Schroeder INDUSTRIES

Advanced Fluid Conditioning Solutions®

PROUDLY MANUFACTURED IN THE UNITED STATES

Filtration Presentation

Introduction

As an ISO 9001:2015 certified company, Schroeder Industries has been designing, manufacturing, and marketing a complete range of Advanced Fluid Conditioning Solutions® for over 73 years.

Introduction

With a comprehensive portfolio of filtration and diagnostics solutions, we have been recognized as *the* leader in fluid conditioning for markets that use:

Hydraulic and Lube Filtration

Fuel Filtration

Filter Systems

Process Filtration

Element Technology

Fluid Power Machines – What are you operating?

No matter what the job you are asked to perform, chances are the use of heavy machinery will take place. Whatever the case is, top priorities should include efforts to ensure the job is completed safely, timely, and all while making a profit.

Fluid Power Machines – What are you operating?

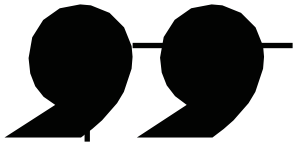
But what does heavy machinery rely on?

Highly efficient, lifting hydraulics!

Hydraulics is the use of fluids under pressure to generate control and transmit power.

In short terms, that is what fluid power is.

But, why are we concerned?



...as much as 70% of all premature machine failures can be **ATTRIBUTED TO CONTAMINATION.**

- NORIA Corp.

Internationally trusted lubrication and oil analysis research and consultation organization

Unbiased focus on improving machine reliability

Publisher of the *Machinery Lubrication* Magazine

The Issues…

Hydraulic system repairs represent a significant portion of annual maintenance spent, typically 2 to 3 times higher than engines and transmissions.

How can I reduce costs and downtime?

How can I improve warranty recovery?

Consolidation of hydraulic oils in all regions?

Reduce / eliminate pump cavitation, leaks?

Effects of Uncontrolled Contamination

Performance

- Cylinder Drift
- Jerky Steering
- Erratic Operation
- Slower Performance

Cost

- Shorter Service Intervals
- Higher Operating Costs
- Lost Productivity

Companies have realized…

Increased machine test non-conformance (meeting cleanliness standards)

Increased time on component test stands (to meet cleanliness standards)

Increased repair work

Reduced through-put

Increased cost of assembly / production

Potential negative impact on Safety

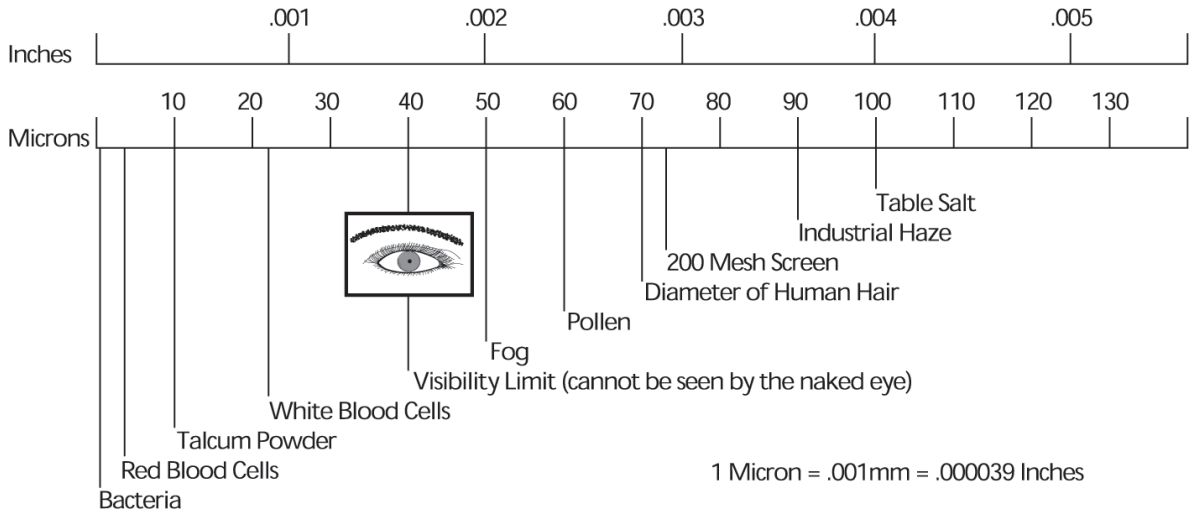
Potential negative impact on Morale / Retention

Types of Contamination – Specs to keep in mind

With the demand for higher efficiency, tolerances have become tighter, and parts have become smaller. Tolerances as tight as .0001 of an inch are more frequently used. **With that tight of a tolerance, contamination in fluids (even 10x smaller than a grain of table salt) can negatively affect critical system components.**

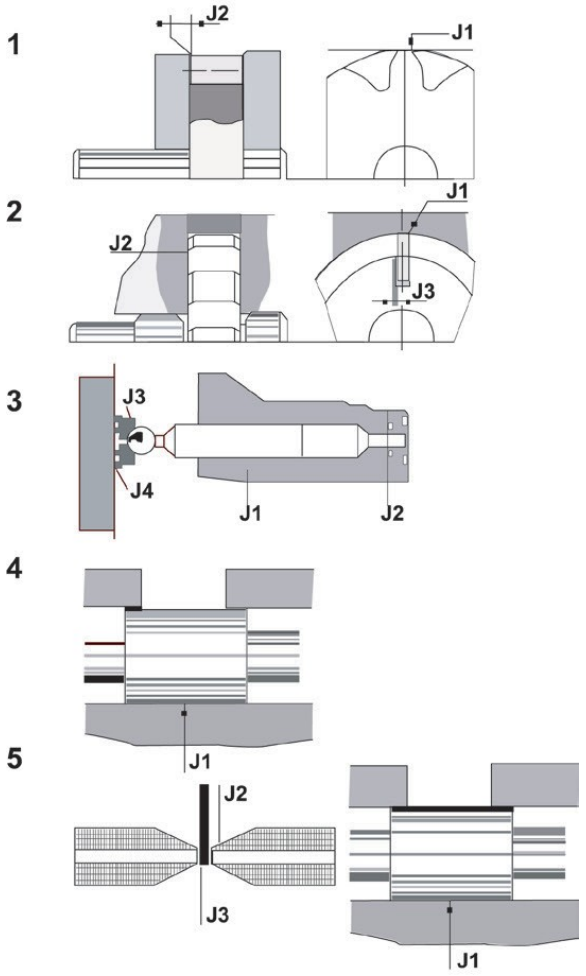
Consider the diameters of the following substances:

Substance	Microns	Inches
Grain of table salt	100	.0039
Human hair	70	.0027
Talcum powder	10	.00039
Bacteria	2 (average)	.000078



Types of Contamination – Specs to be aware of

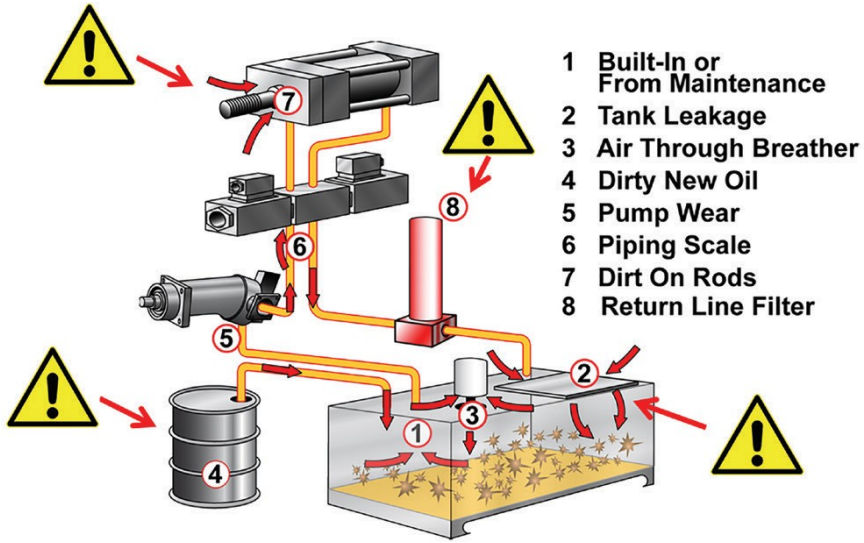
Component	Typical Critical Clearance (µ)
1. Gear Pump (J1, J2)	0.5-5
2. Vane-cell Pump (J1)	0.5-5
3. Piston Pump (J2)	0.5-1
4. Control Valve (J1)	1-25
5. Servo Valve (J1)	1-4



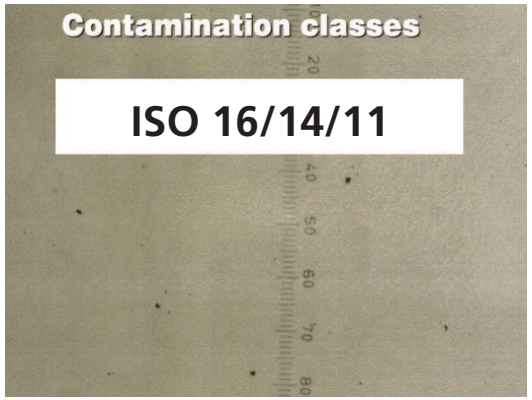
Sources of Contamination – Where does it come from?

Contamination comes from two basic sources: It either enters the system from outside (ingestion) or it is generated from within (ingression). New systems often have contaminants left behind from manufacturing and assembly operations. Unless filtered as it enters the circuit, both the original fluid and make-up fluid are likely to contain more contaminants than the system can tolerate.

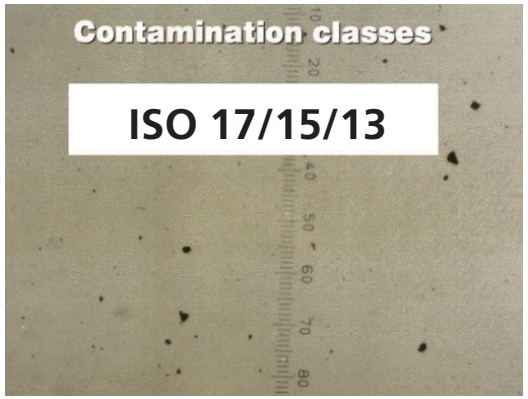
Most systems ingest contaminants through such components as inefficient air breathers and worn cylinder rod seals during normal operation. Airborne contaminants are likely to gain admittance during routine servicing or maintenance. Friction and heat can also produce internally generated contamination.



