IFC-6050-240-S

User Manual



July 2024

V1.00

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

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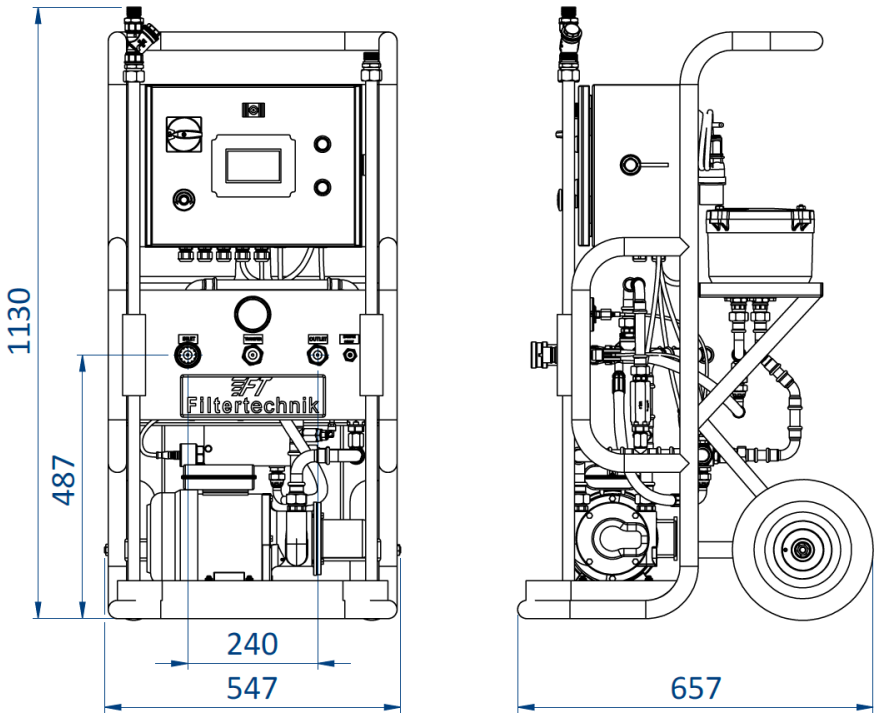
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Specifications

Specification	Detail	
	IFC-6050-110-S	IFC-6050-240-S
Dimensions	(w)547 mm x (d)657 mm x (h)1130 mm	
Weight	60 kg	
Frame	Mild Steel	
Finish	Powder Coated: RAL 5004 BLACK BLUE	
Voltage	110 VAC (+10% to -6%)	240 VAC (+10% to -6%)
Frequency	50 Hz (+/-2%)	
Current	3.6 Amps	1.5 Amps
Power	.2kW	
Pump type	Progressive Cavity Screw pump	
Flow rate (max)	10 ltr/min	
Viscosity range	20 to 100 cSt	
Duty Cycle	Continuous	
Filtration	2 x Hippo Filter (FTHF-01)	
Filter blocked indicator	Pressure Gauge	
Filter bypass	2.8 bar (40 psid)	
Connections	3/4" QRC (Quick release couplings)	
Suction hose	3m long x 3/4" QRCM (Quick release coupling with strainer)	
Discharge hose	3m long x 3/4" QRCF (Quick release coupling)	
Ambient temperature	-10°C to +60°C	
Maximum humidity	90% relative humidity, non-condensing	
Environment	IP55	

Dimensions



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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

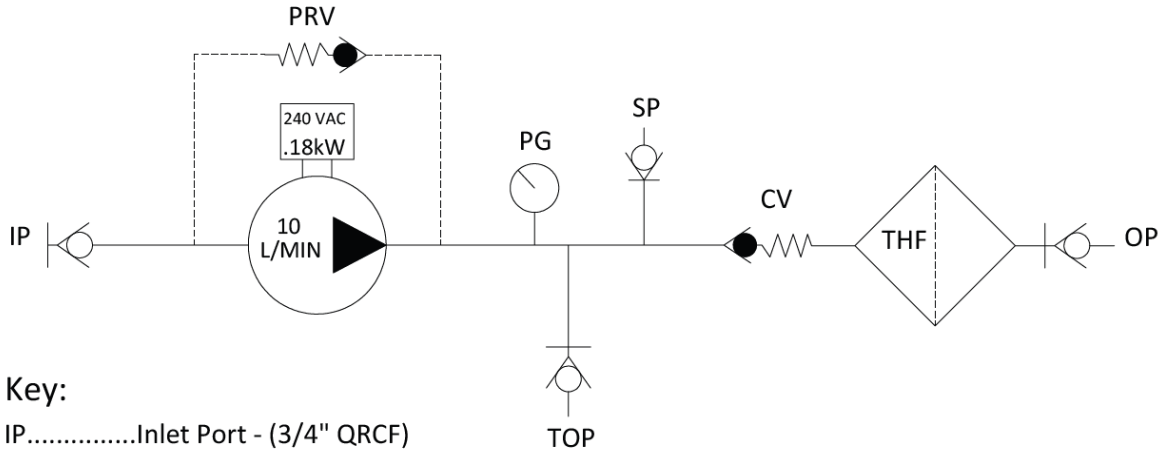
- This equipment should only be used for its intended purpose by competent and authorised persons, inappropriate use could cause serious injury or death.
- Prolonged contact with oil can cause damage to the skin. Appropriate PPE (personal protective equipment) should be worn when operating the unit e.g. 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 IFC-6050-240-S 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.

