

**BuTech**<sup>®</sup>  
An Ingersoll Rand Business

**VALVES FITTINGS TUBINGS**

Quick  
Reference  
Guide

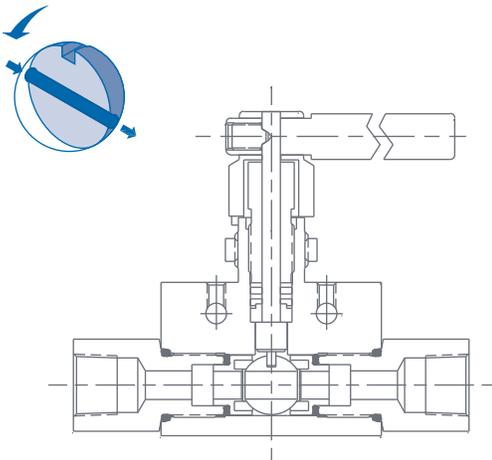


# Ball Valves to 20,000 psi (1380 bar)

## Features:

- Pressure loaded seats assure positive sealing
- Blowout-proof stem and ball provides maximum safety
- Bi-directional flow capabilities
- Straight-through flow path minimizes pressure drop
- Quarter-turn operation accommodates quick open and close needs
- Flow indicating handle indicates valve position at a glance
- Choice of replaceable connections for installation versatility

## 2-way Valves for On-Off Service



Model No.	Maximum Pressure	Port	Cv	Male or Female NPT	Single-Ferrule Tube	Male or Female M/P	Male or Female H/P
K63	6,000 PSI 410 bar	0.187" (4.7)	0.75	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
K103	10,000 PSI 690 bar	0.187" (4.7)	0.75	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
K104	10,000 PSI 690 bar	0.250" (6.4)	1.40	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
K106	10,000 PSI 690 bar	0.375" (9.5)	3.40	1/8" - 1"	1/4" - 1/2"	1/4" - 1"	1/4" - 9/16"
KOS108	10,000 PSI 690 bar	0.500" (12.7)	10.00	3/8" - 1-1/2"	3/8" - 1/2"	3/8" - 1"	1/4" - 9/16"
KW204	20,000 PSI 1380 bar	0.250" (6.4)	1.40	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
KW206	20,000 PSI 1380 bar	0.375" (9.5)	3.40	1/8" - 1"	1/4" - 1/2"	1/4" - 1"	1/4" - 9/16"

\*The maximum allowable working pressure (MAWP) of the valve shall not exceed the MAWP of the valve series or the selected connection, whichever is less

Valve Model	SPRING RETURN ALUMINUM HOUSING				SPRING RETURN STAINLESS STEEL HOUSING					
	Actuator Model	Max Air Consumption (per stroke)		Required Air Pressure		Actuator Model	Max Air Consumption (per stroke)		Required Air Pressure	
K63	RA051SR	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	70 PSI	4.8 bar
K103	RA051SR	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	75 PSI	5.2 bar
K104	RC10SR	51.0 cu in	836 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	75 PSI	5.2 bar
K106	RC10SR	51.0 cu in	836 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	80 PSI	5.5 bar
KOS108	RC30SR	122.0 cu in	1999 cc	80 PSI	5.5 bar	RA31SRSS	52.0 cu in	852 cc	80 PSI	5.5 bar
KW204	RC10SR	51.0 cu in	836 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	85 PSI	5.9 bar
KW206	RC10SR	51.0 cu in	836 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	90 PSI	6.2 bar

Valve Model	DOUBLE-ACTING ALUMINUM HOUSING				DOUBLE-ACTING STAINLESS STEEL HOUSING				ELECTRIC ACTUATION  CONSULT FACTORY	
	Actuator Model	Max Air Consumption (per stroke)		Required Air Pressure		Actuator Model	Max Air Consumption (per stroke)			Required Air Pressure
K63	RA051DA	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	15 PSI	1.0 bar
K103	RA051DA	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	20 PSI	1.4 bar
K104	RA051DA	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	20 PSI	1.4 bar
K106	RA051DA	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	30 PSI	2.1 bar
KOS108	RC20DA	73.0 cu in	1196 cc	80 PSI	5.5 bar	RA21DASS	19.5 cu in	320 cc	50 PSI	3.4 bar
KW204	RA051DA	51.0 cu in	836 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	30 PSI	2.1 bar
KW206	RA051DA	51.0 cu in	836 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	40 PSI	2.8 bar

## Options:

- **BN** Buna-N O-Rings
- **EP** EPR O-Rings
- **HLD** Handle locking device (prevents unauthorized opening/closing of valve)
- **HT** High-temperature o-rings for continuous service to 550°F (288°C)
- **SOG** For Sour Gas service in accordance with NACE MR0175: ISO 15156

BuTech ball valves may be manufactured from any machinable metal and fitted with special seal materials. Consult factory.

# Ball Valves to 20,000 psi (1380 bar)

## 2-way Trunnion Valve

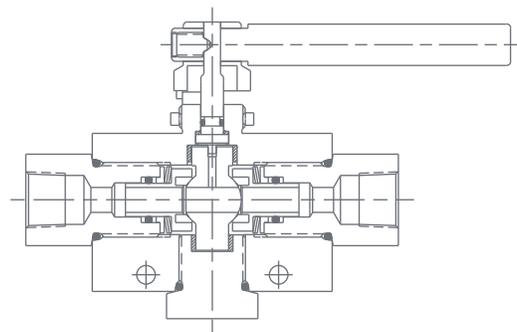
BuTech offers a 2-way trunnion valve for severe high cycle applications. These valves are constructed of the same materials as our 3-way diverting and switching valves and are designed to operate in temperatures of -20 to 400° F (-28 to 204° C).

**See page 4 for a complete list of remote actuators and options**

### Features:

- Pressures to **20,000 PSI (1380 bar) at 72°F (22°C)**
- Pressure loaded seats assure positive sealing
- Blowout-proof stem provides maximum safety
- Choice of replaceable connections for installation versatility
- Double-ended trunnion mounted ball
- Reinforced PEEK trunnion bearings and high-temperature o-rings for temperatures up to **550°F (288°C)**
- Bi-directional flow capabilities

Model No.	Maximum Pressure		Port	Cv
3K631	6,000 PSI	410 bar	0.187" (4.7 mm)	0.75
3K931	10,000 PSI	690 bar	0.187" (4.7 mm)	0.75
3K1061	10,000 PSI	690 bar	0.375" (9.5 mm)	3.40
3KOS1081	10,000 PSI	690 bar	0.500" (12.7 mm)	10.00
3K1231	12,000 PSI	830 bar	0.187" (4.7 mm)	0.75
3K2031	20,000 PSI	1380 bar	0.187" (4.7 mm)	0.75
3K2061	20,000 PSI	1380 bar	0.375" (9.5 mm)	3.40



### Options:

- **BN** Buna-N O-Rings
- **EP** EPR O-Rings
- **HLD** Handle locking device (prevents unauthorized opening/closing of valve)
- **HT** High-temperature o-rings for continuous service to 550°F (288°C)
- **SOG** For Sour Gas service in accordance with NACE MR0175: ISO 15156

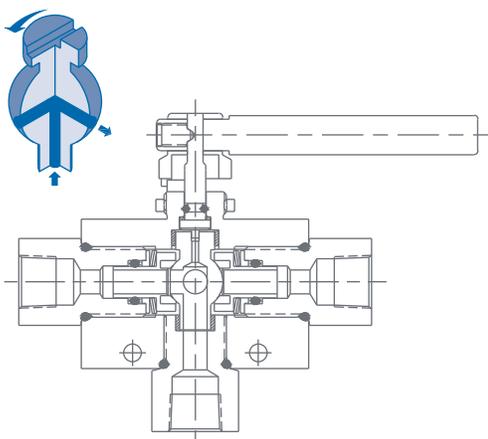
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# Ball Valves to 20,000 psi (1380 bar)

