SFC-3000-316-AIR

User Manual

September 2019

V1.01

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

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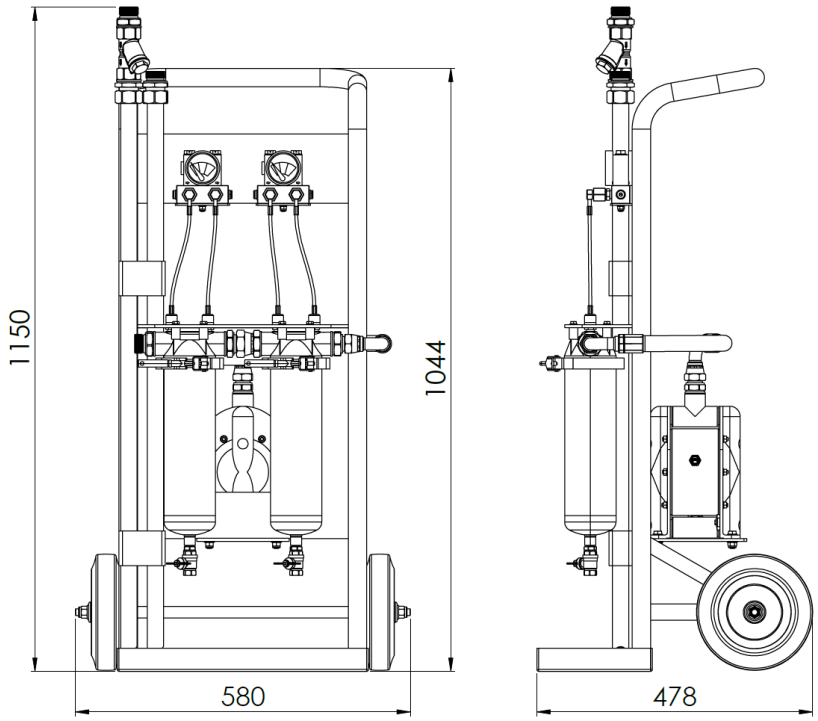
Registered in England No: 03969985 VAT No: 760 821 731 Certification No. UK002838

Table of Contents

Specifications

Specification	Detail
Dimensions	(w)580 mm x (d)478 mm x (h)1044 mm (with lances (h)1150mm)
Weight	42.5 kg
Frame	316 stainless steel
Finish	N/A
Voltage	N/A
Frequency	N/A
Current	N/A
Power	N/A
Pump type	Air operated diaphragm pump
Flow rate (max)	50 L/min
Viscosity range	5 to 100 cSt
Duty Cycle	Continuous
Filtration	2 x 9” filter housings
Filter blocked indicator	Visual indicator gauge
Filter bypass	N/A
Connections	1" BSP male hydraulic
Suction hose	5m x 1" BSP female swivel hydraulic (with strainer)
Discharge hose	5m x 1" BSP female swivel hydraulic
Ambient temperature	-10°C to +60°C
Maximum humidity	90% relative humidity, non-condensing
Environment	N/A



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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 air supply before carrying out any routine maintenance or repairs.
- Air and fluid 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 SFC-3000 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.

