

#### Features

- Traps system contaminants for higher system purity.
- For gas and liquid application.
- Self-supporting structural element suitable for high differential pressure.
- Uniform distribution with defined permeability and porosity.
- Applicable to vibration, pressure pulses, surges, or shock.
- Two (2) types of filters are available; Tee Filter and In-Line Filter.

#### Operation

- Filtration element prevents contaminants from passing through if they are bigger than the pore size.
- As contaminants are trapped, the pressure drop becomes greater.
- When pressure drop becomes too high, the element requires replacement.
- Filter element requires replacement more often for unclean fluids.
- Tee filter should be installed with bonnet facing downwards to prevent contaminants from entering when element is replaced.

#### Definitions

##### Filter Element

The component of a filter that traps the contaminants.

##### Sintered Element

Sintering is the fundamental process for powdered metal products. It is the process of bonding the powdered particles by fusing together at temperature well below their melting point.

##### Filtration Area

The external surface area of the filter element.

##### Micron or Micrometer (µm)

A unit of measure used to describe the mean pore diameter of an element or mean pore particle diameter of fluid contamination. 1 µm equivalent to 0.001 mm or 0.00004 in.

#### Sintered Elements

- Made of SS316 powdered metal.
- High heat resistance and thermal stability up to 900 °F (482 °C).
- Low-pressure drop with high permeability.
- Self-supporting seamless element for shape-stability.

Designator	Nominal Pore Size, µm	Pore Size Range, µm	Element Porosity
05	0.5	0.5 to 2	17%
2	2	1 to 4	25%
7	7	5 to 10	30%
15	15	11 to 25	36%
60	60	50 to 75	44%
90	90	75 to 100	46%



#### Filtration Area

Filter Series		Sintered Element mm <sup>2</sup> (in. <sup>2</sup> )
VF3	VF6	
A	-	350 (0.55)
B	A,B	830 (1.3)
C,D	C,D	1280 (2.0)

#### Maximum Differential Pressure Across Clean Filters @70 °F (20 °C)

Filter Series	Filter with Sintered Element psig (bar)
VF3	1000 (68.9)
VF6	1000 (68.9)

#### VF6 Series Tee Filter



#### Pressure-Temperature Ratings

Filter Series	VF6 Series		VF3		
	SS316	Brass	A, B Series	C,D Series	VF3 Series
<b>Body Material</b>	SS316	Brass	SS316		Brass
<b>Temperature °F (°C)</b>	<b>Working Pressure, psi (bar)</b>				
-20 to 100 (-28 to 37)	6000 (413)	2000 (137)	3000 (205)	2500 (172)	1000 (68.9)
200 (93)	5160 (355)	1730 (119)	2580 (177)	2150 (148)	780 (53.7)
300 (148)	4660 (321)	1470 (101)	2330 (160)	1940 (133)	680 (46.8)
400 (204)	4280 (294)	-	2140 (147)	1780 (122)	-
500 (260)	3980 (274)	-	1990 (137)	1660 (114)	-
600 (315)	3760 (259)	-	1880 (129)	1560 (107)	-
650 (343)	3700 (254)	-	1845 (127)	1540 (106)	-
700 (371)	3600 (248)	-	1800 (124)	1500 (103)	-
750 (398)	3520 (242)	-	1760 (121)	1460 (100)	-
800 (426)	3460 (238)	-	1725 (118)	1440 (99.2)	-
850 (454)	3380 (232)	-	1690 (116)	1410 (97.1)	-
900 (482)	3280 (225)	-	1640 (112)	1360 (93.7)	-

#### VF3 Series In-Line Filter



#### Factory Test

Every filter is factory tested @ 1000 psig (69bar) for no detectable leakage with a liquid leak detector.

#### Cleaning and Packaging

Valves are cleaned and packaged in accordance with HSME cleaning standard CS-01. Special cleaning standard CS-11 in compliance with ASTM G93 Level C is for option.

