

# PIPE VALVES AND FITTINGS

**BuTech Pipe Valves** are designed for liquid and gas flow control in petroleum, chemical, power generating and general industrial applications.

Available in a variety of body styles, the valves are designed for manual operation in temperatures ranging from -100° to +600°F (-73° to +315°C). Optional packings and/or extended stuffing boxes increase the range to -423° to +1200°F (-253° to +648°C).

Their rugged construction provides assurance of fail-safe operation at pressures ranging to 15,000 PSI (1030 bar).

## Needle Valve Features:

- Non-rotating stem prevents galling and scoring
- Five stem styles:
  - Vee
  - Regulating
  - Soft Tip
  - Metering
  - Micro-Metering
- 17-4PH Stem for longer service life. 316 wetted parts are also available by specifying option **-316WP** (see page NPT-3)
- Glass-filled teflon packing for temperatures to 600°F (315°C)
- Integral through holes for bracket mounting. A panel-mounting option is also available (see page NPT-3)
- Wide range of options allow customizing of valve

## Materials of Construction

Standard materials of construction include 316 cold-worked stainless steel, 17-4PH, Ampco 45, and glass-filled teflon. All BuTech equipment may also be produced in any machinable metal. Some of the more common exotic materials used are:

Hastelloy™  
Inconel™  
Titanium  
Monel 400™

**Pipe Sizes: 1/8" through 1"**  
**Pressures to 15,000 PSI (1030 bar)**  
**Type: NPT**

Pipe Size	Connection	SFPV/FPV Series		DHP Series		MAWP+
		Orifice	Cv*	Orifice	Cv*	
1/8"	1/8" NPT	0.187" (4.7 mm)	0.65	0.187" (4.7 mm)	0.60	15,000 PSI 1030 bar
1/4"	1/4" NPT	0.250" (6.4 mm)	0.75	0.250" (6.4 mm)	0.73	15,000 PSI 1030 bar
3/8"	3/8" NPT	0.312" (7.9 mm)	1.75	0.250" (6.4 mm)	0.73	15,000 PSI 1030 bar
1/2"	1/2" NPT	0.312" (7.9 mm)	1.75	0.250" (6.4 mm)	1.75	15,000 PSI 1030 bar
3/4"	3/4" NPT	0.562" (14.3 mm)	3.40	0.687" (17.4 mm)	5.20	10,000 PSI 690 bar
1"	1" NPT	0.562" (14.3 mm)	3.40	0.687" (17.4 mm)	5.20	10,000 PSI 690 bar

\*Cv values listed are for 2-way straight pattern valves excluding metering valves.

For 2-way angle pattern valves, increase Cv value by 50%.

For Metering Valves: Cv=.004, Port size=0.062" (1.57 mm)

+Maximum allowable working pressure at 72° F (22° C)

Equipment	Page
Adapters	NPT-21
Bulkhead Couplings	NPT-20
Caps	NPT-23
Check Valves	NPT-25
Couplings	NPT-22
Crosses	NPT-20
Elbows	NPT-18
Filters	NPT-27
Manifold Valves	NPT-16
Metering and Needle Valves, 1/8"	NPT-4
Metering and Needle Valves, 1/4"	NPT-6
Metering and Needle Valves, 3/8"	NPT-8
Needle Valves, 1/2"	NPT-10
Needle Valves, 3/4"	NPT-12
Needle Valves, 1"	NPT-14
Nipples	NPT-24
Options	NPT-3
Plugs	NPT-23
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Zero-Clearance Unions	NPT-23

# ORDERING INFORMATION & REPLACEMENT PARTS

Valve Series	Size	Flow Path	Stem Tip	Options	Actuator Options
SFPV FPV DHP					
<b>2</b> 1/8" Pipe <b>4</b> 1/4" Pipe <b>6</b> 3/8" Pipe <b>8</b> 1/2" Pipe <b>12</b> 3/4" Pipe <b>16</b> 1" Pipe	<b>FPV AND SFPV SERIES</b> <b>1</b> 2-way Straight <b>2</b> 2-way Angle <b>3</b> 3-way - 2 on Pressure <b>4</b> 3-way - 1 on pressure <b>5</b> 2-stem Manifold <b>6</b> 2-way Angle, Replaceable Seat <b>DHP SERIES</b> <b>F</b> 2-way Straight, Female Ports <b>MF</b> 2-way Straight, Male Inlet, Female Outlet <b>2F</b> 2-way Angle, Female ports <b>2MF</b> 2-way Angle, Male Inlet, Female Outlet <b>7</b> Block & Bleed/Gauge, Male Inlet, Female Outlet <b>9</b> Extension, Male Inlet, Female Outlet	<b>FPV AND SFPV SERIES</b> <b>V</b> Vee <b>R</b> Regulating <b>S</b> Soft Tip <b>DHP SERIES</b> <b>--</b> Vee (std) <b>R</b> Regulating <b>S</b> Soft Tip	See page NPT-3	See section AO	

