

Return Line Filter

KF3

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

SPI

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

LTK

MRT



Features and Benefits

- Meets HF4 automotive standard
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- Various Dirt Alarm® options
- Available with No-Element indicator
- Available with NPTF inlet and outlet female test ports
- Available with magnet inserts
- Available with housing drain plug
- Takes the standard "K" element in K, KK or 27K lengths
- Allows consolidation of inventoried replacement elements by using K-size elements
- Also available with DirtCatcher® elements (KD & KKD)
- G** Available with quality-protected GeoSeal® Elements (GKF3)



Part of the Schroeder Industries 2030 Initiative

100 gpm
380 L/min
300 psi
20 bar

Model No. of filter in photograph is KF31K10SD5.

Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Operating 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
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 30 psi (2 bar) Full Flow: 51 psi (4 bar)
Porting Head:	Die Cast Aluminum
Element Case:	Steel
Weight of KF3-1K:	10.5 lbs. (4.8 kg)
Weight of KF3-2K:	14.2 lbs. (6.4 kg)
Weight of KF3-3K:	18.5 lbs. (8.4 kg)
Element Change Clearance:	1.50" (40 mm) for all lengths

Filter Housing Specifications

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

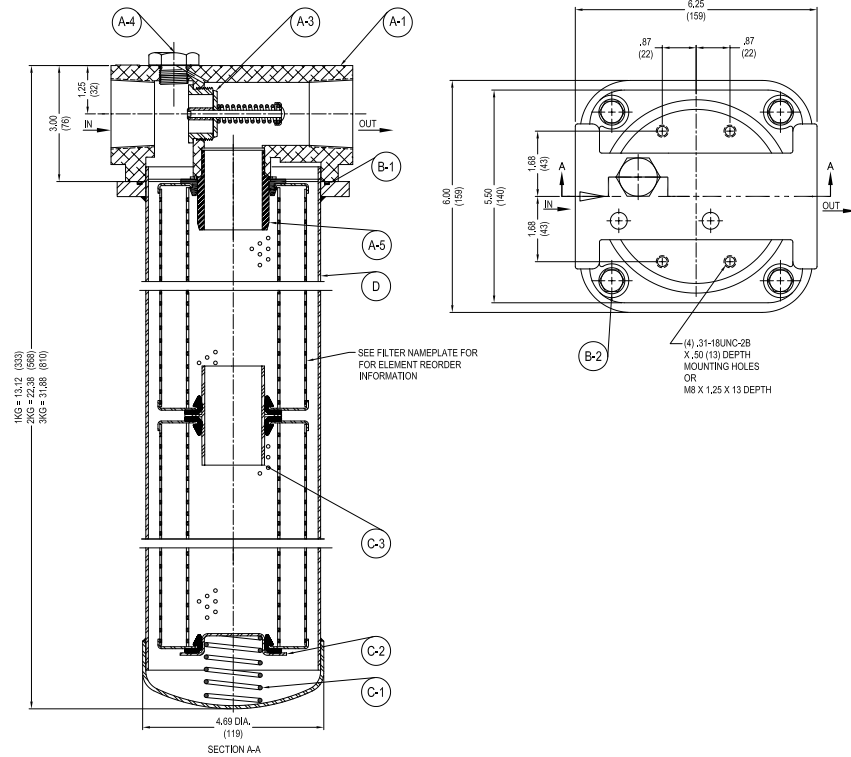
Fluid Compatibility

Accessories
For Tank-
Mounted
Filters

PAF1

MAF1

MF2



Metric dimensions in ().

