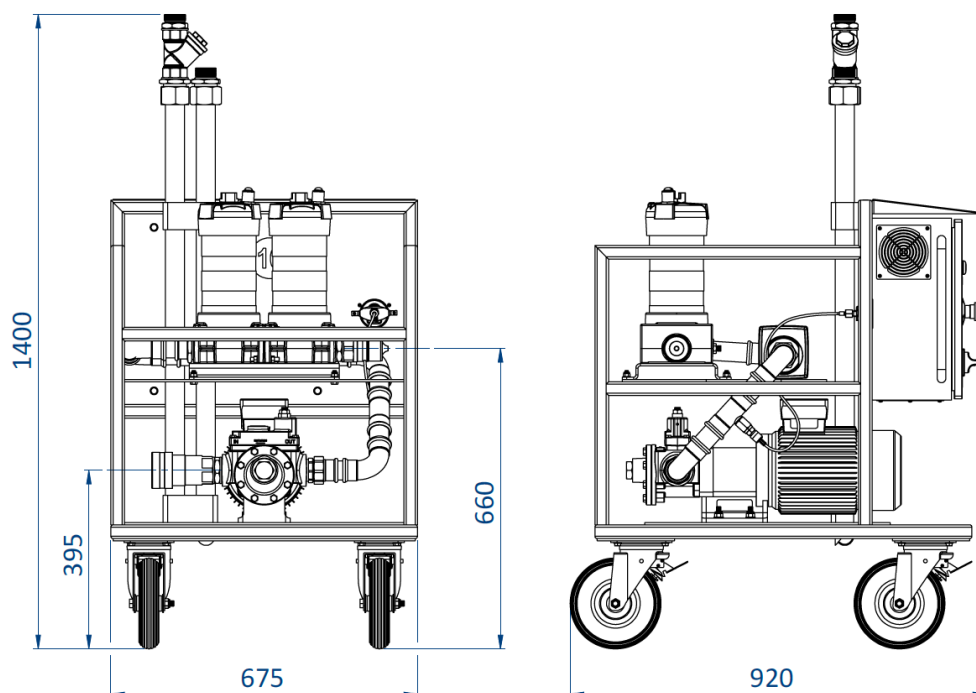
Table of Contents

Specifications	2
Dimensions	2
Fluid Circuit Diagram	3
Product Overview	3
Health, Safety & Environmental Considerations	4
Initial Start Up.....	5
Attention.....	5
Attention.....	5
Component Identification.....	6
Starting & Stopping.....	7
Filtration	8
Geoseal® Filter Media	9
Availability.....	9
Achieving ISO Cleanliness Codes	10
Replacement Element List.....	12
Warranty Statement	12
Declaration Of Conformity	13

Specifications

Specification	Detail
Dimensions	(w)675 mm x (d)920 x (h)1400 mm
Weight	80 kg
Finish	Powder coated RAL 5004 Blue Black
Frame material	Carbon Steel Frame
Voltage	415 VAC 3P +N + E
Frequency	50 Hz \pm 2%
Current	16 Amp supply
Power	2.2 kW
Pump	40UR - Self-Priming Gear Type
Duty cycle	Continuous
Noise level	<70dB @ 1 meter
Fluid compatibility	Mineral oils
Motor protection	Automatic thermal switch
Filtration	Particulate removal / water
System bypass	Integral to Pump (7 bar)
Filter indicator	Differential pressure gauge/With switch x 3
Pressure	10 Bar max
Fluid temperature	-5 to 80°C
Flow	Up to 150 L/min
Fluid type	Oil
Environment	IP55
Connections	1.5" Quick Release Couplings (QRC)

