

Medium Pressure Filter

K9

Patent No. 7,604,738 for connecting end cap



Features and Benefits

- Extremely versatile multiple inlet and outlet ports; can be used alone or in series with another K9
- Top loading for easy access for element change-out
- Allows consolidation of inventoried replacement elements by using K-size elements
- Multiple inlet and outlet porting options reduce the need for additional adaptors on installation
- Can be fitted with test ports for oil sampling
- Small profile allows filter to be mounted in tight areas
- Various Dirt Alarm® options
- Meets HF4 automotive standard

Model No. of filter in photograph is K91KZ5BP20NP20ND5C.

100 gpm
380 L/min
900 psi
60 bar

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

3QF5

QFD2

QFD5

QF15

QLF15

SSQLF15

Applications



INDUSTRIAL



AUTOMOTIVE
MANUFACTURING



MACHINE
TOOL



STEEL
MAKING



MOBILE
VEHICLES



AGRICULTURE



POWER
GENERATION



PULP & PAPER

Flow Rating: Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids

Max. Operating Pressure: 900 psi (60 bar)

Min. Yield Pressure: 3200 psi (220 bar), per NFPA T2.6.1

Rated Fatigue Pressure: 750 psi (52 bar) per NFPA T2.6.1-R1-2005

Temp. Range: -20°F to 225°F (-29°C to 107°C)

Bypass Setting: Cracking: 40 psi (2.8 bar)
Full Flow: 80 psi (5.5 bar)

Porting Head & Cap: Cast Aluminum

Element Case: Steel

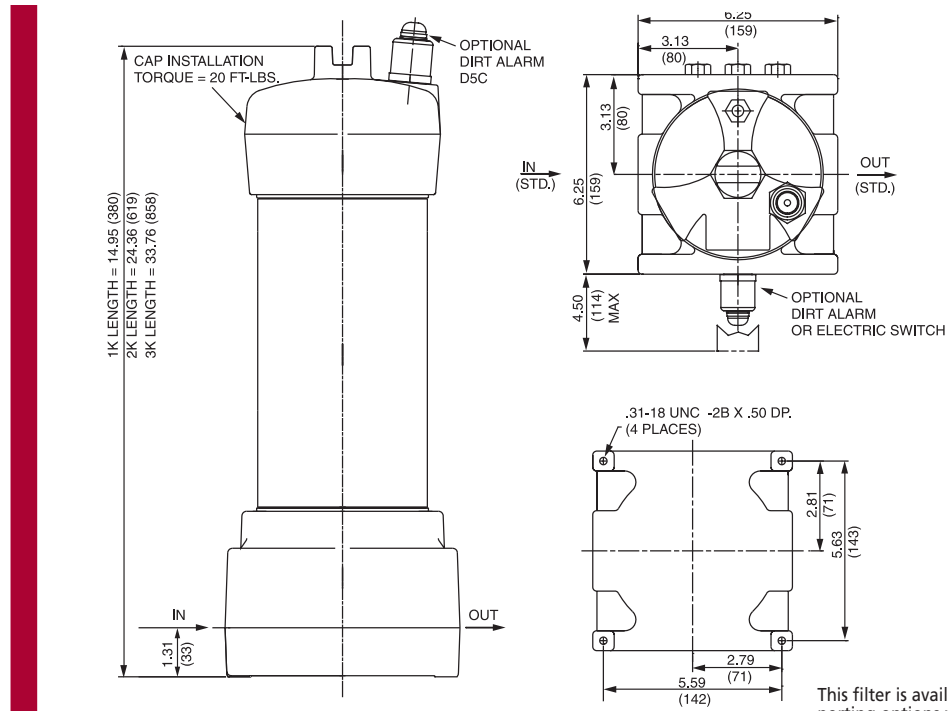
Weight of K9-1K: 19 lbs. (8.6 kg)

Weight of K9-2K: 30 lbs. (13.6 kg)

Weight of K9-3K: 41 lbs. (18.6 kg)

Element Change Clearance: 8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K

Filter Housing Specifications



Metric dimensions in ().