## Features:

- Pressure loaded seats assure positive sealing
- Blowout-proof stem and ball provides maximum safety
- Bi-directional flow capabilities
- Straight-through flow path minimizes pressure drop
- Quarter-turn operation accommodates quick open and close needs
- Flow indicating handle indicates valve position at a glance
- Choice of replaceable connections for installation versatility

## 3-way Valves for Diverting Service



Model No.	Maximum Pressure*	Port	Cv	Male or Female NPT	Single-Ferrule Tube	Male or Female M/P	Male or Female H/P
3DVK63	6,000 PSI 410 bar	0.187" (4.7)	0.56	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
3DVK93	10,000 PSI 690 bar	0.187" (4.7)	0.56	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
3DVK106	10,000 PSI 690 bar	0.375" (9.5)	2.40	1/8" - 1"	1/4" - 1/2"	1/4" - 1"	1/4" - 9/16"
3DVKOS108	10,000 PSI 690 bar	0.500" (12.7)	5.00	3/8" - 1-1/2"	3/8" - 1/2"	3/8" - 1"	1/4" - 9/16"
3DVK123	12,000 PSI 690 bar	0.187" (4.7)	0.56	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
3DVK203	20,000 PSI 1380 bar	0.187" (4.7)	0.56	1/8" - 1/2"	-	1/4" - 9/16"	1/4" - 9/16"
3DVK206	20,000 PSI 1380.000*	0.375" (9.5)	2.40	1/8" - 1"	1/4" - 1/2"	1/4" - 1"	1/4" - 9/16"

\*The maximum allowable working pressure (MAWP) of the valve shall not exceed the MAWP of the valve series or the selected connection, whichever is less

Valve Model	SPRING RETURN ALUMINUM HOUSING				SPRING RETURN STAINLESS STEEL HOUSING					
	Actuator Model	Max Air Consumption (per stroke)		Required Air Pressure		Actuator Model	Max Air Consumption (per stroke)		Required Air Pressure	
3DVK63	RA051SR	4.58 cu in	75 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	75 PSI	5.2 bar
3DVK93	RC10SR	67.1 cu in	1099 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	75 PSI	5.2 bar
3DVK106	RC30SR	244.1 cu in	4001 cc	80 PSI	5.5 bar	RA31SRSS	48.82 cu in	800 cc	75 PSI	5.2 bar
3DVKOS108	RC40SR	305.1 cu in	4999 cc	80 PSI	5.5 bar	RA31SRSS	48.82 cu in	800 cc	80 PSI	5.5 bar
3DVK123	RC10SR	67.1 cu in	1099 cc	80 PSI	5.5 bar	RA11SRSS	9.0 cu in	147 cc	75 PSI	5.2 bar
3DVK203	RC20SR	79.3 cu in	1299 cc	80 PSI	5.5 bar	RA21SRSS	21.36 cu in	350 cc	75 PSI	5.2 bar
3DVK206	RC30SR	244.1 cu in	4001 cc	80 PSI	5.5 bar	RA31SRSS	48.82 cu in	800 cc	80 PSI	5.5 bar

Valve Model	DOUBLE-ACTING ALUMINUM HOUSING				DOUBLE-ACTING STAINLESS STEEL HOUSING					
	Actuator Model	Max Air Consumption (per stroke)		Required Air Pressure		Actuator Model	Max Air Consumption (per stroke)		Required Air Pressure	
3DVK63	RA051DA	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	20 PSI	1.4 bar
3DVK93	RA051DA	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	20 PSI	1.4 bar
3DVK106	RC20DA	73.0 cu in	1196 cc	80 PSI	5.5 bar	RA21DASS	19.5 cu in	320 cc	40 PSI	2.8 bar
3DVKOS108	RC30DA	266.0 cu in	4359 cc	80 PSI	5.5 bar	RA31DASS	19.5 cu in	320 cc	60 PSI	4.1 bar
3DVK123	RC10DA	5.0 cu in	82 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	30 PSI	2.1 bar
3DVK203	RC10DA	61.0 cu in	1000 cc	80 PSI	5.5 bar	RA11DASS	9.0 cu in	147 cc	50 PSI	3.4 bar
3DVK206	RC30DA	226.0 cu in	3703 cc	80 PSI	5.5 bar	RA31DASS	19.5 cu in	320 cc	50 PSI	3.4 bar

## Options:

- **BN** Buna-N O-Rings
- **EP** EPDM O-Rings
- **HLD** Handle locking device (prevents unauthorized opening/closing of valve)
- **HT** High-temperature o-rings for continuous service to 550°F (288°C)
- **SOG** For Sour Gas service in accordance with NACE MR0175: ISO 15156

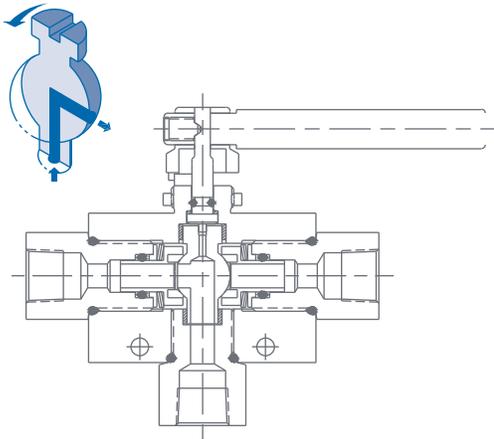
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# Ball Valves to 20,000 psi (1380 bar)

## Features:

- Pressure loaded seats assure positive sealing
- Blowout-proof stem and ball provides maximum safety
- Bi-directional flow capabilities
- Straight-through flow path minimizes pressure drop
- Quarter-turn operation accommodates quick open and close needs
- Flow indicating handle indicates valve position at a glance
- Choice of replaceable connections for installation versatility

## 3-way Valves for Switching Service



Model No.	Maximum Pressure*	Port	Cv	Male or Female NPT	Single-Ferrule Tube	Male or Female M/P	Male or Female H/P
3K63	6,000 PSI 410 bar	0.187" (4.7)	0.56	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
3K93	10,000 PSI 690 bar	0.187" (4.7)	0.56	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
3K106	10,000 PSI 690 bar	0.375" (9.5)	2.40	1/8" - 1"	1/4" - 1/2"	1/4" - 1"	1/4" - 9/16"
3KOS108	10,000 PSI 690 bar	0.500" (12.7)	5.00	3/8" - 1-1/2"	3/8" - 1/2"	3/8" - 1"	1/4" - 9/16"
3K123	12,000 PSI 690 bar	0.187" (4.7)	0.56	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
3K203	20,000 PSI 1380 bar	0.187" (4.7)	0.56	1/8" - 1/2"	-	1/4" - 9/16"	1/4" - 9/16"
3K206	20,000 PSI 1380.000*	0.375" (9.5)	2.40	1/8" - 1"	1/4" - 1/2"	1/4" - 1"	1/4" - 9/16"

\*The maximum allowable working pressure (MAWP) of the valve shall not exceed the MAWP of the valve series or the selected connection, whichever is less

