

Multi Purpose Ball Valves VBF6 Series

1/8 to 3/4 in. OD (3 to 16mm OD)
UP to 6000 psig (413 bar)
Stainless Steel

Catalog No.VBF6-1
January 2014

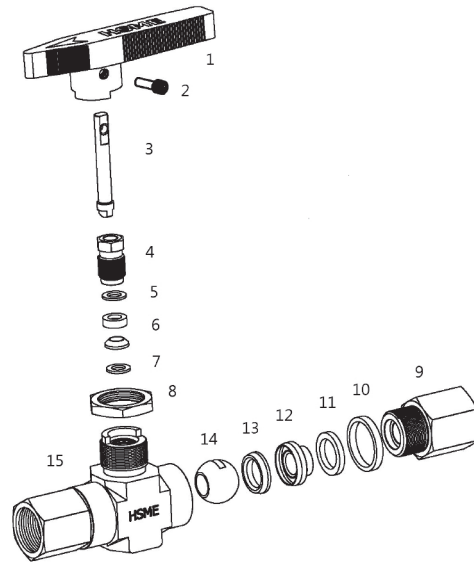
Features



- Panel mountable provides ability to mount valve to control panel or actuator.
- Low actuation torque with micro-finish ball.
- Seat on retainer acts as dynamic seat for a positive seal.
- Retainer seal and retainer provides seat wear compensation.
- High flow capability with a compact design.
- 2-piece Chevron packing improves sealing integrity.
- Handle indicates flow direction.
- Optional pneumatic actuation.
- Nicely designed bracket for pneumatic actuator.

Materials of Construction

Components		Stainless Steel Valves
		Material Grade / ASTM Standard
1	Handle	Nylon with Zinc insert
2	Set screw	Stainless Steel
3	Stem	SS316/A276, A479
4	Packing Bolt	
5	Upper Gland	
6	Chevron Packing (2)	PTFE/D1710
7	Lower Gland	SS316/A276
8	Panel Nut	
9	End Connector (2)	
10	End Connector Seal (2)	PTFE/D1710
11	Retainer Seal (2)	SS316/A276
12	Retainer (2)	
13	Seat (2)	PCTFE, Optional PEEK, PTFE
14	Ball	SS316/A276
15	Body	F316/A182



Wetted component lubrication: Silicon-based lubricant.

- Wetted parts listed in **Bold** letters

Valve Operation

- 2-Way valves are designed to isolate fluid in off position, 3-Way valves are to divert fluid taking it from bottom inlet port
- Valves provide excellent performance in gas, liquid and vacuum in process control and instrumentation application.
- Valves that have not been actuated for a period of time may have a higher initial actuation torque.
- Valves are designed to control fluid in full open or in full closed position; using the valve to throttle the fluid may reduce valve cycle life.

Pressure-Temperature Ratings

Valve Series		Working Pressure @ Room Temp.			Temperature Rating		
		Seat Materials			Seat Materials		
2-Way	3-Way	PCTFE	PEEK	PTFE	PCTFE	PEEK	PTFE
VBF6A	-	6000 psig (413 bar)	6000psig (413 bar)	1500psig (103 bar)	-65 to 350 °F (-54 to 177 °C)	-65 to 450 °F (-54 to 232 °C)	-65 to 350 °F (-54 to 177 °C)
VBF6B	-						
VBF6C	-						
-	VBF63A	4000 psig (276 bar)					
-	VBF63B						
-	VBF63C						

Factory Test and Cleaning

- Every valve is factory tested @ 1000 psig (69 bar) nitrogen for leakage at seat to a maximum allowable leak rate of 0.1 std cm³/min.
- The stem packing is tested @ 1000psig (69 bar) nitrogen for no detectable leakage.
- Every valve is 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.