Just because it's "new" oil, doesn't mean it's "clean" oil



Demanded by Modern Hydraulic Systems



New Oil as Delivered in Mini-container

New Oil as Delivered on Tanker

New Oil as Delivered in Barrels

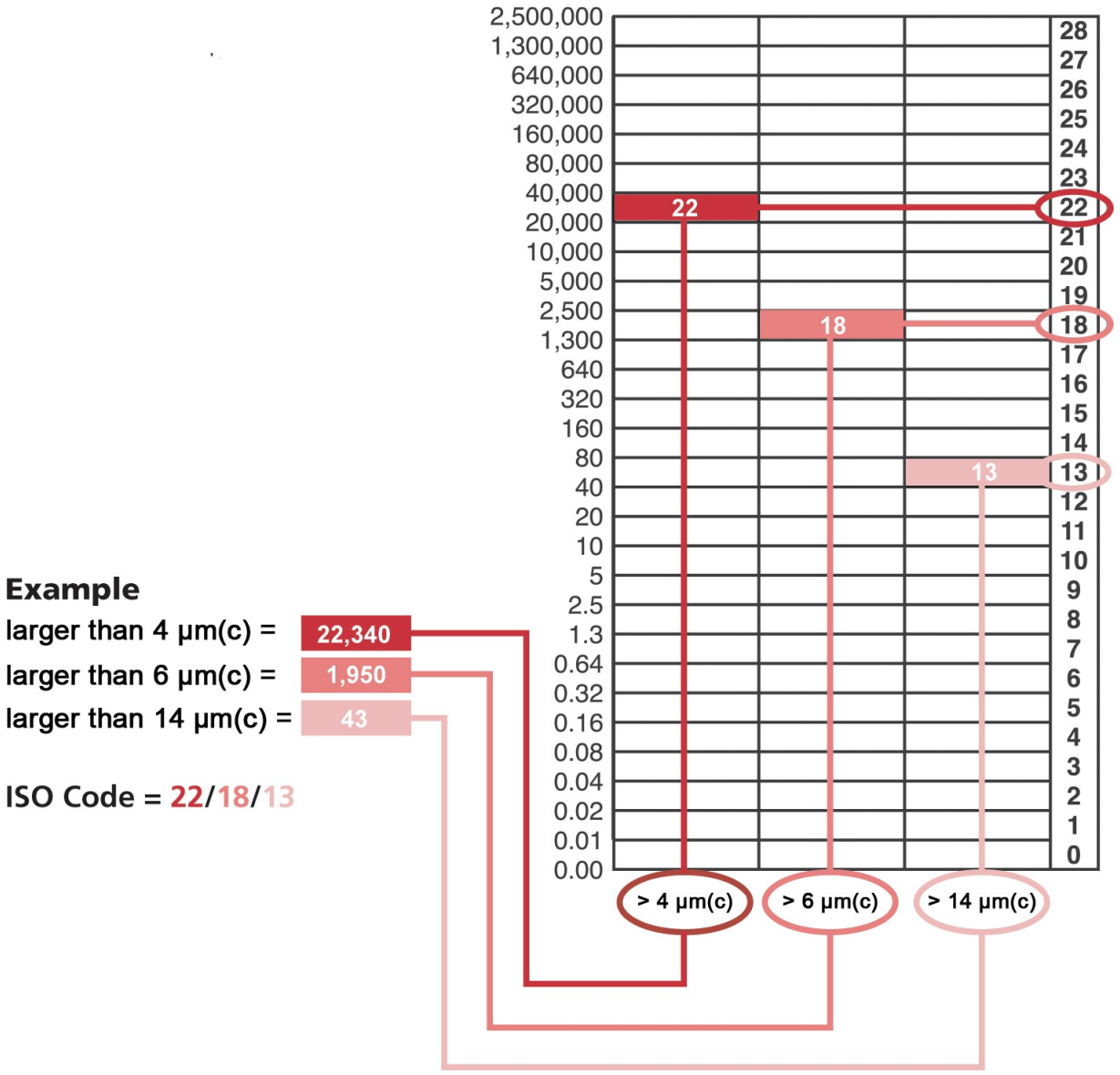
What is “Clean Oil”?

A 55 gallon barrel of hydraulic fluid contaminated with 500 mg of environmental dust (same size as a tablet of aspirin) will not pass the ISO oil cleanliness level requirement for most hydraulic systems.

ISO Cleanliness Levels - Explained

ISO 4406:1999 provides guidelines for defining the level of contamination present in a fluid sample in terms of an ISO rating.

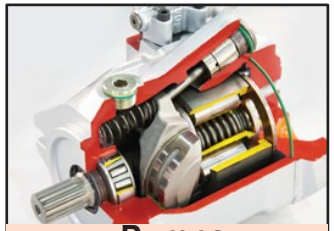
To structure an ISO Code, the amount of dirt particles measured in a 1 mL sample must be larger than these three specified sizes:
4 µm(c) / 6 µm(c) / 14 µm(c).



ISO Cleanliness Levels - Continued

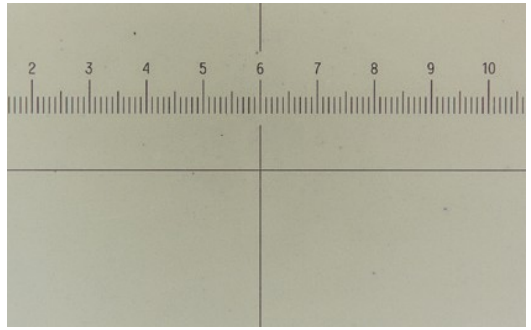
Components	Cleanliness Levels (ISO Code) 4 µm(c)/6 µm(c)/14 µm(c)
Hydraulic Servo Valves	**15/13/11**
Hydraulic Proportional Valves	16/14/12
Hydraulic Variable Piston Pump	16/14/12
Hydraulic Fixed Piston Pump	17/15/12
Hydraulic Variable Vane Pump	17/15/12
Hydraulic Fixed Vane Pump	18/16/13
Hydraulic Fixed Gear Pump	18/16/13
Ball Bearings	15/13/11
Roller Bearings	16/14/12
Journal Bearings (>400 rpm)	17/15/13
Journal Bearings (<400 rpm)	18/16/14
Gearboxes	18/16/13
Hydrostatic Transmissions	16/14/11
Pumps	**16/14/12**

Servo Valves ISO 15/13/11

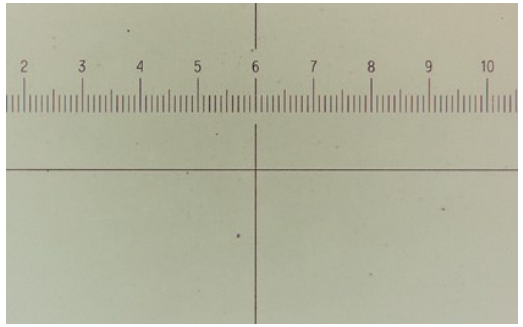


Pumps ISO 16/14/12

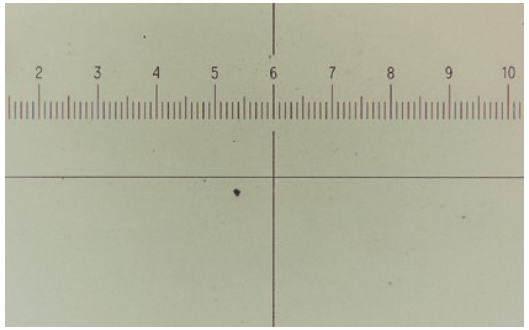
Comparison Photos of Fluid Contamination Classes
(1 Scale Mark = 40 µm)



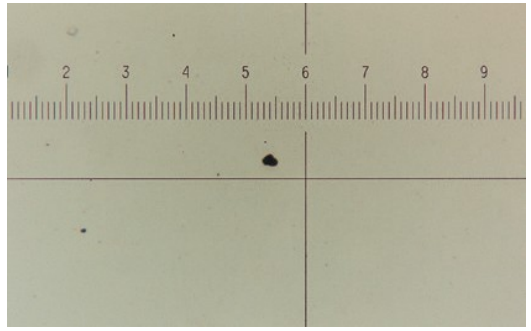
ISO 12/9/6



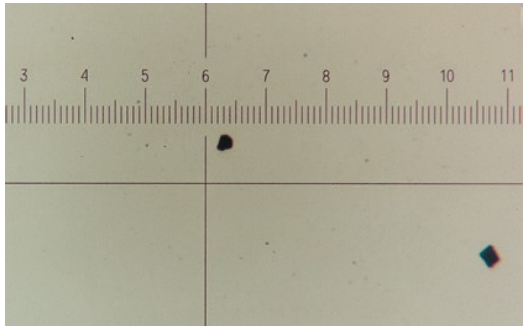
ISO 13/10/7



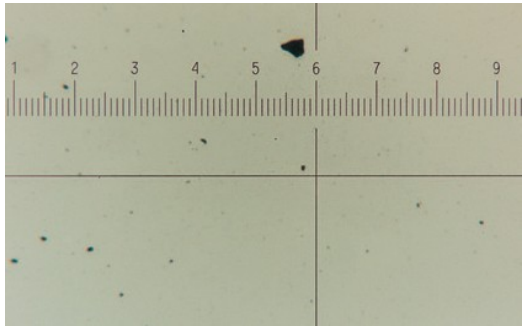
ISO 14/12/9
NAS 1638: Class 3
SAE AS 4059(D): Class 4



ISO 15/13/10
NAS 1638: Class 4
SAE AS 4059(D): Class 5



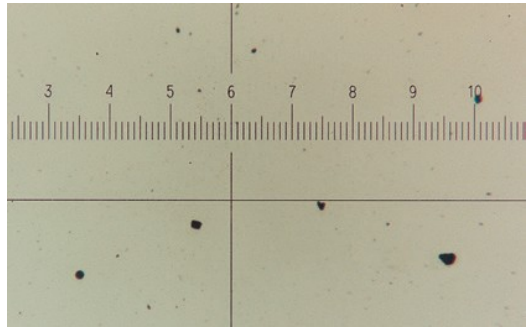
ISO 16/14/11
NAS 1638: Class 5
SAE AS 4059(D): Class 6



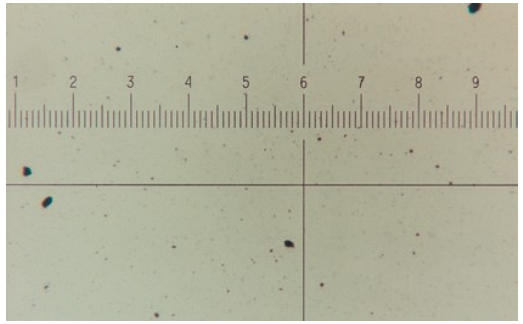
ISO 17/15/12
NAS 1638: Class 6
SAE AS 4059(D): Class 7

Comparison Photos of Fluid Contamination Classes

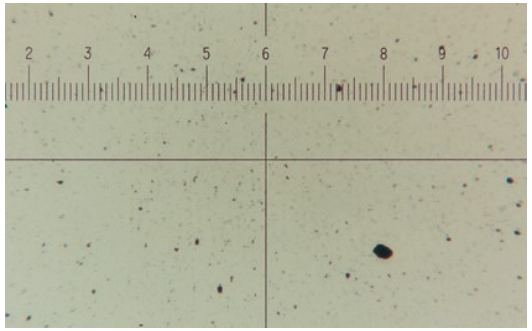
(1 Scale Mark = 40 µm)



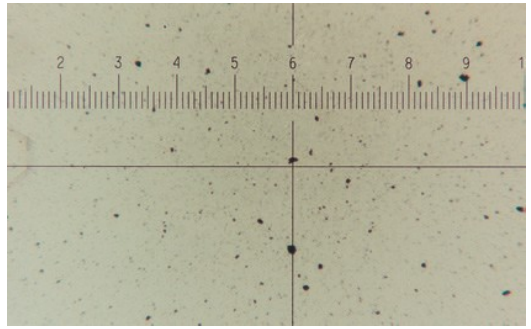
ISO 18/16/13
NAS 1638: Class 7
SAE AS 4059(D): Class 8



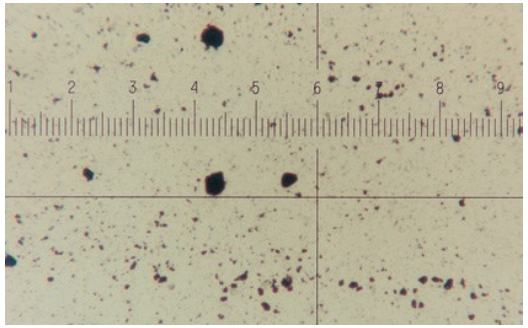
ISO 19/17/14
NAS 1638: Class 8
SAE AS 4059(D): Class 9



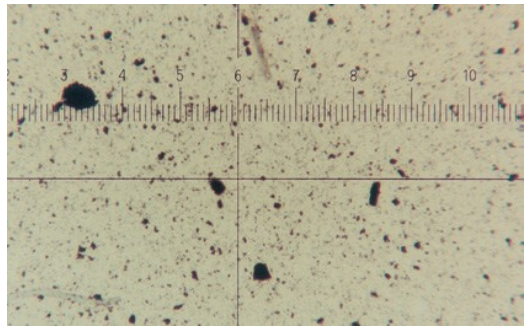
ISO 20/18/15
NAS 1638: Class 9
SAE AS 4059(D): Class 10



ISO 21/19/16
NAS 1638: Class 10
SAE AS 4059(D): Class 11



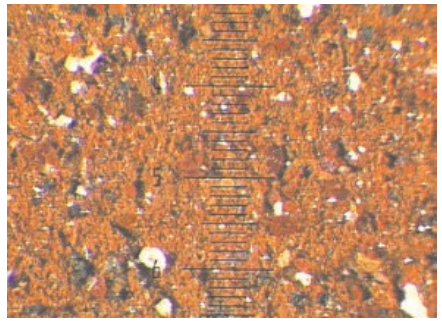
ISO 22/20/17
NAS 1638: Class 11
SAE AS 4059(D): Class 12



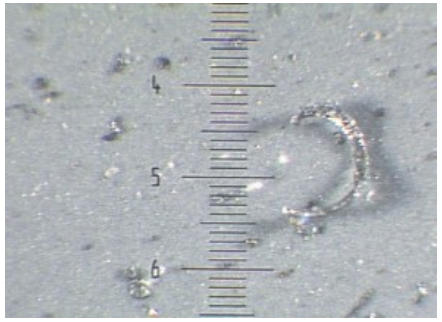
ISO 23/21/18
NAS 1638: Class 12
SAE AS 4059(D): Class 13

Types of Contamination

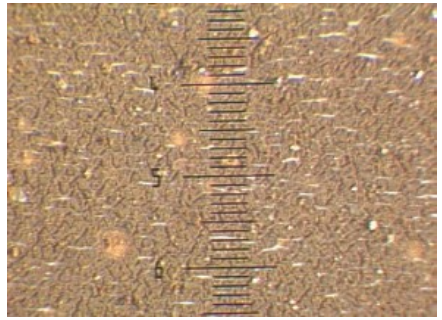
All photos are magnified 48x. Each line is a measurement of 45 µm.