Examples:  
**SFPV42V** specifies a 2-way angle valve for 1/4" pipe with a Vee stem  
**DHP8FR-PM** specifies a 2-way straight valve for 1/2" pipe with regulating stem and panel-mount packing gland option

## Replacement Parts

BuTech offers replacement parts in a variety of packages so you can purchase just the parts you need.

**Replacement Stem** Kit contains just the stem

**Replacement Packing** Kit contains all soft packing rings

**Repair Kits** contain stem, stem sleeve, stem nuts and washers, packings and packing washers (replacement seat where applicable)

Valve Series	Repair Kits		Replacement Stem	Replacement Packings	Replacement Valve Body
	All others	Replaceable Seat			
SFPV2	RK-SFPV2*	RK-SFPV26*	FPS2*	FPPK2	SFPV2+
SFPV4	RK-SFPV4*	RK-SFPV46*	FPS4*	FPPK4	SFPV4+
SFPV6	RK-SFPV6*	RK-SFPV66*	FPS6*	FPPK6	SFPV6+
SFPV8	RK-SFPV8*	RK-SFPV86*	FPS8*	FPPK8	SFPV8+
FPV12	RK-FPV12*	RK-FPV126*	FPS12*	FPPK12	FPV12+
FPV16	RK-FPV16*	RK-FPV166*	FPS16*	FPPK16	FPV16+
DHP	RK-DHP**	----	DHPS**	DHPPK**	DHP++-BO

\*Complete catalog number by adding the following:

**V, R** or **S** for stem type

**Suffix** for special packing materials (see page NPT-3)  
(ex. **-GR** for Grafoil packings)

**Suffix** for special materials  
(ex. **-HC** for Hastelloy)

**-LT** or **-HT** for cryogenic or high-temperature service

**-WAO** for a valve fitted with an actuator

\*\*Complete catalog number by adding the size designator from above

+Complete catalog number by adding the flow path designator:

- 1** 2-way straight
- 2** 2-way angle
- 3** 3-way, 2 connections on pressure
- 4** 3-way, 1 connection on pressure
- 5** 2-stem manifold
- 6** 2-way angle with replaceable seat

++Complete catalog number by adding the flow path designator:

- F** 2-way straight, female ports
- MF** 2-way straight male inlet, female outlet
- 2F** 2-way angle, female ports
- 2MF** 2-way angle male inlet, female outlet
- 7** Block & Bleed/Gauge, maleinlet, female outlet
- 9** Extension male inlet, female outlet

# NEEDLE VALVE OPTIONS

## Packing and Stem Materials

- GR** Grafoil packings for service to 800°F (426°C)
- TFE** Virgin Teflon packing for service to 450°F (232°C)
- 316WP** 316 wetted parts
- STS** Stellite tipped stem
- SRS** Stellite replaceable seat (Replaceable seat valves only)

## Handle Options

- PH** Round plastic handle in place of aluminum (available on 1/8" through 1/2" sizes)
- SS** Stainless steel handle in place of aluminum (available on 1/8" through 1/2" sizes, on 3/4" and 1" SS is standard)
- EXT\_** Handle extended above valve body, specify number of inches of extra height desired (Ex: **EXT6** is a 6" extension)

## Security Options

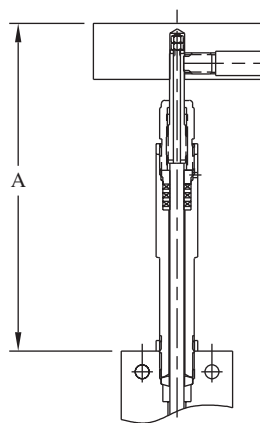
- HLD** Handle locking device (prevents unauthorized opening/closing of valve)
- SLD** Stem locking device (prevents stem from turning due to vibration)

## Extreme Service

- O2** Cleaned for oxygen service
- HT** Extended stuffing box and special materials for high-temperature service to 1200°F (648°C)
- HTF** Finned extended stuffing box and special materials for high-temperature service to 1200°F (648°C)
- LT** Extended stuffing box and special materials for cryogenic service to -423°F (-251°C)
- LTF** Finned extended stuffing box and special materials for cryogenic service to -423°F (-251°C)