Dimensions

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

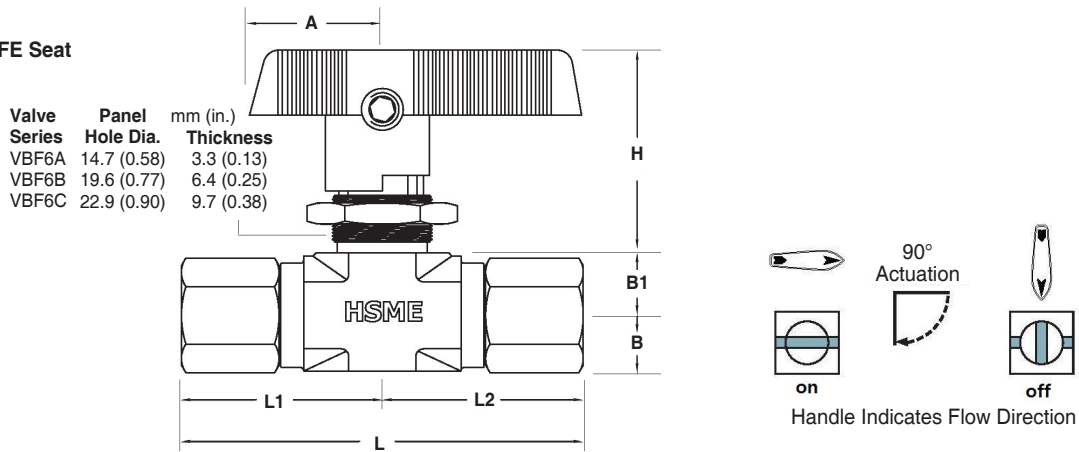
Quality System Certificate 	HSE Management Certificates 	Nuclear Quality System Certificates 	Type Approval Certificates 	www.hsmecorp.com Registered Trade Mark
--------------------------------	---------------------------------	---	--------------------------------	---