Dimensions



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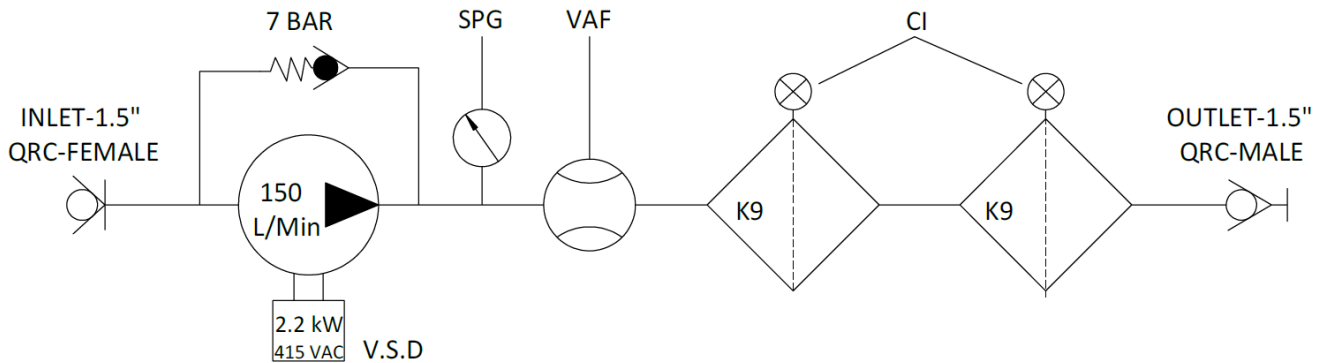
Email: sales@filtertechnik.co.uk

Web: www.filtertechnik.co.uk



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Fluid Circuit Diagram



- KEY:
- VSD VARIABLE SPEED DRIVE
 - SPG SYSTEM PRESSURE GAUGE
 - VAF VARIABLE AREA FLOWMETER
 - CI CLOGGING INDICATOR
 - K9 K9 FILTER HOUSING WITH GEOEAL ELEMENT

Product Overview

Hire Rig No: 10 is a mobile High Viscosity oil filtration system, it is fitted with 2 GK9 single-stack filter housings in series which use GeoSeal filter media, the self-priming gear pump can deliver contaminated oil up to a very respectable 150 L/min.

A clogging indicator fitted to the top of each filter housing serves as a visual aid for the user to check the remaining life of the filter media, The pump speed and flow rate are controllable and there is a variable area flow meter fitted to show this.

