C-LOK

C-LOK Instrument Valve Co.,Ltd.

Filters

F1、F2、F3 and F4 Series

C-LOK

Filtration Definitions

1. Sintered element: metal powder(alloys are available) is pressed in a die at sufficient pressure that the powder particles adhere at their contact points;
2. Strainer element: the strainer is cup-shaped and includes an inner cup-shaped support structure having staggered perforations extending through the surfaces thereof,an outer cup-shaped strainer structure of wire mesh is closely received over the support structure;
3. Element nominal pore size: the elment nominal pore size is normally calculated from the pressure required to cause air to bubble from the largest pore in the filter element when submerged in a test liquid.

Features

Tee-type filters
F1 Series

1. Filter element replaceable without removing body from system;
2. Union bonnet design;
3. Nominal pore sizes for sintered element: 0.5, 2, 7, 15, 40, 60 and 80 um;
4. Nominal pore sizes for sintered element: 100, 150, 250 and 450 um;
5. Maximum working pressure: 6000 psig (414 bar);
6. Working temperature:-20℉ to 900℉(-29℃ to 482℃);
7. Body materials: 316 SS, 316L SS, 304 SS, 304L SS and Brass;
8. Variety of end connections available.

Bypass Filters

F2 Series

1. Bypass port at filter bottom for the ease of sampling purging;
2. Union bonnet design;
3. Nominal pore sizes for sintered element: 0.5, 2, 7, 15, 40, 60 and 80 um;
4. Nominal pore sizes for sintered element: 100, 150, 250 and 450 um;
5. Maximum working pressure: 6000 psig (414 bar);
6. Working temperature:-20℉ to 900℉(-29℃ to 482℃);
7. Body materials: 316 SS, 316L SS, 304 SS, 304L SS and Brass;
8. Variety of end connections available.

In-line Filters

F3 Series

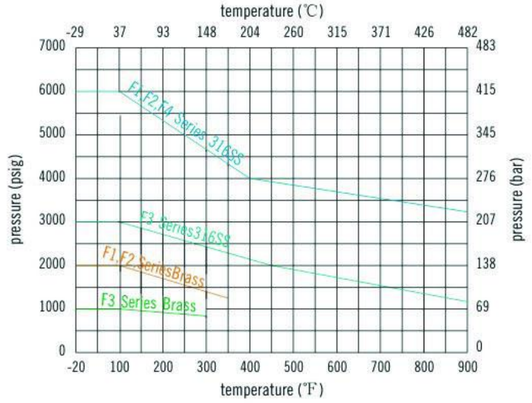
1. Compact and space-saving design;
2. Nominal pore sizes for sintered element: 0.5, 2, 7, 15, 40, 60 and 80 um;
4. Nominal pore sizes for sintered element: 100, 150, 250 and 450 um;
5. Maximum working pressure: 3000 psig (207 bar);
6. Working temperature:-20℉ to 900℉(-29℃ to 482℃);
7. Body materials: 316 SS, 316L SS, 304 SS, 304L SS and Brass;
8. Variety of end connections available.

All-welded In-line Filters

F4 Series

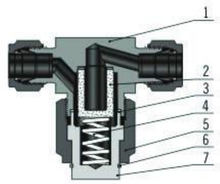
1. Large filtration area and high flow coefficient;
2. All-welded construction for elimination of leakage;
3. Easy cleaning of filters by backflushing;
4. Full-penetration weld between body and element;
5. Nominal pore sizes for sintered element: 0.5, 2, 7, 15, 40, 60 and 80 um;
6. Maximum working pressure: 6000 psig (414 bar);
7. Working temperature:-20℉ to 900℉(-29℃ to 482℃);
8. Body materials: 316 SS, 316L SS, 304 SS, 304L SS and Brass;
9. Variety of end connections available.