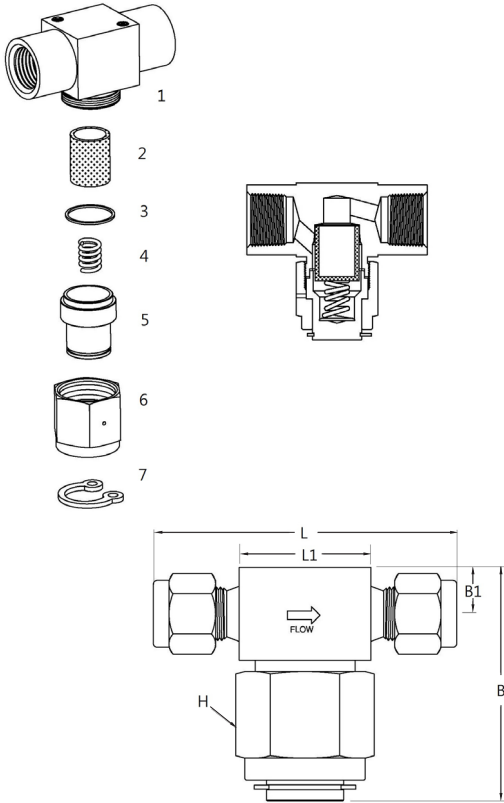
# VF6 Series Tee Filter

## VF6 Series Tee Filter

Working Pressure: 6000 psig (413 bar)

### Features

- Filter element is replaceable, keeping the valve in line.
- Optional bypass port for sampling or purging.



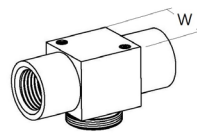
### Materials of Construction

Components	Body Material		
	SS316	Brass	
	Material Grade/ASTM Standard		
1	<b>Body</b>	SS316/A276, A479	C36000/B16, C3604/JIS H3250
2	<b>Sintered Element</b>	SS316	
3	<b>Gasket</b>	Silver Plated SS316/A240	Aluminum/B209
4	<b>Spring</b>	SS302/A313	
5	<b>Bonnet</b>	SS316/A276, A479	C36000/B16, C3604/JIS H3250
6	Bonnet Nut		
7	Retainer Ring	Stainless Steel	

Wetted components listed in **BOLD** letters.

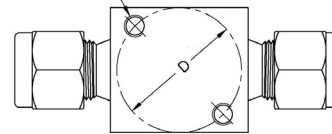
Lubrication:

- Silicon-based lubricant.
- Bonnet Nut thread silver-plated.



### Tee Filter Mounting (1)

x2 Mounting Holes: M5 x 0.8  
6.4mm (0.25 in.) deep



### D: Bolt Circle

VF6 A & B Series: 25.7mm (1 in.)  
C & D Series: 28.7mm (1.13 in.)

### Ordering Information and Dimensions

Basic Ordering Number	End Connections Inlet / Outlet	Orifice mm (in.)	Dimensions, mm (in.)						
			L	L1	B	B1	H	W	
VF6A-	A2T-SS	1/8 in. OD M Tube Fitting	2.39 (0.094)	57.7 (2.27)	27.2 (1.07)	47.5 (1.87)	9.7 (0.38)	25.4 (1.00)	25.4 (1.00)
	F2N-SS	1/8 in. Female NPT	4.41 (0.174)	50.8 (2.00)	25.4 (1.00)				
VF6B-	A4T-SS	1/4 in. OD M Tube Fitting	4.41 (0.174)	62.7 (2.47)	26.9 (1.06)				
	A6M-SS	6mm OD M Tube Fitting	4.36 (0.172)	62.5 (2.46)					
	F4N-SS	1/4 in. Female NPT		54.1 (2.13)					
	M4N-SS	1/4 in. Male NPT							
VF6C-	A6T-SS	3/8 in. OD M Tube Fitting		5.41 (0.213)	72.1 (2.84)	33.5 (1.32)	55.9 (2.20)	11.7 (0.46)	28.6 (1 1/8)
	A8M-SS	8mm OD M Tube Fitting	35.1 (1.38)						
VF6D-	A8T-SS	1/2 in. OD M Tube Fitting	6.35 (0.250)	77.2 (3.04)	33.3 (1.31)				
	A10M-SS	10mm OD M Tube Fitting		72.6 (2.86)	33.5 (1.32)				
	A12M-SS	12mm OD M Tube Fitting		77.2 (3.04)	33.3 (1.31)				
	M6N-SS	3/8 in. Male NPT		60.5 (2.38)	31.8 (1.25)				
	M8N-SS	1/2 in. Male NPT		69.9 (2.75)					

Dimensions shown in this catalog are reference only and subject to change. Dimensions with M Tube Fitting nuts are in finger-tight position.