This filter is available in additional porting options not explicitly shown here. Contact factory for details.

Element Performance Information

Element	Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402			Filtration Ratio wrt ISO 16889 Using APC calibrated per ISO 11171	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
K3/KK3/27K3	6.8	7.5	10.0	N/A	N/A
K10/KK10/27K10	15.5	16.2	18.0	N/A	N/A
KZ1/KKZ1/27KZ1	<1.0	<1.0	<1.0	<4.0	4.2
KZ3/KAS3/KKZ3/KKAS3/27KZ3/27KAS3	<1.0	<1.0	<2.0	<4.0	4.8
KZ5/KAS5/KKZ5/KKAS5/27KZ5/27KAS5	2.5	3.0	4.0	4.8	6.3
KZ10/KAS10/KKZ10/KKAS10/27KZ10/27KAS10	7.4	8.2	10.0	8.0	10.0
KZ25/KKZ25/27KZ25	18.0	20.0	22.5	19.0	24.0
KZW1	N/A	N/A	N/A	<4.0	<4.0
KZW3/KKZW3	N/A	N/A	N/A	4.0	4.8
KZW5/KKZW5	N/A	N/A	N/A	5.1	6.4
KZW10/KKZW10	N/A	N/A	N/A	6.9	8.6
KZW25/KKZW25	N/A	N/A	N/A	15.4	18.5

Dirt Holding Capacity

Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)
K3	54	KK3	108	27K3	162				
K10	44	KK10	88	27K10	132				
KZ1	112	KKZ1	224	27KZ1	336	KZW1	61		
KZ3/KAS3	115	KKZ3/KKAS3	230	27KZ3/27KAS3	345	KZW3	64	KKZW3	128
KZ5/KAS5	119	KKZ5/KKAS5	238	27KZ5/27KAS5	357	KZW5	63	KKZW5	126
KZ10/KAS10	108	KKZ10/KKAS10	216	27KZ10/27KAS10	324	KZW10	57	KKZW10	114
KZ25	93	KKZ25	186	27KZ25	279	KZW25	79	KKZW25	158

Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long
 KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long
 27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

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Type Fluid Appropriate Schroeder Media

Petroleum Based Fluids	All E media (cellulose), Z-Media® and ASP media (synthetic)
High Water Content	All Z-Media® (synthetic), 3, 5 and 10 µ ASP media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® (synthetic), 10 µ ASP media (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® (synthetic), 3, 5 and 10 µ ASP media (synthetic)
Phosphate Esters	All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation, 3, 5 and 10 µ ASP media (synthetic)
Skydrol®	3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation and W media (water removal) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior), 3, 5 and 10 µ ASP Media (synthetic)

Fluid Compatibility

GH

RLT

KF5

SRLT

Skydrol® is a registered trademark of Solutia Inc.

Pressure	Element		Element selections are predicated on the use of 150 SUS (32 cSt) petroleum based fluid and a 40 psi (2.8 bar) bypass valve.					
	Series	Part No.						
To 900 psi (60 bar)	E Media	K3	1K3		2K3 [†]	3K3		
		K10	1K10					
		K25	1K25					
	Z- Media®	KZ1	1KZ1		2KZ1 [†]			
		KZ3	1KZ3/KAS3/KKZ3/27KAS3					
		KZ5	1KZ5/KAS5/KKZ5/27KAS5					
		KZ10	1KZ10/KAS10/KKZ10/27KAS10					
		KZ25	1KZ25					
	Flow	gpm	0	20	40	60	80	100
		(L/min)	0	50	150	250	380	

Element Selection

Based on Flow Rate

K9

2K9

3K9

QF5

3QF5

QFD2

QFD5

QF15

QLF15

SSQLF15

Pressure Drop Information

Based on Flow Rate and Viscosity

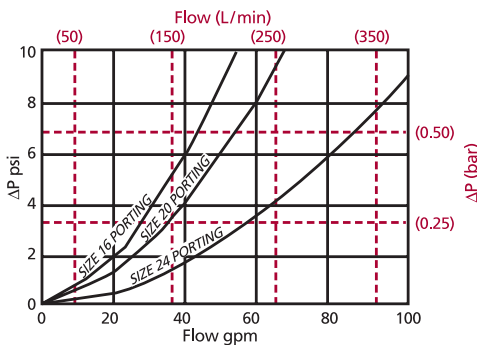
†Double and triple stacking of K-size elements can be replaced by single KK & 27K elements, respectively.