Pressure vs.temperature

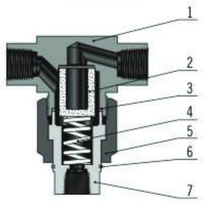


Contact the authorized representative or C-LOK for curve graph of other materials

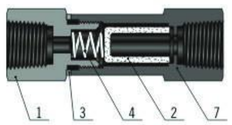
F1 Series



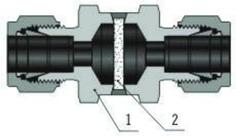
F2 Series



F3 Series



F4 Series



Standard Material of Construction

Component		Material Grade/ASTM Specification	
		316SS	Brass
1	Body	316SS/A479	Brass/B16
2	Element	Sintered 316SS or strainer 316SS	Sintered 316SS or strainer 316SS
3	Gasket	PTFE/D1710 or silver-plated 316SS/A240	PTFE/D1710 or aluminum/B209
4	Spring	302SS/A313	302SS/A313
5	Bonnet Nut	316SS/A479	Brass/B16
6	Backup Ring	316SS/A276	
7	Bonnet	316SS/A479	Brass/B16

1. F4 Series filters not available in bass
2. Lubricants: molybdenum disulfide-based and silicone-based

Maximum Differential Pressure Clean Filter at 70°F (20°C)

Series	Maximum Differential Pressure psig (bar)										
	0.5 Micron	2 Micron	7 Micron	15 Micron	40 Micron	60 Micron	80 Micron	100 Micron	150 Micron	250 Micron	450 Micron
F1, F2, F3	2250 (155.2)	2250 (155.2)	1950 (134.2)	1750 (120.3)	1150 (79.3)	1150 (79.3)	1000 (68.9)	1000 (68.9)	1000 (68.9)	1000 (68.9)	1000 (68.9)
F4	600 (41.4)	100 (6.9)	100 (6.9)	100 (6.9)	—	—	—	—	—	—	—

Elements

Nominal Pore Sizes um	Pore Sizes Range um	Elements Type
0.5	0.5 to 2	Sintered
2	1 to 4	
7	5 to 10	
15	11 to 25	
40	35 to 53	
60	50 to 75	
80	70 to 95	
100	—	Strainer
150	—	
250	—	
450	—	

Flow Data at 70°F (20°C)