Fluid cleanliness can be monitored via the S120-PM (Particle Monitor) which is fitted into the user-friendly control panel.

Fluid Circuit Diagram



Key:

IP.....Inlet Port - (3/4" QRCF)
PRV.....Pressure Relief Valve (4 Bar)
PG.....Pressure Gauge
TOP.....Transfer Outlet Port - (3/4"QRCM)
SP.....Sample Point - (1620 Testpoint)
CV.....Check Vlave (1 bar)
THF.....Twin Hippo Filter Pots
OP.....Outlet Port - (3/4" QRCM)

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.

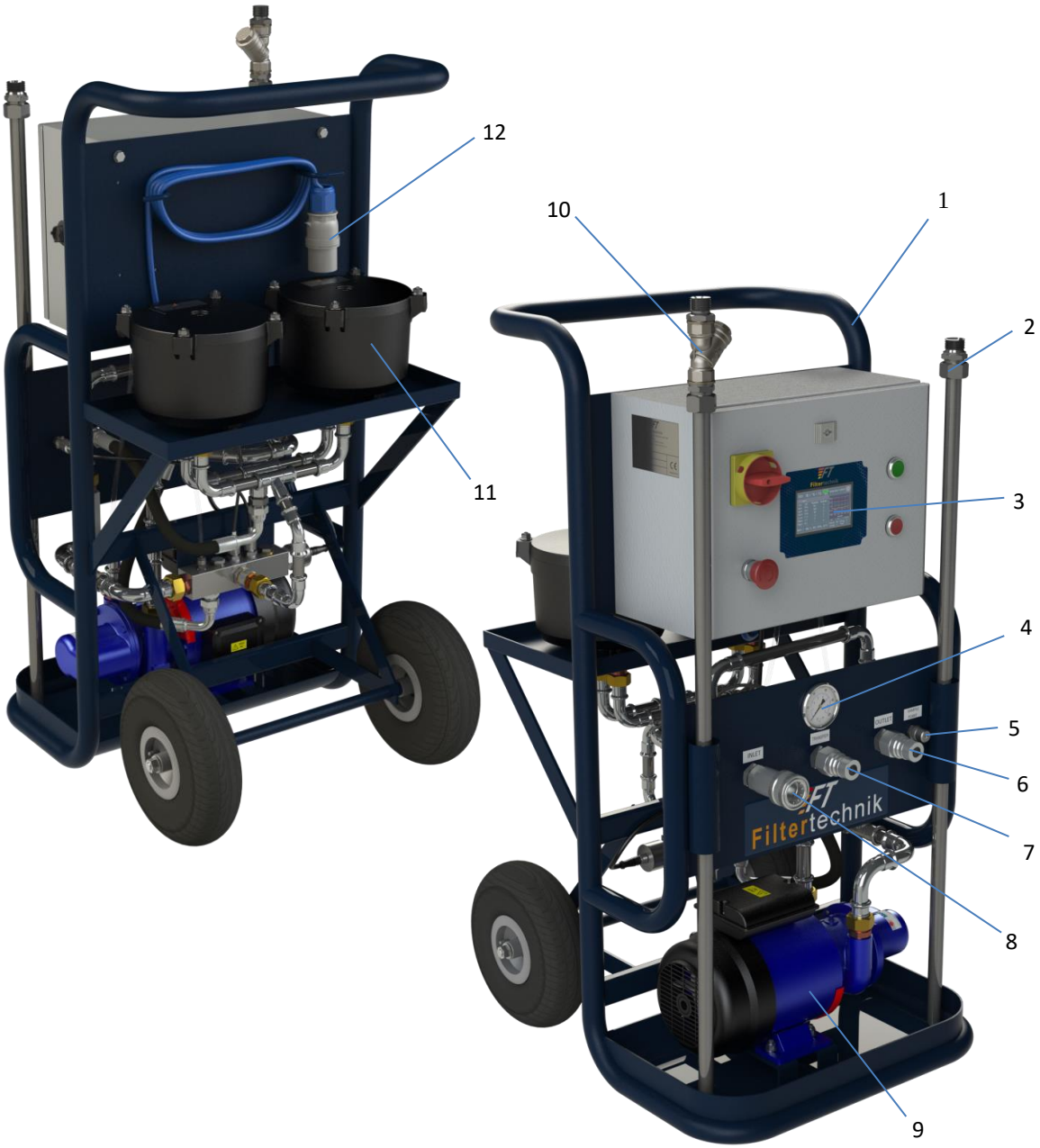
Precautionary Measures

- 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

Component Identification



Key:

1.) Rugged Sack Trolley Frame	7.) Transfer Outlet ¾" QRC Male
2.) Discharge Lance	8.) Inlet Port ¾" QRC Female
3.) Control Panel	9.) L/min Screw Pump (240 VAC)
4.) System Pressure Gauge	10.) Suction Lance c/w Y-Strainer
5.) Sample Point - Minimess 1620 Test Point	11.) 2 x Hippo Filter Pots
6.) Outlet Port ¾" QRC Male	12.) Mains Plug

Operational Instructions

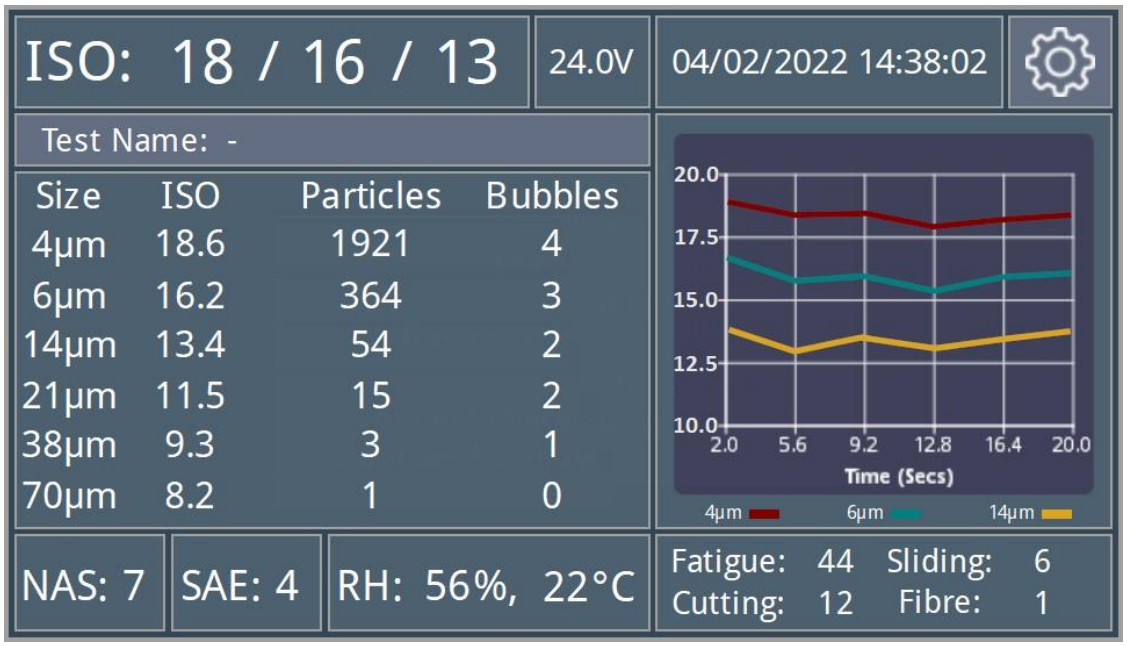
1. Connect the unit to a suitable 110 VAC, 16 Amp supply.
2. Move the Isolator to the “ON” position.
3. Make sure all physical hose/pipe connections are made.
4. To start the system, press the “GREEN” section of the ON/OFF switch.
5. To stop the system, press the “RED” section of the ON/OFF switch.
6. In an emergency hit the EMERGENCY STOP button.
7. To reset the Emergency-stop switch (Twist until it pops out).
8. The flow control valve may need to be operated to achieve the required flow rate to the particle counter. This will increase the system pressure.



Key:

1.) Push Button Start-Green	4.) Touch Screen Display
2.) USB Data Transfer Port	5.) Emergency Stop Button
3.) Push Button Stop-Red	6.) Mains Isolator