(1) Tee Filter mounting

- Mounting holes are not applicable to 1/4 in. female NPT end connection valve.
- Mounting bolts are not supplied with the valve.

To order, follow the steps below.

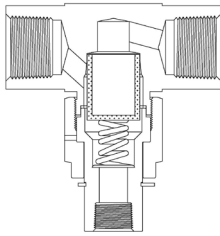
Step 1. Select a filter basic ordering number. Example: VF6A-A2T-SS

Step 2. Select an applicable element designator, and insert it into the ordering number: VF6A-A2T-05-SS

To order filter in brass material, replace "SS" with "B". VF6A-A2T-05-B

### Options

#### Bypass Port



Bypass Port

The bypass port at the bottom of bonnet allows sampling or purging of the system fluid. The port is available either 1/8 in. female NPT or two ferrule M Tube Fitting.

Filter Series	Bypass Port End Connection	Port Designator	(1) B
VF6A, VF6B	1/8 in. Female NPT	BP1	59.9 (2.36)
	1/8 in. OD M Tube Fitting	BP2	53.1 (2.09)
	1/4 in. OD M Tube Fitting	BP3	71.6 (2.82)
VF6C VF6D	1/8 in. Female NPT	BP4	62.5 (2.46)
	1/4 in. OD M Tube Fitting	BP5	79.8 (3.14)
	3/8 in. OD M Tube Fitting	BP6	81.3 (3.20)
	1/2 in. OD M Tube Fitting	BP7	86.9 (3.42)

#### Tee Filter without Element

Tee filter can be supplied with no element. To order, insert "NE" into the basic ordering number.

Example: VF6A-A2T-NE-SS

(1) Refer to "B" to VF6 Series dimensional table on page 2.

### Flow Data @70 °F (21 °C)

#### VF6 Series

Sintered Element Designator	Pressure Drop, psig (bar)			(1) Inlet Pressure, psig (bar)		
	10 (0.68)	50 (3.4)	100 (6.8)	5 (0.34)	10 (0.68)	15 (1.0)
	Water Flow, L/min (U.S.gal/min)			Air Flow, std L/min (std ft3/min)		
<b>VF6A Series</b>						
05	0.15 (0.04)	0.64 (0.17)	0.45 (0.29)	1.1 (0.04)	1.7 (0.06)	3.4 (0.12)
2	0.3 (0.08)	0.91 (0.24)	1.5 (0.4)	5.6 (0.2)	11 (0.4)	17 (0.6)
7	0.37 (0.1)	1.1 (0.3)	1.8 (0.48)	14 (0.5)	25 (0.9)	34 (1.2)
15	0.45 (0.12)	1.3 (0.36)	2.1 (0.58)	22 (0.8)	36 (1.3)	42 (1.5)
60	0.56 (0.15)	1.8 (0.5)	2.6 (0.7)	48 (1.7)	62 (2.2)	68 (2.4)
90	0.75 (0.2)	1.8 (0.5)	2.2 (0.6)	51 (1.8)	62 (2.2)	73 (2.6)
<b>VF6B Series</b>						
05	0.15 (0.04)	0.64 (0.17)	1 (0.29)	3.4 (0.12)	7.3 (0.26)	13 (0.48)
2	0.9 (0.24)	3.2 (0.86)	4.9 (1.3)	17 (0.6)	39 (1.4)	65 (2.3)
7	1.5 (0.4)	4.9 (1.3)	7.5 (2)	39 (1.4)	82 (2.9)	130 (4.7)
15	1.8 (0.5)	4.9 (1.3)	7.9 (2.1)	34 (1.2)	82 (2.9)	130 (4.7)
60	3.4 (0.9)	10 (2.7)	14 (3.9)	87 (3.1)	160 (5.9)	240 (8.5)
90	4.5 (1.2)	12 (3.4)	18 (4.9)	110 (4.1)	210 (7.5)	280 (10)
<b>VF6C and VF6D Series</b>						
05	0.34 (0.09)	1.5 (0.4)	2.8 (0.76)	10 (0.36)	24 (0.86)	45 (1.6)
2	0.98 (0.26)	4.1 (1.1)	6 (1.6)	39 (1.4)	79 (2.8)	110 (4)
7	2.4 (0.64)	8.3 (2.2)	13 (3.5)	51 (1.8)	119 (4.2)	190 (6.8)
15	3.1 (0.84)	9.8 (2.6)	15 (4.1)	51 (1.8)	130 (4.9)	220 (7.9)
60	7.5 (2)	18 (4.8)	25 (6.7)	140 (5.1)	280 (10)	420 (15)
90	8.7 (2.3)	20 (5.5)	28 (7.6)	170 (6.1)	310 (11)	450 (16)