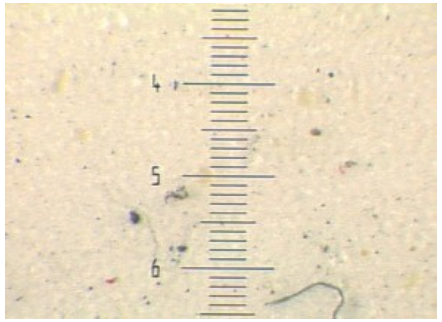
Rust and Additives
These particles result in premature aging of the oil, damage to pumps, seals, and valves, as well as other wear and tear.



Metal
These particles cause wear on pumps, seals, and other components, as well as increase the aging rate of oil.



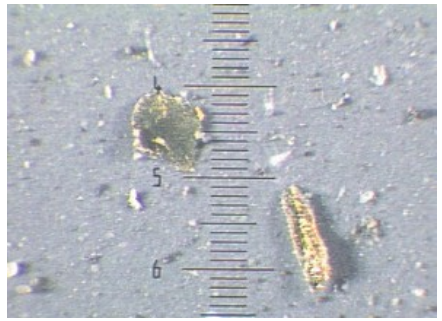
Oil Aging Products
These particles block the filter element and cause silting within the system.



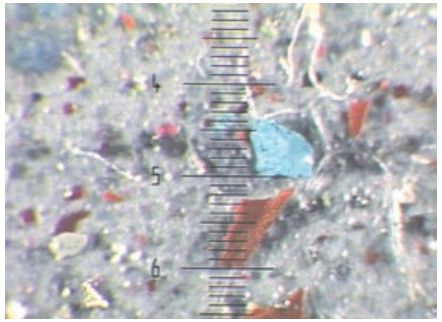
Gel-type Residue
These block the filter by silting up the element causing the filter to go into bypass or collapse.

Types of Contamination

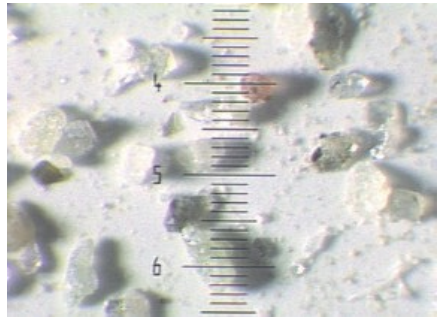
All photos are magnified 48x. Each line is a measurement of 45 µm.



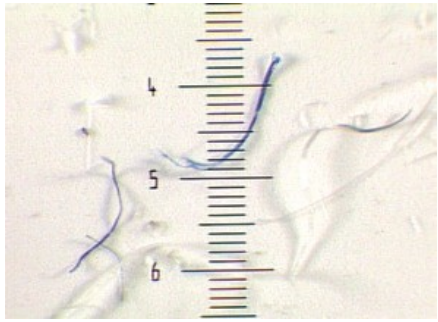
Bronze, Copper, and Brass
These particles cause wear on pumps, seals, and other components, as well as increase the aging rate of oil.



Colored/Synthetic Particles
They cause breakdowns in pumps, and valves, as well as wearing of the seals.



Silicates
These produce heavy component wear, pump, and valve breakdowns, as well as wearing of seals.



Fibers
They enter through open tanks, cleaning clothes, etc. Fibers block nozzles and cause leaking from valve seats.

For this reason, Schroeder Industries recommends multiple filtration locations in a circuit so that all components are protected.

Components, ISO Codes, and Filter Media

Recommended Cleanliness Levels (ISO Codes) for Fluid Power Components

Components	Cleanliness Level
Hydraulic Fixed Gear Pump	18/16/13
Hydraulic Fixed Piston Pump	17/15/12
Hydraulic Variable Vane Pump	17/15/12
Hydraulic Fixed Vane Pump	18/16/13
Hydraulic Proportional Valves	16/14/12
Hydraulic Servo Valves	15/13/11

Schroeder Element Media Recommendations

Desired Cleanliness Levels (ISO Code)	Schroeder Media
20/18/15-19/17/14	Z25
19/17/14-18/16/13	Z10
18/16/13-15/13/10	Z5
15/13/10-14/12/9	Z3
14/12/9-13/11/8	Z1

*Based on Ingression Rate

Recommended Schroeder Media to Achieve Desired Cleanliness Level*

Desired Cleanliness Levels (ISO Code)	Ingression Rate	Schroeder Media
20/18/15	High	Z25
19/17/14	Low	Z25
19/17/14	High	Z10
18/16/13	Low	Z10
18/16/13	High	Z5
15/13/10	Low	Z5
15/13/10	High	Z3
14/12/9	Low	Z3
14/12/9	High	Z1
13/11/8	Low	Z1

Fluid Analysis Evaluation Methods for Particulate Contamination

	Manual Methods		Automated Methods	
	Gravimetric Method (mg/m2)	Counting of particles on the analysis membrane (no. of particles >x µ/m2)	Counting of particles on the analysis membrane (no. of particles >x µ/m2)	Counting of particles on the analysis membrane (no. of particles >x µ/m2)
HOW PERFORMED	The particle-laden fluid is filtered through a prepared analysis membrane			The particles on the particle-laden fluid are counted using an automatic particle counter
	The analysis membrane is weighed before and after analysis and the Gravimetry computed on the basis of the difference between the measured values	The number of particles in the individual size ranges are estimated or counted <100 µm >100 µm	The analysis membrane is placed under a microscope and evaluated using a software tool. The software records the light/ dark contrasts on the membrane and interprets them as particles.	
APPLICATIONS	Samples exhibiting contamination > 10 mg	Samples featuring high content of coarse contamination are often combined with gravimetric evaluation	Samples featuring a low contamination content < 5 mg	Preferred for very clean components. When high dirt content is involved, the sample has to be diluted in order to perform counting.

STANDARD	ISO 4405 ISO 4407			ISO 11500
ADVANTAGES	Able to analyze material type, with a quick overview of large particles. Air and other liquids pose no problem unless a deposit forms on membrane. Can be used for large particle quantities.			Analysis performed quickly and integrated online method. Can detect small particles with selectable measurement range (2-400 µm). Very accurate.
DISADVANTAGES	Can take a long time. (1 hr minimum). Lab Method.	Can take a long time. No. of particles <100 µm is estimated. Lab Method.	Can take a long time. Light particles are not interrupted. The diameter of an area equivalent circle is measured.	The sample must be prepared (possible dilution). This is a statistical method generating acceptable accuracy.
APPLICATION	Lab Method. Used as a control for indirect measurement techniques (e.g. off-line process control in test stations).		Lab Method.	Online process control in manufacturing assembly. Can also be used in labs.

Products

We will now dive in deeper to some of the products and solutions we offer here at Schroeder Industries.

All Schroeder products are tested and held to the standards on the right:

ISO 2941	Element Collapse (Burst)
ISO 2942	Fabrication Integrity
ISO 2943	Material Compatibility
ISO 3723	End Load
ISO 3724	Element Flow Fatigue
ISO 3968	Pressure Drop / Flow
ISO 4402: 1991	Calibration of automatic particle counters
ISO 4405: 1991	Determining particulate contamination of fluid by Gravimetric Method
ISO 4406: 1987	Methods of coding level of fluid contamination by solid particles
ISO 4406: 1999	Code for defining level of contamination of solid particles
ISO 4407: 1991	Determining fluid contamination by counting method using a microscope
ISO 11171: 1999	Calibration of liquid automatic particle counters
ISO 16889	Multi Pass Test
NAS 1638	Cleanliness requirements of parts used in hydraulic systems
NFPA/T-2.6.1	Burst Pressure Test
NFPA/T-2.6.1	Fatigue Testing
NFPA/T-3.10.17	Pressure / Life Rating of a Spin-On Filter

QuickDelivery

As a note, all products listed in this presentation (unless otherwise noted) are part of our **QuickDelivery program.** This program enables us to always keep stock of the included parts, and make available to ship within 5 business days from our Leetsdale, PA location.

HYDRAULIC & LUBE FILTRATION

Our filter housings are continuously tested using the latest ISO and NFPA test procedures in our Fluid Care Center (FCC). Extensive testing is conducted to verify rated fatigue and burst pressures and to ensure compatibility with various mineral-based fluids.

HYDRAULIC & LUBE FILTRATION

Product offerings include:

- ◆High Pressure Filters (1,500-6,500 psi)
- ◆Medium Pressure Filters (500-1,500 psi)
- ◆Stainless Steel (up to 1,500 psi)
- ◆Low Pressure Filters (up to 500 psi)
- ◆Suction Filters
- ◆Manifold Cartridge Kits & Filters
- ◆Custom Solutions

How to Size a Filter

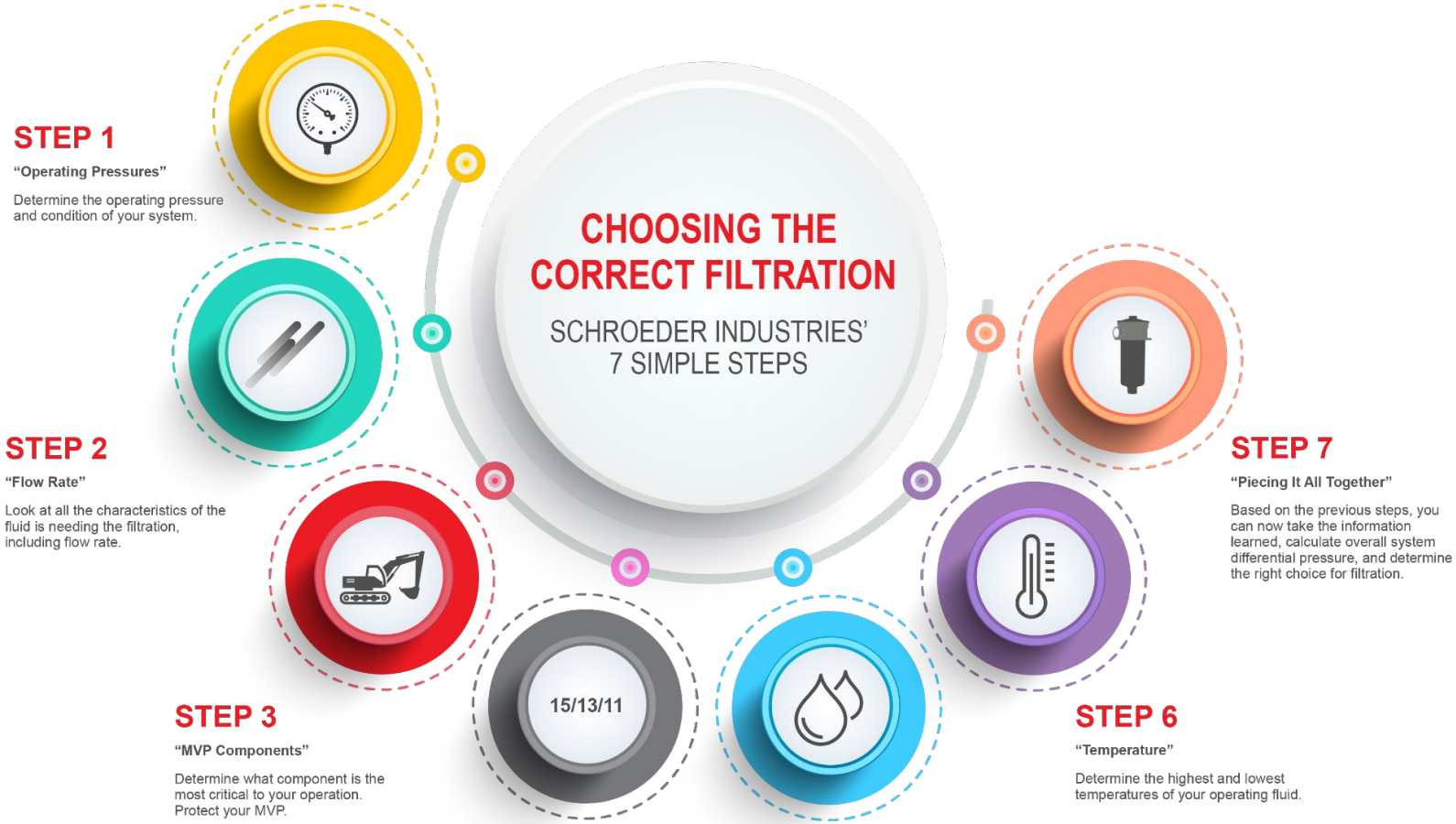
In the new era, systems are getting smaller and more compact, causing flow rates in hydraulic reservoirs to decrease, as well as a tighter space for overall reservoir components.