Touch screen Layout



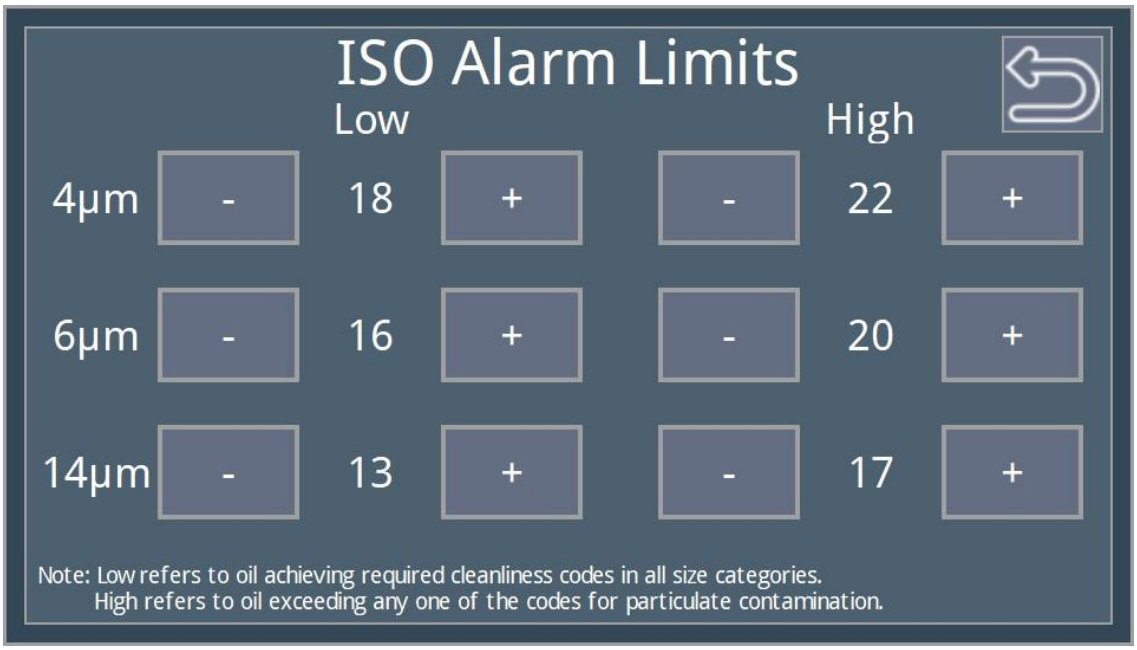
The main window of the touch screen displays all information provided by the particle counter and any other sensor that may be installed, including the input voltage. The ISO code can change from white to green or red depending on the alarm limits set.

In the top right corner of the screen is a settings icon, clicking this will open the settings page.



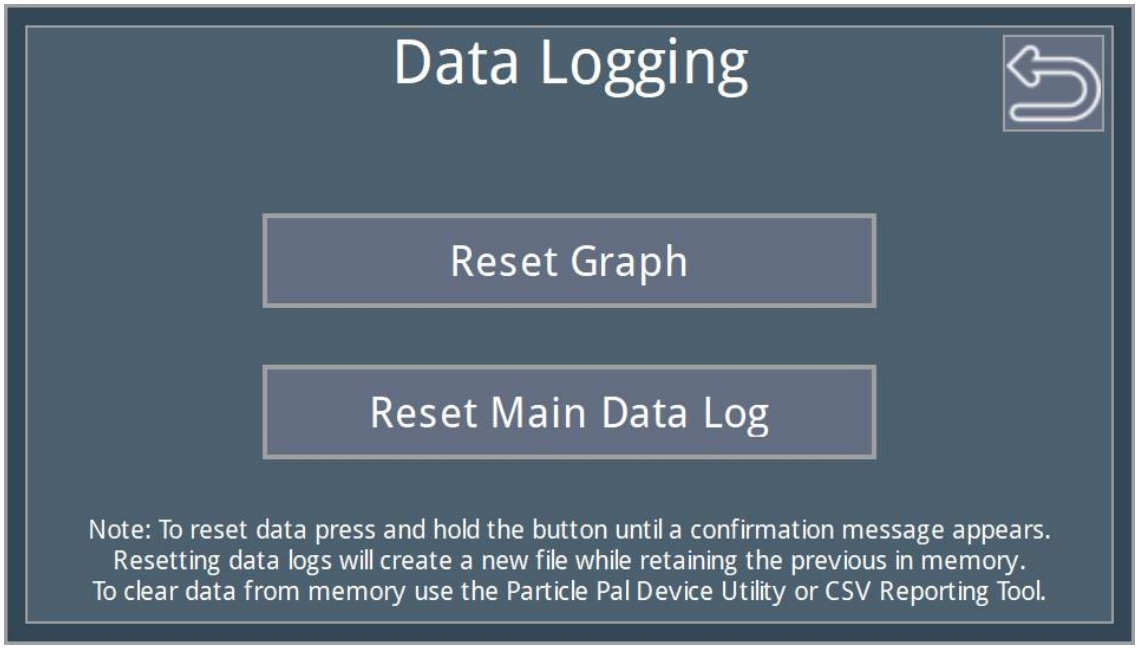
At the bottom left of the settings page the software version is displayed.