#### VF3 Series

Sintered Element Designator	Pressure Drop, psig (bar)			(1) Inlet Pressure, psig (bar)		
	10 (0.68)	50 (3.4)	100 (6.8)	5 (0.34)	10 (0.68)	15 (1.0)
	Water Flow, L/min (U.S.gal/min)			Air Flow, std L/min (std ft3/min)		
<b>VF3A Series</b>						
05	0.03 (0.01)	0.15 (0.04)	0.45 (0.12)	1.1 (0.04)	1.7 (0.06)	3.4 (0.12)
2	0.3 (0.08)	0.91 (0.24)	1.5 (0.4)	5.6 (0.2)	11 (0.4)	17 (0.6)
7	0.37 (0.1)	1.1 (0.3)	1.8 (0.48)	14 (0.5)	25 (0.9)	34 (1.2)
15	0.45 (0.12)	1.3 (0.36)	2.1 (0.58)	22 (0.8)	36 (1.3)	42 (1.5)
60	0.56 (0.15)	1.8 (0.5)	2.6 (0.7)	48 (1.7)	62 (2.2)	68 (2.4)
90	0.75 (0.2)	1.8 (0.5)	2.2 (0.6)	51 (1.8)	62 (2.2)	73 (2.6)
<b>VF3B Series</b>						
05	0.15 (0.04)	0.64 (0.17)	1 (0.29)	3.4 (0.12)	7.3 (0.26)	13 (0.48)
2	0.9 (0.24)	3.2 (0.86)	4.9 (1.3)	17 (0.6)	39 (1.4)	65 (2.3)
7	1.5 (0.4)	4.9 (1.3)	7.5 (2)	39 (1.4)	82 (2.9)	130 (4.7)
15	1.8 (0.5)	4.9 (1.3)	7.9 (2.1)	34 (1.2)	82 (2.9)	130 (4.7)
60	3.4 (0.9)	12 (3.3)	17 (4.6)	87 (3.1)	160 (5.9)	240 (8.5)
90	4.5 (1.2)	15 (4.2)	23 (6.1)	110 (4.1)	210 (7.5)	280 (10)
<b>VF3C and VF3D Series</b>						
05	0.34 (0.09)	1.5 (0.4)	2.8 (0.76)	10 (0.36)	24 (0.86)	45 (1.6)
2	0.98 (0.26)	4.1 (1.1)	6 (1.6)	39 (1.4)	79 (2.8)	110 (4)
7	2.4 (0.64)	8.3 (2.2)	13 (3.5)	51 (1.8)	119 (4.2)	190 (6.8)
15	3.1 (0.84)	9.8 (2.6)	15 (4.1)	51 (1.8)	130 (4.9)	220 (7.9)
60	7.5 (2)	25 (6.7)	37 (10)	140 (5.1)	280 (10)	420 (15)
90	8.7 (2.3)	28 (7.6)	41 (11)	170 (6.1)	310 (11)	450 (16)

