

Cold Start Protection Inside-Out Flow Filter

QF5i



Features and Benefits (QF5i)

- Magnetic filtration protection while filter is in cold start bypass
- Coreless QCL element with inside-out flow for eco-friendly easy disposal
- Efficient means to remove both ferromagnetic and non-ferromagnetic parts from the fluid
- Designed for inside-out flow
- Depending on the filter length, a magnetic rod can be threaded into the element top cap sealing plug
- Element changeout from the top minimizes oil spillage
- Offered in pipe, SAE straight thread, and flange porting
- Optional inlet and outlet test points
- Various Dirt Alarm[®] options

120 gpm
454 L/min
500 psi
35 bar

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

3QF5

QFD2

QFD5

QF15

QLF15

SSQLF15

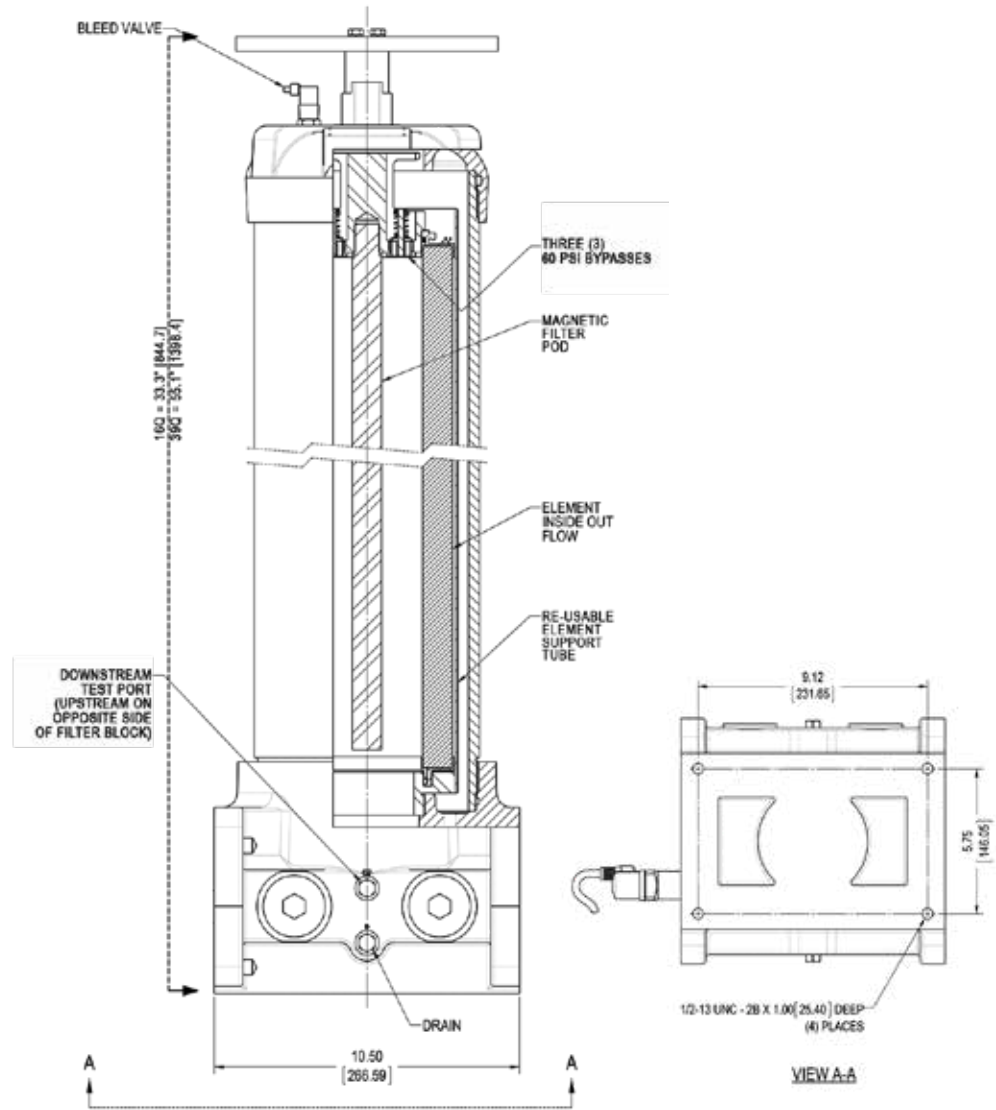
Model No. of filter in photograph is QF5i16QCLIZ10P3260M.

Flow Rating:	Up to 120 gpm (454 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	500 psi (35 bar)
Min. Yield Pressure:	2500 psi (172 bar), per NFPA T2.6.1-R1-2005
Rated Fatigue Pressure:	Contact Factory
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 60 psi (4.1 bar) Full Flow: 95 psi (6.6 bar)
Porting Base:	Cast Aluminum
Element Case:	Steel
Cap:	Ductile Iron
Weight of QF5i16:	85 lbs. (39 kg)
Weight of QF5i39:	120 lbs. (55 kg)
Element Change Clearance:	16QCLI 16.0" (407 mm) 39QCLI 39.0" (991 mm)

Filter Housing Specifications

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)

Fluid Compatibility



Metric dimensions in ().