ISO Alarm Limits

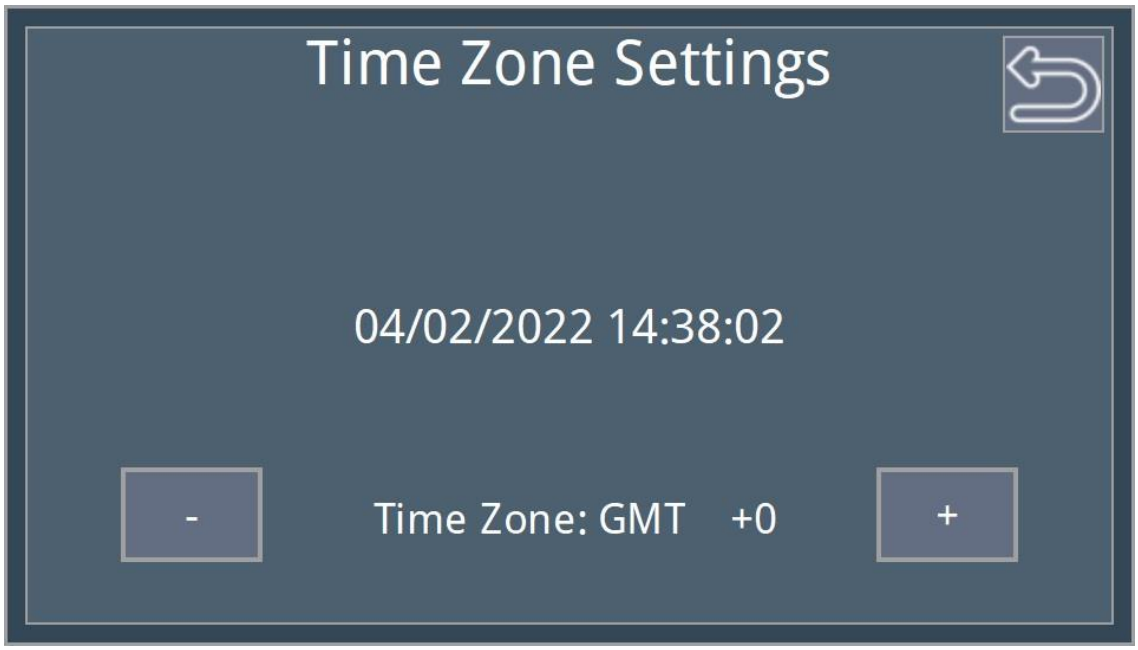


Alarm limits for low (clean) or high (dirty) can be set. Low refers to oil achieving required cleanliness codes in all size categories. High refers to oil exceeding any one of the codes for particulate contamination. When the oil is clean the ISO code on the main screen will turn green, when dirty it will become red, between the two values the text is white.

Datalogging

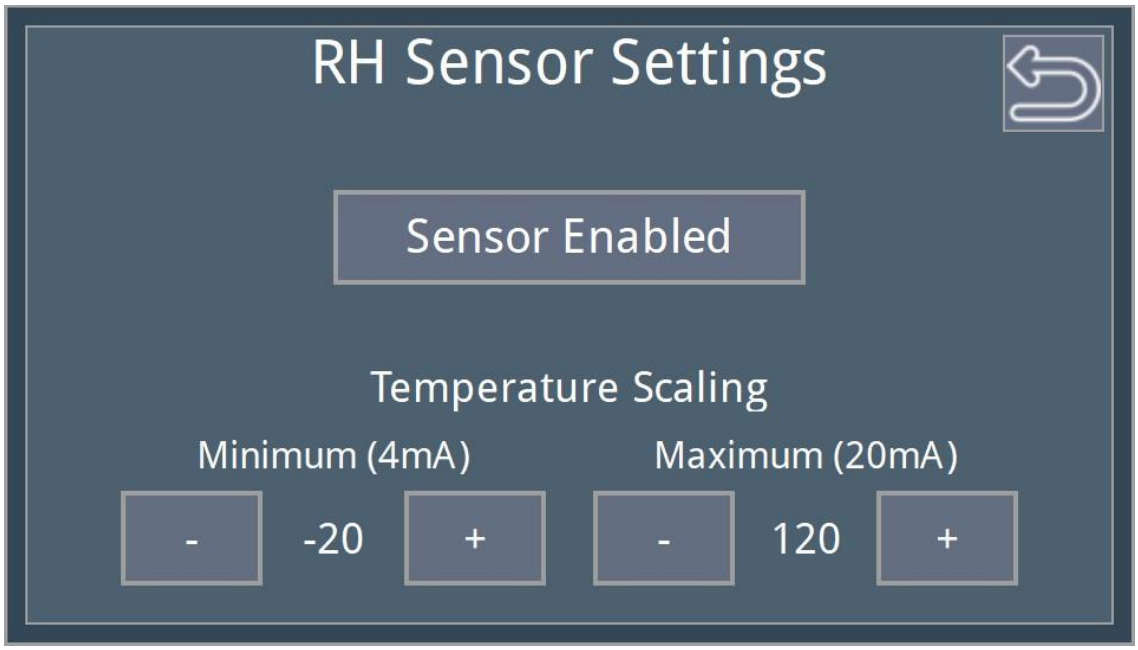


Time Zone Adjustment



The display screen is pre-set with the date and date to GMT +0 (UK time) this can be adjusted according to your time zone if required.