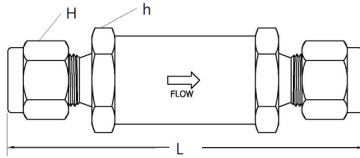
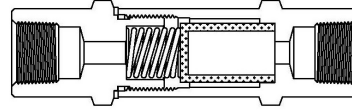
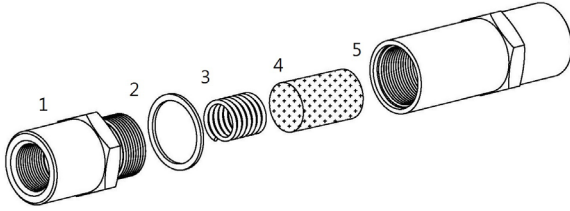
(1) Inlet pressure is discharged to atmosphere through outlet port.

# VF3 Series In-Line Filter

## VF3 Series In-Line Filter

### Features

- Applicable where space is tight and element is not required for frequent replacement.



### Materials of Construction

Components	Body Material	
	SS316	Brass
Material Grade/ASTM Standard		
1 <b>Inlet Body</b>	SS316/A276, A479	C36000/B16, C3604/JIS H3250
2 <b>Gasket</b>	Silver Plated SS316/A240	Aluminum/B209
3 <b>Spring</b>	SS302/A313	
4 <b>Sintered Element</b>	SS316	
5 <b>Outlet Body</b>	SS316/A276, A479	C36000/B16, C3604/JIS H3250

Wetted components listed in **BOLD** letters.

Lubrication:

- Silicon-based lubricant.
- Molybdenum dry film on inlet and outlet body threads.

### Ordering Information and Dimensions

Basic Ordering Number	End Connections Inlet / Outlet	Orifice mm (in.)	Dimensions, mm (in.)		
			L	h	H
VF3A-	A2T-SS 1/8 in. OD M Tube Fitting	2.39 (0.094)	59.7 (2.35)	9/16	7/16
	A3M-SS 3mm OD M Tube Fitting		60.5 (2.38)		12mm
	F2N-SS 1/8 in. Female NPT		54.9 (2.16)		-
VF3B-	A4T-SS 1/4 in. OD M Tube Fitting	4.75 (0.187)	74.9 (2.95)	3/4	9/16
	A6M-SS 6mm OD M Tube Fitting		75.2 (2.96)		14mm
	F4N-SS 1/4 in. Female NPT		72.9 (2.87)		-
	M4N-SS 1/4 in. Male NPT		68.3 (2.69)		-
VF3C-	A6T-SS 3/8 in. OD M Tube Fitting	7.14 (0.281)	81.5 (3.21)	1	11/16
VF3D-	A8T-SS 1/2 in. OD M Tube Fitting	10.3 (0.406)	88.6 (3.49)		7/8

Dimensions shown in this catalog are reference only and subject to change. Dimensions with M Tube Fitting nuts are in finger-tight position.

To order, follow the steps below.

Step 1. Select a filter basic ordering number. Example: VF3A-A2T-SS

Step 2. Select an applicable element designator, and insert it into the ordering number: VF3A-A2T-05-SS

To order filter in brass material, replace "SS" with "B". VF3A-A2T-05-B

### Maintenance Kits

#### Element Kits

Filter Series	Basic Element Kit Ordering Number	Sintered Element Designator
VF6	VF3	05, 2, 7, 15, 60, 90
-	A	
A,B	B	
C,D	C,D	

To order, select a basic element kit ordering number. Example: MK-VFA-  
Select an applicable element designator, and add it to the ordering number. Example: MK-VFA-05

#### Gasket Kits

Filter Series	Gasket Kit Ordering Number
VF6	VF3
-	A
-	B
-	C,D
A,B	-
C,D	-

To order, select kit ordering number.  
Example: MK-VFA-GK

### Safe Valve Selection

The selection of a valve for any application or system must be considered to ensure safe performance. Valve rating, valve function, material compatibility, proper installation, operation and maintenance remain the sole responsibility of the system designer and the user. HSME Corporation accepts no liability for any improper selection, compatibility, installation, operation or maintenance.

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