Shown above are the elements most commonly used in this housing.

Note: Contact factory regarding use of E media in High Water Content, Invert Emulsion and Water Glycol Applications. For more information, refer to Fluid compatibility: Fire Resistant Fluids, pages 19 and 20.

ΔP_{housing}

K9 ΔP_{housing} for fluids with sp gr = 0.86:



sp gr = specific gravity

Sizing of elements should be based on element flow information provided in the Element Selection chart above.

$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + \Delta P_{\text{element}}$$

Exercise:

Determine ΔP at 80 gpm (303 L/min) for K93KZ3BP20NP20ND5C using 200 SUS (44 cSt) fluid.

Solution:

$$\Delta P_{\text{housing}} = 6.0 \text{ psi } [.41 \text{ bar}]$$

$$\Delta P_{\text{element}} = 80 \times .03 \times (200 \div 150) = 3.2 \text{ psi}$$

or

$$= [303 \times (.03 \div 54.9) \times (44 \div 32) = .23 \text{ bar}]$$

$$\Delta P_{\text{total}} = 6.0 + 3.2 = 9.2 \text{ psi}$$

or

$$= [.41 + .23 = .64 \text{ bar}]$$

ΔP_{element}

$$\Delta P_{\text{element}} = \text{flow} \times \text{element } \Delta P \text{ factor} \times \text{viscosity factor}$$

El. ΔP factors @ 150 SUS (32 cSt):

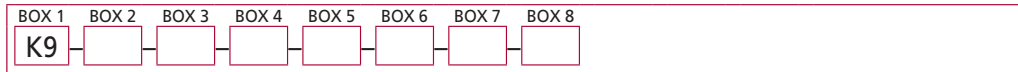
	1K	2K	3K
K3	.25	.12	.08
K10	.09	.05	.03
K25	.02	.01	.01
KZ1	.20	.10	.05
KZ3/KAS3	.10	.05	.03
KZ5/KAS5	.08	.04	.02
KZ10/KAS10	.05	.03	.02
KZ25	.04	.02	.01
	1K	2K	
KZW1	.43		
KZW3	.32	.16	
KZW5	.28	.14	
KZW10	.23	.12	
KZW25	.14	.07	

If working in units of bars & L/min, divide above factor by 54.9.

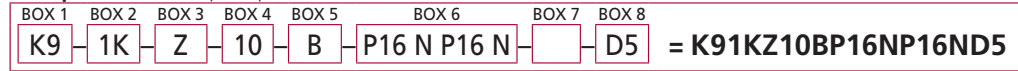
Viscosity factor: Divide viscosity by 150 SUS (32 cSt).

Filter Model Number Selection

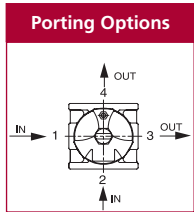
How to Build a Valid Model Number for a Schroeder 2K9:



Example: NOTE: One option per box



BOX 1	BOX 2	BOX 3	BOX 4	BOX 5
Filter Series	Number & Size of Elements	Media Type	Micron Rating	Seal Material
K9	1 K, KK, 27K 2 K 3 K	Omit = E-media (cellulose) Z = Excellement® Z-Media® AS = Anti-Stat Pleat media (synthetic) ZW = Aqua-Excellement® ZW media ZX = Excellement® Z-Media® (high collapse centertube) W = W media (water removal) M = media (reusable metal mesh)	1 = 1 μ Z, ZW, ZX media 3 = 3 μ AS, E, Z, ZW, ZX media 5 = 5 μ AS, Z, ZW, ZX media 10 = 10 μ AS, E, M, Z, ZW, ZX media 25 = 25 μ E, M, Z, ZW, ZX media 60 = 60 μ M media 150 = 150 μ M media 260 = 260 μ M media	B = Buna N V = Viton® H = EPR H.5 = Skydrol® Compatibility