The pump is protected by an internal bypass system which will crack when the system pressure exceeds 7 bar, the system pressure can also be monitored via a pressure gauge next to the control panel.

The system is supplied with 2 x 3 Meter hoses and lances, the suction hose is fitted with a y-strainer to take out any large contaminants before they reach the pump.

The connection ports are 1.5" quick release couplings.

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.

Initial Start Up

- Check that the quantity of oil 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. There-fore it is necessary to keep the outlet open to permit the evacuation of the air.

Attention

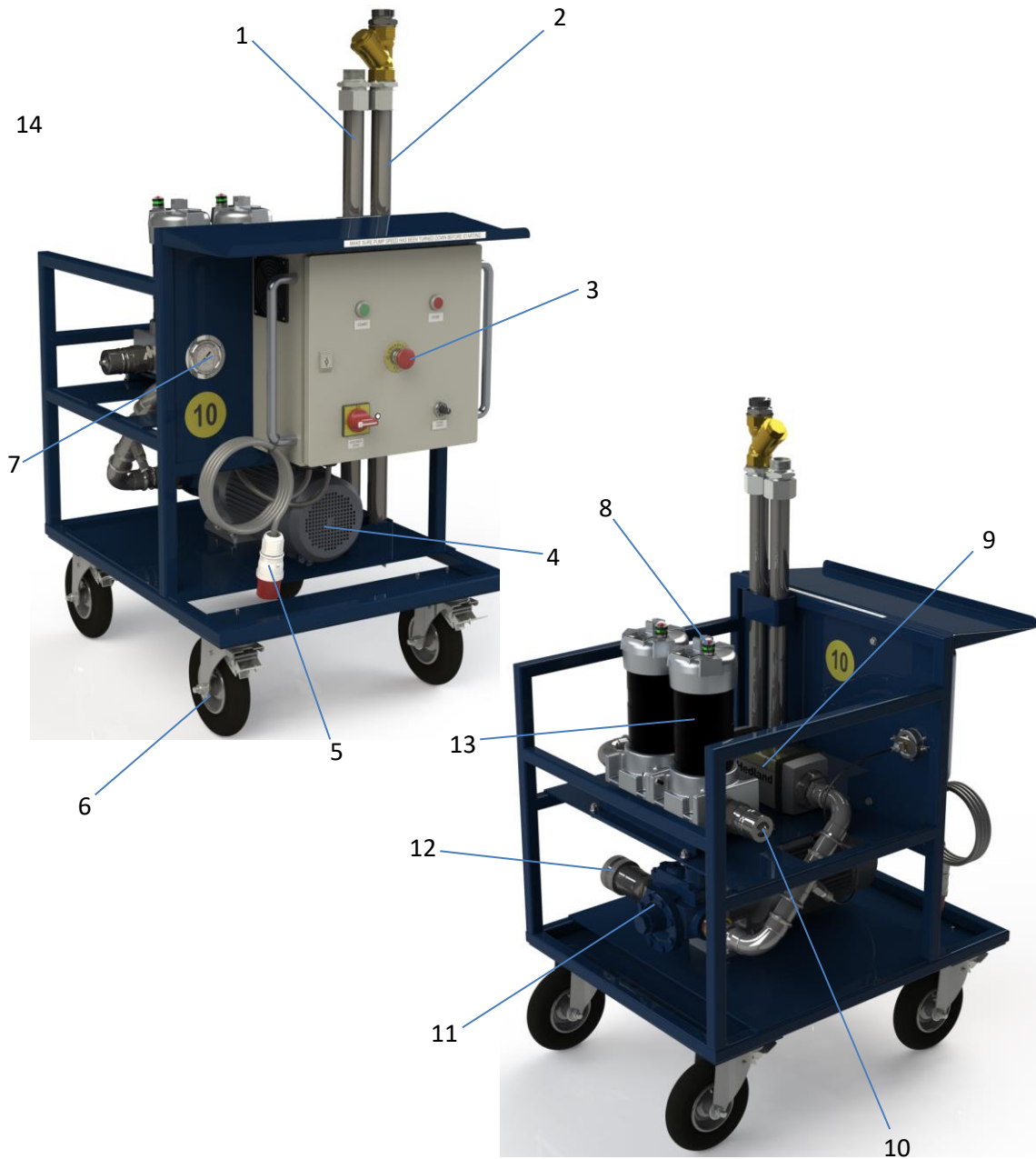
The priming phase can last from several seconds to a few minutes, as a function of the characteristics of the system. If this phase is prolonged, stop the pump and verify:

- 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.

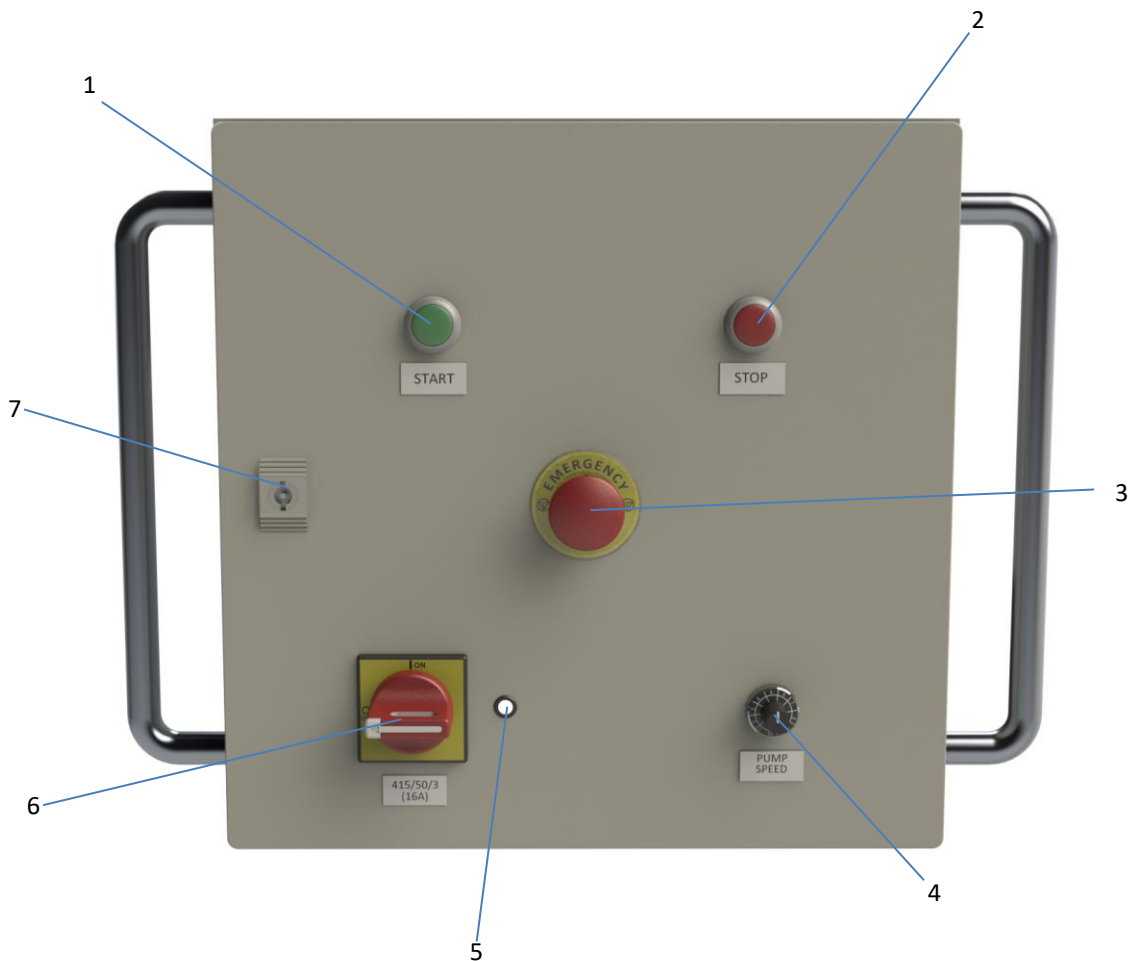
Component Identification



Key:

1.) Delivery lance	8.) Pop Up Clogging Indicator
2.) Suction Lance c/w Y-Strainer	9.) Variable Area Flow meter
3.) Control Panel – c/w Pump Speed Controller	10.) Outlet – 1.5" Quick Release Coupling - Male
4.) 415 VAC Motor 1.5kW	11.) 100 L/min Gear Pump with Integral Bypass
5.) 415 VAC – 16 Amp Plug	12.) Inlet – 1.5" Quick Release Coupling - Female
6.) Pneumatic Tyred wheels C/W Brakes	13.) Base mounted Filter Vessel x 2
7.) System Pressure Gauge	

Starting & Stopping



Key:

1.) "START" Push Button	5.) Mains LED Indicator
2.) "STOP" Push Button	6.) Mains Isolator 415 VAC
3.) Emergency Stop Button (Twist to reset)	7.) Panel Door Lock
4.) Pump Speed Dial Control	

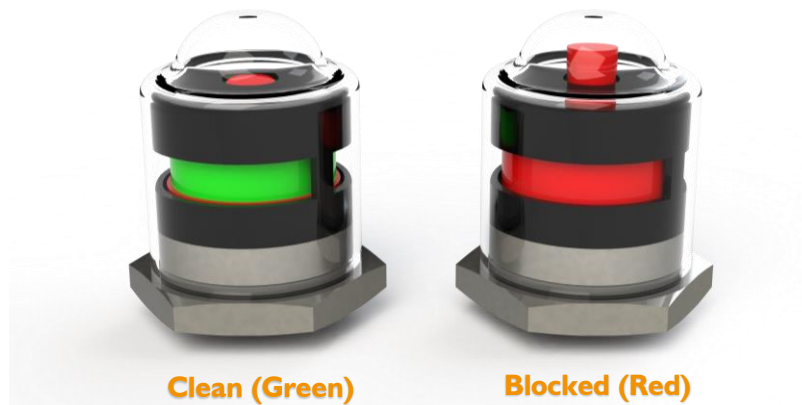
The unit is supplied with user friendly control panel. Once connected to the mains supply the unit can be switched on and off via the two push buttons. The panel also has an emergency stop button and a mains isolator. When the isolator is switched to the on position the white L.E.D will illuminate.

NOTE:

Make sure that the pump speed dial is turned down to the lowest setting before starting the system, then gradually increasing until the desired speed/flow rate is achieved.

Filtration

The unit is equipped with 2 x Base ported filter housing which can be fitted with a range of media for removing particulate and water contamination from oils. (9" Element shown below) Each filter is