Element Performance Information & Dirt Holding Capacity

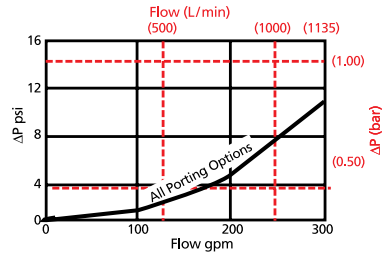
Element	Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402			Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171		Dirt Holding Capacity		
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$	Element	DHC (gm)	
16Q	CLIZ1	<1.0	<1.0	<1.0	<4.0	4.2	CLIZ1	307
	CLIZ3	<1.0	<1.0	<2.0	<4.0	4.8	CLIZ3	315
	CLIZ5	2.5	3.0	4.0	4.8	6.3	CLIZ5	364
	CLIZ10	7.4	8.2	10.0	8.0	10.0	CLIZ10	306
	CLIZ25	18.0	20.0	22.5	19.0	24.0	CLIZ25	278
39Q	CLIZ1	<1.0	<1.0	<1.0	<4.0	4.2	CLIZ1	1259
	CLIZ3	<1.0	<1.0	<2.0	<4.0	4.8	CLIZ3	1293
	CLIZ5	2.5	3.0	4.0	4.8	6.3	CLIZ5	1302
	CLIZ10	7.4	8.2	10.0	8.0	10.0	CLIZ10	1214
	CLIZ25	18.0	20.0	22.5	19.0	24.0	CLIZ25	1102

Flow Direction: Inside-Out

Element Nominal Dimensions: 16QCLI: 6.0" (150 mm) O.D. x 17.81" (452 mm) long
39QCLI: 6.0" (150 mm) O.D. x 39.63" (1007 mm) long

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

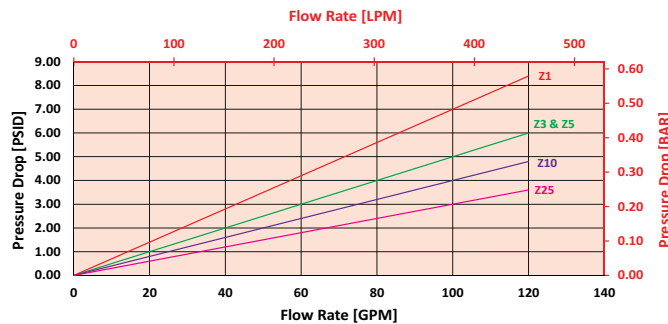
QF5i $\Delta P_{\text{housing}}$ for fluids with sp gr (specific gravity) = 0.86:



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

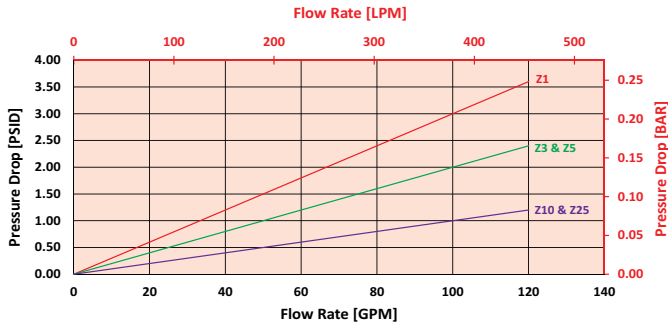
16QCLIZ

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



39QCLIZ

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 120 gpm (455 L/min) for QF5i16QCLIZ3P32 using 200 SUS (44 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 120 gpm. In this case, $\Delta P_{\text{housing}}$ is 3 psi (.21 bar) on the graph for the QF5i housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 120 gpm. In this case, $\Delta P_{\text{element}}$ is 6 psi (.415 bar) according to the graph for the 16QCLIZ3 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:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 6 \text{ psi } [.415 \text{ bar}]$$

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

$$\Delta P_{\text{filter}} = 3 \text{ psi } + (6 \text{ psi } * 1.333) = 11 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar } + (.415 \text{ bar } * 1.333) = .76 \text{ bar}$$

Pressure Drop Information Based on Flow Rate and Viscosity

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

3QF5

QFD2

QFD5

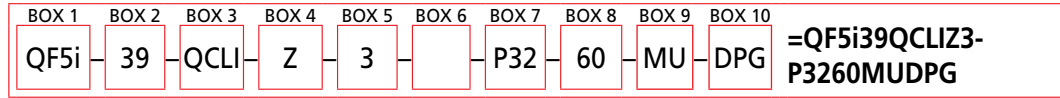
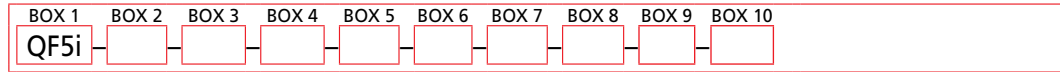
QF15

QLF15

SSQLF15

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder QF5i:



BOX 1	BOX 2	BOX 3	BOX 4	BOX 5
Filter Series	Element Length (in)	Element Style	Media Type	Micron Rating
QF5i	16 39	QCLI	Z = Excellement® Z-Media® (synthetic)	1 = 1 µm Z-Media® 3 = 3 µm Z-Media® 5 = 5 µm Z-Media® 10 = 10 µm Z-Media® 25 = 25 µm Z-Media®

BOX 6	BOX 7	BOX 8	BOX 9
Housing Seal Material	Porting	Bypass Setting	Options
Omit = Buna N V = Viton®	P32 = 2" NPTF F32 = 2" SAE 4-bolt flange Code 61 P40 = 2½" NPTF F40 = 2½" SAE 4-bolt flange Code 61 P48 = 3" NPTF S32 = SAE-32 F48 = 3" SAE 4-bolt flange Code 61	60 = 60 psi cracking	Omit = No Magnet M = Magnetic Filter Rod Omit = No Test point U = Test point in cap (upstream) UU = Test points in block (upstream and downstream)

Dirt Alarm® Options	
	Omit = None
Visual	DPG = Standard differential pressure gauge 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 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

NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4 and 5 plus the letter V.
Example: 16QCLIZ10V

Box 6. All elements for this filter are supplied with Viton® seals. Seal designation in Box 6 applies to housing only. Viton® is a registered trademark of DuPont Dow Elastomers.