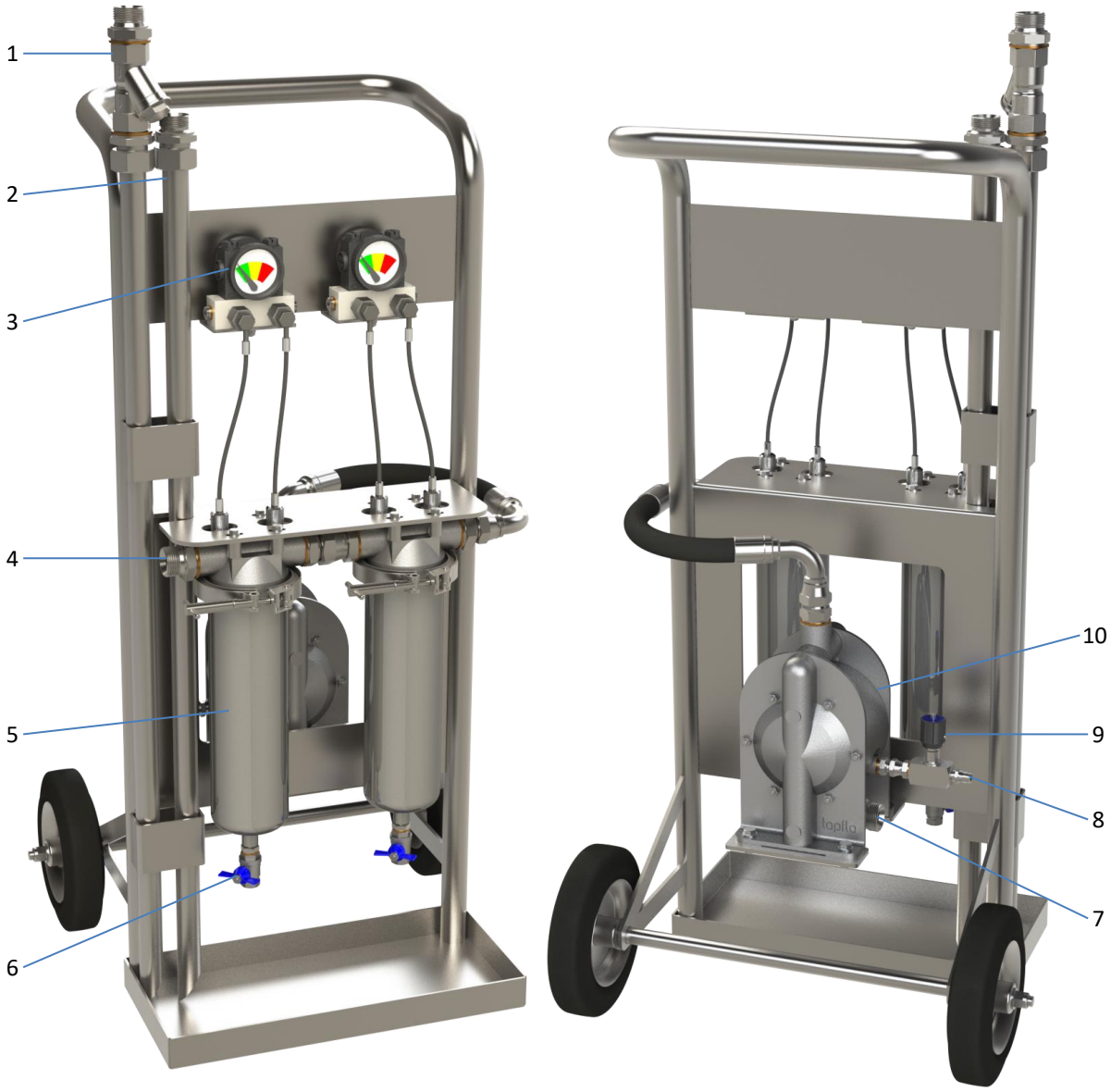
Precautionary Measures

- 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

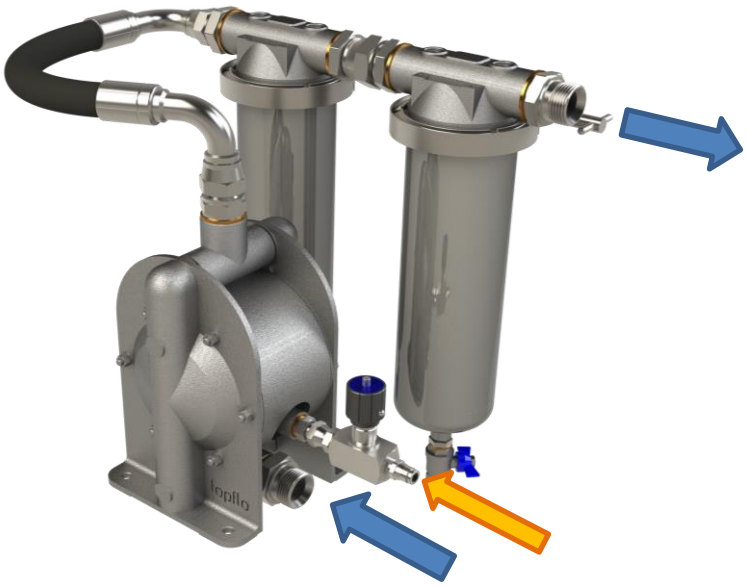
Component Identification



Key:

1.) 1” Suction Lance (With Strainer)	6.) 1/4" Drain Valve
2.) 1” Discharge Lance	7.) Inlet Port (1” BSP)
3.) Differential Pressure Indicator	8.) Air Connection 8mm
4.) Outlet Port (1” BSP)	9.) Needle Valve for Air Flow Control
5.) 9” Filter Housing	10.) T70 Diaphragm Pump

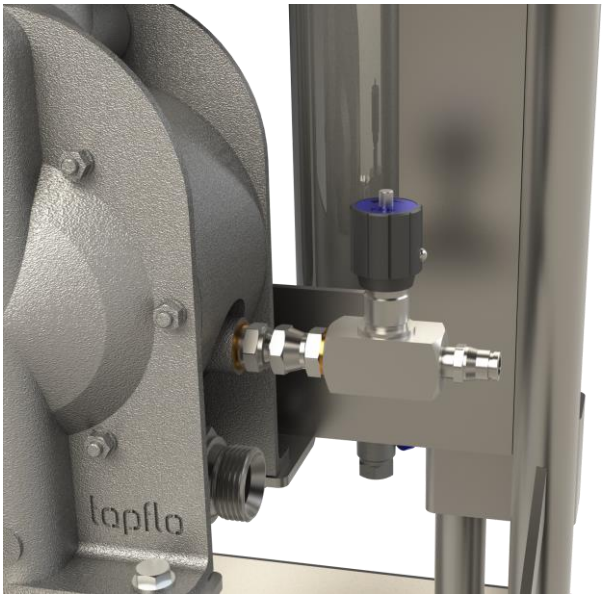
Flow Direction



Starting & Stopping

With the need valve fully closed connect the unit to a suitable air supply via the 8mm tube fitting. Connect the suction and delivery hoses to the system/lances.

Gradually open the needle valve to regulate air flow, where the pump will start to operate.



Filtration

The unit is equipped with two filter housings which can be fitted with a range of media for removing particulate and water contamination. If using only particle filters, it's best to stage the filtration, i.e. a 5µm first followed by a 3µm. If a water filter is being used alongside a particulate filter it's best to fit the particulate filter first to protect the water absorbing filter from blocking prematurely.

To change a filter element:

1) Make sure the air supply is disconnected from the unit.
2) Open the drain port and collect the oil/fuel into a suitable waste container.
3) Remove the v-band clamp and filter bowl, along with the old filter element.
4) Fit the new element to the filter head and replace the bowl and v-band clamp. The v-band clamp should only need to be tightened by hand.
5) Close off the drain valve before running the system.

Differential Pressure Gauge

The unit comes with differential pressure gauges that gives an indication of the filter condition via a green, yellow and red visual indication.

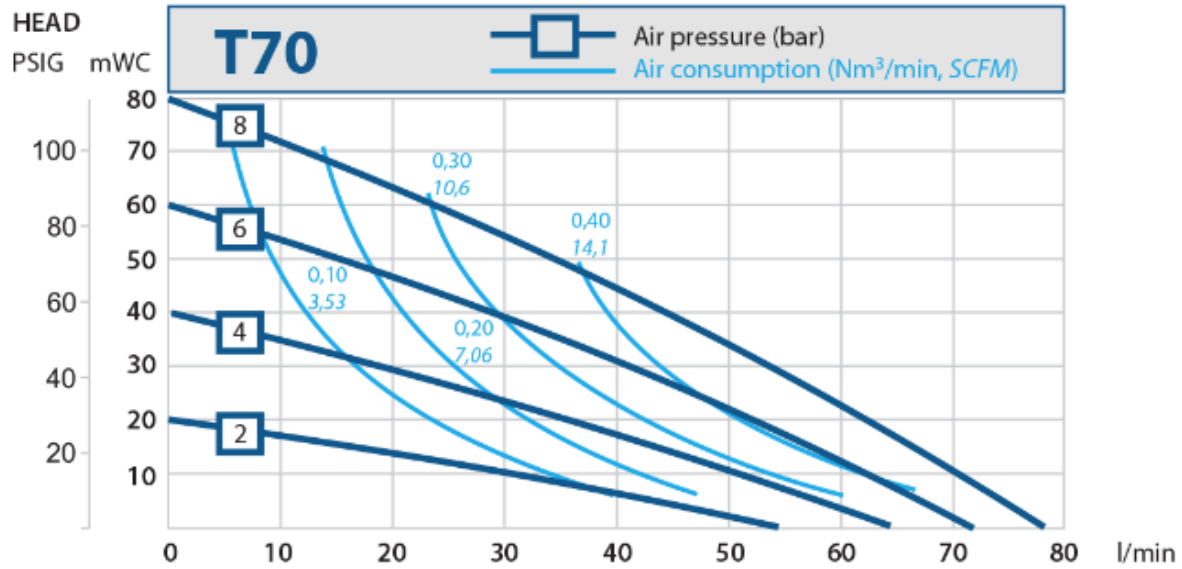
Colour	Pressure Range	Notes
Green	0-15 psid	Indicates a clean and healthy filter
Yellow	16-22 psid	Indicates the filter is starting to become blocked and requires more frequent monitoring
Red	23-30psid	Indicates the filter is now fully blocked and requires changing