Valve Model	Actuator Model	DOUBLE-ACTING ALUMINUM HOUSING				ELECTRIC ACTUATION
		Max Air Consumption (per stroke)		Required Air Pressure		
3K63	ADA180	34.8 cu in	570 cc	80 PSI	5.5 bar	CONSULT FACTORY
3K93	ADA180	34.8 cu in	570 cc	80 PSI	5.5 bar	
3K106	ADA180	34.8 cu in	570 cc	80 PSI	5.5 bar	
3KOS108	AHDA180	128.8 cu in	2111 cc	80 PSI	5.5 bar	
3K123	ADA180	34.8 cu in	570 cc	80 PSI	5.5 bar	
3K203	ADA180	34.8 cu in	570 cc	80 PSI	5.5 bar	
3K206	ADA180	34.8 cu in	570 cc	80 PSI	5.5 bar	

## Options:

- **BN** Buna-N O-Rings
- **EP** EPR O-Rings
- **HLD** Handle locking device (prevents unauthorized opening/closing of valve)
- **HT** High-temperature o-rings for continuous service to 550°F (288°C)
- **SOG** For Sour Gas service in accordance with NACE MR0175: ISO 15156

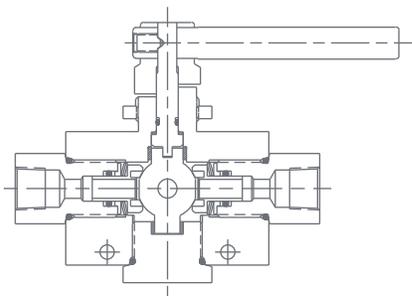
BuTech ball valves may be manufactured from any machinable metal and fitted with special seal materials. Consult factory.

# Ball Valves to 10,000 psi (690 bar)

## Features:

- Pressure loaded seats assure positive sealing
- Blowout-proof stem and ball provides maximum safety
- Bi-directional flow capabilities
- Straight-through flow path minimizes pressure drop
- Quarter-turn operation accommodates quick open and close needs
- Flow indicating handle indicates valve position at a glance
- Choice of replaceable connections for installation versatility

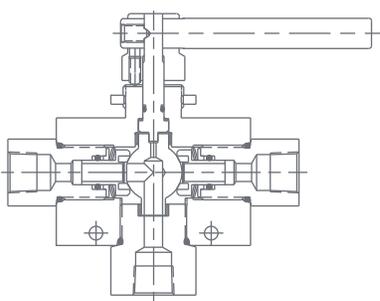
## 4-way Valves for Crossover Service



Model No.	Maximum Pressure*	Port	Cv	Male or Female NPT	Single-Ferrule Tube	Male or Female M/P	Male or Female H/P
4K103	10,000 PSI 690 bar	0.187" (4.7)	0.56	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
4K106	10,000 PSI 690 bar	0.375" (9.5)	2.40	1/8" - 1"	1/4" - 1/2"	1/4" - 1"	1/4" - 9/16"

\*The maximum allowable working pressure (MAWP) of the valve shall not exceed the MAWP of the valve series or the selected connection, whichever is less

## 5-way Valves for Switching Service



Model No.	Maximum Pressure*	Port	Cv	Male or Female NPT	Single-Ferrule Tube	Male or Female M/P	Male or Female H/P
5K103	10,000 PSI 690 bar	0.187" (4.7)	0.56	1/8" - 1/2"	1/8" - 1/2"	1/4" - 9/16"	1/4" - 9/16"
5K106	10,000 PSI 690 bar	0.375" (9.5)	2.40	1/8" - 1"	1/4" - 1/2"	1/4" - 1"	1/4" - 9/16"

\*The maximum allowable working pressure (MAWP) of the valve shall not exceed the MAWP of the valve series or the selected connection, whichever is less



## Options:

- **BN** Buna-N O-Rings
- **EP** EPDM O-Rings
- **HLD** Handle locking device (prevents unauthorized opening/closing of valve)
- **HT** High-temperature o-rings for continuous service to 550°F (288°C)
- **SOG** For Sour Gas service in accordance with NACE MR0175: ISO 15156

BuTech ball valves may be manufactured from any machinable metal and fitted with special seal materials. Consult factory.

# Pipe Valves to 15,000 psi (1030 bar)

Options and actuators on pages 18 & 19

**Pipe Sizes: 1/8" – 1"**

**Type: NPT**

## Needle Valve Features:

- Non-rotating stem prevents galling and scoring
- Four stem styles:
  - Vee
  - Metering
  - Regulating
  - Micro-Metering
- 17-4PH Stem for longer service life. 316 wetted parts are also available by specifying option **-316WP**
- For Hydrogen service specify option **-H2-S**
- Glass-filled packing for temperatures to **600°F (315°C)**
- Integral through holes for bracket mounting, a panel-mounting option is also available
- Positive gland locking device

## Materials of Construction:

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

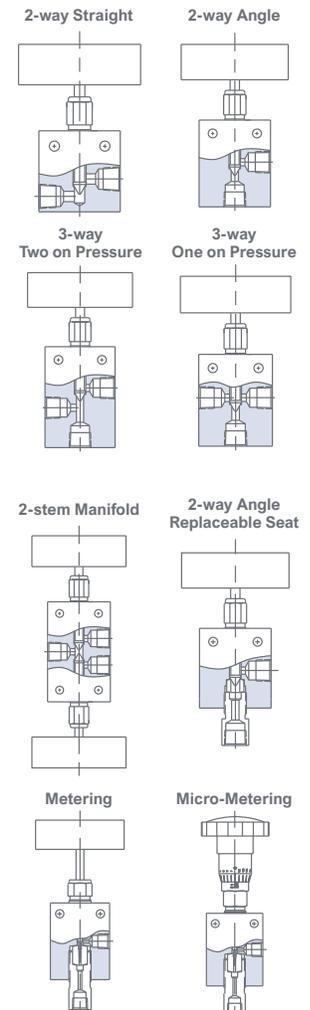
- HC Hallestoy™ Alloy 276
- Inconel™ Alloy 625
- MO Monel 400™ Alloy 400
- 254 SMO Stainless Steel
- 2507 Duplex Stainless Steel

Connection	MAWP*	Cv*	Stem Style	2-way Straight	2-way Angle	3-way Two on Pressure	3-way One on Pressure
1/8"	15,000 PSI 1,030 bar	0.65	Vee Reg	SFPV21V SFPV21R	SFPV22V SFPV22R	SFPV23V SFPV23R	SFPV24V SFPV24R
1/4"	15,000 PSI 1,030 bar	0.75	Vee Reg	SFPV41V SFPV41R	SFPV42V SFPV42R	SFPV43V SFPV43R	SFPV44V SFPV44R
3/8"	15,000 PSI 1,030 bar	1.75	Vee Reg	SFPV61V SFPV61R	SFPV62V SFPV62R	SFPV63V SFPV63R	SFPV64V SFPV64R
1/2"	15,000 PSI 1,030 bar	1.75	Vee Reg	SFPV81V SFPV81R	SFPV82V SFPV82R	SFPV83V SFPV83R	SFPV84V SFPV84R
3/4"	10,000 PSI 690 bar	3.40	Vee Reg	FPV121V FPV121R	FPV122V FPV122R	FPV123V FPV123R	FPV124V FPV124R
1"	10,000 PSI 690 bar	3.40	Vee Reg	FPV161V FPV161R	FPV162V FPV162R	FPV163V FPV163R	FPV164V FPV164R

