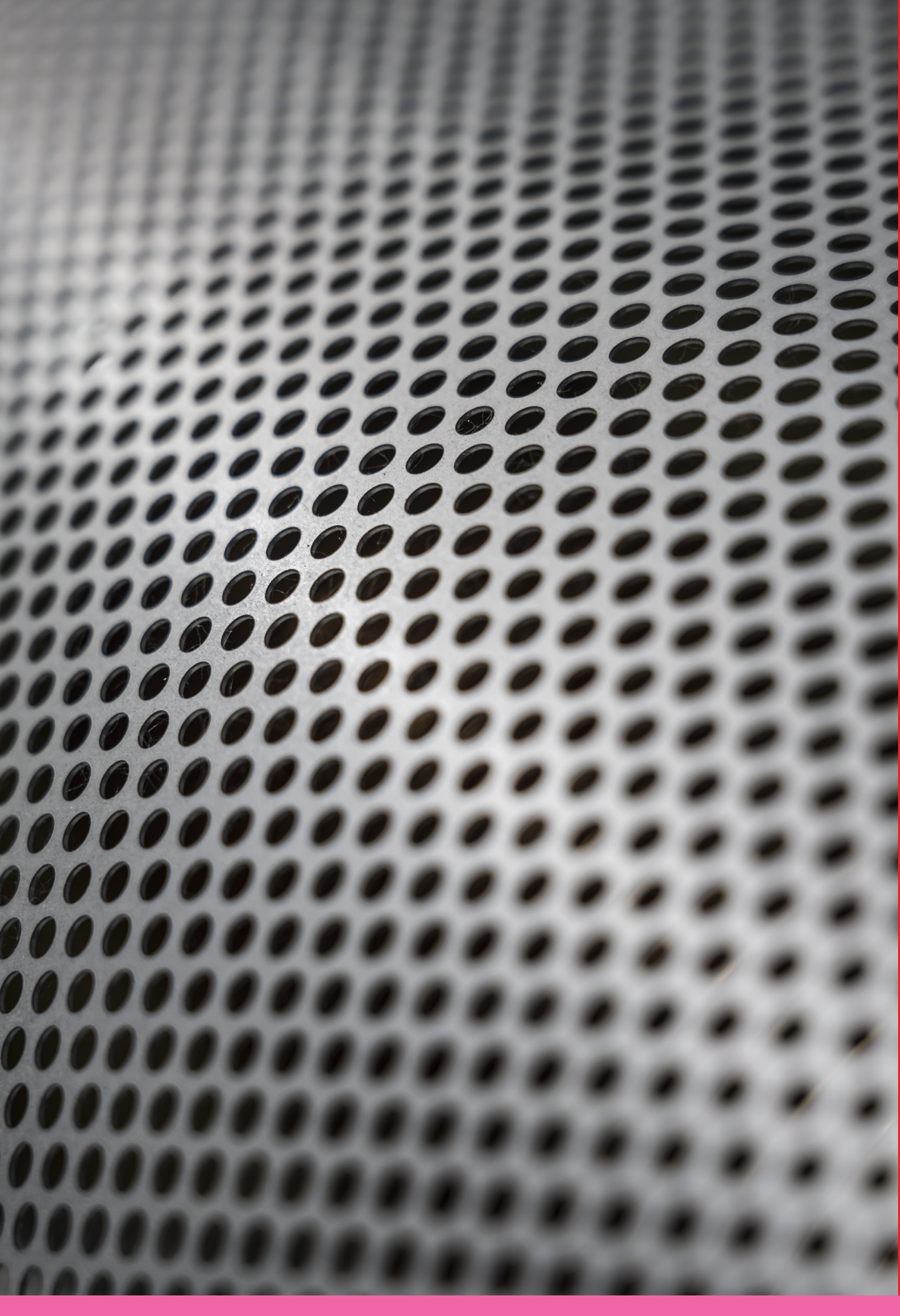


Section 6:

SUCTION FILTERS



Section 6

Suction Filters Selection Guide

	Pressure psi (bar)	Flow gpm (L/min)	Element Length/Size	Page	
Suction Filters	Tank-Mounted Suction Filter				
	ST	NA	20 (75)	K, KT	333
	Top-Ported Suction Filter				
	SKF3	300 (20)	25 (95)	KT	337
	In-Line Magnetic Suction Separators				
	TF-SKB	NA	12.5 (47)	SKB	341
	KF3-SKB	NA	35 (130)	SKB	342
	Tank-Mounted Magnetic Suction Separator				
BFT-SKB	NA	75 (285)	SKB	343	

Tank-Mounted Suction Filter

ST



Features and Benefits

- Tank-mounted suction filter for hydrostatic suction service
- Optional check valve prevents reservoir siphoning
- Easy Element changeout
- Inlet filter protects pump, reduces start-up failures

20 gpm
75 L/min

ST

SKF3

TF-SKB

KF3-SKB

BFT-SKB

Model No. of filter in photograph is ST1K105Y.

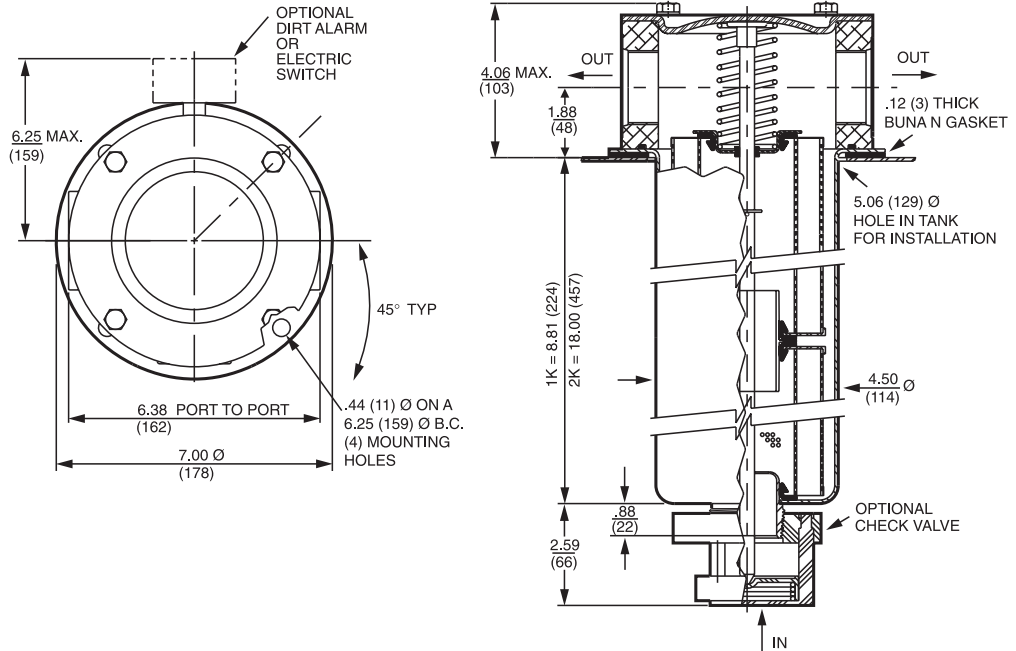
Flow Rating:	Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	Suction Filter
Min. Yield Pressure:	Not Applicable
Rated Fatigue Pressure:	Not Applicable
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Non-bypassing
Porting Head:	Die Cast Aluminum
Cap:	Steel
Element Case:	Steel
Weight of ST-1K:	11.1 lbs. (5.0 kg)
Weight of ST-2K:	14.7 lbs. (6.7 kg)

Element Change Clearance: 7.25" (185 mm) for 1K; 17.50" (445 mm) for KK

Filter Housing Specifications

Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E media (cellulose) and Z-Media® (synthetic)
High Water Content	10 μ Z-Media® (synthetic)
Invert Emulsions	10 μ Z-Media® (synthetic)
Water Glycols	10 μ Z-Media® (synthetic)
Phosphate Esters	10 μ Z-Media® (synthetic) with H (EPR) seal designation and 10 μ E media (cellulose) with H (EPR) seal designation
Skydrol®	10 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)

Fluid Compatibility



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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
KTZ10	7.4	8.0	10.0	8.0	10.0