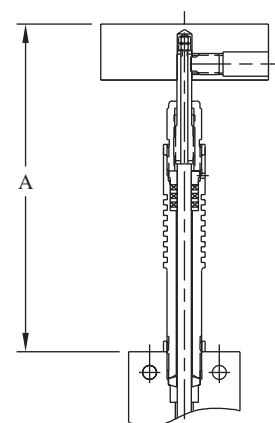
Valve Model	A
SFPV2	5.82"
SFPV4	(147.8)
SFPV6	7.22"
SFPV8	(183.4)
FPV12	10.76"
FPV16	(273.3)
DHP2	5.82"
DHP4	
DHP6	
DHP8	
DHP12	10.85"
DHP16	
	(275.6)

**-HT or -LT Options**



**Cylindrical Bonnet**

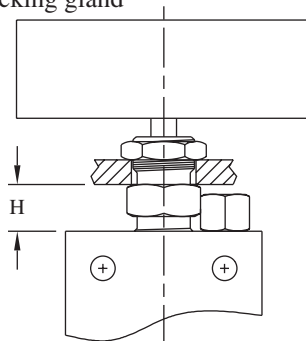
**-HTF or -LTF Options**



**Finned Bonnet**

## Panel Mount

- PM** Panel-mount packing gland



Valve Model	Panel Hole Size	Max Panel Thickness	H
SFPV2	0.66"	0.25"	0.54"
SFPV4	(16.8)	(6.4)	(13.7)
SFPV6	0.78"	0.44"	0.50"
SFPV8	(19.8)	(11.2)	(12.7)
FPV12	1.41"	0.62"	0.97"
FPV16	(35.8)	(15.7)	(24.6)
DHP2	0.64"	0.44"	0.50"
DHP4			
DHP6			
DHP8			
DHP12	1.41"	0.62"	1.03"
DHP16	(35.8)	(15.7)	(26.2)