Connection	MAWP*	Cv	Stem Style	2-stem Manifold	2-way Angle Replaceable Seat	Metering	Micro-Metering
1/8"	15,000 PSI 1,030 bar	0.65	Vee Reg	SFPV25V SFPV25R	SFPV26V SFPV26R	SFPMV26V	SFPMMV26V
1/4"	15,000 PSI 1,030 bar	0.75	Vee Reg	SFPV45V SFPV45R	SFPV46V SFPV46R	SFPMV46V	SFPMMV46V
3/8"	15,000 PSI 1,030 bar	1.75	Vee Reg	SFPV65V SFPV65R	SFPV66V SFPV66R	SFPMV66V	SFPMMV66V
1/2"	15,000 PSI 1,030 bar	1.75	Vee Reg	SFPV85V SFPV85R	SFPV86V SFPV86R	-	-
3/4"	10,000 PSI 690 bar	3.40	Vee Reg	FPV125V FPV125R	FPV126V FPV126R	-	-
1"	10,000 PSI 690 bar	3.40	Vee Reg	FPV165V FPV165R	FPV166V FPV166R	-	-

\*Cv values listed are for 2-way straight pattern valves. For 2-way angle valves, increase Cv value by 50%

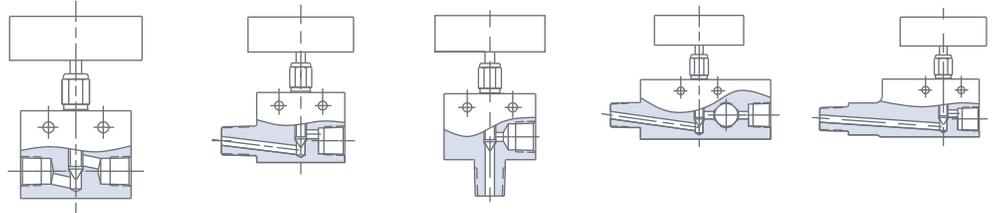
+Maximum pressure rating at 72°F (22°C) of the valve only. Working pressure is determined by the pressure rating of the pipe



# Pipe Valves to 15,000 psi (1030 bar)

Additional couplings and adapters on pages 20–22

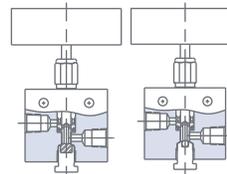
**Pipe Sizes: 1/8" – 1"**  
**Type: NPT**



Connection	MAWP*	Cv*	2-way Straight, Female Ports	2-way Straight, Male Inlet/Female Outlet	2-way Angle, Male Inlet/Female Outlet	Block & Bleed Gauge, Male Inlet/Female Outlet	Extension, Male Inlet/Female Outlet
1/8"	15,000 PSI 1,030 bar	0.60	DHP2F	DHP2MF	DHP22MF	DHP27	DHP29
1/4"	15,000 PSI 1,030 bar	0.73	DHP4F	DHP4MF	DHP42MF	DHP47	DHP49
3/8"	15,000 PSI 1,030 bar	0.73	DHP6F	DHP6MF	DHP62MF	DHP67	DHP69
1/2"	15,000 PSI 1,030 bar	0.73	DHP8F	DHP8MF	DHP82MF	DHP87	DHP89
3/4"	10,000 PSI 690 bar	5.20	DHP12F	DHP12MF	DHP122MF	-	-
1"	10,000 PSI 690 bar	5.20	DHP16F	DHP16MF	DHP162MF	-	-

## Replaceable Seat Valves:

- Designed to permit replacement of the seat without removing the valve from the system
- Non-rotating stem
- Shut-off and metering service capability
- Glass-filled PTFE Packing
- Soft seat available in PEEK and PTFE
- Ball seat available in 316SS, Tungsten Carbide and Ceramic



Connection	MAWP*	Cv	Soft Seat	Ball Seat
1/8"	15,000 PSI 1,030 bar	0.65	JSV-P2	JBV-P2
1/4"	15,000 PSI 1,030 bar	0.75	JSV-P4	JBV-P4
3/8"	15,000 PSI 1,030 bar	1.75	JSV-P6	JBV-P6
1/2"	15,000 PSI 1,030 bar	1.75	JSV-P8	JBV-P8

## Pipe Adapters:

Standard Material of Construction: **316SS**

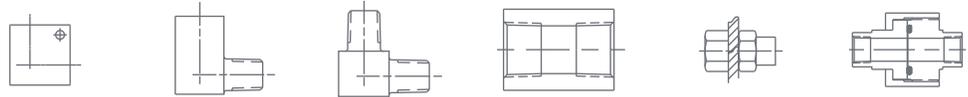
	1/8" 15,000 PSI (1030 bar)	1/4" 15,000 PSI (1030 bar)	3/8" 15,000 PSI (1030 bar)	1/2" 15,000 PSI (1030 bar)	3/4" 10,000 PSI (690 bar)	1" 10,000 PSI (690 bar)
1/8"	MA2P2P	MA2P4P	MA2P6P	MA2P8P	MA2P12P	MA2P16P
1/4"	MA2P4P	MA4P4P	MA4P6P	MA4P8P	MA4P12P	MA4P16P
3/8"	MA2P6P	MA4P6P	MA6P6P	MA6P8P	MA6P12P	MA6P16P
1/2"	MA2P8P	MA4P8P	MA6P8P	MA8P8P	MA8P12P	MA8P16P
3/4"	MA2P12P	MA4P12P	MA6P12P	MA8P12P	MA12P12P	MA12P16P
1"	MA2P16P	MA4P16P	MA6P16P	MA8P16P	MA12P16P	MA16P16P

\*Cv values listed are for 2-way straight pattern valves. For 2-way angle valves, increase Cv value by 50%

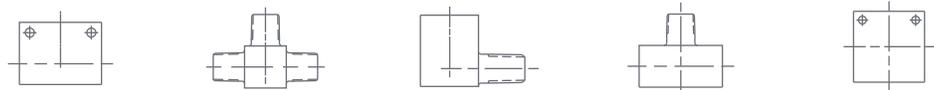
+Maximum pressure rating at 72°F (22°C) of the valve only. Working pressure is determined by the pressure rating of the pipe

# Pipe Equipment to 15,000 psi (1030 bar)

Adapters and reducer couplings on pages 20–22



Connection	MAWP*		Female Elbow	Street Elbow	Male Elbow	Coupling	Bulkhead Coupling	Zero-Clear Union
	PSI	bar						
1/8" NPT	15,000	1,030	FPL2	MSPL2	MPL2	FPF2	FPBF2	FPUF2
1/4" NPT	15,000	1,030	FPL4	MSPL4	MPL4	FPF4	FPBF4	FPUF4
3/8" NPT	15,000	1,030	FPL6	MSPL6	MPL6	FPF6	FPBF6	FPUF6
1/2" NPT	15,000	1,030	FPL8	MSPL8	MPL8	FPF8	FPBF8	FPUF8
3/4" NPT	10,000	690	FPL12	MSPL12	MPL12	FPF12	FPBF12	FPUF12
1" NPT	10,000	690	FPL16	MSPL16	MPL16	FPF16	FPBF16	FPUF16



Connection	MAWP*		Female Tee	Male Tee	Male Street Tee	Male Branch Tee	Female Cross
	PSI	bar					
1/8" NPT	15,000	1,030	FPT2	MPT2	MSPT2	MBPT2	FPX2
1/4" NPT	15,000	1,030	FPT4	MPT4	MSPT4	MBPT4	FPX4
3/8" NPT	15,000	1,030	FPT6	MPT6	MSPT6	MBPT6	FPX6
1/2" NPT	15,000	1,030	FPT8	MPT8	MSPT8	MBPT8	FPX8
3/4" NPT	10,000	690	FPT12	MPT12	MSPT12	MBPT12	FPX12
1" NPT	10,000	690	FPT16	MPT16	MSPT16	MBPT16	FPX16