Element Performance Information & Dirt Holding Capacity

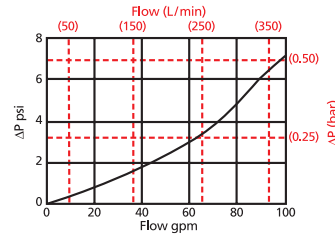
Element	Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402			Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
KZ1/KKZ1/27KZ1	<1.0	<1.0	<1.0	<4.0	4.2
KZ3/KKZ3/27KZ3	<1.0	<1.0	<2.0	<4.0	4.8
KZ5/KKZ5/27KZ5	2.5	3.0	4.0	4.8	6.3
KZ10/KKZ10/27KZ10	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

Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)
KZ1	112	KKZ1	224	27KZ1	336	KDZ1	89	KKDZ1	188	KZW1	61
KZ3	115	KKZ3	230	27KZ3	345	KDZ3	71	KKDZ3	150	KZW3	64
KZ5	119	KKZ5	238	27KZ5	357	KDZ5	100	KKDZ5	210	KZW5	63
KZ10	108	KKZ10	216	27KZ10	324	KDZ10	80	KKDZ10	168	KZW10	57
KZ25	93	KKZ25	186	27KZ25	279	KDZ25	81	KKDZ25	171	KZW25	79
										KKZW3	128
										KKZW5	126
										KKZW10	114
										KKZW25	158

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

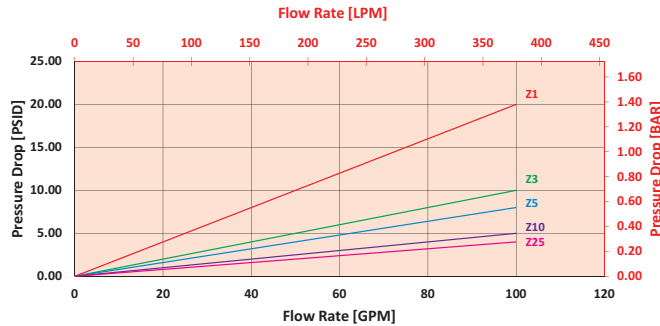
Flow Direction: Outside In

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

$\Delta P_{\text{housing}}$ KF3 $\Delta P_{\text{housing}}$ for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$

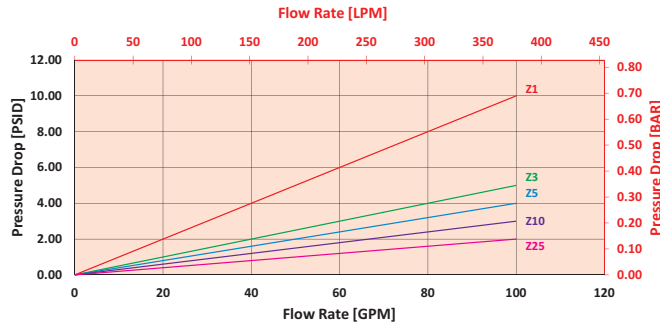
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



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

Exercise:Determine ΔP_{filter} at 70 gpm (265.3 L/min) for KF31KZ10SD5 using 160 SUS (34 cSt) fluid.Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 70 gpm. In this case, $\Delta P_{\text{housing}}$ is 4 psi (.27 bar) on the graph for the KF3 housing.Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 70 gpm. In this case, $\Delta P_{\text{element}}$ is 3 psi (.21 bar) according to the graph for the KZ10 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 Appendix D.

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

Solution:

$$\Delta P_{\text{housing}} = 4 \text{ psi } [.227 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 3 \text{ psi } [.21 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 4 \text{ psi} + (3 \text{ psi} * 1.1) = 7.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .27 \text{ bar} + (.21 \text{ bar} * 1.1) = .50 \text{ bar}$$

Pressure Drop Information

Based on Flow Rate and Viscosity

Note:
If your element is not graphed, use the following equation:
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ Plug this variable into the overall pressure drop equation.

Ele.	ΔP	Ele.	ΔP	Ele.	ΔP
K3	0.25	2K3/KK3	0.12	3KZ1/27KZ1	0.05
K10	0.09	2K10/KK10	0.05	3KZ3/27KZ3	0.03
K25	0.02	2K25/KK25	0.01	3KZ5/27KZ5	0.02
KAS3	0.10	2KAS3/KKAS3	0.05	3KZ10/27KZ10	0.02
KAS5	0.08	2KAS5/KKAS5	0.04	3KZ25/27KZ25	0.01
KAS10	0.05	2KAS10/KKAS10	0.03	K3K	0.08
KDZ1	0.24	2KDZ1	0.12	3K10	0.03
KDZ3	0.12	2KDZ3	0.06	3K25	0.01
KDZ5	0.10	2KDZ5	0.05	3KAS3/27KAS3	0.03
KDZ10	0.06	2KDZ10	0.03	3KAS5/27KAS5	0.02
KDZ25	0.04	2KDZ25	0.02	3KAS10/27KAS10	0.02
KZW1	0.43	2KZW1	-		
KZW3	0.32	2KZW3/KKZW3	0.16		
KZW5	0.28	2KZW5/KKZW5	0.14		
KZW10	0.23	2KZW10/KKZW10	0.12		
KZW25	0.14	2KZW25/KKZW25	0.07		