F1,F2 Series

Pressure Drop to Atmosphere Δp psig(bar)	2 Series		4 Series		6,8 Series	
	Water Flow U.S.gal(L/min)	Air Flow std ft³/min (std L/min)	Water Flow U.S.gal(L/min)	Air Flow std ft³/min (std L/min)	Water Flow U.S.gal(L/min)	Air Flow std ft³/min (std L/min)
	0.5 Micron Cv=0.035		0.5 Micron Cv=0.035		0.5 Micron Cv=0.052	
5(0.34)	0.07(0.26)	0.4(11.3)	0.07(0.26)	0.4(11.3)	0.11(0.43)	0.47(13.3)
10(0.69)	0.11(0.42)	0.5(14.2)	0.11(0.42)	0.5(14.2)	0.16(0.62)	0.74(21.0)
50(3.45)	0.25(0.95)	1.33(37.7)	0.25(0.95)	1.33(37.7)	0.36(1.38)	1.96(55.5)
	2 Micron Cv=0.068		2 Micron Cv=0.072		2 Micron Cv=0.096	
5(0.34)	0.15(0.56)	0.77(21.8)	0.16(0.60)	0.82(23.2)	0.21(1.81)	1.09(30.9)
10(0.69)	0.22(0.83)	0.97(27.5)	0.22(0.83)	1.02(28.9)	0.30(1.14)	1.37(38.8)
50(3.45)	0.48(1.81)	2.58(73.1)	0.51(1.93)	2.72(77.0)	0.67(2.53)	3.64(103.1)
	7 Micron Cv=0.158		7 Micron Cv=0.165		7 Micron Cv=0.35	
5(0.34)	0.35(1.32)	1.80(51.0)	0.37(1.40)	1.83(53.2)	0.78(2.96)	4.00(113.3)
10(0.69)	0.50(1.89)	2.25(63.7)	0.52(1.96)	2.35(66.5)	1.10(4.18)	5.00(141.6)
50(3.45)	1.12(4.22)	5.89(169.3)	1.16(4.38)	6.25(177.0)	2.47(9.35)	13.3(376.6)
	15 Micron Cv=0.19		15 Micron Cv=0.20		15 Micron Cv=0.37	
5(0.34)	0.42(1.61)	2.16(61.2)	0.44(1.66)	2.28(64.6)	0.82(3.12)	4.20(118.9)
10(0.69)	0.60(2.27)	2.71(76.7)	0.63(2.38)	2.85(80.7)	0.82(3.12)	5.28(149.5)
50(3.45)	1.34(5.06)	7.20(203.9)	1.41(5.33)	7.58(214.6)	2.61(9.88)	14.00(396.4)
	40 Micron Cv=0.23		40 Micron Cv=0.24		40 Micron Cv=0.42	
5(0.34)	0.51(1.94)	2.62(74.2)	0.54(2.04)	2.74(77.6)	0.93(3.54)	4.80(135.9)
10(0.69)	0.73(2.76)	3.28(96.8)	0.76(2.87)	3.42(96.8)	1.32(5.02)	6.00(169.9)
50(3.45)	1.63(6.16)	8.74(247.5)	1.70(6.42)	9.11(258.0)	2.96(11.20)	15.90(450.2)
	60 Micron Cv=0.24		60 Micron Cv=0.25		60 Micron Cv=0.45	
5(0.34)	0.54(2.04)	2.74(77.6)	0.56(2.11)	2.85(80.7)	1.00(3.78)	5.10(144.4)
10(0.69)	0.76(2.87)	3.42(96.8)	0.79(2.90)	3.57(101.1)	1.42(5.37)	6.40(181.2)
50(3.45)	1.70(6.42)	9.11(258.0)	1.77(6.70)	9.49(268.7)	3.18(12.00)	17.00(481.4)
	80 Micron Cv=0.25		80 Micron Cv=0.26		80 Micron Cv=0.67	
5(0.34)	0.56(2.11)	2.85(80.7)	0.58(2.19)	2.96(83.8)	1.49(5.66)	7.64(216.3)
10(0.69)	0.79(2.98)	3.57(101.1)	0.82(3.10)	3.70(104.8)	2.11(5.89)	9.55(270.4)
50(3.45)	1.77(6.70)	9.49(268.7)	1.84(6.95)	9.80(277.5)	4.73(17.90)	25.40(719.2)
	100 Micron Cv=0.27		100 Micron Cv=0.28		100 Micron Cv=0.72	
5(0.34)	0.60(2.27)	3.08(87.2)	0.62(2.34)	3.20(90.6)	1.61(6.08)	8.20(232.2)
10(0.69)	0.85(3.21)	3.85(109.0)	0.88(3.30)	4.00(113.2)	2.27(8.61)	10.20(288.8)
50(3.45)	1.91(7.22)	10.20(288.8)	1.98(7.48)	5.30(150.1)	5.09(19.20)	27.20(770.2)
	150,250,450 Micron Cv=0.55		150, 250, 450 Micron Cv=0.58		150, 250, 450 Micron Cv=0.80	
5(0.34)	1.23(4.65)	6.28(177.8)	1.30(4.91)	6.60(186.9)	1.83(6.93)	9.36(265.0)
10(0.69)	1.74(6.58)	7.85(222.3)	1.83(6.91)	8.20(232.2)	2.59(9.80)	11.70(331.3)
50(3.45)	3.89(14.70)	20.80(589.0)	4.10(15.50)	21.9(620.1)	5.79(21.90)	27.20(770.2)

Flow Data at 70°F (20°C)