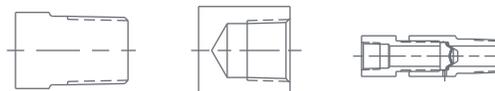


Connection	MAWP*		Check Valves		Filters	
	PSI	bar	Ball Type	O-ring Type	Line	Cup
1/8" NPT	15,000	1,030	FPBC2	FPSC2	FPLF2-*/*	FPSCF2-*
1/4" NPT	15,000	1,030	FPBC4	FPSC4	FPLF4-*/*	FPSCF4-*
3/8" NPT	15,000	1,030	FPBC6	FPSC6	FPLF6-*/*	FPSCF6-*
1/2" NPT	15,000	1,030	FPBC8	FPSC8	FPLF8-*/*	FPSCF8-*
3/4" NPT	10,000	690	FPBC12	FPSC12	FPLF12-*/*	FPSCF12-*
1" NPT	10,000	690	FPBC16	FPSC16	FPLF16-*/*	FPSCF16-*

Standard o-ring material is Buna-N. Other materials available on request

-\*/\*Line filters available in nominal ratings of 0.5, 2, 5, 10, 20, 40 and 100 micron

-\*Cup filters available in nominal ratings of 5, 10, 20, 40 and 100 micron



Connection	MAWP*		Plug	Cap	Safety Head
	PSI	bar			
1/8" NPT	15,000	1,030	MPP2	FPCA2	FPSH2-1/4A or -1/2F
1/4" NPT	15,000	1,030	MPP4	FPCA4	FPSH4-1/4A or -1/2F
3/8" NPT	15,000	1,030	MPP6	FPCA6	FPSH6-1/4A or -1/2F
1/2" NPT	15,000	1,030	MPP8	FPCA8	FPSH8-1/4A or -1/2F
3/4" NPT	10,000	690	MPP12	FPCA12	FPSH12-1/4A or -1/2F
1" NPT	10,000	690	MPP16	FPCA16	FPSH16-1/4A or -1/2F

+MAWP listed is the maximum working pressure of the fitting. Working pressure is determined by the pressure rating of the pipe.

# Valves to 15,000 psi (1030 bar)

Options and actuators on pages 18 & 19

**Tube Sizes: 1/8" – 1/2"**

**Type: L/P Single Ferrule Compression**

## Needle Valve Features:

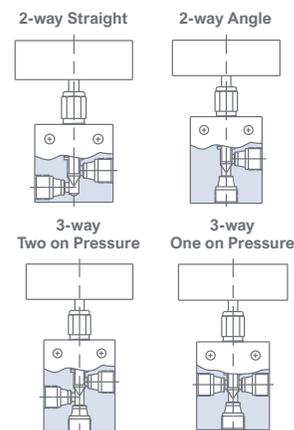
- Non-rotating stem prevents galling and scoring
- Four stem styles:
  - Vee
  - Regulating
  - Metering
  - Micro-Metering
- 17-4PH Stem for longer service life. 316 wetted parts are also available by specifying option **-316WP**
- For Hydrogen service specify option **-H2-S**
- Glass-filled packing for temperatures to **600°F (315°C)**
- Integral through holes for bracket mounting, a panel-mounting option is also available
- Positive gland locking device

## Materials of Construction:

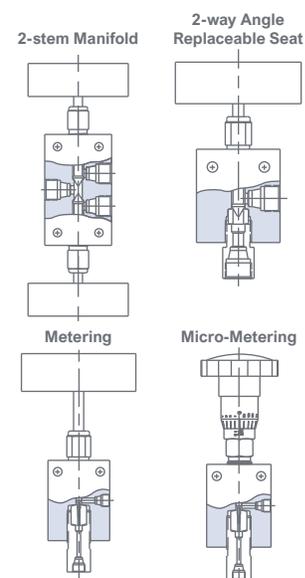
Standard materials of construction include 316 cold-worked stainless steel, 17-4PH, and glass-filled PTFE. All BuTech equipment may also be produced in any machinable metal. Some of the more common exotic materials used are:

- HC Hallestoy™ Alloy 276
- Inconel™ Alloy 625
- MO Monel 400™ Alloy 400
- 254 SMO Stainless Steel
- 2507 Duplex Stainless Steel

Tube OD	MAWP*	Cv*	Stem Style	2-way Straight	2-way Angle	3-way Two on Pressure	3-way One on Pressure
1/8"	15,000 PSI 1,030 bar	0.12	Vee Reg	SLPV21V SLPV21R	SLPV22V SLPV22R	SLPV23V SLPV23R	SLPV24V SLPV24R
1/4"	11,500 PSI 790 bar	0.20	Vee Reg	SLPV41V SLPV41R	SLPV42V SLPV42R	SLPV43V SLPV43R	SLPV44V SLPV44R
3/8"	7,500 PSI 520 bar	0.20	Vee Reg	SLPV61V SLPV61R	SLPV62V SLPV62R	SLPV63V SLPV63R	SLPV64V SLPV64R
1/2"	5,500 PSI 380 bar	1.90	Vee Reg	SLPV81V SLPV81R	SLPV82V SLPV82R	SLPV83V SLPV83R	SLPV84V SLPV84R



Tube OD	MAWP*	Cv*	Stem Style	2-stem Manifold	2-way Angle Replaceable Seat	Metering	Micro-Metering
1/8"	15,000 PSI 1,030 bar	0.12	Vee Reg	SLPV25V SLPV25R	SLPV26V SLPV26R	SLPMV26V	SLPMMV26V
1/4"	11,500 PSI 790 bar	0.20	Vee Reg	SLPV45V SLPV45R	SLPV46V SLPV46R	SLPMV46V	SLPMMV46V
3/8"	7,500 PSI 520 bar	0.20	Vee Reg	SLPV65V SLPV65R	SLPV66V SLPV66R	SLPMV66V	SLPMMV66V
1/2"	5,500 PSI 380 bar	1.90	Vee Reg	SLPV85V SLPV85R	SLPV86V SLPV86R	-	-

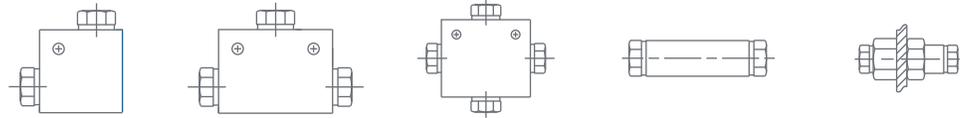


\*Cv values listed are for 2-way straight pattern valves. For 2-way angle valves, increase Cv value by 50%

+Maximum pressure rating at 72°F (22°C) of the valve only. Working pressure is determined by the pressure rating of the tubing

# Equipment to 15,000 psi (1030 bar)

Additional couplings and adapters on pages 20–22



Tube OD	MAWP <sup>+</sup>		Elbow	Tee	Cross	Coupling	Bulkhead Coupling
	PSI	bar					
1/8"	15,000	1,030	LPL2	LPT2	LPX2	LPC2	LPBF2
1/4"	11,500	790	LPL4	LPT4	LPX4	LPC4	LPBF4
3/8"	7,500	520	LPL6	LPT6	LPX6	LPC6	LPBF6
1/2"	5,500	380	LPL8	LPT8	LPX8	LPC8	LPBF8