RH Sensor Settings



If an RH sensor is connected to the unit this will need to be activated in the “RH Sensor Settings” page. Here the temperature scaling can be adjusted to suit the sensor being used.

Troubleshooting

General Operational Errors

Problem	Possible Cause	Solution
Unit will not switch on.	Power supply issue.	With a multimeter check at the input terminal block that 24V is being supplied.
Touch screen does not power up.	Internal connector issue.	If the switch illuminates but the screen does not power up check the Molex connector has been reconnected after assembly.
Screen is behaving erratically.	Dirt or moisture on the screen.	Wipe the screen clean to remove traces of dirt, oil, or moisture. In most cases thick gloves will not work with the touch screen.

Particle Counting

Problem	Possible Cause	Solution
Contamination codes dropped to near zero..	A blockage in the flow path.	Check there is adequate flow rate going through the unit (approximately 20-50ml/min). Check/clean the suction strainer for any contamination.
Erratic count levels.	Unstable sample.	Check for the presence of air. Bubble counts should be maintained below 200 bubbles/ml in each channel.

RH & water Content

Problem	Possible Cause	Solution
Water content is above 95%	High moisture levels in the sample. Damaged moisture sensor.	Flush the unit immediately with dry oil to avoid damage to the moisture sensor. If levels still don't fall the sensor could be permanently damaged.
Water content bouncing from near 0 to 100%.	Damaged moisture sensor.	Permanent damaged due to excessive moisture. Sensor will require replacing.

Temperature not reading correctly.	Scaling issue.	Go into the "RH Sensor Setting" menu item and make sure the scaling has been correctly configured.

Particle Count ISO Codes

ISO Codes (ISO4406)

The table below shows the ISO 4406 codes by number of particles per 1 ml of fluid sampled.

ISO 4406 Code	Counts/mL	
	Greater than	Up to/including
0	0	
1	0.01	
2	0.02	
3	0.04	
4	0.08	
5	0.16	
6	0.32	
7	0.64	
8	1.3	
9	2.5	
10	5	
11	10	
12	20	
13	40	
14	80	

15	160	0.01
		0.02
		0.04
		0.08
		0.16
		0.32
		0.64
		1.3
		2.5
		5
		10
		20
		40
		80
		160
		320
		640
		1300
		2500
		5000
		10000
		20000
		40000
		80000
		160000
		320000
		640000
		1300000
		2500000
		∞
16	320	
17	640	
18	1300	
19	2500	
20	5000	
21	10000	

22	20000
23	40000
24	80000
25	160000
26	320000
27	640000
28	1300000
29	2500000

ISO Codes (ISO4406)

The S120 particle counter gives a greater insight into cleanliness by showing ISO decimal codes, with the particle counts as per the below table.

Code	Counts/mL	Code	Counts/mL	Code	Counts/mL	Code	Counts/mL	Code	Counts/mL
5	0.16	10	5	15	160	20	5000	25	160000
5.1	0.176	10.1	5.5	15.1	176	20.1	5500	25.1	176000
5.2	0.192	10.2	6	15.2	192	20.2	6000	25.2	192000
5.3	0.208	10.3	6.5	15.3	208	20.3	6500	25.3	208000
5.4	0.224	10.4	7	15.4	224	20.4	7000	25.4	224000
5.5	0.24	10.5	7.5	15.5	240	20.5	7500	25.5	240000
5.6	0.256	10.6	8	15.6	256	20.6	8000	25.6	256000
5.7	0.272	10.7	8.5	15.7	272	20.7	8500	25.7	272000
5.8	0.288	10.8	9	15.8	288	20.8	9000	25.8	288000
5.9	0.304	10.9	9.5	15.9	304	20.9	9500	25.9	304000
6	0.32	11	10	16	320	21	10000	26	320000
6.1	0.352	11.1	11	16.1	352	21.1	11000	26.1	352000
6.2	0.384	11.2	12	16.2	384	21.2	12000	26.2	384000
6.3	0.416	11.3	13	16.3	416	21.3	13000	26.3	416000
6.4	0.448	11.4	14	16.4	448	21.4	14000	26.4	448000
6.5	0.48	11.5	15	16.5	480	21.5	15000	26.5	480000

