Single Pass Filter Kit 3K9

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

100 gpm
380 L/min
900 psi
60 bar

Features and Benefits

- Three patent-pending K9 filters supplied in series as a single filter assembly providing in-line single pass particulate and water filtration
- Meets HF4 automotive standard
- 900 psi rating covers almost all transfer line pressure specs including air driven transfer systems
- Top loading for easy access for element changeout
- Allows consolidation of inventoried elements by using K-size elements
- Can be fitted with test points for oil sampling

Model No. of filter in photograph is 3K9127EDBBP20P20UUD5C.

Applications

INDUSTRIAL
AUTOMOTIVE MANUFACTURING
MACHINE TOOL
STEEL MAKING
MOBILE VEHICLES
AGRICULTURE
POWER GENERATION
PULP & PAPER

Filter Housing Specifications

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)
Porting Base & Cap:	Cast Aluminum
Element Case:	Steel
Element Change Clearance:	8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K

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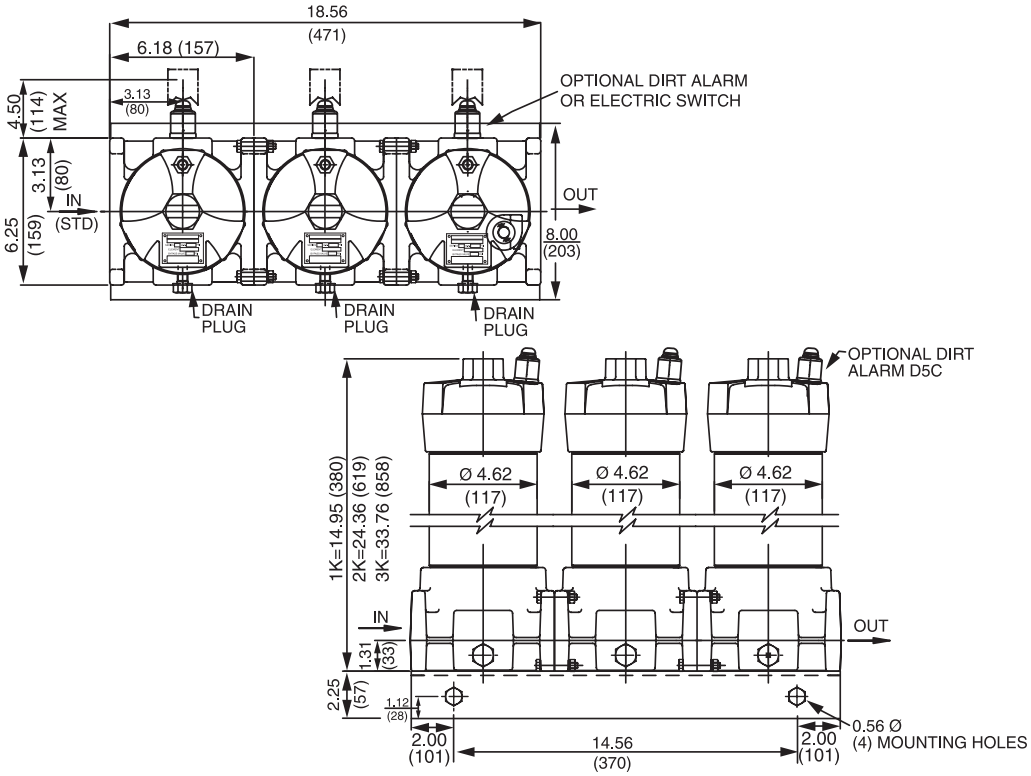

Metric dimensions in ( ).

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	
	$\beta_X \geq 75$	$\beta_X \geq 100$	$\beta_X \geq 200$	$\beta_X(c) \geq 200$	$\beta_X(c) \geq 1000$
KZ1/KKZ1/27KZ1	<1.0	<1.0	<1.0	<4.0	4.2
KZ3/KKZ3/27KZ3/KAS3/KKAS3/27KAS3	<1.0	<1.0	<2.0	<4.0	4.8
KZ5/KKZ5/27KZ5/KAS5/KKAS5/27KAS5	2.5	3.0	4.0	4.8	6.3
KZ10/KKZ10/27KZ10/KAS10/ KKAS10/27KAS10	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)
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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Fluid Compatibility

Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All Z-Media® and ASP media (synthetic)
High Water Content	All Z-Media® and ASP media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® and 10 µ ASP media (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® and all 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 and all 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) and all ASP media (synthetic)

Skydrol® is a registered trademark of Solutia Inc.