All fittings are supplied complete with the appropriate gland and ferrule

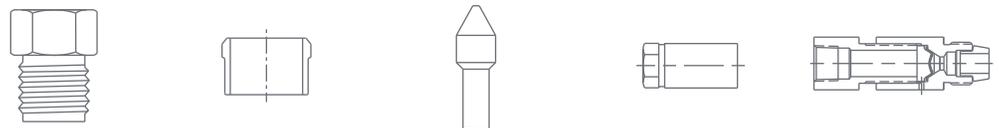


Tube OD	MAWP <sup>+</sup>		Check Valves		Filters	
	PSI	bar	Ball Type	O-ring Type	Line	Cup
1/8"	15,000	1,030	LPBC2	LPSC2	LPLF2-*/*	LPSCF2-*
1/4"	11,500	790	LPBC4	LPSC4	LPLF4-*/*	LPSCF4-*
3/8"	7,500	520	LPBC6	LPSC6	LPLF6-*/*	LPSCF6-*
1/2"	5,500	380	LPBC8	LPSC8	LPLF8-*/*	LPSCF8-*

Standard o-ring material is Buna-N. Other materials available on request

-\*/Line filters available in nominal ratings of 0.5, 2, 5, 10, 20, 40 and 100 micron

-\*Cup filters available in nominal ratings of 5, 10, 20, 40 and 100 micron



Tube OD	MAWP <sup>+</sup>		Gland	Ferrule	Plug	Cap	Safety Heads
	PSI	bar					
1/8"	15,000	1,030	LPG2	LPF2	LPP2	LPCA2	LPSH2-1/4A or -1/2F
1/4"	11,500	790	SLPG4	LPF4	LPP4	LPCA4	LPSH4-1/4A or -1/2F
3/8"	7,500	520	SLPG6	LPF6	LPP6	LPCA6	LPSH6-1/4A or -1/2F
1/2"	5,500	380	LPG8	LPF8	LPP8	LPCA8	LPSH8-1/4A or -1/2F

## Tubing:

Tubing is available in standard 20-24 foot length (6-7 meters), however, longer lengths are available on request.

Tube OD	MAWP <sup>+</sup>		I.D.	Catalog Number
1/8"	15,000	1,030	0.062" (1.6 mm)	LP125-052-*
1/4"	11,500	790	0.125" (3.2 mm)	LP250-125-*
3/8"	7,500	520	0.250" (6.4 mm)	LP375-250-*
1/2"	7,000	480	0.334" (8.5 mm)	LP500-334-*
1/2"	5,500	380	0.375" (9.5 mm)	LP500-375-*

+MAWP listed is the maximum working pressure of the fitting. Working pressure is determined by the pressure rating of the tubing.

Standard material of construction is 316 cold-worked stainless steel. Other materials are available on request. Please contact the factory.

\*Complete catalog number by adding suffix 316 for 316 stainless steel or suffix 304 for 304 stainless steel

# Valves for 20,000 psi (1380 bar)

Options and actuators on pages 18 & 19

**Tube Sizes: 1/4" – 1"**  
**Type: M/P Cone-and-Thread**

## Needle Valve Features:

- Non-rotating stem prevents galling and scoring
- Four stem styles:
  - Vee
  - Metering
  - Regulating
  - Micro-Metering
- 17-4PH Stem for longer service life. 316 wetted parts are also available by specifying option **-316WP**
- For Hydrogen service specify option **-H2-S**
- Glass-filled packing for temperatures to **600°F (315°C)**
- Integral through holes for bracket mounting, a panel-mounting option is also available
- Positive gland locking device

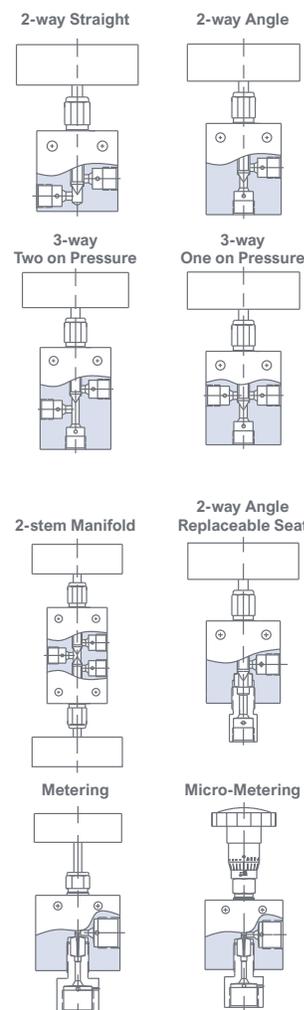
## Materials of Construction:

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

- HC Hallestoy™ Alloy 276
- Inconel™ Alloy 625
- MO Monel 400™ Alloy 400
- 254 SMO Stainless Steel
- 2507 Duplex Stainless Steel

Tube OD	MAWP*	Cv*	Stem Style	2-way Straight	2-way Angle	3-way Two on Pressure	3-way One on Pressure
1/4"	20,000 PSI 1,380 bar	0.31	Vee Reg	20UV41V 20UV41R	20UV42V 20UV42R	20UV43V 20UV43R	20UV44V 20UV44R
3/8"	20,000 PSI 1,380 bar	0.75	Vee Reg	20UV61V 20UV61R	20UV62V 20UV62R	20UV63V 20UV63R	20UV64V 20UV64R
9/16"	20,000 PSI 1,380 bar	1.75	Vee Reg	20UV91V 20UV91R	20UV92V 20UV92R	20UV93V 20UV93R	20UV94V 20UV94R
3/4"	20,000 PSI 1,380 bar	2.80	Vee Reg	20V121V 20V121R	20V122V 20V122R	20V123V 20V123R	20V124V 20V124R
1"	20,000 PSI 1,380 bar	5.20	Vee Reg	20V161V 20V161R	20V162V 20V162R	20V163V 20V163R	20V164V 20V164R

Tube OD	MAWP*	Cv*	Stem Style	2-stem Manifold	2-way Angle Replaceable Seat	Metering	Micro-Metering
1/4"	20,000 PSI 1,380 bar	0.31	Vee Reg	20UV45V 20UV45R	20UV46V 20UV46R	20MV46V	20MMV46V
3/8"	20,000 PSI 1,380 bar	0.75	Vee Reg	20UV65V 20UV65R	20UV66V 20UV66R	20MV66V	20MMV66V
9/16"	20,000 PSI 1,380 bar	1.75	Vee Reg	20UV95V 2 20UV95R	20UV96V 20UV96R	-	-
3/4"	20,000 PSI 1,380 bar	2.80	Vee Reg	20V125V 20V125R	20V126V 20V126R	-	-
1"	20,000 PSI 1,380 bar	5.20	Vee Reg	20V165V 2 20V165R	20V166V 20V166R	-	-



\*Cv values listed are for 2-way straight pattern valves. For 2-way angle valves, increase Cv value by 50%

+Maximum pressure rating at 72°F (22°C) of the valve only. Working pressure is determined by the pressure rating of the tubing

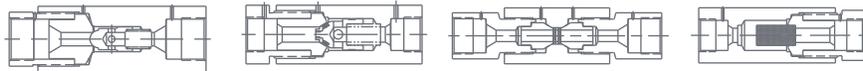
# Equipment for 20,000 psi (1380 bar)

Additional couplings and adapters on pages 20–22



Tube OD	Elbow	Tee	Cross	Coupling	Replaceable Seat Coupling	Bulkhead Coupling
1/4"	20L4	20T4	20X4	20F4	20UF4	20BF4
3/8"	20L6	20T6	20X6	20F6	20UF6	20BF6
9/16"	20L9	20T9	20X9	20F9	20UF9	20BF9
3/4"	20L12	20T12	20X12	20F12	20UF12	20BF12
1"	20L16	20T16	20X16	20F16	20UF16	20BF16