Element	DHC (gm)
KTZ10	56

Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Inside Out

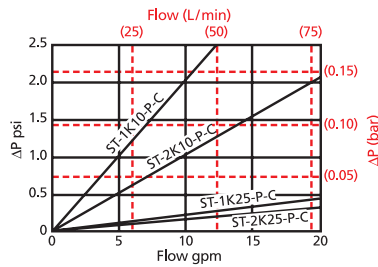
Element Nominal Dimensions: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

Tank-Mounted Suction Filter

ST

$\Delta P_{\text{housing}}$

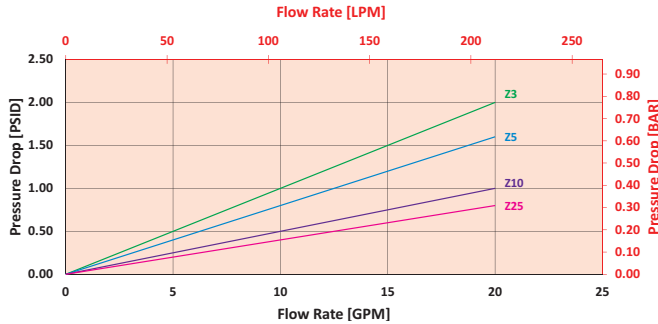
ST $\Delta P_{\text{housing}}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

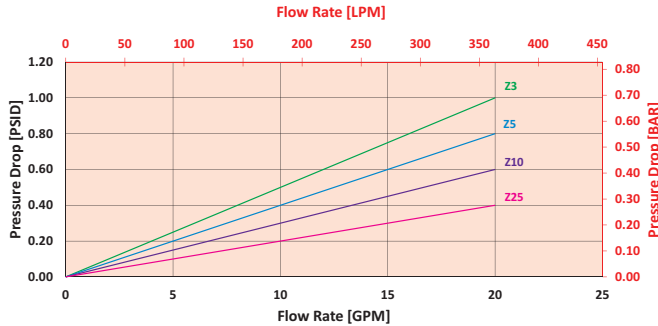
KTZ

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



2KTZ

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 15 gpm (57 L/min) for ST1KTZ10PY using 160 SUS (34 cSt) fluid.

Use the element pressure curve to determine $\Delta P_{\text{housing}}$ at 15 gpm. In this case, $\Delta P_{\text{housing}}$ is 1.5 psi (.10 bar) according to the graph for the ST element.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 15 gpm. In this case, $\Delta P_{\text{element}}$ is .75 psi (.05 bar) according to the graph for the KZT10 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:

$$\Delta P_{\text{housing}} = 1.5 \text{ psi } [.75 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = .75 \text{ psi } [.05 \text{ bar}]$$

$$v_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.07$$

$$\Delta P_{\text{filter}} = 1.5 \text{ psi} + (.75 \text{ psi} * 1.07) = 2.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .10 \text{ bar} + (0.05 \text{ bar} * 1.07) = 0.15 \text{ bar}$$

Pressure Drop Information
Based on Flow Rate and Viscosity

ST

SKF3

TF-SKB

KF3-SKB

BFT-SKB

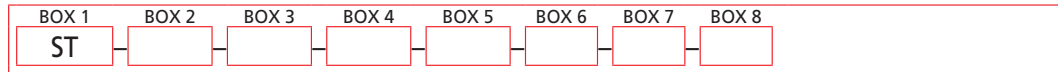
Note:

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.

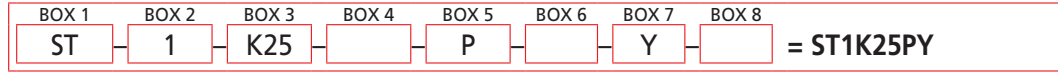
Ele.	ΔP	Ele.	ΔP	Ele.	ΔP
K3	0.25	KZW25	0.14	2KZW10	0.12
K10	0.09	2K3	0.12	2KZW25	0.07
K25	0.02	2K10	0.05	3K3	0.08
KAS3	0.10	2K25	0.01	3K10	0.03
KAS5	0.08	2KAS3	0.05	3K25	0.01
KAS10	0.05	2KAS5	0.04	3KAS3	0.03
KZX10	0.22	2KAS10	0.03	3KAS5	0.02
KZW1	0.43	2KZX10	0.11	3KAS10	0.02
KZW3	0.32	2KZW1	-	3KZX10	0.07
KZW5	0.28	2KZW3	0.16		
KZW10	0.23	2KZW5	0.14		