Without a properly sized filter and element in your machine's reservoir, operators can experience occurrences such as: foaming, cavitation, shortened fluid lifespan, poor response time from hydraulic valves, increase in replacement filter elements, and more valve and pump repairs.

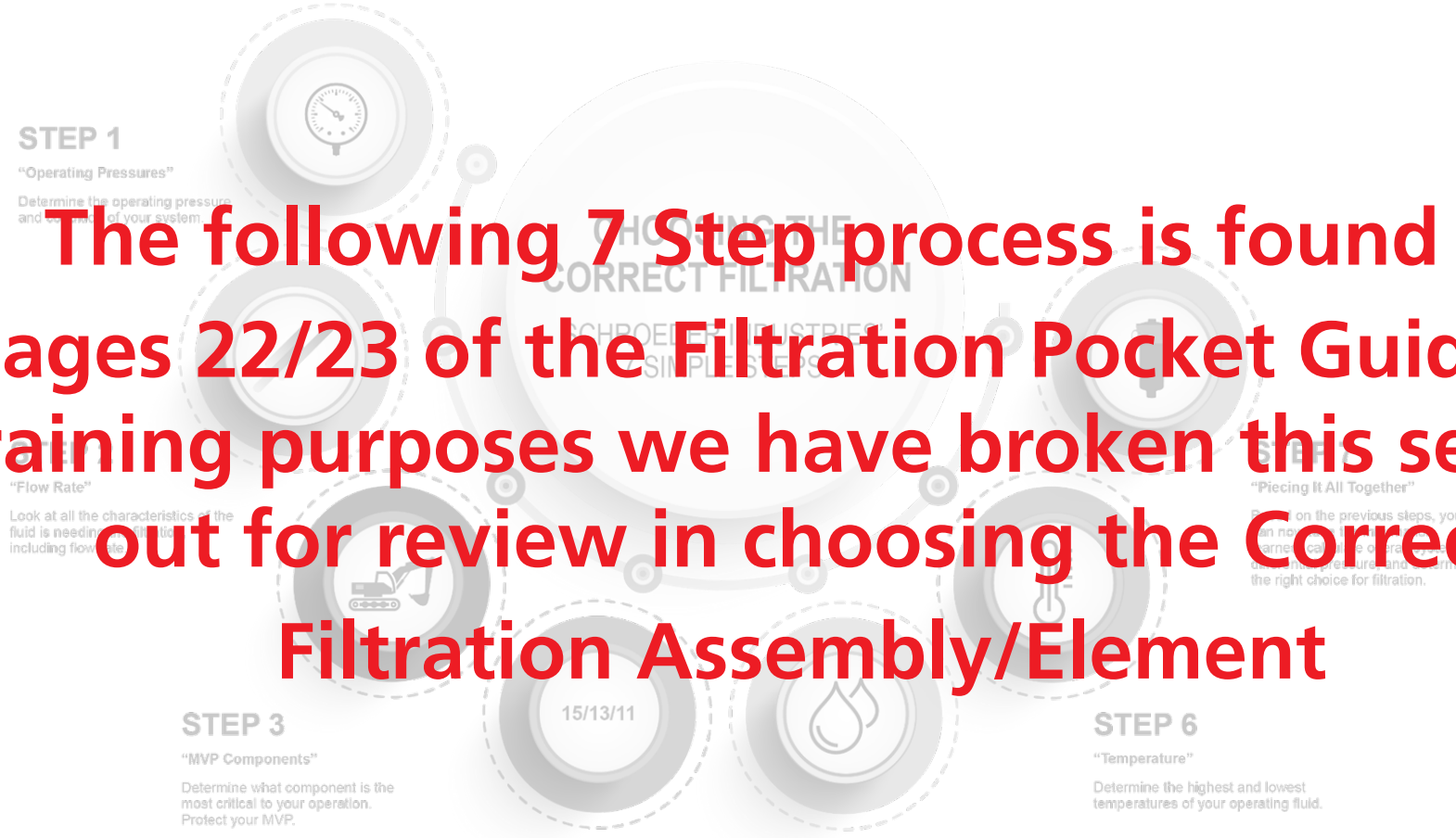
In this section, we will walk you through our

7 Steps for Choosing the Correct Filtration.

The 7 Steps for Choosing the Correct Filtration



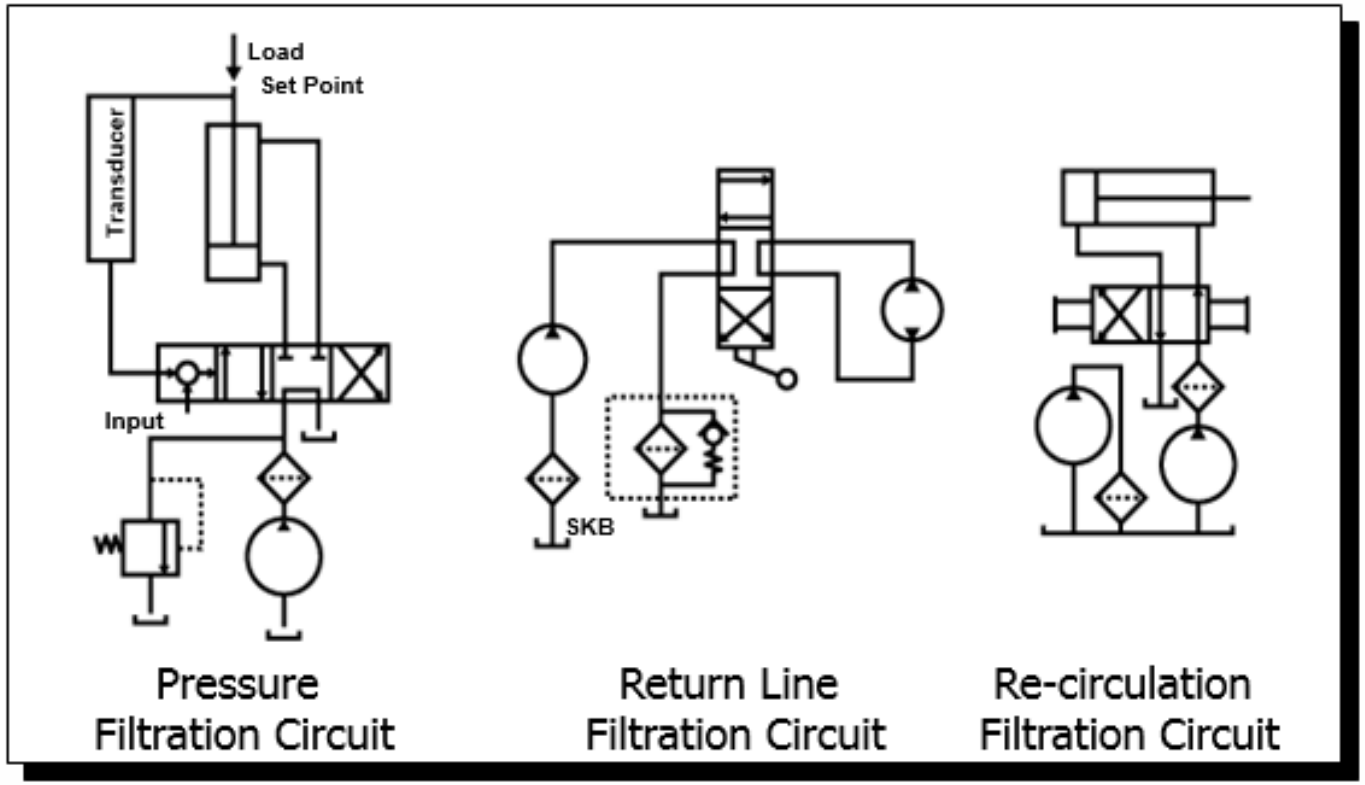
The 7 Steps for Choosing the Correct Filtration



The following 7 Step process is found on pages 22/23 of the Filtration Pocket Guide for training purposes we have broken this section out for review in choosing the Correct Filtration Assembly/Element

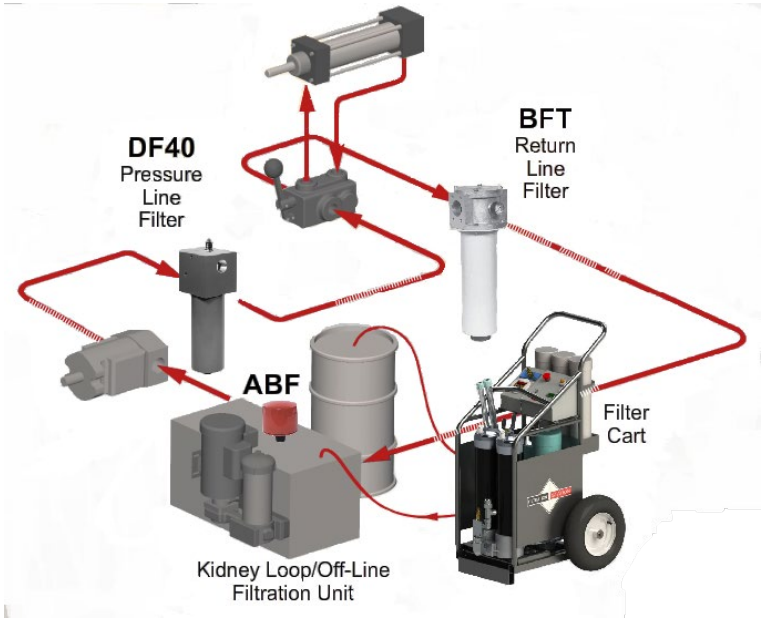
The 7 Steps – Step 1 “Operating Pressures”

- Determine the filter’s operating pressure and condition
  - System Operating Environment
  - Filter location
  - Duty Cycle



The 7 Steps – Step 2 “Flow Rate”

- Max and nominal flow rate
- Whether surge flow and back flow may be present
- Element sizing depend on max flow rate for the housing



The 7 Steps – Step 3 "MVP"

- Think of what component is breaking down/wearing out?
- Never hurts to go with the cleaner approach
- If there are several components in a system, pick the cleanest code
  - Identify the **Most Sensitive Component** in the System

Components	Cleanliness Levels (ISO Code) 4 µm(c)/6 µm(c)/14 µm(c)
Hydraulic Servo Valves	**15/13/11**
Hydraulic Proportional Valves	16/14/12
Hydraulic Variable Piston Pump	16/14/12
Hydraulic Fixed Piston Pump	17/15/12
Hydraulic Variable Vane Pump	17/15/12
Hydraulic Fixed Vane Pump	18/16/13
Hydraulic Fixed Gear Pump	18/16/13
Ball Bearings	15/13/11
Roller Bearings	16/14/12
Journal Bearings (>400 rpm)	17/15/13
Journal Bearings (<400 rpm)	18/16/14
Gearboxes	18/16/13
Hydrostatic Transmissions	16/14/11
Pumps	**16/14/12**