Filter
Model
Number
SelectionHighlighted
product eligible for
QuickDelivery

How to Build a Valid Model Number for a Schroeder KF3:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10
KF3									

Example: NOTE: Only box 10 may contain more than one option

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10
KF3	1K	Z	10			S		D5	

 = KF31KZ10SD5

BOX 1 <table><tr><th>Filter Series</th></tr><tr><td>KF3</td></tr><tr><td>GKF3 (GeoSeal®)</td></tr><tr><td>WKF3 (Water)</td></tr></table>	Filter Series	KF3	GKF3 (GeoSeal®)	WKF3 (Water)	BOX 2 <table><tr><th>Number & Size of Elements</th></tr><tr><td>1K, KK,27K</td></tr><tr><td>2K</td></tr><tr><td>3K</td></tr><tr><td>GeoSeal®</td></tr><tr><td>1KG,KKG,27KG</td></tr><tr><td>2KG</td></tr><tr><td>3KG</td></tr></table>	Number & Size of Elements	1K, KK,27K	2K	3K	GeoSeal®	1KG,KKG,27KG	2KG	3KG	BOX 3 <table><tr><th>Media Type</th></tr><tr><td>Omit = E media (cellulose)</td></tr><tr><td>AS = Anti-Static Pleat Media</td></tr><tr><td>Z = Excellement® Z-Media® (synthetic)</td></tr><tr><td>ZW = Aqua-Excellement® ZW media</td></tr><tr><td>W = Water Removal media</td></tr><tr><td>M = M Media (reusable metal)</td></tr><tr><td>DZ = DirtCatcher® Excellement® Z-Media®</td></tr><tr><td>Water System Element Options</td></tr><tr><td>KM10 = K size 25 µ M media (reusable metal)</td></tr><tr><td>KM25 = K size 10 µ M media (reusable metal)</td></tr><tr><td>KM60 = K size 60 µ M media (reusable metal)</td></tr><tr><td>KM150 = K size 150 µ M media (reusable metal)</td></tr><tr><td>KM260 = K size 260 µ M media (reusable metal)</td></tr></table>	Media Type	Omit = E media (cellulose)	AS = Anti-Static Pleat Media	Z = Excellement® Z-Media® (synthetic)	ZW = Aqua-Excellement® ZW media	W = Water Removal media	M = M Media (reusable metal)	DZ = DirtCatcher® Excellement® Z-Media®	Water System Element Options	KM10 = K size 25 µ M media (reusable metal)	KM25 = K size 10 µ M media (reusable metal)	KM60 = K size 60 µ M media (reusable metal)	KM150 = K size 150 µ M media (reusable metal)	KM260 = K size 260 µ M media (reusable metal)	BOX 4 <table><tr><th>Micron Rating</th></tr><tr><td>1 = 1 µ (Z, ZW and DZ media)</td></tr><tr><td>3 = 3 µ (E, AS, Z, ZW and DZ media)</td></tr><tr><td>5 = 5 µ (AS, Z, ZW and DZ media)</td></tr><tr><td>10 = 10 µ (E, AS, Z, ZW, M and DZ media)</td></tr><tr><td>25 = 25 µ (E, Z, ZW, M and DZ media)</td></tr><tr><td>60 = 60 µ (M media)</td></tr></table>	Micron Rating	1 = 1 µ (Z, ZW and DZ media)	3 = 3 µ (E, AS, Z, ZW and DZ media)	5 = 5 µ (AS, Z, ZW and DZ media)	10 = 10 µ (E, AS, Z, ZW, M and DZ media)	25 = 25 µ (E, Z, ZW, M and DZ media)	60 = 60 µ (M media)								
Filter Series																																												
KF3																																												
GKF3 (GeoSeal®)																																												
WKF3 (Water)																																												
Number & Size of Elements																																												
1K, KK,27K																																												
2K																																												
3K																																												
GeoSeal®																																												
1KG,KKG,27KG																																												
2KG																																												
3KG																																												
Media Type																																												
Omit = E media (cellulose)																																												
AS = Anti-Static Pleat Media																																												
Z = Excellement® Z-Media® (synthetic)																																												
ZW = Aqua-Excellement® ZW media																																												
W = Water Removal media																																												
M = M Media (reusable metal)																																												
DZ = DirtCatcher® Excellement® Z-Media®																																												
Water System Element Options																																												