Filter Model Number Selection

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



Example: NOTE: Only box 8 may contain more than one option



BOX 1	BOX 2	BOX 3			BOX 4
Filter Series	Number of Elements	Element Part Number			Seal Material
ST	1 2	K10 = K size 10 μ E media (cellulose) K25 = K size 25 μ E media (cellulose) KTZ3 = K size 3 μ Excellement® Z-Media® (synthetic) inside-out flow KTZ5 = K size 5 μ Excellement® Z-Media® (synthetic) inside-out flow KTZ10 = K size 10 μ Excellement® Z-Media® (synthetic) inside-out flow KTZ25 = K size 25 μ Excellement® Z-Media® (synthetic) inside-out flow			Omit = Buna N H = EPR W = Buna N H.5 = Skydrol® compatibility
BOX 5		BOX 6	BOX 7		BOX 8
Outlet Port		Optional Check Valve	Dirt Alarm® Options		Additional Options
P = 1½" NPTF PP = Dual 1½" NPTF S = SAE 24 SS = Dual SAE 24 B = ISO 228 G-1½" BB = ISO 228 G-1½"		Omit = None C = Check Valve	Omit = None Visual Y = Vacuum gauge YR = Vacuum gauge mounted on opposite side of standard location Electrical VS = Electrical Vacuum Switch VSR = Electrical Vacuum Switch mounted on opposite side of standard location VSR1 = Heavy-Duty Vacuum Switch		Omit = None G2293 = Cork Gasket G547 = Two ⅛" gauge ports

NOTES:

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

Box 4. For options H and W, 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.
 Skydrol® is a registered trademark of Solutia Inc.

Box 6. See also "Accessories for Tank-Mounted Filters," page 299.

Top-Ported Suction Filter

SKF3



Features and Benefits

- Top-ported suction filter for hydrostatic suction service
- Easy element changeout
- Inlet filter protects pump, reduces start-up failures
- 2.5 psi suction bypass available

25 gpm
95 L/min
300 psi
20 bar

ST

SKF3

TF-SKB

KF3-SKB

BFT-SKB

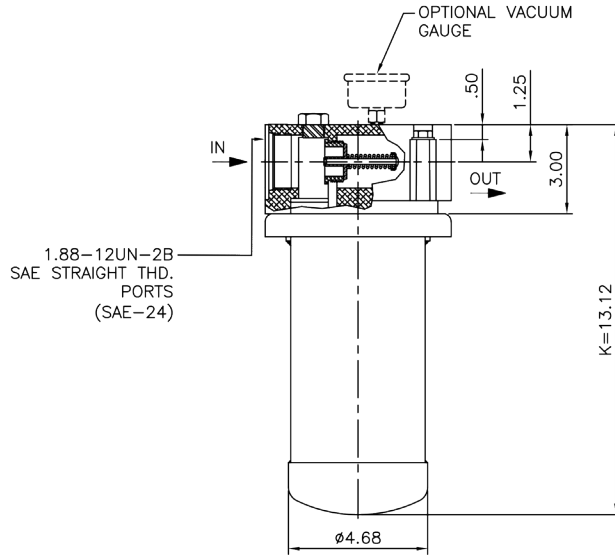
Model No. of filter in photograph is SKF31KTZ25S2.5Y

Flow Rating:	Up to 25 gpm (95 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: 2.5 psi (0.2 bar) Full Flow: Contact Factory
Porting Base:	Die Cast Aluminum
Element Case:	Steel
Weight of SKF3:	10.5 lbs. (4.8 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®
High Water Content	All Z-Media®
Invert Emulsions	10 and 25 µ Z-Media® (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-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
Skydrol®	3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation

Fluid Compatibility



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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
	KTZ1/GKTZ1	<1.0	<1.0	<1.0	<4.0
KTZ3/GKTZ3	<1.0	<1.0	<2.0	<4.0	4.8
KTZ5/GKTZ5	2.5	3.0	4.0	4.8	6.3
KTZ10/GKTZ10	7.4	8.2	10.0	8.0	10.0
KTZ25/GKTZ25	18.0	20.0	22.5	19.0	24.0

Dirt Holding Capacity

Element	DHC (gm)
KTZ1/GKTZ1	112
KTZ3/GKTZ3	115
KTZ5/GKTZ5	119
KTZ10/GKTZ10	108
KTZ25/GKTZ25	93

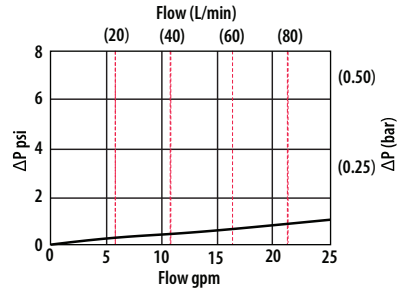
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Inside Out

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

$\Delta P_{\text{housing}}$

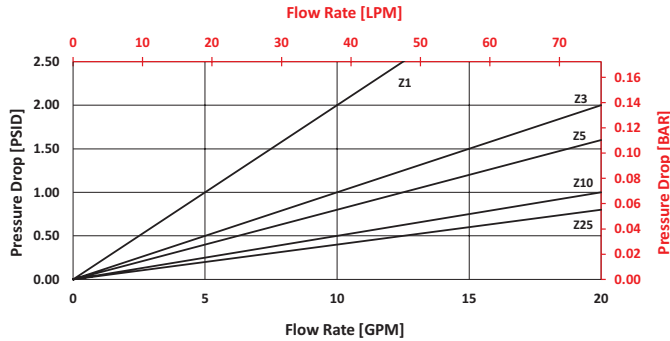
SKF3 $\Delta P_{\text{housing}}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

KTZ1

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



Curves Also Available Upon Request

Pressure Drop Information Based on Flow Rate and Viscosity

ST

SKF3

TF-SKB

KF3-SKB

BFT-SKB

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

Exercise:

Determine ΔP_{filter} at 20 gpm (76 L/min) for SKF31KTZ25S2.5Y using 200 SUS (44 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 20 gpm. In this case, $\Delta P_{\text{housing}}$ is 0.7 psi (.05 bar) on the graph for the SKF3 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 20 gpm. In this case, $\Delta P_{\text{element}}$ is 0.8 psi (.06 bar) according to the graph for the 1KTZ25 element.

Because the viscosity in this sample is 200 SUS (44 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:

$$\Delta P_{\text{housing}} = 0.7 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 0.8 \text{ psi } [.415 \text{ bar}]$$

$$v_f = 200 \text{ SUS } (42.4 \text{ cSt}) / 150 \text{ SUS } (32 \text{ cSt}) = 1.333$$

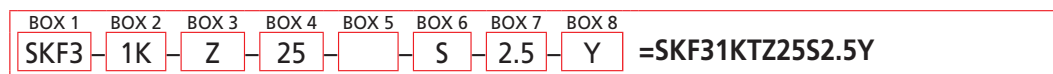
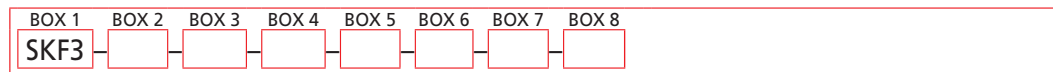
$$\Delta P_{\text{filter}} = 0.7 \text{ psi } + (0.8 \text{ psi } * 1.333) = 1.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .05 \text{ bar } + (.06 \text{ bar } * 1.333) = .13 \text{ bar}$$

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder SKF3:



BOX 1	BOX 2	BOX 3	BOX 4
Filter Series	Number & Size of Elements	Media Type	Micron Rating
SKF3 GSKF3 (GeoSeal®)	1KT GeoSeal® 1KTG	Omit = E media (cellulose) Z = Excellement® Z-Media® (synthetic) M = M Media (reusable metal)	1 = 1µ (Z-Media) 3 = 3µ (E, Z-Media) 5 = 5µ (Z-Media) 10 = 10µ (E, Z and M-Media) 25 = 25µ (E, Z and M-Media) 60 = 60µ (M-Media) 150 = 150µ (M-Media)