F3 Series

Pressure Drop to Atmosphere Δp psig(bar)	2 Series		4 Series		6,8 Series	
	Water Flow U.S.gal(L/min)	Air Flow std ft³/min (std L/min)	Water Flow U.S.gal(L/min)	Air Flow std ft³/min (std L/min)	Water Flow U.S.gal(L/min)	Air Flow std ft³/min (std L/min)
	0.5 Micron Cv=0.008		0.5 Micron Cv=0.038		0.5 Micron Cv=0.187	
5(0.34)	0.01(0.03)	0.09(2.6)	0.08(0.30)	0.42(11.9)	0.41(1.45)	2.09(59.2)
10(0.69)	0.02(0.07)	0.11(3.1)	0.12(0.45)	0.52(14.7)	0.59(2.23)	2.56(72.5)
50(3.45)	0.05(0.18)	0.30(8.5)	0.26(0.98)	1.72(4.02)	1.32(4.98)	6.99(197.9)
	2 Micron Cv=0.022		2 Micron Cv=0.106		2 Micron Cv=0.374	
5(0.34)	0.04(0.15)	0.24(6.8)	0.23(0.86)	1.18(33.4)	0.83(3.13)	4.2(118.9)
10(0.69)	0.06(0.22)	0.30(8.5)	0.42(1.58)	1.45(41.1)	1.18(4.46)	5.13(145.3)
50(3.45)	0.15(0.56)	0.82(23.2)	0.74(2.79)	3.96(112.1)	2.64(9.97)	14.00(396.4)
	7 Micron Cv=0.28		7 Micron Cv=0.112		7 Micron Cv=0.406	
5(0.34)	0.06(0.22)	0.3.1(8.7)	0.25(0.94)	1.26(35.7)	0.90(3.40)	4.56(129.1)
10(0.69)	0.80(0.06)	0.38(10.8)	0.35(1.32)	1.54(43.6)	1.28(4..83)	5.57(157.7)
50(3.45)	0.19(0.71)	1.05(29.7)	0.79(2.98)	4.20(118.9)	2.87(10.80)	15.2(430.4)
	15 Micron Cv=0.096		15 Micron Cv=0.183		15 Micron Cv=0.515	
5(0.34)	0.21(0.79)	1.08(30.6)	0.40(1.51)	2.05(58.0)	1.15(4.37)	5.78(163.7)
10(0.69)	0.30(1.13)	1.32(37.4)	0.57(2.15)	2.50(70.8)	1.62(6.12)	7.07(200.2)
50(3.45)	0.67(2.53)	3.60(101.9)	1.29(4.87)	6.80(192.6)	3.64(13.70)	19.2(543.7)
	40 Micron Cv=0.143		40 Micron Cv=0.294		40 Micron Cv=0.678	
5(0.34)	0.32(1.20)	1.60(43.7)	0.65(2.45)	3.3(93.4)	1.51(5.70)	7.72(218.6)
10(0.69)	0.45(1.70)	1.95(55.2)	0.92(3.47)	4.03(114.1)	2.14(8.08)	9.43(267.0)
50(3.45)	1.01(3.81)	5.54(151.2)	2.07(7.82)	11.0(311.5)	4.79(18.10)	25.70(727.7)
	60 Micron Cv=0.168		60 Micron Cv=0.325		60 Micron Cv=0.874	
5(0.34)	0.37(1.39)	1.89(53.5)	0.72(2.72)	3.57(101.0)	1.95(7.37)	9.81(277.8)
10(0.69)	0.53(2.00)	2.31(65.4)	1.02(3.85)	4.46(126.3)	2.76(10.40)	11.90(337.0)
50(3.45)	1.18(4.46)	63.0(178.4)	2.29(8.86)	12.10(342.6)	6.18(23.30)	32.70(926.0)
	80 Micron Cv=0.198		80 Micron Cv=0.473		80 Micron Cv=1.106	
5(0.34)	0.44(1.66)	2.22(62.3)	1.05(3.96)	5.31(150.4)	2.47(9.33)	12.40(351.1)
10(0.69)	0.62(2.34)	2.71(76.7)	1.49(5.63)	6.49(183.8)	3.49(13.10)	15.10(427.6)
50(3.45)	1.40(5.29)	7.41(209.8)	3.34(12.60)	17.70(501.2)	7.82(29.50)	41.40(1172.3)
	100 Micron Cv=0.220		100 Micron Cv=0.565		100 Micron Cv=1.218	
5(0.34)	0.49(1.85)	2.47(69.9)	1.26(4.74)	6.35(179.8)	2.72(10.20)	13.60(385.1)
10(0.69)	0.69(2.60)	3.02(85.5)	1.78(6.72)	7.76(219.7)	3.85(14.50)	16.70(472.9)
50(3.45)	1.55(5.85)	8.25(233.6)	3.99(15.00)	21.10(597.5)	8.61(32.50)	45.60(1291.2)
	150, 250, 450 Micron Cv=0.264		150, 250, 450 Micron Cv=0.780		150, 250, 450 Micron Cv=2.413	
5(0.34)	0.49(1.85)	2.97(84.1)	1.74(6.57)	8.70(246.3)	5.39(20.30)	27.00(764.6)
10(0.69)	0.69(2.60)	3.63(102.8)	2.46(9.29)	10.70(303.0)	7.63(28.80)	33.10(937.3)
50(3.45)	1.55(5.85)	9.90(280.3)	5.51(20.80)	29.20(826.9)	17.00(64.20)	90.30(2557.0)