BOX 6 Specification of all 4 ports is required				BOX 7
Porting				Options
Port 1 (standard)	Port 2	Port 3	Port 4	
N = None P16 = 1" NPTF P20 = 1 1/4" NPTF P24 = 1 1/2" NPTF S16 = SAE-16 S20 = SAE-20 S24 = SAE-24 B16 = ISO 228 G-1" B20 = ISO 228 G-1 1/4" B24 = ISO 228 G-1 1/2"	N = None P16 = 1" NPTF P20 = 1 1/4" NPTF P24 = 1 1/2" NPTF F16 = 1" SAE 4-bolt flange Code 61 F20 = 1 1/4" SAE 4-bolt flange Code 61 F24 = 1 1/2" SAE 4-bolt flange Code 61 S16 = SAE-16 S20 = SAE-20 S24 = SAE-24 B16 = ISO 228 G-1" S20 = SAE-20 S24 = SAE-24 B16 = ISO 228 G-1" B20 = ISO 228 G-1 1/4" B24 = ISO 228 G-1 1/2"	N = None P16 = 1" NPTF P20 = 1 1/4" NPTF P24 = 1 1/2" NPTF S16 = SAE-16 S20 = SAE-20 S24 = SAE-24 B16 = ISO 228 G-1" B20 = ISO 228 G-1 1/4" B24 = ISO 228 G-1 1/2"	N = None P16 = 1" NPTF P20 = 1 1/4" NPTF P24 = 1 1/2" NPTF F16 = 1" SAE 4-bolt flange Code 61 F20 = 1 1/4" SAE 4-bolt flange Code 61 F24 = 1 1/2" SAE 4-bolt flange Code 61 S16 = SAE-16 S20 = SAE-20 S24 = SAE-24 B16 = ISO 228 G-1" S20 = SAE-20 S24 = SAE-24 B16 = ISO 228 G-1" B20 = ISO 228 G-1 1/4" B24 = ISO 228 G-1 1/2"	Omit = None X = Blocked bypass U = Test point in cap (upstream) UU = Test points in block (upstream and downstream)

NOTES:

Box 2. Double and triple stacking of K-size elements can be replaced by KK and 27K elements, respectively. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. ZW media not available in 27K length.

Box 5. For options H, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 8. If location 1 is used as inlet port, dirt alarm will occupy location 2. If location 2 is used as inlet port, dirt alarm will occupy location 1. If dual inlet ports are specified, the only dirt alarm option is pop-up indicator in cap (D5C).

BOX 8	
Dirt Alarm® Options	
	Omit = None
Visual	D5 = Visual pop-up D5C = D5 in cap
Visual with Thermal Lockout	D8 = Visual w/ thermal lockout D8C = D8 in cap
Electrical	MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable MS5LC = Low current MS5 MS10 = Electrical w/ DIN connector (male end only) MS10LC = Low current MS10 MS11 = Electrical w/ 12 ft. 4-conductor wire MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only) MS12LC = Low current MS12 MS16 = Electrical w/ weather-packed sealed connector MS16LC = Low current MS16 MS17LC = Electrical w/ 4 pin Brad Harrison male connector
Electrical with Thermal Lockout	MS5T = MS5 (see above) w/ thermal lockout MS5LCT = Low current MS5T MS10T = MS10 (see above) w/ thermal lockout MS10LCT = Low current MS10T MS12T = MS12 (see above) w/ thermal lockout MS12LCT = Low current MS12T MS16T = MS16 (see above) w/ thermal lockout MS16LCT = Low current MS16T MS17LCT = Low current MS17T
Electrical Visual	MS13 = Supplied w/ threaded connector & light MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)
Electrical Visual with Thermal Lockout	MS13DCT = MS13 (see above), direct current, w/ thermal lockout MS13DCLCT = Low current MS13DCT MS14DCT = MS14 (see above), direct current, w/ thermal lockout MS14DCLCT = Low current MS14DCT