BOX 5	BOX 6	BOX 7
Seal Material	Magnetic Core	Porting
Omit = Buna N H = EPR V = Viton® H.5 = Skydrol® Compatibility W = Buna N with anodized parts	Omit = No Magnetic Core M = Magnetic Core	P = 1 1/2" NPTF S = SAE 24 F = 1 1/2" SAE-4-bolt flange Code 61 B = ISO 228 G-1 1/2"

BOX 8	BOX 9
Bypass	Dirt Alarm® Options
Omit = No Bypass 2.5 = 2.5 psi Suction Bypass	Omit = None Visual Y = Vacuum guage Electrical VS = Electrical Vacuum Switch VS1 = Heavy-Duty Vacuum Switch

NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.
Example: KTZ25

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.

In-Line Magnetic Suction Separators

TF-SKB

Features and Benefits

- Protects components downstream by capturing potentially harmful ferrous particles

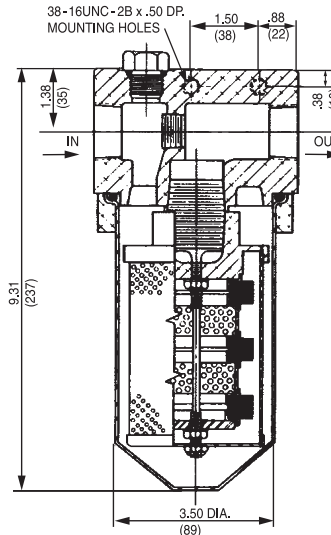
Specifications

Flow Rating: 12.5 gpm (47 L/min)

Element Replacement Part Number: SKB-1

Element Change Clearance: 2.5" (65 mm)

Weight of TF-SKB: 5.8 lbs (2.6 kg)

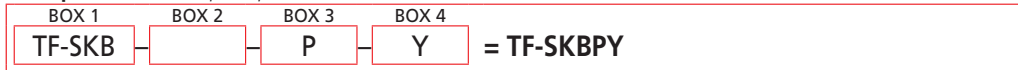


Metric dimensions in ().

How to Build a Valid Model Number for a Schroeder TF-SKB:



Example: NOTE: One option per box



BOX 1	BOX 2	BOX 3	BOX 4
Filter Series	Seal Material	Porting	Dirt Alarm® Options
TF-SKB	Omit = Buna N	P = 1" NPTF	Omit = None Visual Y = Vacuum gauge Electrical VS = Electrical Vacuum Switch VS1 = Heavy-Duty Vacuum Switch

Filter Model Number Selection

NOTE:
Box 1. Element replacement part number: SKB-1.

Features and Benefits

- Protects components downstream by capturing potentially harmful ferrous particles

Specifications

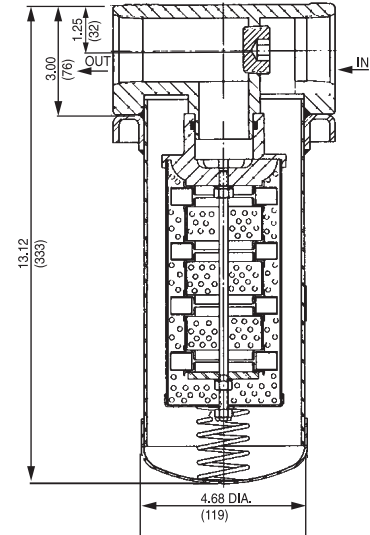
Flow Rating: 35 gpm (130 L/min)

Element Replacement Part Number: A-LF-1789

Element Change Clearance: 1.5" (40 mm)

Weight of KF3-SKB: 11.5 lbs (5.2 kg)

Metric dimensions in ().