All fittings are supplied complete with the appropriate gland and ferrule

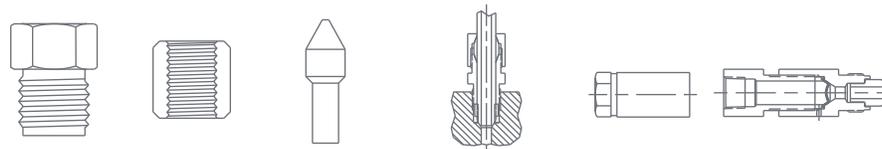


Tube OD	Check Valves		Filters	
	Ball Type	O-ring Type	Line	Cup
1/4"	20BC4	20SC4	20LF4-*/*	20SCF4-*
3/8"	20BC6	20SC6	20LF6-*/*	20SCF6-*
9/16"	20BC9	20SC9	20LF9-*/*	20SCF9-*
3/4"	20BC12	20SC12	20LF12-*/*	20SCF12-*
1"	20BC16	20SC16	20LF16-*/*	20SCF16-*

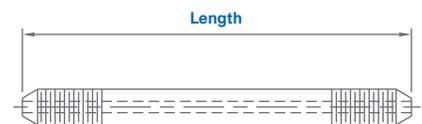
Standard o-ring material is Buna-N.  
Other materials available on request

-\*/\*Line filters available in nominal ratings of 0.5, 2, 5, 10, 20, 40 and 100 micron

-\*Cup filters available in nominal ratings of 5, 10, 20, 40 and 100 micron



Tube OD	Gland	Collar	Plug	Anti-Vibration Collet Gland	Cap	Safety Heads
1/4"	20G4	20C4	20P4	20AVCG4	20CA4	20SH4-1/4A or -1/2F
3/8"	20G6	20C6	20P6	20AVCG6	20CA6	20SH6-1/4A or -1/2F
9/16"	20G9	20C9	20P9	20AVCG9	20CA9	20SH9-1/4A or -1/2F
3/4"	20G12	20C12	20P12	20AVCG12	20CA12	20SH12-1/4A or -1/2F
1"	20G16	20C16	20P16	20AVCG16	20CA16	20SH16-1/4A or -1/2F



## Tubing:

Tubing is available in standard 20-24 foot length (6-7 meters), however, longer lengths are available on request.

Tube OD	I.D.	Catalog Number
1/4"	0.109" (2.8 mm)	20-109-*
3/8"	0.203" (5.2 mm)	20-203-*
9/16"	0.312" (7.9 mm)	20-312-*
3/4"	0.438" (11.1 mm)	20-438-*
1"	0.562" (14.3 mm)	20-562-*

\*Complete catalog number by adding suffix 316 for 316 stainless steel

## Nipples:

BuTech stocks pre-cut coned and threaded nipples in lengths up to 12" (305mm). In addition, nipples can be purchased to any custom length.

Tube OD	Length						
	2.75"	3.00"	4.00"	6.00"	8.00"	10.00"	12.00"
1/4"	20N442-*	20N443-*	20N444-*	20N446-*	20N448-*	20N4410-*	20N4412-*
3/8"	-	20N663-*	20N664-*	20N666-*	20N668-*	20N6610-*	20N6612-*
9/16"	-	-	20N994-*	20N996-*	20N998-*	20N9910-*	20N9912-*
3/4"	-	-	-	20N126-*	20N128-*	20N1210-*	20N1212-*
1"	-	-	-	20N166-*	20N1268-*	20N1610-*	20N1612-*

# Valves for 40,000 psi (2760 bar)

Options and actuators on pages 18 & 19

**Tube Sizes: 1/4" – 1"**  
**Type: H/P Cone-and-Thread**

## Needle Valve Features:

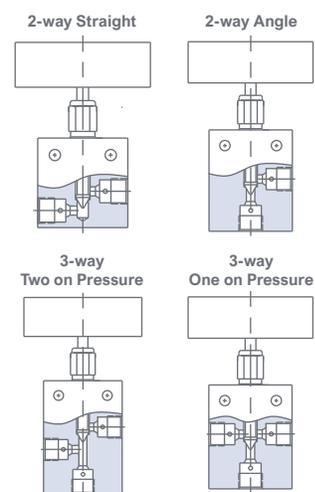
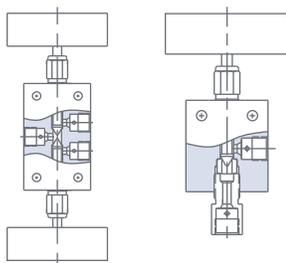
- Non-rotating stem prevents galling and scoring
- Four stem styles:
  - Vee
  - Metering
  - Regulating
  - Micro-Metering
- 17-4PH Stem for longer service life. 316 wetted parts are also available by specifying option **-316WP**
- Glass-filled packing for temperatures to **600°F (315°C)**
- Integral through holes for bracket mounting, a panel-mounting option is also available
- Positive gland locking device

## Materials of Construction:

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

- HC Hallestoy™ Alloy 276
- Inconel™ Alloy 625
- MO Monel 400™ Alloy 400
- 254 SMO Stainless Steel
- 2507 Duplex Stainless Steel

Tube OD	MAWP*	Cv*	Stem Style	2-way Straight	2-way Angle	3-way Two on Pressure	3-way One on Pressure
1/4"	30,000 PSI 2,070 bar	0.12	Vee Reg	30UV41V 30UV41R	30UV42V 30UV42R	30UV43V 30UV43R	30UV44V 30UV44R
3/8"	30,000 PSI 2,070 bar	0.23	Vee Reg	30UV61V 30UV61R	30UV62V 30UV62R	30UV63V 30UV63R	30UV64V 30UV64R
9/16"	30,000 PSI 2,070 bar	0.33	Vee Reg	30UV91V 30UV91R	30UV92V 30UV92R	30UV93V 30UV93R	30UV94V 30UV94R
1"	30,000 PSI 2,070 bar	2.80	Vee Reg	30V161V 30V161R	30V162V 30V162R	30V163V 30V163R	30V164V 30V164R
9/16"	40,000 PSI 2,760 bar	0.31	Vee Reg	40UV91V 40UV91R	40UV92V 40UV92R	40UV93V 40UV93R	40UV94V 40UV94R



Tube OD	MAWP*	Cv*	Stem Style	2-stem Manifold	2-way Angle Replaceable Seat
1/4"	30,000 PSI 2,070 bar	0.12	Vee Reg	30UV45V 30UV45R	30UV46V 30UV46R
3/8"	30,000 PSI 2,070 bar	0.23	Vee Reg	30UV65V 30UV65R	30UV66V 30UV66R
9/16"	30,000 PSI 2,070 bar	0.33	Vee Reg	30UV95V 30UV95R	30UV96V 30UV96R
1"	30,000 PSI 2,070 bar	2.80	Vee Reg	30V165V 30V165R	30V166V 30V166R
9/16"	40,000 PSI 2,760 bar	0.31	Vee Reg	40UV95V 40UV95R	40UV96V 40UV96R

\*Cv values listed are for 2-way straight pattern valves. For 2-way angle valves, increase Cv value by 50%

+Maximum pressure rating at 72°F (22°C) of the valve only. Working pressure is determined by the pressure rating of the tubing