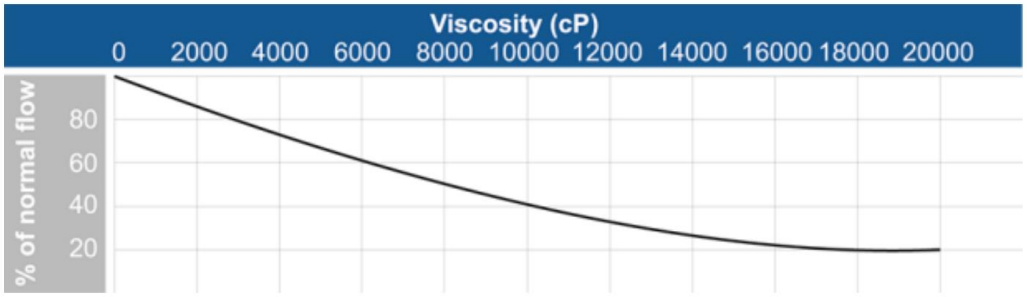
Pump Information

Specification	Detail
Max capacity	78 l/min
Volume per stroke	130 ml
Max discharge pressure	8 bar
Max air pressure	8 bar
Max suction lift (dry)	3m
Max suction lift (wet)	8m
Max size of solids	4mm

Performance Curve

The performance curves are based on water at 20°C. Other circumstances might change the performance, such as a viscosity.





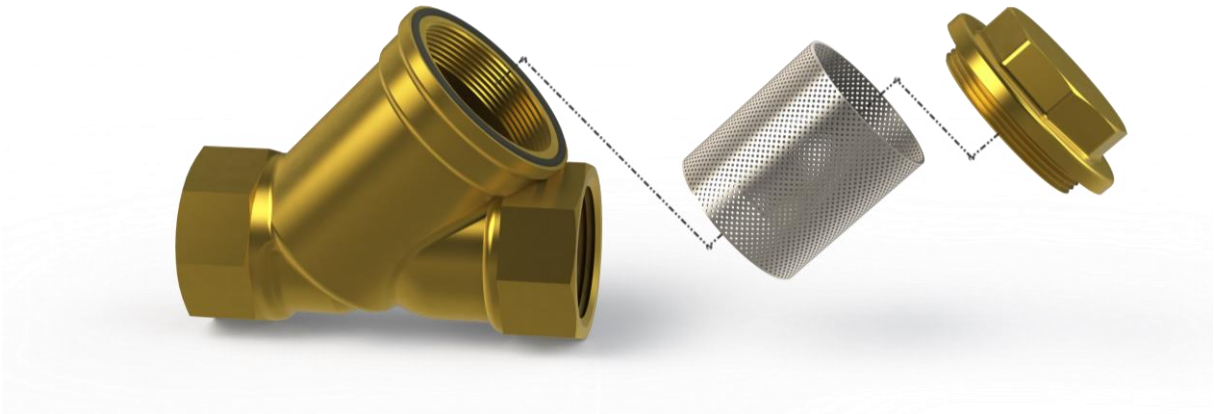
Hoses & Lances

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.

Troubleshooting

Symptom	Problem	Solution
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 diaphragm	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 seal Hose leaks	Replace seals where necessary Tighten all joints

Spare Parts List

Description	Part Number
1 µm Absolute	9VZ1
3 µm Absolute	FTB-03
5 µm Absolute	FTB-05
10 µm Absolute	FTB-10
25 µm Absolute	FTB-25
150 µm Recleanable	9VM150
Water Removal	9VW

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.