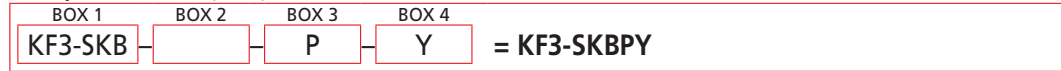


Filter Model Number Selection

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



Example: NOTE: One option per box



BOX 1	BOX 2	BOX 3	BOX 4
Filter Series	Seal Material	Porting	Dirt Alarm® Options
KF3-SKB	Omit = Buna N	P = 1/2" NPTF	Omit = None
			Visual Y = Vacuum gauge
			Electrical VS = Electrical Vacuum Switch
			VS1 = Heavy-Duty Vacuum Switch

NOTE:

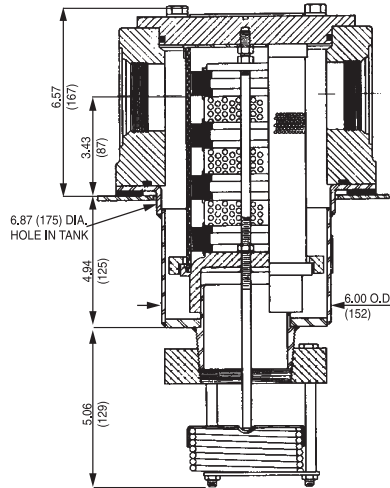
Box 1. Element replacement part number: A-LF-1789.

Tank-Mounted Magnetic Suction Separators

BFT-SKB

Features and Benefits

- Protects components downstream by capturing potentially harmful ferrous particles

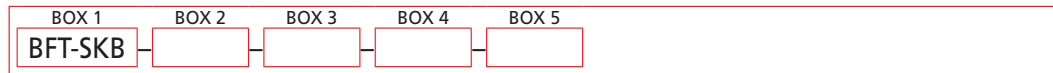


Metric dimensions in ().

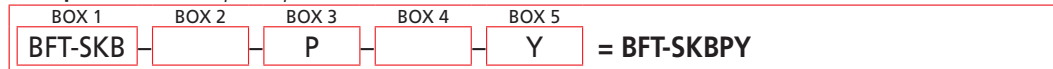
Flow Rating:	75 gpm (285 L/min)
Element Replacement	with check valve: A-SKB-3-76
Part Number:	without check valve: SKB-3
Element Change Clearance:	13.5" (345 mm)
Weight of BFT-SKB:	32.0 lbs (14.5 kg)

Specifications

How to Build a Valid Model Number for a Schroeder BFT-SKB::



Example: NOTE: One option per box



BOX 1	BOX 2	BOX 3	Box 4
Filter Series	Seal Material	Porting	Other Options
BFT-SKB	Omit = Buna N	P = 2½" NPTF PP = Dual 2½" NPTF F = 2½" SAE 4-bolt flange Code 61 FF = Dual 2½" SAE 4-bolt flange Code 61	Omit = None C = Check Valve

BOX 5	
Dirt Alarm® Options	
Omit = None	
Visual	Y = Vacuum gauge YR = Vacuum gauge mounted on opposite side of standard location
Electrical	VS = Electrical Vacuum Switch VSR = Electrical Vacuum Switch on opposite side of standard location VS1 = Heavy-Duty Vacuum Switch

Filter Model Number Selection

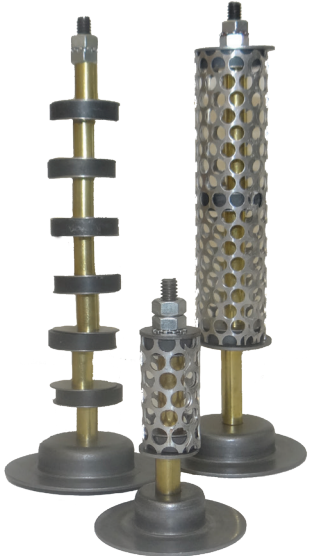
NOTE:
Box 1. See specifications on previous page for element replacement part numbers.

Magnet Inserts for Filters

Magnet Inserts for Filters

KF30, KF50, KC50, KC65 and TF50 are available with magnet inserts to trap ferrous material that passes through the filter element.

These inserts are removed with the element each time service is performed and cleaned before being reinserted with new elements.



Replacements are available by ordering parts:

	Single Element	Double Element	Triple Element
KF30, KF50, KC50, KC65, KF3, LF1, MLF1	A-LF-1592	A-LF-1593	A-LF-1594
TF50	A-TF-301-1	A-TF-302-1	