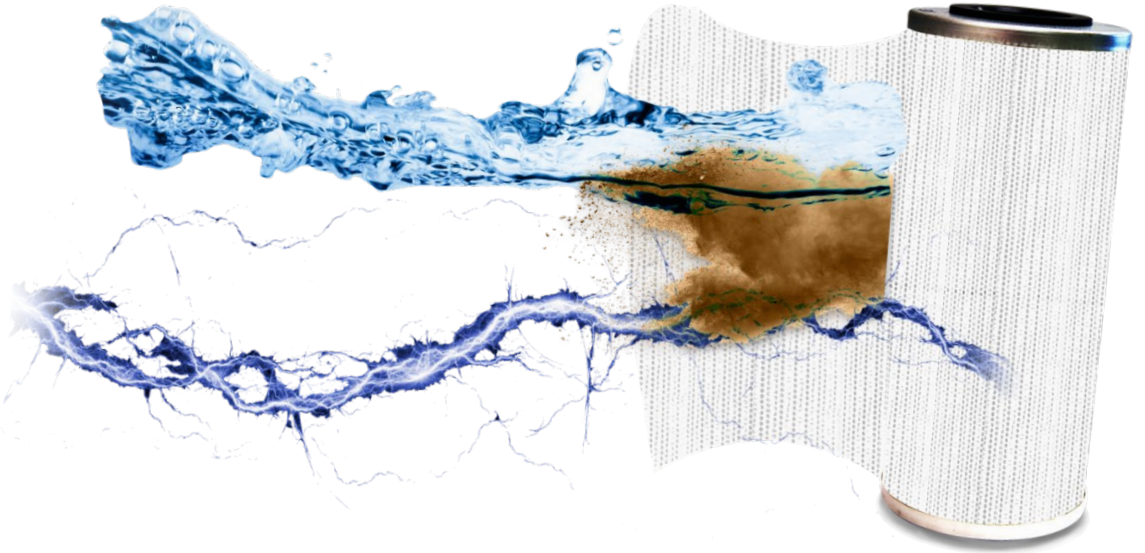
The 7 Steps – Step 4 “ISO Level”

- Select the proper micron rating to implement

Desired Cleanliness Level (ISO Code)	Media Type
20/18/15 - 19/17/14	Z25
19/17/14 - 18/16/13	Z10
18/16/13 - 15/13/10	Z5
15/13/10 - 14/12/9	Z3
14/12/9 - 13/11/8	Z1

The 7 Steps – Step 5 “Fluid Type”

- What type fluid runs in the system will determine the seal type
- Selecting media type
  - What media best accommodates what you’re protecting
  - What is your contamination issue?
- Removing contaminant, water, electrostatic charge, gas, fuel?
  - There is a filter for all!



The 7 Steps – Step 6 “Temperature”

- Temperature will determine proper housing size and, more importantly, viscosity
- Viscosity will affect differential pressure, and need close attention

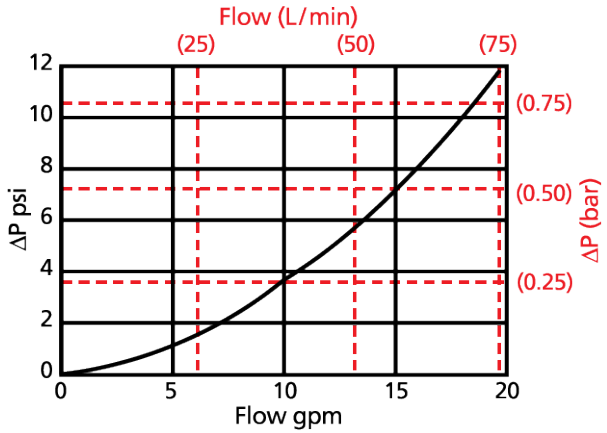
The 7 Steps – Step 7 “Piecing It All Together”

- Calculate Overall System Differential Pressure
- Ensure it is around half of the cracking pressure
- Apply the correct porting
- Add any indicator options needed

Schroeder has a filter for every application and market!

Pressure Drop Information (NF30) Example

$$\Delta P_{filter} = \Delta P_{housing} + (\Delta P_{element} * V_f)$$



Exercise:

Determine ΔP_{filter} at 15 gpm (57 L/min) for NF301NZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 15 gpm. In this case, $\Delta P_{housing}$ is 7 psi (.48 bar) according to the graph for an NF30 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 15 gpm. In this case, $\Delta P_{element}$ is 8 psi (.55 bar) according to the graph for an NZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor (V_f)** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in the H & L Catalog (L-2520).

Finally, the overall filter pressure differential, ΔP_{filter}, is calculated by adding $\Delta P_{housing}$ with the true element pressure differential, $(\Delta P_{element} * V_f)$. The $\Delta P_{element}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:

$\Delta P_{housing}$ = 7 psi [.48 bar] | $\Delta P_{element}$ = 8 psi [.55 bar]

V_f = 160 SUS (34 cSt) / 150 SUS (32 cSt) = 1.07

ΔP_{filter} = 7 psi + (8 psi * 1.07) = 15.6 psi

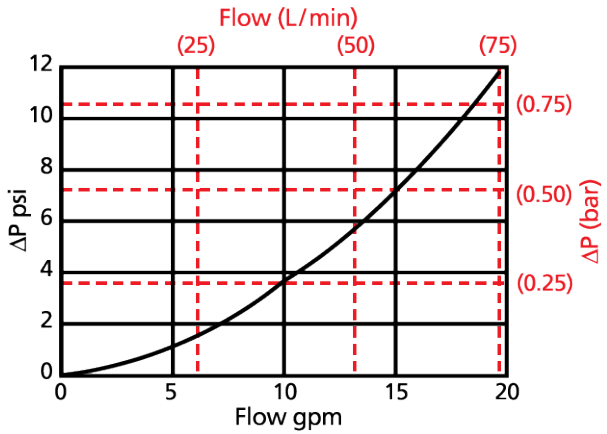
OR

ΔP_{filter} = .48 bar + (.55 bar * 1.07) = 1.07 bar

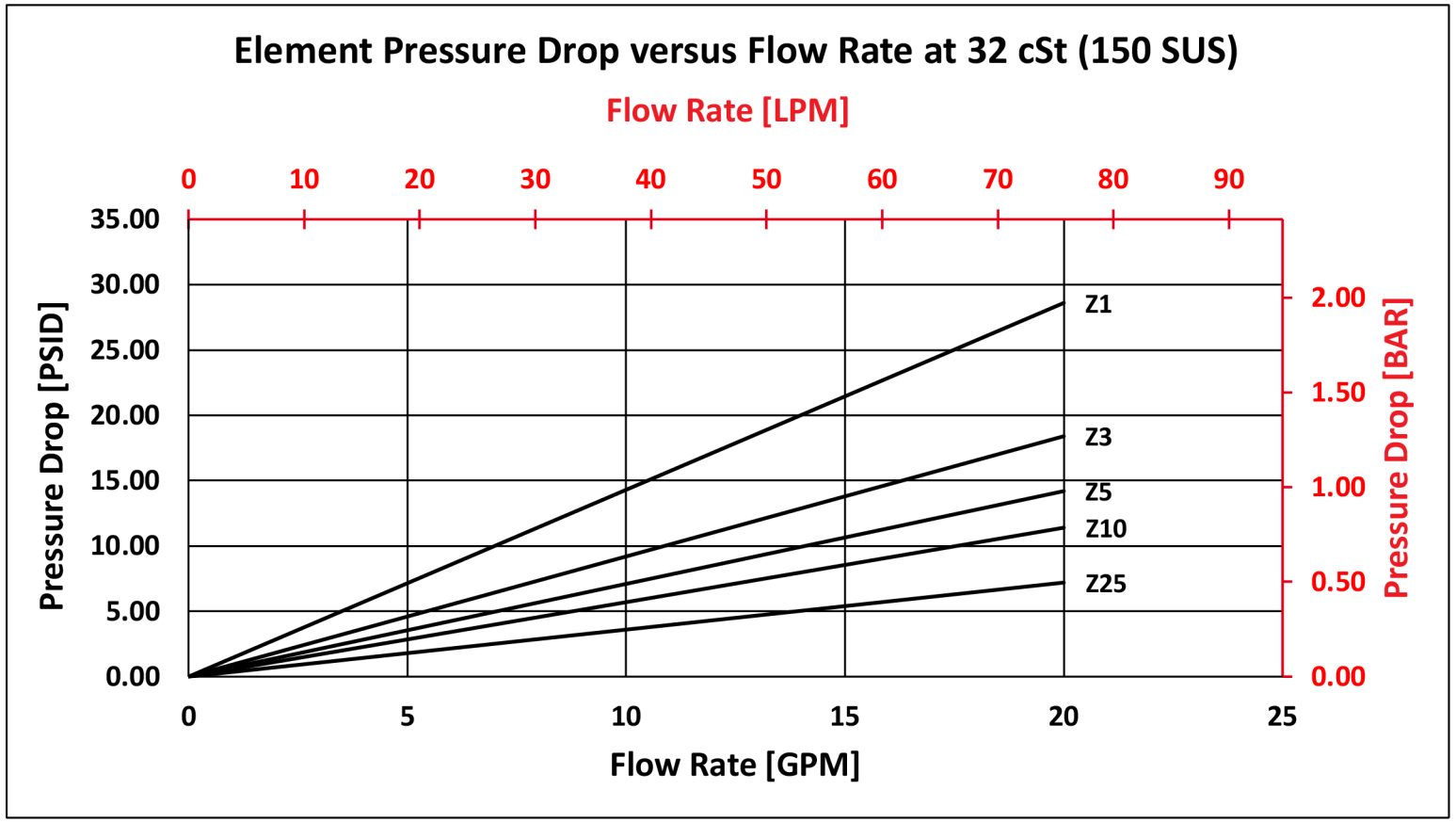
Pressure Drop Information (NF30)

ΔPhousing

NF30 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:



NZ



HYDRAULIC & LUBE FILTRATION

Model Code: NF301NZ10SD5

Flow Rating:	Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	3000 psi (210 bar)
Min. Yield Pressure:	10,000 psi (690 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	2400 psi (165 bar), per NFPA T2.6.1
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Porting Head:	Aluminum
Element Case:	Aluminum
Element Change Clearance:	4.50" (115 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-12

Model Code: DF401CCZ10SD5

Flow Rating:	Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	4000 psi (275 bar)
Min. Yield Pressure:	12,000 psi (828 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	1800 psi (125 bar), per NFPA T2.6.1-2005
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Porting Head:	Aluminum
Element Case:	Steel
Element Change Clearance:	4.0" (100 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-16

HYDRAULIC & LUBE FILTRATION

GeoSeal

Model Code: GKF301KGZ10SD5

Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	3000 psi (210 bar)
Min. Yield Pressure:	12,000 psi (830 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	2500 psi (170 bar), per NFPA T2.6.1-2005
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Porting Base & Cap:	Ductile Iron
Element Case:	Steel
Element Change Clearance:	8.50" (215 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-24

GeoSeal

Model Code: GZT8GTZZ10SY2

Flow Rating:	Up to 40 gpm (150 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	100 psi (7 bar)
Min. Yield Pressure:	300 psi (21 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	90 psi (6 bar), per NFPA T2.6.1-R1-2005
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Cap & Bowl:	Nylon
Porting Head:	Aluminum
Element Change Clearance:	10.0" (254 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-16

HYDRAULIC & LUBE FILTRATION

Model Code: LRT18LZ10S24S24NY2

Flow Rating:	Up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	100 psi (7 bar)
Min. Yield Pressure:	400 psi (28 bar)
Rated Fatigue Pressure:	90 psi (6 bar), per NFPA T2.6.1-2005
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Porting Head & Cap:	Die Cast Aluminum
Element Case:	Steel
Element Change Clearance:	17.0" (432 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-24

GeoSeal

Model Code: GRTB1KBGZ10SY2 & GRTB1KBGZ10PY2

Flow Rating:	up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	100 psi (7 bar)
Min. Yield Pressure:	400 psi (28 bar)
Rated Fatigue Pressure:	145 psi (10 bar), per NFPA T2.6.1-2005
Temperature Range:	-20°F to 200°F (-29°C to 93°C)
Cap & Bowl:	Nylon
Porting Head:	Aluminum
Element Change Clearance:	12.0" (305 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-20, 1.25" NPT