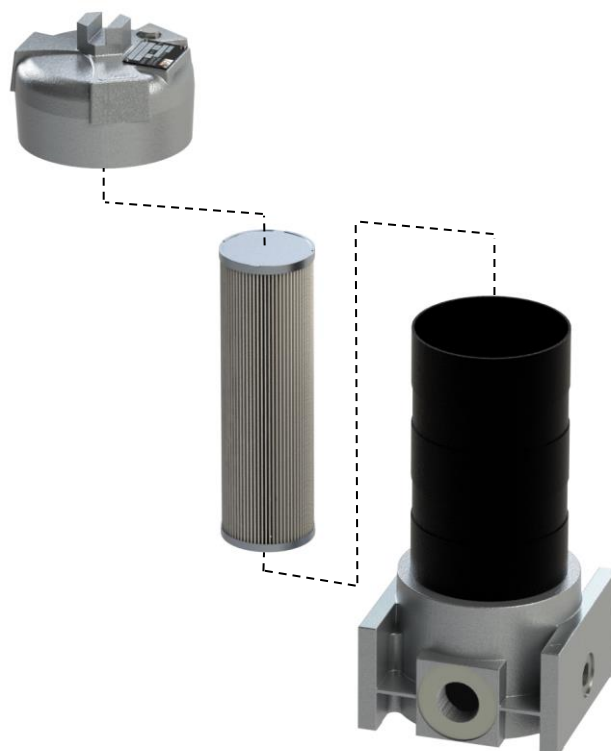


monitored by a visual pop up indicator, where a small red indicator will rise once the filter media becomes blocked (40 psid) and requires changing. Note that once blocked the filter media shall be bypassed to prevent rising internal pressures, so the system can continue running without running without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

To change a filter element support the base of the filter housing and using a large spanner on the hex nut unscrew the filter head.

Pull the element away from the filter housing 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 head should be torque tightened to 54 N.m (40 lb.ft).



Geoseal® Filter Media

GeoSeal®

Did you know that there are currently more than 180 million willfitters in business that are churning out cheap imitations of well-established and highly regarded manufacturers such as Schroeder? Far too often, we have seen customers make purchasing decisions based solely on price, only to be extremely disappointed with the poor quality delivered by low cost imitations. To make matters worse, the customer often points an accusing finger at the filter housing manufacturer for poor performance rather than the inadequate element he chose to replace the Schroeder original with!



Figure 1: Filter element with GeoSeal® grommet

GeoSeal® is a new patented offering from Schroeder that provides a unique way for OEM's to retain replacement element business and to keep a filters performance at the level that it was supplied. The idea is brilliantly simple: the critical sealing arrangement between A filter housing and its replacement element takes on a shape other than the standard circular arrangement. Specifically, the element grommet & mating bushing are given a new geometric shape.



Figure 2: Filter housing (cut-away) with GeoSeal® grommet bushing

Figures 1 & 2 show the initial configuration being used.

Availability

Currently, The GeoSeal® design is available on the K-size element And in the following Schroeder filter series:

KF30	KF50	KC50	KC65	MKF50
K9	2K9	3K9	KF3	KL3
	MLF1	KF8	RT	

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 – Absolute 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

Replacement Element List

Part Number	Description
9KGZ1	Geoseal -Schroeder Original - 1 stack element to replace KGZ1 elements 1μ absolute DHC 336gm
9KGZ3	Geoseal -Schroeder Original - 1 stack element to replace KGZ3 elements 3μ absolute DHC 345gm
9KGZ5	Geoseal -Schroeder Original - 1 stack element to replace KGZ3 elements 5μ absolute DHC 357gm
9KGZ10	Geoseal -Schroeder Original - 1 stack element to replace KGZ10 elements 10μ absolute DHC 324gm
9KGZ25	Geoseal -Schroeder Original - 1 stack element to replace KGZ25 elements 25μ absolute DHC 279gm
9KGZ25V	Geoseal -Schroeder Original - 3 stack element to replace KGZ40 elements 25μ absolute viton seals
9KGZ40V	Geoseal -Schroeder Original - 3 stack element to replace KGZ40 elements 40μ absolute viton seals


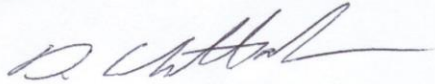
Warranty Statement

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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Declaration Of Conformity

 <p>Filtertechnik Filtration, Purification & Separation Solutions</p>		<p>EC DECLARATION OF CONFORMITY</p>
<p>Machinery Description</p> <p>Machine Type <input type="text"/></p> <p>Serial Number <input type="text"/></p>		
<p>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</p>		
<p>Declaration</p> <p>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</p> <p>IMPORTANT</p> <p>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.</p> <p>The technical construction file for this product is maintained at the address given below.</p> <p align="center">  </p> <p>Mr D Whittaker, Engineering Director Filtertechnik Limited, 1 Central Park, Lenton Lane, Nottingham, NG7 2NR England.</p>		