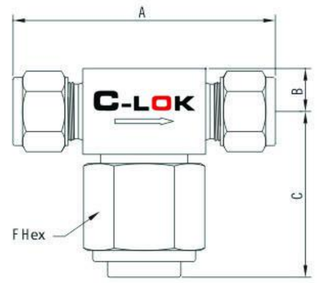
Flow Data at 70°F (20°C)

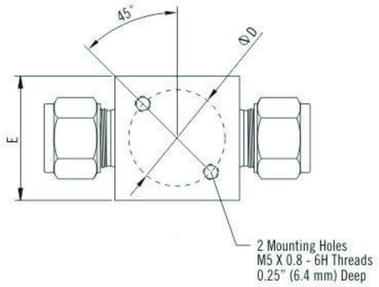
F4 Series

Pressure Drop to Atmosphere Δp psig(bar)	4 Series	
	Water Flow U.S.gal(L/min)	Air Flow std ft³/min (std L/min)
	0.5 Micron Cv=0.035	
5(0.34)	0.01(0.03)	0.09(2.6)
10(0.69)	0.02(0.07)	0.11(3.1)
50(3.45)	0.05(0.18)	0.30(8.5)
	2 Micron Cv=0.42	
5(0.34)	0.93(3.50)	4.72(133.7)
10(0.69)	1.32(4.98)	5.77(163.4)
50(3.45)	2.96(11.10)	15.70(444.6)
	5 Micron Cv=0.45	
5(0.34)	1.00(3.78)	5.04(142.7)
10(0.69)	1.42(5.36)	6.16(174.4)
50(3.45)	3.18(12.0)	6.80(475.7)
	15 Micron Cv=0.76	
5(0.34)	1.69(6.22)	8.55(242.1)
10(0.69)	2.40(9.07)	10.40(294.5)
50(3.45)	5.37(20.30)	28.50(807.0)