HYDRAULIC & LUBE FILTRATION

Model Code: GH6GZ10S16L & GH9GZ10S16L

Flow Rating:	Up to 35 gpm (130 L/min)
Max. Op. Pressure:	725 psi (50 bar)
Min. Yield Pressure:	2600 psi (179 bar)
Rated Fatigue Pressure:	725 psi (50 bar)
Temperature Range:	-20°F to 250°F (-29°C to 121°C)
Porting Head:	Die Cast Aluminum
Element Case:	Aluminum
Element Change Clearance:	2.0" (50 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-16

Model Code: RLT9VZ10S20D5

Flow Rating:	Up to 70 gpm (265 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	1000 psi (69 bar)
Min. Yield Pressure:	4200 psi (290 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	415 psi (29 bar), per NFPA T2.6.1-R1-2005
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Porting Head:	Aluminum
Element Case:	Aluminum
Element Change Clearance:	2.75" (70 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-20

HYDRAULIC & LUBE FILTRATION

Model Code: SRLT6RZ10S12D5

Flow Rating:	Up to 25 gpm (100 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	1400 psi (100 bar)
Min. Yield Pressure:	4000 psi (276 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	750 psi (52 bar), per NFPA T2.6.1-R1-2005
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Porting Head:	Aluminum
Element Case:	Aluminum
Element Change Clearance:	2.75" (70 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-12

Model Code: PAF16PZ10PY2

Flow Rating:	Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	100 psi (7 bar)
Min. Yield Pressure:	150 psi (10 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	Contact factory
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Porting Head & Cap:	Die Cast Aluminum
Element Case:	Steel
Element Change Clearance:	2.50" (65 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	3/4" NPTF

HYDRAULIC & LUBE FILTRATION

Model Code: GRT1KBGZ10S20NNY2 & GRT1KBGZ10S24S24NY2

Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	100 psi (7 bar)
Min. Yield Pressure:	400 psi (28 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	90 psi (6 bar), per NFPA T2.6.1-R1-2005
Temperature Range:	-20°F to 225°F (-29°C to 107°C)
Porting Head & Cap:	Die Cast Aluminum
Element Case:	Steel
Element Change Clearance:	8.0" (205 mm)
ΔP:	See H & L Catalog (L-2520)
Porting:	SAE-20, SAE-24

Model Code: GKF31KGZ10SD5

Flow Rating :	100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Op. Pressure:	300 psi (20 bar)
Min. Yield Pressure :	1000 psi (70 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	290 psi (20 bar), per NFPA T2.6.1-2005
Temperature Range :	-20°F to 225°F (-29°C to 107°C)
Porting Head:	Die Cast Aluminum
Element Case:	Steel
Element Change Clearance:	1.50" (40 mm)
ΔP:	See H & L Catalog (L-2520)
Porting :	SAE-24

FUEL FILTRATION

Our full range of fuel filtration products have revolutionized fuel cleanliness, and serve a diverse range of markets and industries. The designs of our products are a result of many hours of field testing, laboratory research, over 73 years of experience, and partnerships with fuel industry and filtration experts.

FUEL FILTRATION

Product offerings include:

- ◆Fuel Condition Monitoring Equipment
- ◆On-Board, Mobile Diesel Filtration
- ◆Diesel Particulate & Coalescing Solutions
- ◆CNG Filtration Technology
- ◆Biodiesel Treatment & Polishing
- ◆ASME Filtration Vessels
- ◆Custom Solutions

The New World of Advanced Diesel Filtration

Tier IV emissions requirements & industry guidelines, such as the ones outlined by the World Wide Fuel Charter, are raising the bar for fuel cleanliness and water removal. High Pressure Common Rail systems, developed to maximize efficiency, require meticulously clean fuel to be compliant with the precision tolerances of a modern engine design.

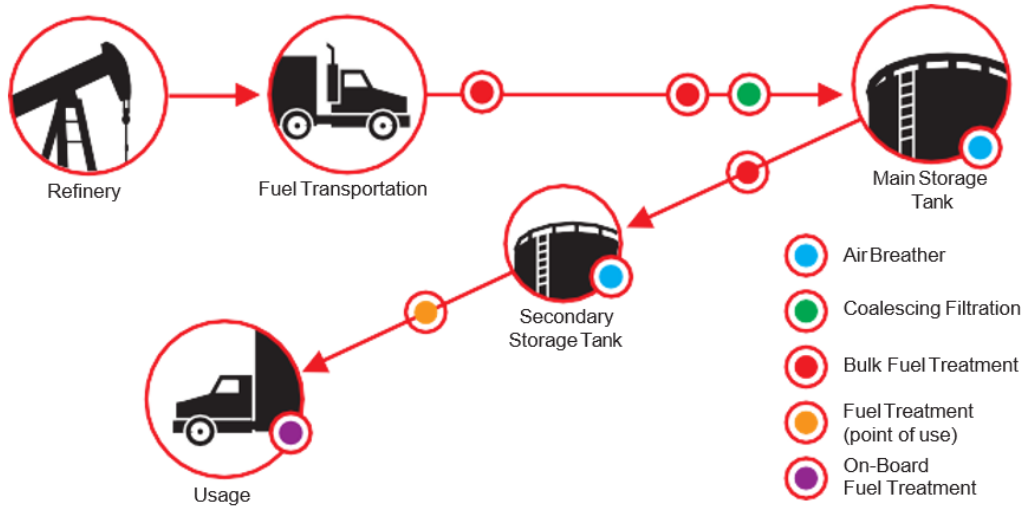
The New World of Advanced Diesel Filtration

Unfortunately, the lubricity enhancing additives and biodiesel blends common in today's Ultra Low Sulfur Diesel (ULSD15) sharply reduce the overall performance of previously acceptable diesel fuel/water separators by up to 40%.

In short, fuel/water separators from the past that were 99% efficient in removing water are now roughly 68% efficient.

The New World of Advanced Diesel Filtration

For this reason, Schroeder Industries has continuously improved our patented, ultra-high efficiency, coalescing media. When coupled with our high efficiency particulate media, we can ensure that the fuel being used by diesel-powered equipment is both clean & dry, meeting or exceeding existing published engine manufacturers' specifications.



The Schroeder Industries product range includes the filters, filtration systems and condition monitoring equipment necessary to do it all. For every step of the process - from production to consumption - we provide specific products for optimum diesel fuel conditioning, filtering, and monitoring.

FUEL FILTRATION

GeoSeal

Model Code: GHPF11GGZ3VS24D5R

Flow Rating:	Up to 100 gpm (380 L/min)
Max. Op. Pressure:	150 psi (10.3 bar)
Min. Yield Pressure:	2600 psi (179 bar)
Operating Temp.:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar)
Porting Head:	Cast Aluminum, Anodized
Element Case:	Aluminum, Anodized
Element Change Clearance:	2.0" (51 mm)
Porting:	SAE-24

GeoSeal

Model Code: GHCFCG5VS24D5R

Flow Rating:	Up to 25 gpm (95 L/min)
Max. Op. Pressure:	150 psi (10.3 bar)
Min. Yield Pressure:	1189 psi (82 bar)
Operating Temp.:	32°F to 225°F (0°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar)
Porting Head:	Cast Aluminum, Anodized
Element Case:	Aluminum, Anodized
Sump:	Cast Aluminum, Anodized
Element Change Clearance:	4.50" (114 mm)
Porting:	SAE-24

FUEL FILTRATION

GeoSeal

Model Code: BDFP11GGZ3CG5VD514

Flow Rating:	Up to 14 gpm (53 L/min)
Max. Op. Pressure:	See GHPF & GHCF Specs (pg. 35)
Min. Yield Pressure:	See GHPF & GHCF Specs (pg. 35)
Operating Temp.:	32°F to 104°F (0°C to 40°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar)
Porting Head:	See GHPF & GHCF Specs (pg. 35)
Element Case:	See GHPF & GHCF Specs (pg. 35)
Sump:	See GHCF Specs (pg. 35)
Element Change Clearance:	4.50" (114 mm)
Porting:	-16 SAE (J1926)

GeoSeal

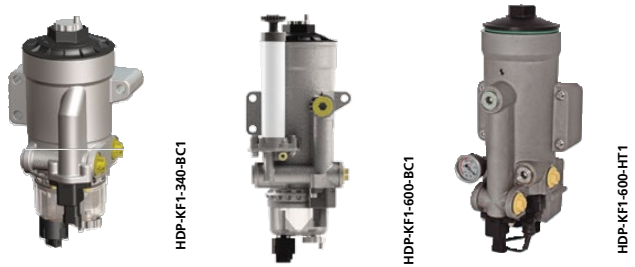
Model Code: BDFC11GGZ3CG5VD525

Flow Rating:	Up to 25 gpm (95 L/min) for ULSD15 & biodiesel blends
Operating Temp.:	32°F to 104°F (0°C to 40°C)
Bypass Setting:	40 psi (2.8 bar)
Porting Head:	See GHPF & GHCF Specs (pg. 35)
Element Case:	See GHPF & GHCF Specs (pg. 35)
Sump:	See GHCF Specs (pg. 35)
Element Change Clearance:	4.50" (114 mm) (Elements included)

FUEL FILTRATION

Model Code: BDC39QPMLZ3VAVM

Flow Rating:	Up to 25 gpm (95 L/min) for ULSD15 & biodiesel blends
Operating Temp.:	32°F to 104°F (0°C to 40°C) Standard
Bypass Setting:	Particulate: 20 psi (1.37 bar) Coalescing: 30 psi (2 bar)
Porting Base:	Anodized Aluminum
Cap:	Plated Steel
Bag Housing:	304 Stainless Steel
Filter Housings:	Particulate: Epoxy Paint w/ High-phos Electroless Nickel Plating (Standard) Coalescing: Epoxy Paint w/ High-phos Electroless Nickel Plating (Standard)
Element Change Clearance:	33.8" (858 mm)



Model Code: HDP-KF1-340-BC1, 600-BC1, & 600-HT1

Flow Rating:	Up to 160 gph (600 lph)
Max. Op. Pressure:	<14.5 psia (<1 bar) suction side application
Operating Temp.:	BC1: -40°F to 194°F (-40°C to 90°C) HT1: -4°F to 194°F (-20°C to 90°C)
Nominal Voltage:	24V DC
Water Separation Eff.:	>95% to ISO CD 16332
Porting Thread:	340-BC1: M22 x 1.5 600-BC1: M27 x 2.0 600-HT1: G3/4" (BSPP)

Diesel Fuel Quality Analysis Kits

Fuel analysis can identify potential causes for fuel filter plugging, smoking, loss of power, poor injector performance, malfunctioning throttle position sensors and sticking valves. Testing also confirms a diesel fuel's sulfur content, biodiesel content and compliance with manufacturer specifications and standards for cleanliness that could affect equipment warranty requirements.

Schroeder Industries offers Diesel Fuel Quality Analysis Kits. All packages include:

- A pre-paid testing form
- The required number of fuel containers for desired test

Schroeder INDUSTRIES
Advanced Fluid Conditioning Solutions®
Proudly Manufactured In The United States

FILTER SYSTEMS & DIAGNOSTIC TOOLS

Our fluid conditioning and diagnostic monitoring tools are known for their diversity, capability and precision. As applications become more sophisticated and widespread, the need for highly efficient fluid conditioning, as well as condition monitoring is increasing.

