Cold Start Protection Inside-Out Flow Filter QF5i

Model No. of filter in photograph is QF5i16QCLIZ10F3260M.

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
- 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

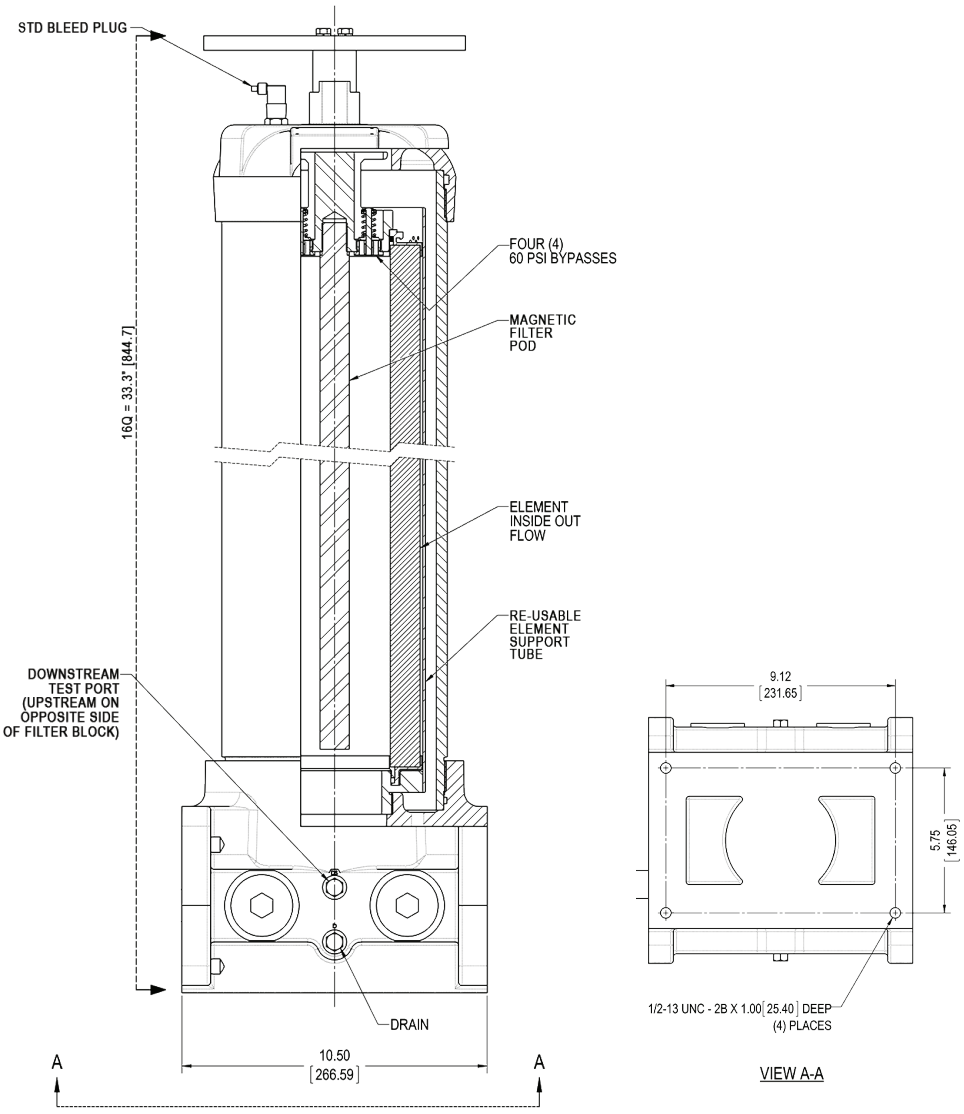
Filter Housing Specifications

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: Weight of QF5i39:	85 lbs. (39 kg) 120 lbs. (55 kg)
Element Change Clearance:	16QCLI 16.0" (407 mm)

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)

QF5i Cold Start Protection Inside-Out Flow Filter



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

Flow Direction: Inside-Out

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

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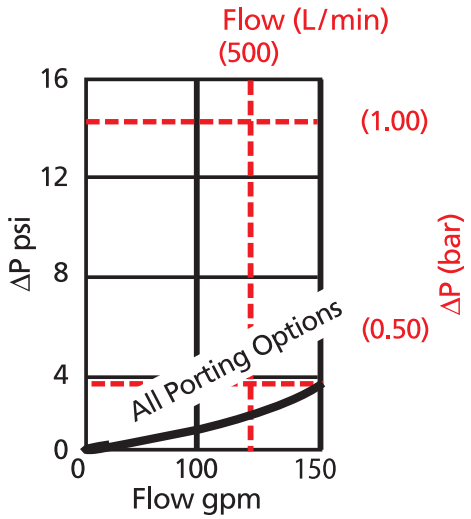
Pressure Drop Information
Based on Flow Rate and Viscosity

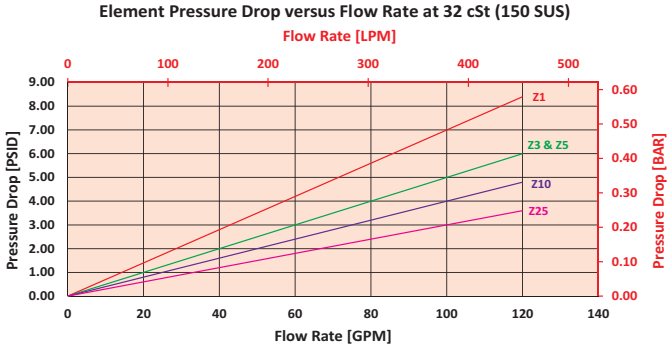
$\Delta P_{housing}$

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



$\Delta P_{element}$

16QCLIZ



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

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

Use the element pressure curve to determine $\Delta P_{element}$ at 120 gpm. In this case, $\Delta P_{element}$ 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 $\Delta P_{housing}$ with the true element pressure differential, ($\Delta P_{element} * V_f$). The $\Delta P_{element}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:

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

V_f = 200 SUS (42.4 cSt) / 150 SUS (32 cSt) = 1.333

ΔP_{filter} = 3 psi + (6 psi * 1.333) = 11 psi

OR

ΔP_{filter} = .21 bar + (.415 bar * 1.333) = .76 bar

QF5i Cold Start Protection Inside-Out Flow Filter

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	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10
QF5i									

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10	
QF5i	16	QCLI	Z	3		P32	60	MU	DPG	**=QF5i16QCLIZ3-P3260MUDPG**

BOX 1 — Filter Series

QF5i

BOX 2 — Element Length (in)

16

BOX 3 — Element Style

QCLI

BOX 4 — Media Type

Z = Excellement® Z-Media® (synthetic)

BOX 5 — Micron Rating

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 — Housing Seal Material

Omit = Buna N
V = Viton®

BOX 7 — Porting

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

BOX 8 — Bypass Setting

60 = 60 psi cracking

BOX 9 — Options

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)

BOX 10 — 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.