# NEEDLE VALVES FOR 15,000 PSI (1030 BAR)

## 1/8" PIPE

**2-way Straight**

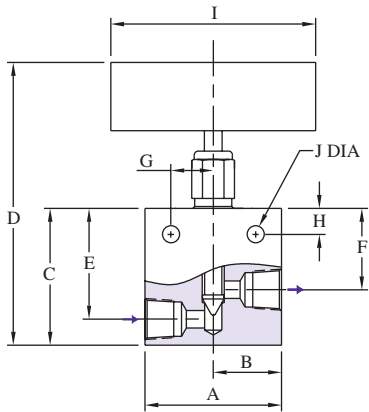


Figure 1

**2-way Angle**

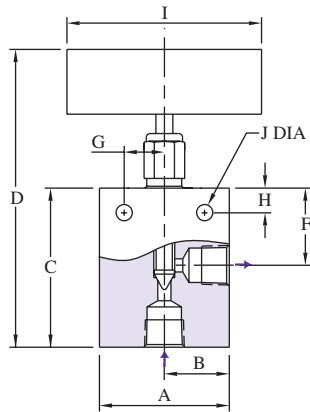


Figure 2

**3-way Two on Pressure**

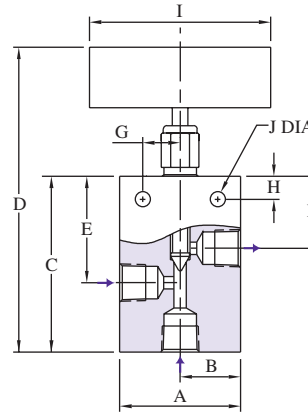


Figure 3

**3-way One on Pressure**

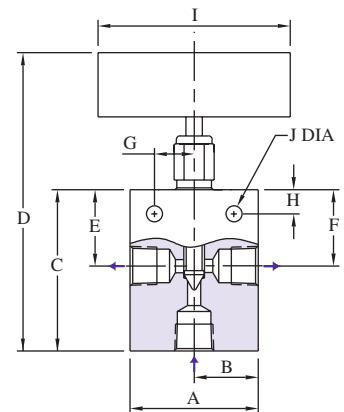


Figure 4

Catalog Number	Stem Style	Connection	A	B	C	D	E	F	G	H	I	J	K	L	Thk.	Fig
SFPV21V SFPV21R	Vee Reg	1/8" NPT	2.00" (50.8)	1.00" (25.4)	2.00" (50.8)	4.50" (114.3)	1.62" (41.1)	1.19" (30.2)	0.62" (15.7)	0.38" (9.7)	3.00" (76.2)	0.25" (6.4)	---	---	0.75" (19.1)	1
SFPV22V SFPV22R	Vee Reg	1/8" NPT	2.00" (50.8)	1.00" (25.4)	2.44" (62.0)	4.94" (125.5)	---	1.19" (30.2)	0.62" (15.7)	0.38" (9.7)	3.00" (76.2)	0.25" (6.4)	---	---	0.75" (19.1)	2
SFPV23V SFPV23R	Vee Reg	1/8" NPT	2.00" (50.8)	1.00" (25.4)	2.62" (66.5)	5.12" (130.0)	1.62" (41.1)	1.19" (30.2)	0.62" (15.7)	0.38" (9.7)	3.00" (76.2)	0.25" (6.4)	---	---	0.75" (19.1)	3
SFPV24V SFPV24R	Vee Reg	1/8" NPT	2.00" (50.8)	1.00" (25.4)	2.44" (62.0)	4.94" (125.5)	1.19" (30.2)	1.19" (30.2)	0.62" (15.7)	0.38" (9.7)	3.00" (76.2)	0.25" (6.4)	---	---	0.75" (19.1)	4
SFPV25V SFPV25R	Vee Reg	1/8" NPT	2.00" (50.8)	1.00" (25.4)	3.38" (85.9)	8.38" (212.9)	1.68" (42.7)	1.19" (30.2)	0.62" (15.7)	0.38" (9.7)	3.00" (76.2)	0.25" (6.4)	---	---	0.75" (19.1)	5
SFPV26V SFPV26R	Vee Reg	1/8" NPT	2.00" (50.8)	1.00" (25.4)	2.25" (57.2)	4.75" (120.7)	---	1.19" (30.2)	0.62" (15.7)	0.38" (9.7)	3.00" (76.2)	0.25" (6.4)	0.75" (19.1)	0.87" (22.1)	0.75" (19.1)	6
SFPMV26V	Meter	1/8" NPT	1.37" (34.8)	0.87" (22.1)	1.56" (39.6)	4.70" (119.4)	---	0.94" (23.9)	1.19" (30.2)	0.44" (11.2)	2.37" (60.2)	0.16" (4.1)	0.62" (15.7)	0.71" (18.0)	0.75" (19.1)	7
SFPMV26V	Micro-Meter	1/8" NPT	1.37" (34.8)	0.87" (22.1)	1.56" (39.6)	5.24" (133.1)	---	0.94" (23.9)	1.19" (30.2)	0.44" (11.2)	2.37" (60.2)	0.16" (4.1)	0.62" (15.7)	0.71" (18.0)	0.75" (19.1)	8

See page NPT-1 for orifice and Cv

**2-stem Manifold**

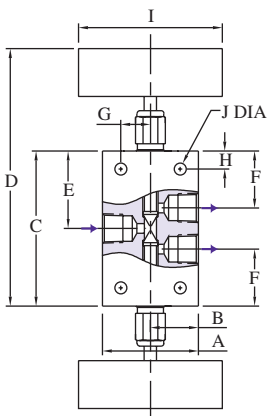


Figure 5

**Replaceable Seat**

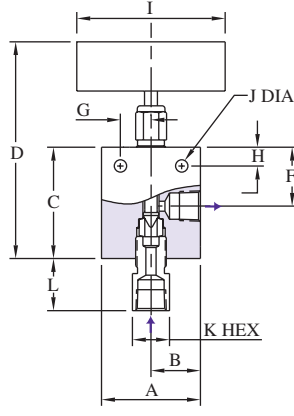


Figure 6

**Metering**

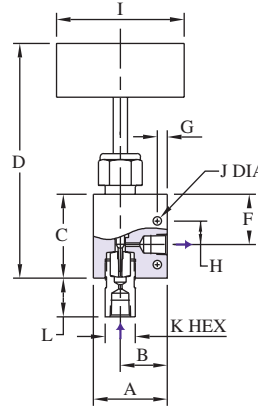


Figure 7

**Micro-Metering**

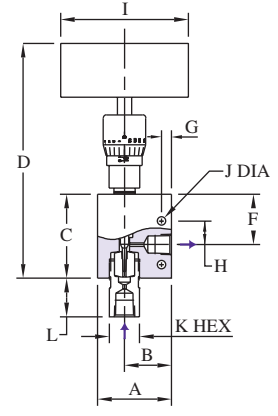


Figure 8