KM10 = K size 25 µ M media (reusable metal)																																												
KM25 = K size 10 µ M media (reusable metal)																																												
KM60 = K size 60 µ M media (reusable metal)																																												
KM150 = K size 150 µ M media (reusable metal)																																												
KM260 = K size 260 µ M media (reusable metal)																																												
Micron Rating																																												
1 = 1 µ (Z, ZW and DZ media)																																												
3 = 3 µ (E, AS, Z, ZW and DZ media)																																												
5 = 5 µ (AS, Z, ZW and DZ media)																																												
10 = 10 µ (E, AS, Z, ZW, M and DZ media)																																												
25 = 25 µ (E, Z, ZW, M and DZ media)																																												
60 = 60 µ (M media)																																												
BOX 5 <table><tr><th>Seal Material</th></tr><tr><td>Omit = Buna N</td></tr><tr><td>H = EPR</td></tr><tr><td>V = Viton®</td></tr><tr><td>Skydrol®</td></tr><tr><td>H.5 = Compatibility</td></tr><tr><td>Buna N with</td></tr><tr><td>W = anodized parts</td></tr></table>	Seal Material	Omit = Buna N	H = EPR	V = Viton®	Skydrol®	H.5 = Compatibility	Buna N with	W = anodized parts	BOX 6 <table><tr><th>Magnet Option</th></tr><tr><td>Omit = None</td></tr><tr><td>M = Magnet</td></tr></table>	Magnet Option	Omit = None	M = Magnet	BOX 7 <table><tr><th>Porting</th></tr><tr><td>P = 1½" NPTF</td></tr><tr><td>S = SAE-24</td></tr><tr><td>F = 1½" SAE-4-bolt flange Code 61</td></tr><tr><td>B = ISO 228 G-1½"</td></tr></table>	Porting	P = 1½" NPTF	S = SAE-24	F = 1½" SAE-4-bolt flange Code 61	B = ISO 228 G-1½"	BOX 8 <table><tr><th>Bypass Setting</th></tr><tr><td>Omit = 30 psi cracking</td></tr><tr><td>50 = 50 psi cracking (req. for HF4)</td></tr></table>	Bypass Setting	Omit = 30 psi cracking	50 = 50 psi cracking (req. for HF4)																						
Seal Material																																												
Omit = Buna N																																												
H = EPR																																												
V = Viton®																																												
Skydrol®																																												
H.5 = Compatibility																																												
Buna N with																																												
W = anodized parts																																												
Magnet Option																																												
Omit = None																																												
M = Magnet																																												
Porting																																												
P = 1½" NPTF																																												
S = SAE-24																																												
F = 1½" SAE-4-bolt flange Code 61																																												
B = ISO 228 G-1½"																																												
Bypass Setting																																												
Omit = 30 psi cracking																																												
50 = 50 psi cracking (req. for HF4)																																												
BOX 9 <table><tr><th>Dirt Alarm® Options</th></tr><tr><td>Omit = None</td></tr><tr><td>Visual</td></tr><tr><td>D = Pointer</td></tr><tr><td>D5 = Visual pop-up</td></tr><tr><td>Visual with Thermal Lockout</td></tr><tr><td>D8 = Visual w/ thermal lockout</td></tr><tr><td>Electrical</td></tr><tr><td>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable</td></tr><tr><td>MS5LC = Low current MS5</td></tr><tr><td>MS10 = Electrical w/ DIN connector (male end only)</td></tr><tr><td>MS10LC = Low current MS10</td></tr><tr><td>MS11 = Electrical w/ 12 ft. 4-conductor wire</td></tr><tr><td>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)</td></tr><tr><td>MS12LC = Low current MS12</td></tr><tr><td>MS16 = Electrical w/ weather-packed sealed connector</td></tr><tr><td>MS16LC = Low current MS16</td></tr><tr><td>Electrical