VBF6 Series 2-Way On-Off Ball Valves

90° Actuation

PCTFE Seat

Optional PEEK/PTFE Seat



Ordering Information and Dimensions

Ordering Number	End Connections		Orifice mm (in.)	Cv	Dimensions, mm (in.)											
	Inlet/Outlet				L	L1	L2	B	B1	H	A					
VBF6A-	A2T-SS	1/8 in. OD M Tube Fitting		2.4 (0.093)	0.21	69.0 (2.72)	34.5 (1.36)		8.4 (0.33)	9.5 (0.37)	24.8 (0.98)	19.1 (0.75)				
	A4T-SS	1/4 in. OD M Tube Fitting		4.2 (0.165)	0.43	75.20 (2.96)	37.6 (1.48)									
	A3M-SS	3mm OD M Tube Fitting		2.2 (0.086)	0.18	69.60 (2.74)	34.8 (1.37)									
	F2N-SS	1/8 in. Female NPT		4.2 (0.165)	0.43	54.40 (2.14)	27.2 (1.07)									
	M2N-SS	1/8 in. Male NPT				60.0 (2.36)	30.0 (1.18)									
	M4N-SS	1/4 in. Male NPT				68.60 (2.70)	34.3 (1.35)									
VBF6B-	A2T-SS	1/8 in. OD M Tube Fitting				2.4 (0.093)	0.26	83.80 (3.3)	41.9 (1.65)		10.7 (0.42)	11.9 (0.47)	38.9 (1.53)	25.4 (1.00)		
A4T-SS	1/4 in. OD M Tube Fitting		4.7 (0.187)	1.04	88.40 (3.48)	44.2 (1.74)										
A6T-SS	3/8 in. OD M Tube Fitting		6.4 (0.25)	2.34	91.40 (3.60)	45.7 (1.8)										
A6M-SS	6mm OD M Tube Fitting		4.7 (0.187)	1.04	89.0 (3.50)	44.50 (1.75)										
A8M-SS	8mm OD M Tube Fitting		6.4 (0.25)	2.34	90.40 (3.56)	45.20 (1.78)										
A10M-SS	10mm OD M Tube Fitting				92.0 (3.62)	46.00 (1.81)										
F4N-SS	1/4 in. Female NPT				76.80 (3.02)	38.40 (1.51)										
M4N-SS	1/4 in. Male NPT				82.20 (3.24)	41.10 (1.62)										
M6N-SS	3/8 in. Male NPT		79.50 (3.13)	1.04	38.4 (1.51)	41.1 (1.62)										
MF4N-SS	1/4 in. Male NPT	1/4 in. Female NPT			82.60 (3.25)	44.2 (1.74)	38.4 (1.51)									
FA4N4T-SS	1/4 in. Female NPT	1/4 in. OD M Tube Fitting	4.7 (0.187)	1.04	82.60 (3.25)	44.2 (1.74)	38.4 (1.51)									
FA4N6T-SS	1/4 in. Female NPT	3/8 in. OD M Tube Fitting	6.4 (0.25)	2.34	84.10 (3.31)	45.7 (1.8)	38.4 (1.51)									
MA4N4T-SS	1/4 in. Male NPT	1/4 in. OD M Tube Fitting	4.7 (0.187)	1.04	85.30 (3.36)	44.2 (1.74)	41.1 (1.62)									
MA4N6T-SS	1/4 in. Male NPT	3/8 in. OD M Tube Fitting	6.4 (0.25)	2.34	86.80 (3.42)	45.7 (1.8)	41.1 (1.62)									
VBF6C-	A8T-SS	1/2 in. OD M Tube Fitting		10.3 (0.406)	6.42	118.80 (4.68)	59.40 (2.34)		17.5 (0.69)	17.8 (0.70)					44.2 (1.74)	38.1 (1.50)
	A12T-SS	3/4 in. OD M Tube Fitting				118.40 (4.66)	59.20 (2.33)									
	A12M-SS	12mm OD M Tube Fitting		9.5 (0.375)	5.57	118.40 (4.66)	59.20 (2.33)									
	A16M-SS	16mm OD M Tube Fitting		10.3 (0.406)	6.42	99.0 (3.90)	49.50 (1.95)									
	F6N-SS	3/8 in. Female NPT				109.20 (4.30)	54.60 (2.15)									
	F8N-SS	1/2 in. Female NPT				112.80 (4.44)	56.40 (2.22)									
	M8N-SS	1/2 in. Male NPT														

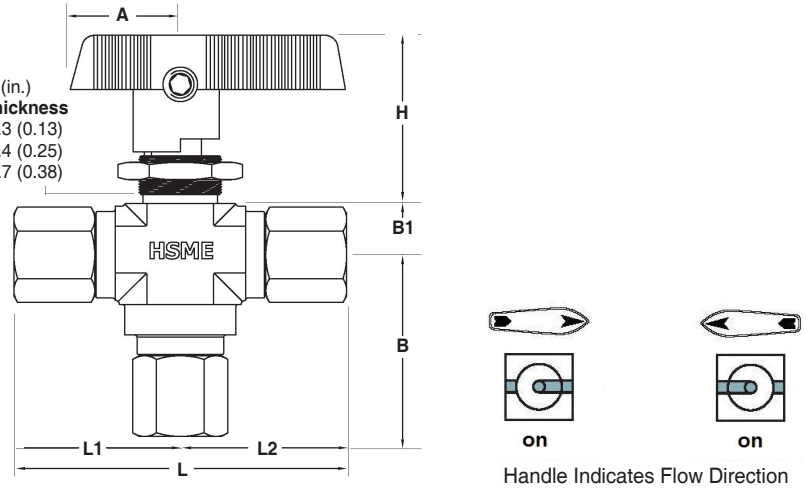
**VBF63 Series
3-Way Diverter Ball Valves**

180° Actuation

PCTFE Seat

Optional PEEK/PTFE Seat

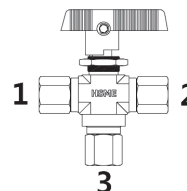
Valve Series	Panel Hole Dia.	mm (in.) Thickness
VBF63A	14.7 (0.58)	3.3 (0.13)
VBF63B	19.6 (0.77)	6.4 (0.25)
VBF63C	22.9 (0.90)	9.7 (0.38)