Dimensions

F1 Series



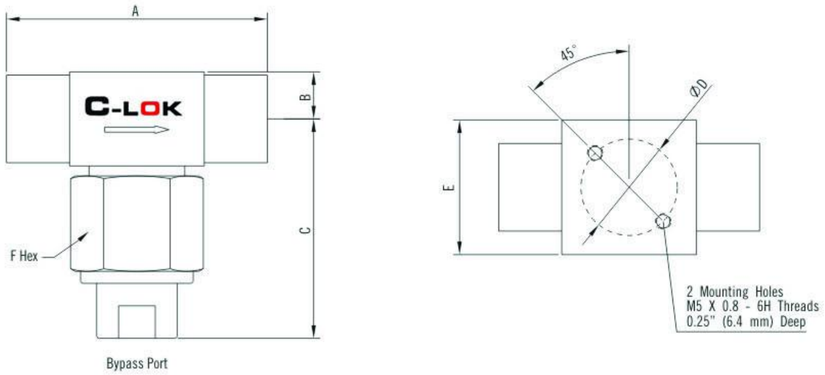


Basic Ordering Number	Connection Type and Size		Dimension, in. (mm)					
	Inlet	Outlet	A	B	C	ΦD	E	F
-F1-S2-	1/8" OD	1/8" OD	2.27(57.7)	0.38(9.7)	1.49(37.8)	1.0(25.4)	1.0(25.4)	1.0(25.4)
-F1-S4-	1/4" OD	1/4" OD	2.47(62.7)					
-F1-S6-	3/8" OD	3/8" OD	2.84(72.1)	0.46(11.7)	1.74(44.2)	1.13(28.7)	1.13(28.7)	1 1/8(28.575)
-F1-S8-	1/2" OD	1/2" OD	3.04(77.2)					
-F1-SM6-	6mm OD	6mm OD	2.46(62.5)	0.38(9.7)	1.49(37.8)	1.0(25.4)	1.0(25.4)	1.0(25.4)
-F1-SM8-	8mm OD	8mm OD	2.84(72.1)	0.46(11.7)	1.74(44.2)	1.13(28.7)	1.13(28.7)	1 1/8(28.575)
-F1-SM10-	10mm OD	10mm OD	2.86(72.6)					
-F1-SM12-	12mm OD	12mm OD	3.04(77.2)					
-F1--F2-	1/8 Female NPT	1/8 Female NPT	2.00(50.8)	0.38(9.7)	1.49(37.8)	1.0(25.4)	1.0(25.4)	1.0(25.4)
-F1-F4-	1/4 Female NPT	1/4 Female NPT	2.13(54.1)					
-F1-M4-	1/4 Male NPT	1/4 Male NPT						
-F1-M6-	3/8 Male NPT	3/8 Male NPT	2.38(60.5)	0.46(11.7)	1.74(44.2)	1.13(28.7)	1.13(28.7)	1 1/8(28.575)
-F1-M8-	1/2 Male NPT	1/2 Male NPT	2.75(69.9)					

Mounting holes not available with 1/4 female NPT end connections

Dimensions

F2 Series

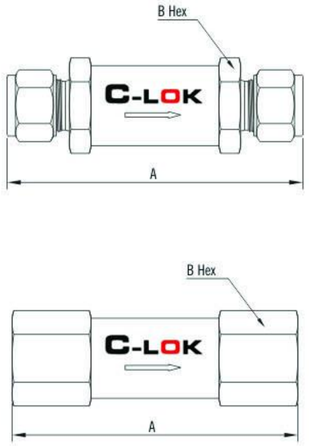


Basic Ordering Number	Connection Type and Size		Dimension,in.(mm)					
	Inlet	Outlet	A	B	C	ΦD	E	F
-F2-S2-	1/8" OD	1/8" OD	2.27(57.7)	0.38(9.7)	1.98(50.2)	1.0(25.4)	1.0(25.4)	1.0(25.4)
-F2-S4-	1/4" OD	1/4" OD	2.47(62.7)		2.44(61.9)			
-F2-S6-	3/8" OD	3/8" OD	2.84(72.1)	0.46(11.7)	2.74(69.1)	1.13(28.7)	1.13(28.7)	1 1/8(28.575)
-F2-S8-	1/2" OD	1/2" OD	3.04(77.2)		2.96(74.2)			
-F2-SM6-	6mm OD	6mm OD	2.46(62.5)	0.38(9.7)	2.44(61.9)	1.0(25.4)	1.0(25.4)	1.0(25.4)
-F2-SM8-	8mm OD	8mm OD	2.84(72.1)	0.46(11.7)	2.74(69.1)	1.13(28.7)	1.13(28.7)	1 1/8(28.575)
-F2-SM10-	10mm OD	10mm OD	2.86(72.6)		2.96(74.2)			
-F2-SM12-	12mm OD	12mm OD	3.04(77.2)					
-F2--F2-	1/8 Female NPT	1/8 Female NPT	2.00(50.8)	0.38(9.7)	1.71(43.4)	1.0(25.4)	1.0(25.4)	1.0(25.4)
-F2-F4-	1/4 Female NPT	1/4 Female NPT	2.13(54.1)					
-F2-M4-	1/4 Male NPT	1/4 Male NPT						
-F2-M6-	3/8 Male NPT	3/8 Male NPT	2.38(60.5)	0.46(11.7)	2.0(50.8)	1.13(28.7)	1.13(28.7)	1 1/8(28.575)
-F2-M8-	1/2 Male NPT	1/2 Male NPT	2.75(69.9)					