6.6	0.512	11.6	16	16.6	512	21.6	16000	26.6	512000
6.7	0.544	11.7	17	16.7	544	21.7	17000	26.7	544000
6.8	0.576	11.8	18	16.8	576	21.8	18000	26.8	576000
6.9	0.608	11.9	19	16.9	608	21.9	19000	26.9	608000
7	0.64	12	20	17	640	22	20000	27	640000
7.1	0.706	12.1	22	17.1	706	22.1	22000	27.1	706000
7.2	0.772	12.2	24	17.2	772	22.2	24000	27.2	772000
7.3	0.838	12.3	26	17.3	838	22.3	26000	27.3	838000
7.4	0.904	12.4	28	17.4	904	22.4	28000	27.4	904000
7.5	0.97	12.5	30	17.5	970	22.5	30000	27.5	970000
7.6	1.036	12.6	32	17.6	1036	22.6	32000	27.6	1036000
7.7	1.102	12.7	34	17.7	1102	22.7	34000	27.7	1102000
7.8	1.168	12.8	36	17.8	1168	22.8	36000	27.8	1168000
7.9	1.234	12.9	38	17.9	1234	22.9	38000	27.9	1234000
8	1.3	13	40	18	1300	23	40000	28	1300000
8.1	1.42	13.1	44	18.1	1420	23.1	44000	28.1	1420000
8.2	1.54	13.2	48	18.2	1540	23.2	48000	28.2	1540000
8.3	1.66	13.3	52	18.3	1660	23.3	52000	28.3	1660000
8.4	1.78	13.4	56	18.4	1780	23.4	56000	28.4	1780000
8.5	1.9	13.5	60	18.5	1900	23.5	60000	28.5	1900000
8.6	2.02	13.6	64	18.6	2020	23.6	64000	28.6	2020000
8.7	2.14	13.7	68	18.7	2140	23.7	68000	28.7	2140000
8.8	2.26	13.8	72	18.8	2260	23.8	72000	28.8	2260000
8.9	2.38	13.9	76	18.9	2380	23.9	76000	28.9	2380000
9	2.5	14	80	19	2500	24	80000	>29	2500000
9.1	2.75	14.1	88	19.1	2750	24.1	88000	–	–
9.2	3	14.2	96	19.2	3000	24.2	96000	–	–
9.3	3.25	14.3	104	19.3	3250	24.3	104000	–	–
9.4	3.5	14.4	112	19.4	3500	24.4	112000	–	–
9.5	3.75	14.5	120	19.5	3750	24.5	120000	–	–

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9.6	4	14.6	128	19.6	4000	24.6	128000	–	–
9.7	4.25	14.7	136	19.7	4250	24.7	136000	–	–
9.8	4.5	14.8	144	19.8	4500	24.8	144000	–	–
9.9	4.75	14.9	152	19.9	4750	24.9	152000	–	–

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

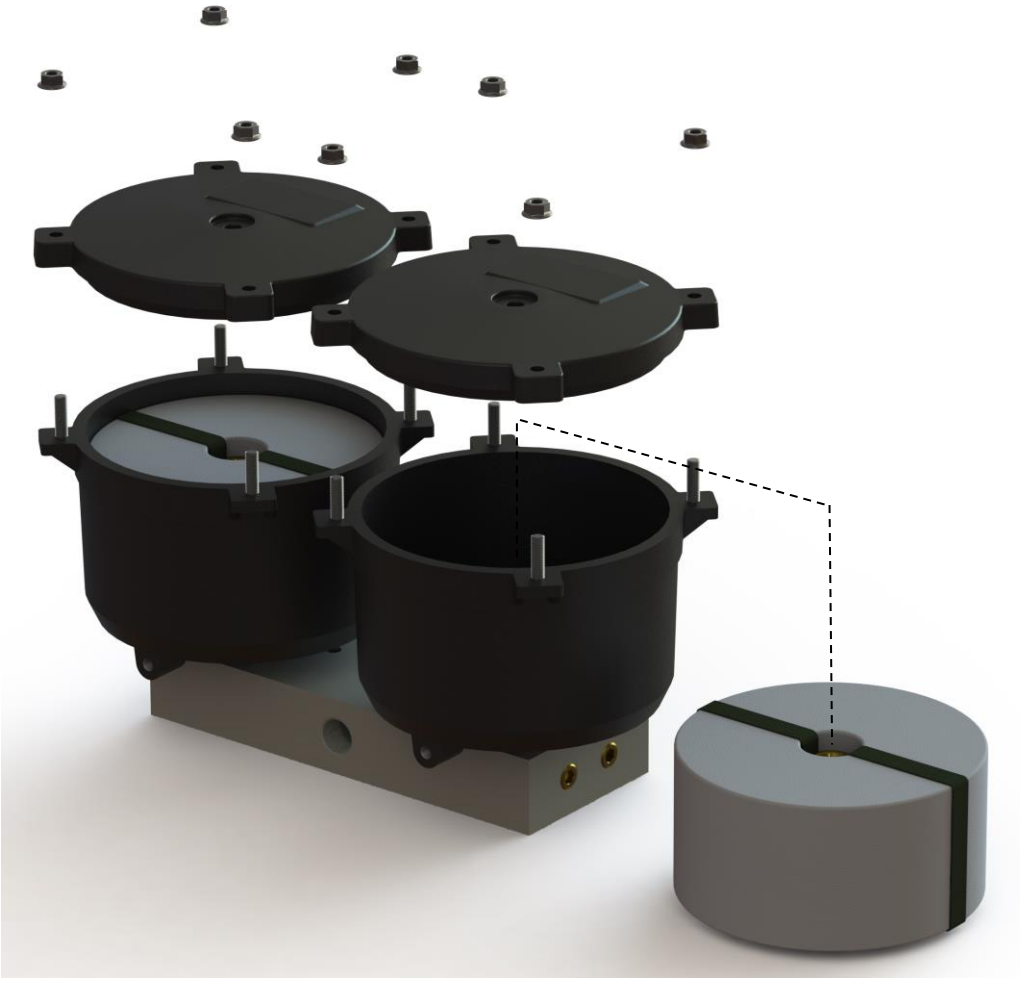
Required Cleanliness Codes for Fluid Power Components