Ordering Information and Dimensions

Ordering Number	End Connections	Orifice mm (in.)	Cv	Dimensions, mm (in.)						
				L	L1	L2	B	B2	H	A
VBF63A-	A2T- 1/8 in. OD M Tube Fitting	2.4 (0.093)	0.21	69.0 (2.72)	34.5(1.36)	36.8(1.45)	8.4 (0.33)	23.9 (0.94)	19.1 (0.75)	
	A4T- 1/4 in. OD M Tube Fitting	4.2 (0.165)	0.63	75.20 (2.96)	37.6(1.48)	39.6(1.56)				
	F2N- 1/8 in. Female NPT		54.40 (2.14)	27.2(1.07)	29.2(1.15)					
	M2N- 1/8 in. Male NPT	0.59	60.0 (2.36)	30.0(1.18)	32.0(1.26)					
	M4N- 1/4 in. Male NPT	68.6 (2.70)	34.3(1.35)	36.3(1.43)						
VBF63B-	A2T- 1/8 in. OD M Tube Fitting	2.4 (0.093)	0.21	83.80 (3.30)	41.9 (0.165)	45.5(1.79)	11.9 (0.47)	38.9 (1.53)	25.4 (1.00)	
	A4T- 1/4 in. OD M Tube Fitting	5.0 (0.196)	0.7	88.40 (3.48)	44.2 (1.74)	47.8 (1.88)				
	A6T- 3/8 in. OD M Tube Fitting		0.87	91.40 (3.60)	45.7 (1.8)	49.3 (1.94)				
	A6M- 6mm OD M Tube Fitting	4.7 (0.187)	0.7	89.0 (3.50)	44.5 (1.75)	47.8 (1.88)				
	A8M- 8mm OD M Tube Fitting	5.0 (0.196)	0.87	90.40 (3.56)	45.2 (1.78)	48.5 (1.91)				
	A10M- 10mm OD M Fitting			92.0 (3.62)	46.0 (1.81)	49.5 (1.95)				
	F4N- 1/4 in. Female NPT			7.68 (3.02)	38.4 (1.51)	41.9 (1.65)				
	M4N- 1/4 in. Male NPT			82.20 (3.24)	41.1 (1.62)	44.7 (1.76)				
	M6N- 3/8 in. Male NPT	59.4 (2.34)	57.1 (2.25)							
VBF63C-	A8T- 1/2 in. OD M Tube Fitting	10.3 (0.406)	3.62	118.80 (4.68)	59.2 (2.33)	57.1 (2.25)	47.0 (1.85)	17.8 (0.70)	44.2 (1.74)	38.1 (1.50)
	A12T- 3/4 in. OD M Tube Fitting	9.5 (0.375)	3.46		59.4 (2.34)					
	A12M- 12mm OD M Tube Fitting		113.80 (4.66)	56.9 (2.33)						
	A16M- 16mm OD M Tube Fitting	10.3 (0.406)	3.62	99.0 (3.90)	49.5 (1.95)					
	F6N- 3/8 in. Female NPT			109.20 (4.30)	54.6 (2.15)					
	F8N- 1/2 in. Female NPT			112.80 (4.44)	56.4 (2.22)					
	M8N- 1/2 in. Male NPT									
	AAF-8T8T8N-(1)	1/2 in. OD M Tube Fitting, 1/2 in. Female NPT								

(1) If 3-way valve is required to have different end ports, they are described first by outlet port (1) & (2) and next by inlet port (3).