Mounting holes not available with 1/4 female NPT end connections

Dimensions

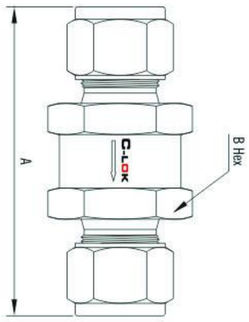
F3 Series



Basic Ordering Number	Connection Type and Size		Dimension,in.(mm)	
	Inlet	Outlet	A	B
-F3-S2-	1/8" OD	1/8" OD	2.35(59.7)	9/16(14.28)
-F3-S4-	1/4" OD	1/4" OD	2.95(74.9)	3/4(19.05)
-F3-S6-	3/8" OD	3/8" OD	3.21(81.5)	1.00(25.4)
-F3-S8-	1/2" OD	1/2" OD	3.49(88.6)	
-F3-SM3-	3mm OD	3mm OD	2.38(60.5)	9/16(14.28)
-F3-SM6-	6mm OD	6mm OD	2.96(75.2)	3/4(19.05)
-F3--F2-	1/8 Female NPT	1/8 Female NPT	2.16(54.9)	9/16(14.28)
-F3-F4-	1/4 Female NPT	1/4 Female NPT	2.87(72.9)	3/4(19.05)
-F3-M2-	1/8 Male NPT	1/8 Male NPT	1.88(47.7)	9/16(14.28)
-F3-M4-	1/4 Male NPT	1/4 Male NPT	2.69(68.3)	3/4(19.05)

Dimensions

F4 Series



Basic Ordering Number	Connection Type and Size		Orifice, in.(mm)	Dimension, in.(mm)	
	Inlet	Outlet		A	B
-F4-S4-	1/4" OD	1/4" OD	0.187(4.75)	2.15(54.6)	1.00(25.4)
-F4-SM6-	6mm OD	6mm OD			
-F4-F4-	1/4 Female NPT	1/4 Female NPT	0.187(4.75)	1.57(39.9)	
-F4-M4-	1/4 Male NPT	1/4 Male NPT	0.281(7.14)	1.89(48.0)	

Filters Ordering Information

SS - F1 - S 8 - SM 10 - S - P1 50 - S4 F2

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
S1	321 SS
B	Brass

Series
F1
F2
F3
F4

Inlet Type	
F	Female NPT
M	Male NPT
FR	Female BSPT
MR	Male BSPT
FM	Female ISO (for RP)
MM	Male ISO (for RG)
FG	Female BSPP (for RP)
MG	Male BSPP (for RG)
SW	Fractional Tube Socket Weld
BW	Fractional Tube Butt Weld
S	Fractional Tube Fitting
SM	Metric Tube Fitting
MFR	Male FR Fitting

Inlet Size	
2	1/8 (in.)
4	1/4 (in.)
6	3/8 (in.) or 6 mm
8	1/2 (in.) or 8 mm
10	10 mm
12	3/4 (in.) or 12 mm
14	14 mm or M14 x 1.5
16	1 (in.) or 16 mm
18	18 mm
20	1 1/4 (in.) or 20 mm or M20 x 1.5
22	22 mm or M22 x 1.5
25	25 mm

Outlet Type / Outlet Size	
	Same as Inlet

Specified in the same way as the inlet type and size

Element Type	
	Sintered
S	Strainer

Gasket Material	
	Silver-plated 316 SS for F1, F2, F3
P	PTFE-plated 316 SS for F1, F2, F3
A	Aluminum for F1, F2, F3

Element Nominal Pore Size	
05	0.5 μm
2	2 μm
7	7 μm
15	15 μm
40	40 μm
60	60 μm
80	80 μm
100	100 μm
150	150 μm
250	250 μm
450	450 μm

Bypass Port (for FB Series Only)	
	Female NPT 1/8"
S2	Fractional Tube Fitting 1/8"
S4	Fractional Tube Fitting 1/4"
SW4	1/4" Tube Socket Weld
S6	Fractional Tube Fitting 3/8"
S8	Fractional Tube Fitting 1/2"

Cleaning and Packaging	
	DD-01
F2	DD-02

1. Cleaning and Packaging:
   DD-01 Standard cleaning and packaging for basic industrial procedures.
   DD-02 Special cleaning and packaging for wetted system components to ensure compliance requirement as stated in ASTM G93 Level C
2. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12otM24: 1.5 mm
   M27andabove: 2 mm
   Standard thread pitch should be ignored in the ordering number, others should be specified.

Elements Ordering Information