EC Declaration of Conformity

Filtertechnik
Filtration, Purification & Separation Solutions

EC DECLARATION OF CONFORMITY

Machinery Description

Machine Type	SFC-3000-316-AIR
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

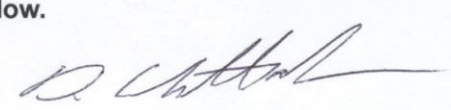
Declaration

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.



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Appendix A –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

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

ISO 4406 Contamination Scale

NAS Codes (NAS 1638)

Class	Particle Size Range (Particles/100 mL)	
	5 to 15 µm	15 to 25 µm
00	125	22
0	250	44
1	500	89
2	1,000	178
3	2,000	356
4	4,000	712
5	8,000	1,425
6	16,000	2,850
7	32,000	5,700
8	64,000	11,400
9	128,000	22,800
10	256,000	45,600
11	512,000	91,200
12	1,024,000	182,400

SAE Codes (SAE AS4059)

	Maximum Contamination Limits (Particles/100 mL)					
Size, ISO 4402 calibration, or optical microscope count[1]	> 1 µm	> 5 µm	> 15 µm	> 25 µm	> 50 µm	> 100 µm
Size, ISO 11171 calibration, or electron microscope[2]	> 4 µm(c)	> 6 µm(c)	> 14 µm(c)	> 21 µm(c)	> 38 µm(c)	> 70 µm(c)
Size Code	**A**	**B**	**C**	**D**	**E**	**F**
Class 000	195	76	14	3	1	0
Class 00	390	152	27	5	1	0
Class 0	780	304	54	10	2	0
Class 1	1560	609	109	20	4	1
Class 2	3120	1220	217	39	7	1
Class 3	6250	2430	432	76	13	2
Class 4	12,500	4860	864	152	26	4
Class 5	25,000	9730	1730	306	53	8
Class 6	50,000	19,500	3460	612	106	16
Class 7	100,000	38,900	6920	1220	212	32
Class 8	200,000	77,900	13,900	2450	424	64
Class 9	400,000	156,000	27,700	4900	848	128
Class 10	800,000	311,000	55,400	9800	1700	256
Class 11	1,600,000	623,000	111,000	19,600	3390	512
Class 12	3,200,000	1,250,000	222,000	39,200	6780	1020

[1] Particle size based on the longest dimension.
[2] Particle size based on the projected area equivalent diameter.

Conversion between Standards

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				

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

ISO 4406 vs NAS 1638 Contamination

Appendix B - Required Cleanliness Codes for Fluid Power Components

Component	Type	ISO 4406 Target Level		
		Low Pressure <130 bar	Medium Pressure 130 - 200 bar	High Pressure 200 - 1000 bar
Pump	Fixed Gear or Fixed Valve	20/18/15	19/17/14	18/16/13
	Fixed Piston	19/17/14	18/16/13	17/15/12
	Variable Vane	18/16/13	17/15/12	N/A
	Variable Piston	18/16/13	17/15/12	16/14/11
Valve	Check Valve	20/18/15	20/18/15	19/17/14
	Directional (Solenoid)	20/18/15	19/17/14	18/16/13
	Standard Flow Control Valve	20/18/15	19/17/14	18/16/13
	Cartridge Valve	19/17/14	18/16/13	17/15/12
	Proportional Valve	17/15/12	17/15/12	16/14/11
	Servo Valve	16/14/11	16/14/11	15/13/10
Actuator	Cylinder, Vane Motor, Gear Motor	20/18/15	19/17/14	18/16/13
	Piston Motor, Swash Plate Motor	19/17/14	18/16/13	17/15/12
	Hydrostatic Drive	16/14/11	16/14/11	15/13/10
	Test Stand	15/13/10	15/13/10	15/13/10
Bearing	Journal Bearing	17/15/12	N/A	N/A
	Industrial Gear Box	17/15/12	N/A	N/A
	Ball Bearing	15/13/10	N/A	N/A
	Roller Bearing	16/14/11	N/A	N/A
Station Nozzle	Worldwide fuel charter cleanliness standard for fuel delivered	18/16/13	N/A	N/A