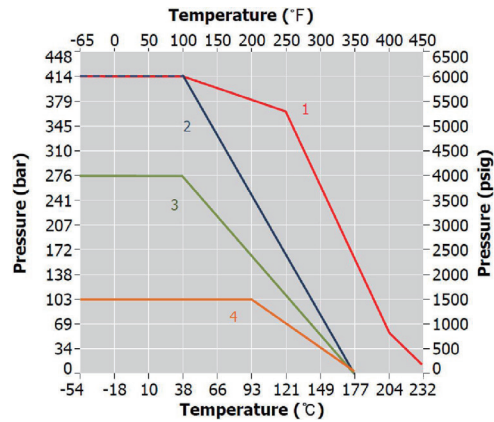


Diverter Ball Valves

Valves are designed to accept media through the bottom inlet port (3) so direct it to out of two outlet ports (1 or 2). If valve accepts media through outlet side ports (1 or 2), the pressure shouldn't be more than 150 psig (10 bar).

Pressure – Temperature Ratings

Seat Materials	Applicable Valve Series
1. PEEK Seat	Entire VBF6 Series Entire VBF63 Series
2. PCTFE Seat	Entire VBF6 Series VBF63A Series
3. PCTFE Seat	VBF63B & VBF63C Series
4. PTFE Seat	Entire VBF6 Series Entire VBF63 Series



Flow Data

1000 psig (69 bar) inlet pressure @60 °F (16 °C)

2-Way VBF6 Series

Media	ΔP	Cv							
		0.18	0.21	0.26	0.43	1.04	2.34	5.57	6.42
Air SCFM	10 psi	17.7	20.7	25.6	42.3	102.4	230.3	548.2	631.9
	50 psi	39.6	46.2	57.2	94.6	228.9	515.0	1225.9	1413.0
	100 psi	56.0	65.4	80.9	133.8	323.7	728.3	1733.7	1998.3
Water GPM	10 psi	0.6	0.7	0.8	1.3	3.3	7.4	17.6	20.3
	50 psi	1.3	1.5	1.8	3.0	7.4	16.5	39.4	45.4
	100 psi	1.8	2.1	2.6	4.3	10.4	23.4	55.7	64.2

3-Way VBF63 Series

Media	ΔP	Cv						
		0.21	0.59	0.63	0.7	0.87	3.46	3.62
Air SCFM	10 psi	20.7	58.1	62.0	68.9	85.6	340.6	356.3
	50 psi	46.2	129.8	138.7	154.1	191.5	761.5	796.7
	100 psi	65.4	183.6	196.1	217.9	270.8	1077.0	1126.8
Water GPM	10 psi	0.7	1.8	2.0	2.2	2.8	10.9	11.5
	50 psi	1.5	4.1	4.5	4.9	6.2	24.5	25.6
	100 psi	2.1	5.9	6.3	7.0	8.7	34.6	36.2

- To convert the flow rate to m³/hr, multiply SCFM by 1.69 and GPM by 0.227.

Packing Adjustment Procedure

- Packing adjustment may be periodically required to prevent leakage
 - Depressurize the system.
 - Cycle and purge the valve.
 - Remove the handle from the valve.
 - Turn the packing bolt clockwise in 1/16 –turn increment until the valve achieves the leak-tight performance.
 - Re-assemble the handle back in the valve.

How to Order

- To order, select the valve ordering number. Example: VBF6A-A4T-SS
- To order the valve with an optional seat material, insert the seat designator to the valve ordering number. Example: VBF6A-A4T-PK-SS


Seat Material	Standard PCTFE	PEEK	PTFE
Designator	Nil	PK	TE

Sour Gas Service

Valve materials are selected in accordance with NACE MR0175/ISO 15156-3. To order valve for sour gas application, insert "SG" to the valve ordering number. Example: VBF6A-A4T-PK-SG-SS

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.

 © Corporate Office & Factory 595-1 Hwajeon-dong, Gangseo-gu, Busan South Korea 618-280 www.hsmecorp.com		Contact Information	
		For Local Customers	For Overseas Customers
		T 051-264-7700 – 4	T +82 70 4346 6211 / 6326
		F 051-264-7705	F +82 70 8282 5112
		E sales@hsmecorp.com	E hsme@hsmecorp.com