Element	Type	ISO 4406 Cleanliness Code
Pump	Piston (slow speed, inline)	22/20/16
	Piston (high speed, variable)	17/15/13
	Gear	19/17/15
	Vane	18/16/14
Valve	Directional	20/18/15
	Pressure control	19/17/14
	Flow control	19/17/14
	Check valve	20/18/15
	Cartridge valve	20/18/15
	Proportional	18/16/13
	Servo valve	16/14/11
Motor	Axial piston	18/16/13
	Radial piston	19/17/13
	Gear	20/18/15
	Vane	19/17/14
Actuator		20/18/15
Station Nozzle	Worldwide fuel charter cleanliness standard for fuel delivered	18/16/13

Spare Parts List

Part Number	Description
SDFC(W2)-DISC	2.8 µm solids removal & water absorption (most oils & fuels)
SDFC(W2P)	Solids removal only (water based oils & glycol)

Filter change procedure



1. Ensure unit is switched off and disconnected from the mains supply.
2. Disconnect hoses & lances to prevent fluid siphoning from occurring.
3. Remove the 13mm nuts and lid from each filter pot.
4. Pull out the old filter using the black straps. Due to expansion the filter may be a tight fit.
5. Fit new elements with the brass ring facing upwards.
6. Inspect the lid seal and replace if necessary.
7. Fit the lid and tighten the 13mm nuts in a diagonal pattern to 15 N.m.
8. Reconnect the unit to the mains supply and resume filtering. The pressure gauge should now read between 1-2 bar (15-30 psi) with clean elements.
9. For the first few minutes of running observe the unit for signs of leaking.

Hoses & Lances

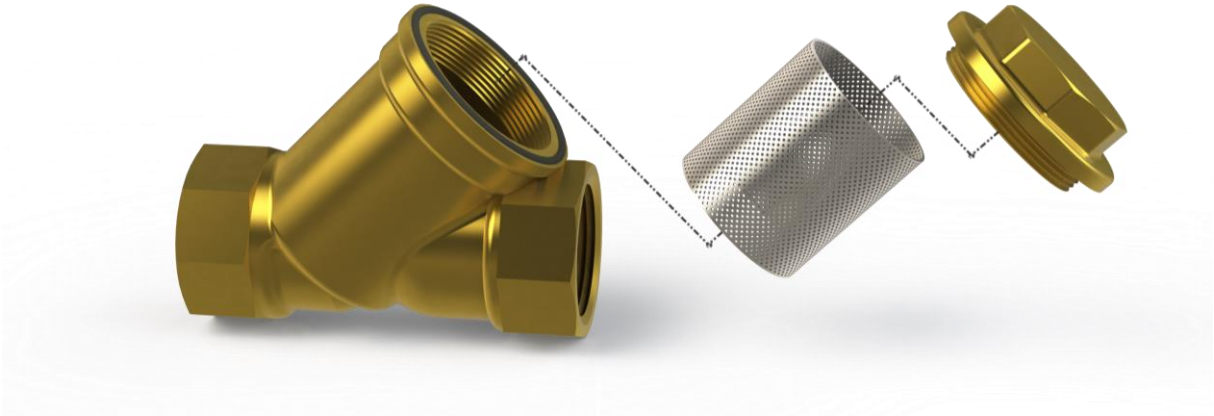
The unit is supplied with two 3/4" lances, a suction lance with strainer to protect the pump and a discharge lance. Each lance is 1000mm long.

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.

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	IFC-6050-240-S
Serial Number	FT39096-01

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.