Schroeder INDUSTRIES
Advanced Fluid Conditioning Solutions®
Proudly Manufactured In The United States

FILTER SYSTEMS & DIAGNOSTIC TOOLS

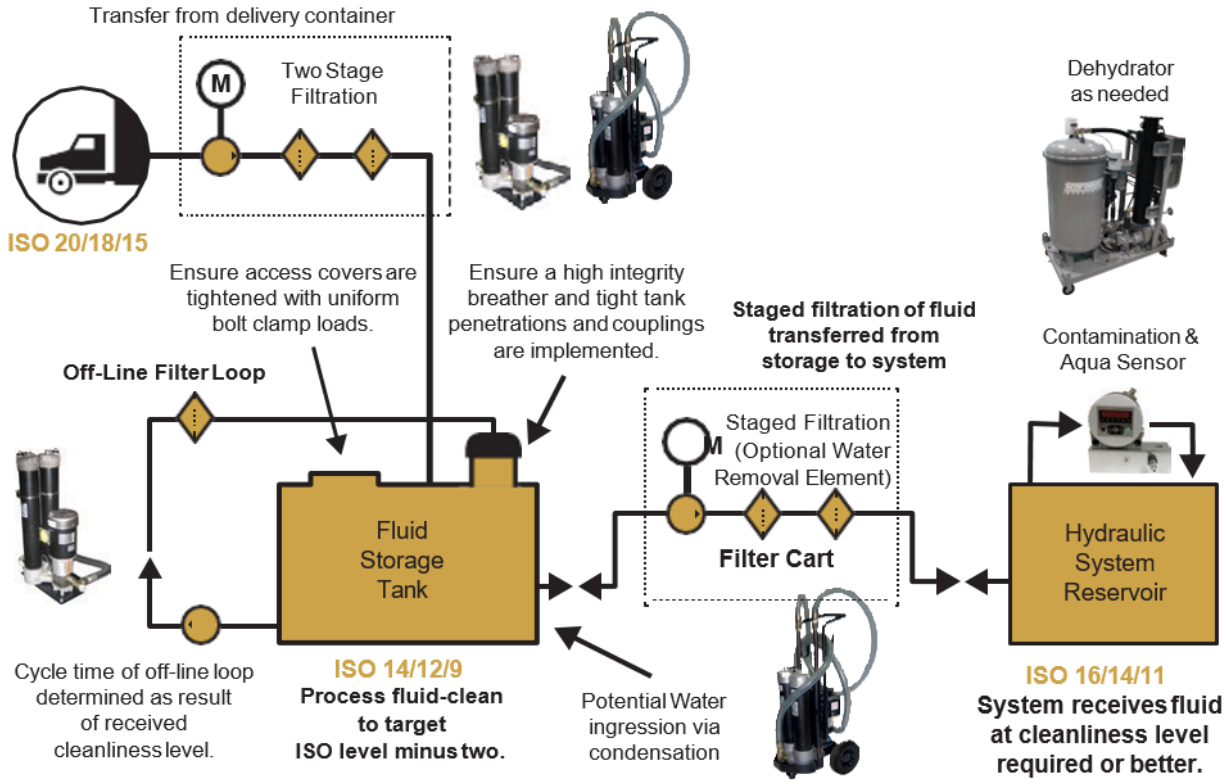
Product offerings include:

- De-Watering, De-Gassing & Dehydration Units
- Asset Management Filtration Carts
- Mobile & Stationary Filtration Systems
- EasyTest & Fluid Analysis
- HTB | Hydraulic Test Benches
- HY-TRAX® Series

Fluid Treatment

New fluid, delivered by your supplier, is generally not clean enough for immediate use without prior filtration and treatment. In general, modern high pressure hydraulic systems demand fluid cleanliness of ISO 18/16/13, or better. New fluid delivered in barrels could be as dirty as ISO 23/21/18.

Fluid Treatment

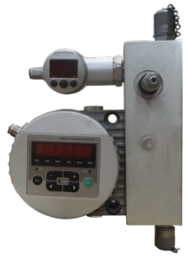


Handling of new fluid in a plant involves several points of contact between receiving and hydraulic reservoir (point of use). At each step in the process, the fluid should be filtered either by permanently installed filters, or by filter carts using high efficiency filter elements.

FILTER SYSTEMS & DIAGNOSTIC TOOLS

Model Code: CS1220-A-0-0-0-1 /-K & CS1220-A-0-0-0-1 /-KAS

Measuring Range:	Display ISO Ranges between ISO 9/8/7 and 25/24/23 Calibration within the range ISO 13/11/10 to 23/21/18
Self-Diagnosis:	Continuously with error indication via status LED
Inlet/Outlet:	5075 psi (350 bar) max.
Connections:	Inlet: ISO 228 G 1⁄4Threaded Outlet: ISO 228 G 1⁄4Threaded
Sensor Flow Rate:	30 to 500 mL/min
Permissible Viscosity Range:	32 to 4635 SUS (1 to 1,000 cSt)
Fluid Temp. Range:	32°F to 185°F (0°C to 85°C)
Power Supply Voltage:	9 to 36 VDC residual ripple <10%
Power Consumption:	3 Watt max
Electrical Outputs:	4 to 20 mA Analog, RS485
Electrical Specifications:	4 to 20 mA Analog output (max burden 330Ω) Limit switching output (Power MOSFET): max. current 1.5A
Ambient Temp. Range:	-22°F to 176°F (-30°C to 80°C)
Storage Temp. Range:	-40°F to 176°F (-40°C to 80°C)
Relative Humidity:	95%, non-condensing max
Seal Material:	Mineral Oil: Viton® Phosphate Ester: EPR
Electrical Safety Class:	III (low voltage protection)
IP Class:	IP67



Model Code: FCU-1310-4-U-AS-1

Self- Diagnosis:	Continuously with error indication via status LED and display
Measured Value:	ISO Code/ SAE Class/ NAS Class/ Saturation level/ Temperature
Measuring Range:	Display ISO Ranges between ISO 9/8/7 and 25/24/23 Calibrate within the range ISO 13/11/10 to 23/21/18 Saturation level 0 to 100% Temperature -13°F to 212°F (-25°C to 100°C)
Accuracy:	± ½ ISO class in the calibrated range/ ± 2% Full scale max.
Seal Material:	FPM Viton® seals
Ambient Temp. Range:	32°F to 113°F (0°C to 45°C)
Storage Temp. Range:	-40°F to 176°F (-40°C to 80°C)
IP Class:	IP50 in operation IP67 closed
Operating Pressure:	In: -7.25 to 650 psi (-0.5 to 45 bar) Out: 0 to 7.5 psi (0 to 0.5 bar)
Operating Pressure w/ Adapter for Pressure Lines	In: 217 to 5000 psi (15 to 345 bar) Out: 0 to 7.5 psi (0 to 0.5 bar)
Pressure Max.	5000 psi (345 bar) (using included high pressure adapter)
Maximum Suction Ht.	39" (1 m)
Permissible Viscosity Range:	46 to 1622 SUS (10 to 350 cSt)
Fluid Temperature Range:	32°F to 158°F (0°C to 70°C)
Power Supply Voltage:	24 VDC ± 20%, residual ripple < 10%
Max. Power / Current Consumption:	100 Watt / 4 A
Interface:	Plug connection, 5 pole, male, M12x1, and USB

FILTER SYSTEMS & DIAGNOSTIC TOOLS

Model Code: MFD-BC-1-09-H10-H05

Flow Rating:	10 gpm (37.9 L/min) max
Maximum Viscosity:	1000 SUS (216 cSt)
Fluid Temperature Range:	25°F to 150°F (-4°C to 65°C)
Bypass Setting:	Cracking 25 psi (1.7 bar)
Element Technology:	Staged 10 and 5 µm elements installed

Model Code: MFD-1-27-GXX-B-14

Flow Rating:	14 gpm (53.0 L/min) max
Maximum Viscosity:	1000 SUS (216 cSt)*
Fluid Temperature Range:	25°F to 150°F (-4°C to 65°C)
Bypass Setting:	Cracking 30 psi (2 bar)
Element Technology:	Element not installed. Order desired micron elements as a separate line item.

**Higher viscosity cart options are also available in QuickDelivery*

FILTER SYSTEMS & DIAGNOSTIC TOOLS

Model Code: FS-A-127-G10-G05-V-9-W

Flow Rating:	9 gpm (34 L/min)
Maximum Viscosity:	1000 SUS (216 cSt)
Fluid Temperature Range:	-20°F to 150°F (-29°C to 65°C)
Bypass Setting:	Cracking: 30 psi (2 bar) x 2

Model Code: HFS-BC-209-H10-H05-B-E

Flow Rating:	4 gpm (15.14 L/min) max
Maximum Viscosity:	1600 SUS (350 cSt)
Fluid Temperature Range:	25°F to 150°F (-4°C to 65°C)
Element Case:	Aluminum

FILTER SYSTEMS & DIAGNOSTIC TOOLS

Model Code: KLD-127-GXX-B-14

Flow Rating:	14 gpm (53.0 L/min) max
Viscosity Range:	40-1,000 SUS (4-216 cSt)
Fluid Temperature Range:	25°F to 150°F (-4°C to 65°C)
Bypass Setting:	Cracking 30 psi (2 bar)

Model Code: OLF-30/30-G-L60-DM02-E/-12

Flow Rating:	OLF-30/30: 10 gpm (37.85 L/min)
Viscosity Range:	75-5000 SUS (gear pump)
Fluid Temperature Range:	15°F to 175°F (-9°C to 80°C)
Element Rating:	2 Micron
Contamination Retention Capacity:	1.1 lbs per element (2.2 lbs total)

FILTER SYSTEMS & DIAGNOSTIC TOOLS

Model Code: TDS-A-V-M-A-B-05-1

Flow Rate:	1.5 gpm (90 gallons/hour)
Fluid Viscosity:	70-1000 SUS (13-215 cSt)
Power Supply:	110 VAC, 60Hz, 12 amp
Attainable Water Content:	< 50 ppm
Fluid Service Temperature:	40°F to 140°F (4°C to 60°C)
Inlet Pressure:	Atmospheric
Outlet Pressure:	Up to 40 psi (2.76 bar)

Model Code: TDS-E-V-M-A-B-G05-H

Flow Rate:	15 gpm (900 gallons/hour)
Fluid Viscosity:	70-2000 SUS (13-539 cSt)
Power Supply:	460 V/3/60 Hz, 28 amps w/ heater
Attainable Water Content:	< 50 ppm
Fluid Service Temperature:	50°F to 175°F (10°C to 79°C)
Inlet Pressure:	Atmospheric
Outlet Pressure:	Up to 125 psi (8.62 bar)

FILTER SYSTEMS & DIAGNOSTIC TOOLS

Model Code: NAV30-M-2-A-H-10

Flow Rate:	30 gpm (1800 gallons/hour)
Fluid Viscosity:	150-3280 SUS (32-700 cSt)
Power Supply:	460VAC/50 Hz/3 Ph, 40 amps w/ heater
Attainable Water Content:	< 10 ppm
Fluid Service Temperature:	50°F to 175°F (10°C to 79°C)
Inlet Pressure:	22 in. Hg – 10 psi
Outlet Pressure:	Up to 110 psi (7.6 bar)

COMING SOON TO QuickDelivery!

PROCESS FILTRATION

Our process/water filtration products remove solid contamination from process fluids, and protect the integrity of high grade components that depend on low viscosity water or water-based fluids and emulsions. Improvements in operational efficiency, reduced downtime, and lower maintenance costs are achieved.

Schroeder INDUSTRIES
Advanced Fluid Conditioning Solutions®
Proudly Manufactured In The United States

PROCESS FILTRATION

Product offerings include:

- Automatic Backflushing Filters
- Bag Housings & Elements
- RMF | Rolling Media Filter
- Mining Specific Products
- Automatic Twist Flow
- Cartridge Housings & Elements
- Oil & Gas Filtration Products
- Custom Solutions

Eight Main Considerations in Choosing Process Filters

1. Fluid Compatibility

How the materials of construction and seals for both the housing and element withstand the process medium

a. Housing Construction – Carbon steel, stainless steel, polypropylene, brass and more

b. Seals – Buna, EPDM, Viton, etc.

c. Filter Elements – Please see *Element Selection Guide* and *Technical Data Section* for more detailed information

2. Pressure Rating

The maximum sustainable working pressure of the system

3. Pressure Drop (loss)

Maximum system pressure loss across the filter

4. Piping Connection Size

The process piping and specific requirements of the system determine these criteria

5. Filter Element Options

The desired pore size of the element and the requirements of the system (Please see Filter Element Selection)

6. Overall Efficiency

Based on filter element selection

7. Accessories

Gauges, system monitoring, control panels

8. Economic Considerations

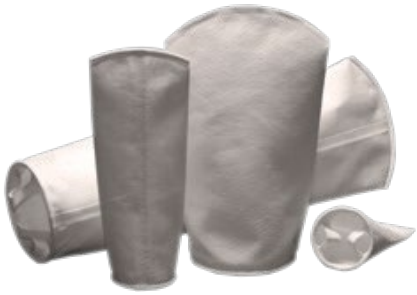
The model numbering selection chart on each product page will provide an easy method to fully define the necessary product for your specific application.