Element Selection Based on Flow Rate

Pressure	Element Series	Part No.	Element selections are predicated on the use of 150 SUS (32 cSt) petroleum based fluid and a 40 psi (2.8 bar) bypass valve.
To 900 psi (60 bar)	Z-Media®	KZ1	1KZ1 / 2KZ1†
		KZ3	1KZ3/KAS3/KKAS3/27KAS3
		KZ5	1KZ5/KAS5/KKAS5/27KAS5
		KZ10	1KZ10/KAS3/KKAS3/27KAS3
		KZ25	1KZ25
	Flow	gpm	0 20 40 60 80 100
		(L/min)	0 50 150 250 380

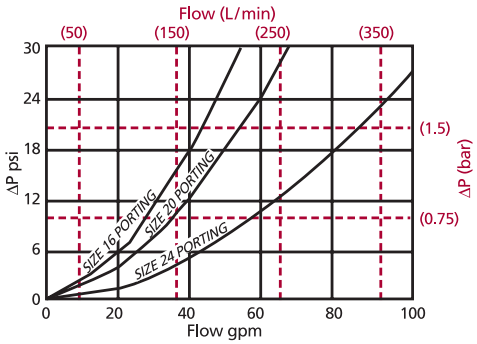
†Double and triple stacking of K-size elements can be replaced by single KK & 27K elements, respectively.

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.*

Pressure Drop Information Based on Flow Rate and Viscosity

$\Delta P_{housing}$

K9 $\Delta P_{housing}$ 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.

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

Exercise:

Determine ΔP at 80 gpm (303 L/min) for 3K9209EDBBP24P24 using 150 SUS (32 cSt) fluid.

Solution:

$\Delta P_{housing}$ = 18.0 psi [1.2 bar]

$\Delta P_{element1}$ = 80 x .02 = 1.6 psi [0.1 bar]

$\Delta P_{element2}$ = 80 x .03 = 2.4 psi [0.2 bar]

$\Delta P_{element3}$ = 80 x .05 = 4.0 psi [0.3 bar]

ΔP_{total} = 18.0 + 1.6 + 2.4 + 4.0 = 26.0 psi [1.8 bar]

$\Delta P_{element}$

$\Delta P_{element}$ = flow x element ΔP factor x viscosity factor

El. ΔP factors @ 150 SUS (32 cSt):

	1K	2K/KK	3K/27K
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).

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Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder 3K9:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10	BOX 11
3K9 –		–		–		–		–		–

Example: *NOTE: One option per box*

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10	BOX 11	
3K9 –	1 –	09 –	E –	C –	A –	B –	P16 –	P16 –	D5 –		=3K9109ECABP16P16D5

BOX 1

Filter Series
3K9

BOX 2

No. of Elements
1
2
3

BOX 3

Length of Elements
09 = K Size Element
18 = KK Size Element
27 = 27K Size Element

BOX 4

First Housing
A = 1 µ Z-Media®
B = 3 µ Z-Media®
C = 5 µ Z-Media®
D = 10 µ Z-Media®
E = 25 µ Z-Media®
F = W media (water removal)
G = 1 µ ZW-media
H = 3 µ ZW-media
J = 5 µ ZW-media
K = 10 µ ZW-media
L = 25 µ ZW-media
M = 3 µ AS-media
N = 5 µ AS-media
O = 10 µ AS media

BOX 5

Second Housing
A = 1 µ Z-Media®
B = 3 µ Z-Media®
C = 5 µ Z-Media®
D = 10 µ Z-Media®
E = 25 µ Z-Media®
F = W media (water removal)
G = 1 µ ZW-media
H = 3 µ ZW-media
J = 5 µ ZW-media
K = 10 µ ZW-media
L = 25 µ ZW-media
M = 3 µ AS-media
N = 5 µ AS-media
O = 10 µ AS media

BOX 6

Third Housing
A = 1 µ Z-Media®
B = 3 µ Z-Media®
C = 5 µ Z-Media®
D = 10 µ Z-Media®
E = 25 µ Z-Media®
F = W media (water removal)
G = 1 µ ZW-media
H = 3 µ ZW-media
J = 5 µ ZW-media
K = 10 µ ZW-media
L = 25 µ ZW-media
M = 3 µ AS-media
N = 5 µ AS-media
O = 10 µ AS media

BOX 7

Seal Material
B = Buna N
V = Viton®
H = EPR
H.5 = Skydrol® Compatibility

BOX 8

"In" Porting
P16 = 1" NPTF
P20 = 1¼" NPTF
P24 = 1½" NPTF
B16 = ISO 228 G-1"
B20 = ISO 228 G-1¼"
B24 = ISO 228 G-1½"
F16 = 1" SAE 4-bolt flange Code 61
F20 = 1¼" SAE 4-bolt flange Code 61
F24 = 1½" SAE 4-bolt flange Code 61
S16 = SAE-16
S20 = SAE-20
S24 = SAE-24

BOX 9

"Out" Porting
P16 = 1" NPTF
P20 = 1¼" NPTF
P24 = 1½" NPTF
B16 = ISO 228 G-1"
B20 = ISO 228 G-1¼"
B24 = ISO 228 G-1½"
F16 = 1" SAE 4-bolt flange Code 61
F20 = 1¼" SAE 4-bolt flange Code 61
F24 = 1½" SAE 4-bolt flange Code 61
S16 = SAE-16
S20 = SAE-20
S24 = SAE-24

BOX 10

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

BOX 11

Options
Omit = None
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. ZW media not available in 27K length.

Box 4, 5 & 6. Replacement element part numbers are identical to K9 replacement parts. Please reference page 172.

Box 7. 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.
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Box 11. Option UU not available in combination with indicator in block.