# Cold Start Protection Inside-Out Flow Filter QF5i

Model No. of filter in photograph is QF5i16QCLIZ10P3260M.

## 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***



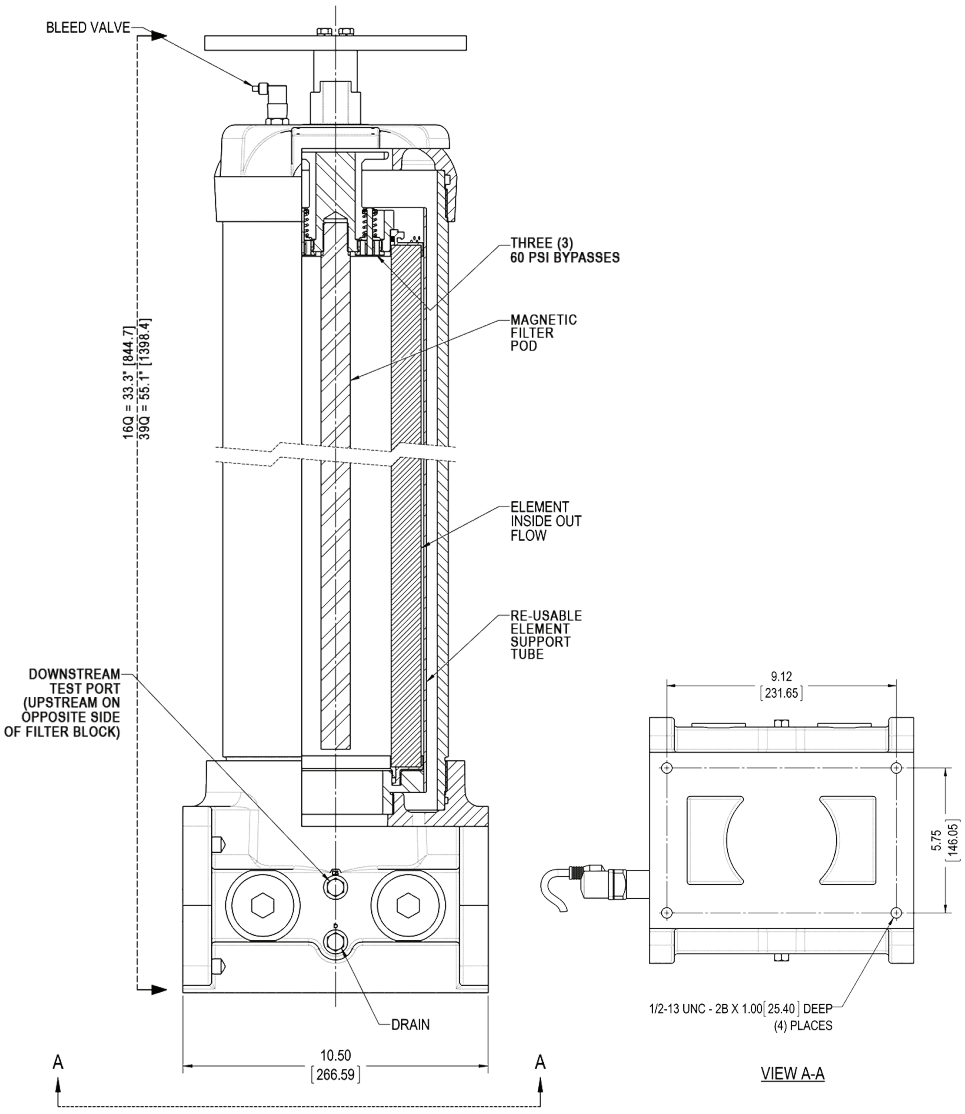
## Filter Housing Specifications

| | |
|---|---|
| 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)<br>Full Flow: 95 psi (6.6 bar) |
| Porting Base: | Cast Aluminum |
| Element Case: | Steel |
| Cap: | Ductile Iron |
| Weight of QF5i16:<br>Weight of QF5i39: | 85 lbs. (39 kg)<br>120 lbs. (55 kg) |
| Element Change Clearance: | 16QCLI 16.0" (407 mm)<br>39QCLI 39.0" (991 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 |
| 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 |

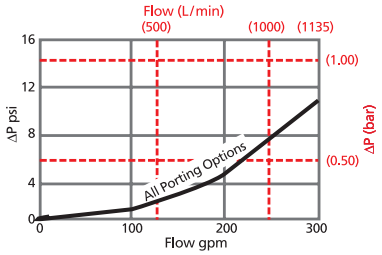
**Flow Direction:** Inside-Out

**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

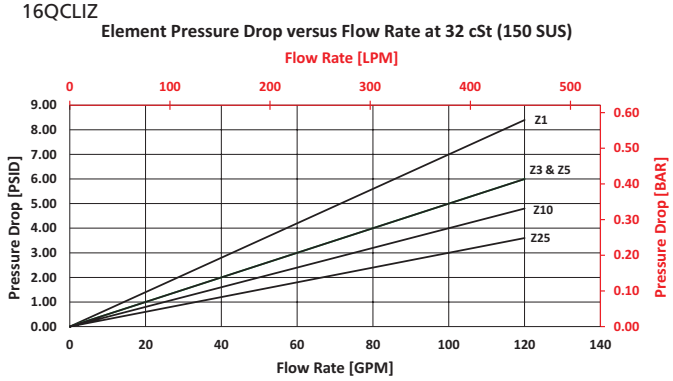
$\Delta P_{housing}$

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

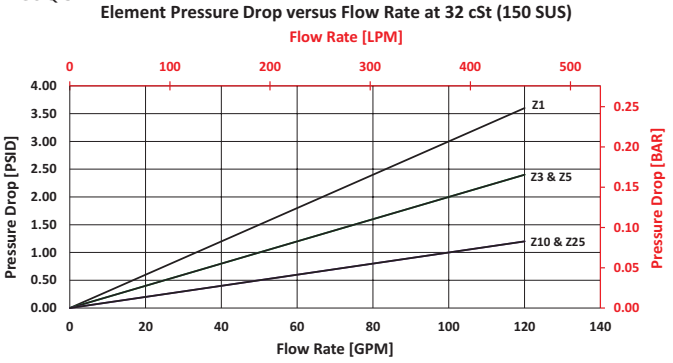



$\Delta P_{element}$

16QCLIZ




39QCLIZ




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

**Exercise:**

Determine $\Delta P_{filter}$ 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 ($\nu_f$)** 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, $\Delta P_{filter}$ , is calculated by adding $\Delta P_{housing}$ with the true element pressure differential, ($\Delta P_{element} * \nu_f$ ). 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]

$\nu_f$ = 200 SUS (42.4 cSt) / 150 SUS (32 cSt) = 1.333

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

**OR**

$\Delta P_{filter}$ = .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 | 39 | QCLI | Z | 3 | | P32 | 60 | MU | DPG | **=QF5i39QCLIZ3-P3260MUDPG** |

**BOX 1 — Filter Series**

| |
|---|
| QF5i |

**BOX 2 — Element Length (in)**

| |
|---|
| 16 |
| 39 |

**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.