PROCESS FILTRATION

Model Code: Varies per application; Contact Factory*

Flow Rating:	Max. flow for single housings from BH1-1 at 90 gpm (333 L/min) to BH10-2 at 1981 gpm (7500 L/min); Duplex DBH2-2: 400 gpm (1514 L/min)
Working Pressure:	100 or 150 psi (7 or 10 bar)
Max. Working Temp:	167°F (75°C)

**Product not currently available in QuickDelivery*



Model Code: Varies per application; Contact Factory*

Material:	Polyester felt, Polypropylene felt, Nomex Felt, Polypropylene Monofilament Mesh, Nylon Monofilament, Polyester Multifilament Mesh, Nylon Multifilament Mesh, Oil Absorbing, High-efficiency and Absolute Rated
Filtration Range:	1 - 1000 Micron
Sizes:	1 thru 4, 7, 8, 9, 11, 12, C1, C2 **custom sizes upon request*

**Product not currently available in QuickDelivery*

PROCESS FILTRATION

Model Code: Varies per application; Contact Factory*

Flow Rating:	CH1210: 5 gpm (18 L/min); CH3220: 26 gpm (100 L/min); Max. flow rates up to 415 gpm
Working Pressure:	100 & 150 psi (7 & 10 bar)
Max. Working Temp:	140°F (60°C) Polypropylene; 194°F (90°C) Stainless Steel

**Product not currently available in QuickDelivery*

Model Code: Varies per application; Contact Factory*

Media:	Polypropylene
Max. Working Temp:	160°F (70°C)
Max. Differential Pressure:	75 psi at 68°F (5.1 bar at 20°C) 35 psi at 130°F (2.4 bar at 54°C)
Filtration Range:	1, 3, 5, 25 - 100 and 200 Micron
Gasket/O-Ring:	EPDM, Viton®

**Product not currently available in QuickDelivery*

ELEMENT TECHNOLOGY

Our exceptional elements are tested to ensure fabrication integrity in the manufacturing process. They are also tested for efficiency and dirt holding capacity in a multi-pass test stand, equipped with inline particle capabilities, which are calibrated to ISO standards and exceed industry requirements.

ELEMENT TECHNOLOGY

Product offerings include:

- ◆Synthetic Media (Z-Media®)
- ◆Patented Grommet & Bushing (GeoSeal®)
- ◆Unique Contaminant Holding (DirtCatcher®)
- ◆Anti-Stat Pleat (ASP®)
- ◆Cellulose Media (E-Media)
- ◆Water-Absorbent (W-Media)
- ◆Private Label Branding
- ◆BestFit® Online Cross-Overs

ELEMENT TECHNOLOGY

BestFit®

48,000 SKU's or 1,200 of Upgrade Replacement Series Currently Available

ELEMENT TECHNOLOGY

Ordering Information:

Part Number	Micron Rating	Collapse Rating	SAP Number
KBGZ10	10	150 PSID	7613394
KGZ10	10	150 PSID	7615018
KGZ25	25	150 PSID	7615021
KGZ3	3	150 PSID	7615023
GeoSeal® Element Plastic Connector			7608357

Part Number	Description	SAP Number
KKGZ1V	18" KGZ 1 micron Z-Media® (GeoSeal®) Viton®	7615298
KKGZ3V	18" KGZ 3 micron Z-Media® (GeoSeal®) Viton®	7615301
KKGZ5V	18" KGZ 5 micron Z-Media® (GeoSeal®) Viton®	7615304
KKGZ10V	18" KGZ 10 micron Z-Media® (GeoSeal®) Viton®	7630721
KKGZ25V	18" KGZ 25 micron Z-Media® (GeoSeal®) Viton®	7634483

ELEMENT TECHNOLOGY

Part Number	Description	SAP Number
27KGZ3	27" KGZ 3 micron Z-Media® (GeoSeal®)	7629165
27KGZ5	27" KGZ 5 micron Z-Media® (GeoSeal®)	7629166
27KGZ10	27" KGZ 10 micron Z-Media® (GeoSeal®)	7629163
27KGZ25	27" KGZ 25 micron Z-Media® (GeoSeal®)	7629164
27KGW	27" KG Water Removal (GeoSeal®)	7629161
27KGZ3V	27" KGZ 3 micron Z-Media® (GeoSeal®) Viton®	7600700
27KGZ5V	27" KGZ 5 micron Z-Media® (GeoSeal®) Viton®	7603035
27KGZ10V	27" KGZ 10 micron Z-Media® (GeoSeal®) Viton®	7603028
27KGZ25V	27" KGZ 25 micron Z-Media® (GeoSeal®) Viton®	7600706
27KGWV	27" KG Water Removal (GeoSeal®) Viton®	7603025

ELEMENT TECHNOLOGY

GeoSeal® Patented Aftermarket Solution

This patented offering from Schroeder provides a unique way for OEM's to retain replacement element business and keep a filter's performance at the level that it was supplied. 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 and mating bushing are given a new geometric shape.

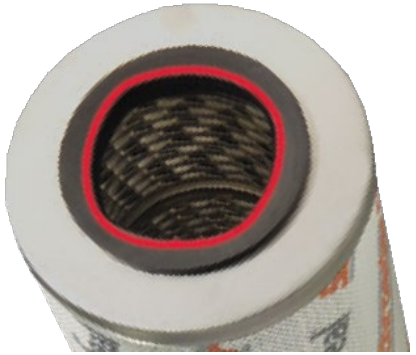


Figure 1. Filter element with GeoSeal grommet.

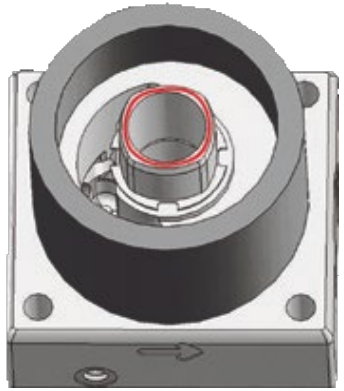


Figure 2. Filter housing (cut-away) with GeoSeal grommet bushing.

ELEMENT TECHNOLOGY

GeoSeal® Patented Aftermarket Solution - Continued

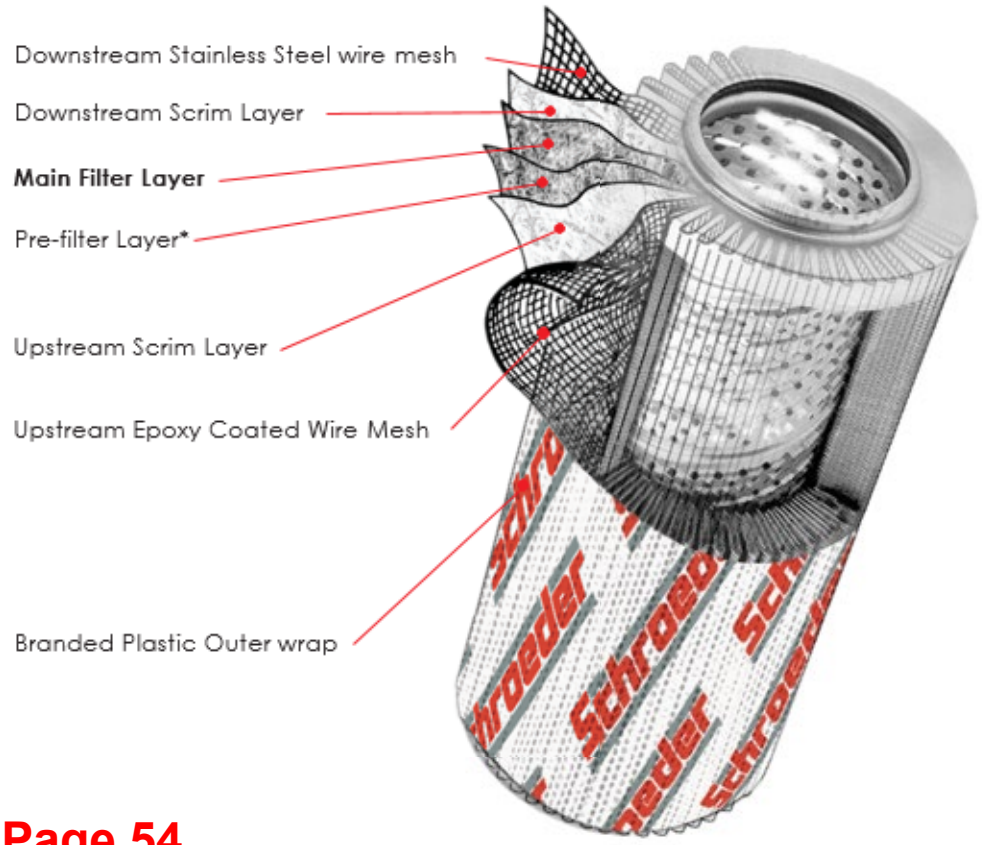
Currently, the GeoSeal® design is available on the K-size element and in the following Schroeder filter series: KF30, KF50, KC50, KC65, MKF50, K9, 2K9, 3K9, KF3, KL3, MLF1, KF5, RT.

To order the filter housing and element incorporated with the GeoSeal® design:

- "G" is added to the front of the housing model code (KF30, KF50, KC50, KC65, MKF50, KF3, KL3, MLF1, KF5, K9, 2K9, 3K9)
- "BG" is added to the element model code for RT (one end of the element has the GeoSeal®; the other end has an integrated bypass valve)
- "G" is added to the element model code for all other housings

ELEMENT TECHNOLOGY

EXCELLEMENT Z-Media®



Stainless Steel Wire Mesh downstream
No threat of epoxy coating migrating downstream and contaminating the system

High cost-effective media area
Less restriction, lower pressure drop, lower hydraulic load

Multilayer media support
Provides protection and support to media layers

Multilayer filter media
Provides strength and high dirt holding capacity

Wire Mesh upstream and downstream
Better pleat stability

* Where applicable

ELEMENT TECHNOLOGY

Z-Media® Dirt Holding Capacity

Dirt holding capacity (DHC) is the amount of contaminant (expressed in grams) the element will retain before it goes into bypass. All other factors being equal, an element's DHC generally indicates how long the element will operate until it needs to be replaced. The element's life span is directly related to the cost of operating the filter.

ELEMENT TECHNOLOGY

Z-Media® Dirt Holding Capacity - Continued

Dirt holding capacity, sometimes referred to as "retained capacity," is a very important and often overlooked factor in selecting the right element for the application. The dirt holding capacity of an element is measured in grams of ISO medium test dust contaminant as determined from the multi-pass test (ISO 16889). When selecting filter elements, it is beneficial to compare the dirt holding capacities of elements with similar particle removal efficiencies.

ELEMENT TECHNOLOGY

Z-Media® Dirt Holding Capacity - Continued

Element Size	Medium				
	Z1	Z3	Z5	Z10	Z25
N	12	12	12	11	11
NN	15	16	18	15	15
C	25	26	30	28	28
CC	57	58	64	62	63
A	25	26	30	28	28
K	112	115	119	108	93
BB	268	275	301	272	246
18L	200	205	228	203	184
8T	51	21	59	55	53
M	-	105	-	104	-
8Z	51	52	59	55	56
KT	-	-	-	56	-
9V	55	57	62	52	48
14V	102	105	115	104	94
7E	23	24	26	26	28
9C	57	58	64	62	63
6R	15	15	17	14	25

Markets Served

Schroeder's products, technical expertise, commitment to R&D, and ongoing improvements in manufacturing enables us to provide products and services that improve performance and efficiency in many major industries, including:

▪Agriculture	▪Machine Tools	▪Power Generation
▪Automotive	▪Marine	▪Printing
▪Bulk Fuels	▪Mining Technology	▪Pulp and Paper
▪Chemical Processing	▪Mobile Vehicles	▪Railroads
▪Defense	▪Offshore	▪Recreation
▪Environment	▪Oil and Gas	▪Refuse
▪Forestry	▪Oil Recycling and Reclamation	▪Steel Making
▪Industrial	▪Plastic Injection Molding	▪Water/Waste Water

...and much more!

Schroeder INDUSTRIES

Advanced Fluid Conditioning Solutions®

PROUDLY MANUFACTURED IN THE UNITED STATES

Questions?