with Thermal Lockout</td></tr><tr><td>MS17LC = Electrical w/ 4 pin Brad Harrison male connector</td></tr><tr><td>MS5T = MS5 (see above) w/ thermal lockout</td></tr><tr><td>MS5LCT = Low current MS5T</td></tr><tr><td>MS10T = MS10 (see above) w/ thermal lockout</td></tr><tr><td>MS10LCT = Low current MS10T</td></tr><tr><td>MS12T = MS12 (see above) w/ thermal lockout</td></tr><tr><td>MS12LCT = Low current MS12T</td></tr><tr><td>MS16T = MS16 (see above) w/ thermal lockout</td></tr><tr><td>MS16LCT = Low current MS16T</td></tr><tr><td>MS17LCT = Low current MS17T</td></tr><tr><td>Electrical Visual</td></tr><tr><td>MS = Cam operated switch w/ ½" conduit female connection</td></tr><tr><td>MS13 = Supplied w/ threaded connector & light</td></tr><tr><td>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)</td></tr><tr><td>Electrical Visual with Thermal Lockout</td></tr><tr><td>MS13DCT = MS13 (see above), direct current, w/ thermal lockout</td></tr><tr><td>MS13DCLCT = Low current MS13DCT</td></tr><tr><td>MS14DCT = MS14 (see above), direct current, w/ thermal lockout</td></tr><tr><td>MS14DCLCT = Low current MS14DCT</td></tr></table>	Dirt Alarm® Options	Omit = None	Visual	D = Pointer	D5 = Visual pop-up	Visual with Thermal Lockout	D8 = Visual w/ thermal lockout	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	Electrical with Thermal Lockout	MS17LC = Electrical w/ 4 pin Brad Harrison male connector	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	MS = Cam operated switch w/ ½" conduit female connection	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 10 <table><tr><th>Additional Options</th></tr><tr><td>Omit = None</td></tr><tr><td>L = Two ¼" NPTF inlet and outlet test ports</td></tr><tr><td>N = No-Element indicator</td></tr><tr><td>G426 = ¾" drain on bottom of housing</td></tr><tr><td>G440 = ½" drain on bottom of housing</td></tr></table>	Additional Options	Omit = None	L = Two ¼" NPTF inlet and outlet test ports	N = No-Element indicator	G426 = ¾" drain on bottom of housing	G440 = ½" drain on bottom of housing
Dirt Alarm® Options																																												
Omit = None																																												
Visual																																												
D = Pointer																																												
D5 = Visual pop-up																																												
Visual with Thermal Lockout																																												
D8 = Visual w/ thermal lockout																																												
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																																												
Electrical with Thermal Lockout																																												
MS17LC = Electrical w/ 4 pin Brad Harrison male connector																																												
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																																												
MS = Cam operated switch w/ ½" conduit female connection																																												
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																																												
Additional Options																																												
Omit = None																																												
L = Two ¼" NPTF inlet and outlet test ports																																												
N = No-Element indicator																																												
G426 = ¾" drain on bottom of housing																																												
G440 = ½" drain on bottom of housing																																												

NOTES:

Box 2. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. Number of elements must equal 1 when using KK or 27K elements. ZW media not available in 27K.

Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5.

Box 5. For options H, W, 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 7. For option F, bolt thread depth .63" (16 mm). B porting option supplied with metric mounting holes.

Box 10. Option L not available with MS Dirt Alarm