# Valves for 60,000 psi (4140 bar)

Options and actuators on pages 18 & 19

**Tube Sizes: 1/4" – 3/4"**  
**Type: H/P Cone-and-Thread**

## Needle Valve Features:

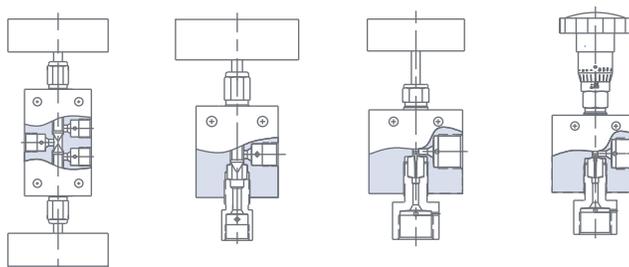
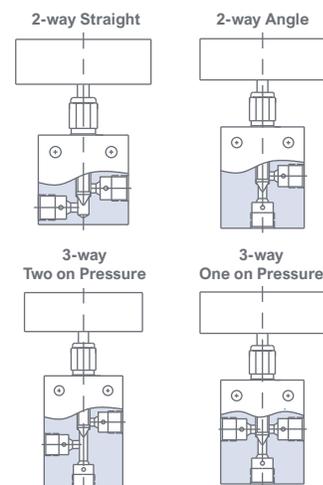
- Non-rotating stem prevents galling and scoring
- Four stem styles:
  - Vee
  - Metering
  - Regulating
  - Micro-Metering
- 17-4PH Stem for longer service life. 316 wetted parts are also available by specifying option **-316WP**
- Glass-filled packing for temperatures to **600°F (315°C)**
- Integral through holes for bracket mounting, a panel-mounting option is also available
- Positive gland locking device

## Materials of Construction:

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

- HC Hallestoy™ Alloy 276
- Inconel™ Alloy 625
- MO Monel 400™ Alloy 400
- 254 SMO Stainless Steel
- 2507 Duplex Stainless Steel

Tube OD	MAWP*	Cv*	Stem Style	2-way Straight	2-way Angle	3-way Two on Pressure	3-way One on Pressure
1/4"	60,000 PSI 4,140 bar	0.08	Vee Reg	60UV41V 60UV41R	60UV42V 60UV42R	60UV43V 60UV43R	60UV44V 60UV44R
3/8"	60,000 PSI 4,140 bar	0.09	Vee Reg	60UV61V 60UV61R	60UV62V 60UV62R	60UV63V 60UV63R	60UV64V 60UV64R
9/16"	60,000 PSI 4,140 bar	0.14	Vee Reg	60UV91V 60UV91R	60UV92V 60UV92R	60UV93V 60UV93R	60UV93V 60UV93R
3/4"	60,000 PSI 4,140 bar	2.80	Vee Reg	60V121V 60V121R	60V122V 60V122R	60V123V 60V123R	60V124V 60V124R



Tube OD	MAWP+	Cv*	Stem Style	2-stem Manifold	2-way Angle Replaceable Seat	Metering	Micro-Metering
1/4"	60,000 PSI 4,140 bar	0.08	Vee Reg	60UV45V 60UV45R	60UV46V 60UV46R	60MV46V	60MMV46V
3/8"	60,000 PSI 4,140 bar	0.09	Vee Reg	60UV65V 60UV65R	60UV66V 60UV66R	60MV66V	60MMV66V
9/16"	60,000 PSI 4,140 bar	0.14	Vee Reg	60UV95V 60UV95R	60UV96V 60UV96R	----	----
3/4"	60,000 PSI 4,140 bar	2.80	Vee Reg	60V125V 60V125R	60V126V 60V126R	----	----

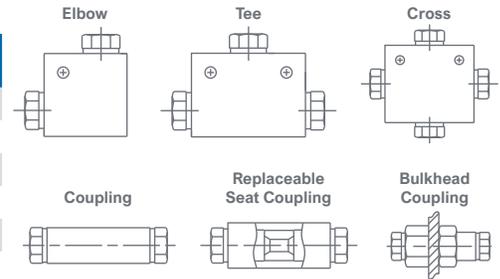
\*Cv values listed are for 2-way straight pattern valves. For 2-way angle valves, increase Cv value by 50%

+Maximum pressure rating at 72°F (22°C) of the valve only. Working pressure is determined by the pressure rating of the tubing

# Equipment for 60,000 psi (4140 bar)

Additional couplings and adapters on pages 20–22

Tube OD	MAWP*		Elbow	Tee	Cross	Coupling	Replaceable Seat Coupling	Bulkhead Coupling
	PSI	bar						
1"	30,000	2,070	30L16	30T16	30X16	30F16	30UF16	30BF16
9/16"	40,000	2,760	40L9	40T9	40X9	40F9	40UF9	40BF9
1/4"	60,000	4,140	60L4	60T4	60X4	60F4	60UF4	60BF4
3/8"	60,000	4,140	60L6	60T6	60X6	60F6	60UF6	60BF6
9/16"	60,000	4,140	60L9	60T9	60X9	60F9	60UF9	60BF9
3/4"	60,000	4,140	60L12	60T12	60X12	60F12	60UF12	60BF12

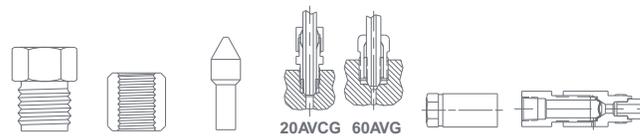


All fittings are supplied complete with the appropriate gland and ferrule

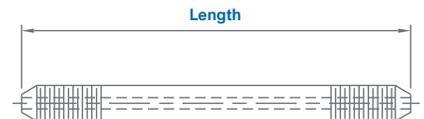


Tube OD	MAWP*		Check Valves		Filters	
	PSI	bar	Ball Type	O-ring Type	Line	Cup
1"	30,000	2,070	30BC16	30SC16	30LF16-*/*	30SCF16-*
9/16"	40,000	2,070	40BC9	40SC9	40LF9-*/*	40SCF9-*
1/4"	60,000	4,140	60BC4	60SC4	60LF4-*/*	60SCF4-*
3/8"	60,000	4,140	60BC6	60SC6	60LF6-*/*	60SCF6-*
9/16"	60,000	4,140	60BC9	60SC9	60LF9-*/*	60SCF9-*
3/4"	60,000	4,140	60BC12	60SC12	60LF12-*/*	60SCF12-*

Standard o-ring material is Buna-N.  
Other materials available on request  
-\*/Line filters available in nominal ratings of 0.5, 2, 5, 10, 20, 40 and 100 micron  
-\*/Cup filters available in nominal ratings of 5, 10, 20, 40 and 100 micron



Tube OD	MAWP+		Gland	Collar	Plug	Anti-Vibration Collet Gland	Cap	Safety Heads
	PSI	bar						
1"	30,000	2,070	20G16	20C16	30P16	20AVCG16	30CA16	30SH16-1/4A or -1/2F
9/16"	40,000	2,760	60G9	60C9	40P9	60AVG9	40CA9	40SH9-1/4A or -1/2F
1/4"	60,000	4,140	60G4	60C4	60P4	60AVG4	60CA4	60SH4-1/4A or -1/2F
3/8"	60,000	4,140	60G6	60C6	60P6	60AVG6	60CA6	60SH6-1/4A or -1/2F
9/16"	60,000	4,140	60G9	60C9	60P9	60AVG9	60CA9	60SH9-1/4A or -1/2F
3/4"	60,000	4,140	60G12	60C12	60P12	60AVG12	60CA12	60SH12-1/4A or -1/2F



## Tubing:

Tubing is available in standard 20-24 foot length (6-7 meters), however, longer lengths are available on request.

Tube OD	I.D.	Catalog Number
1"	0.438" (11.1 mm)	30-438-*
9/16"	0.250" (6.4 mm)	40-250-*
1/4"	0.083" (2.1 mm)	60-083-*
3/8"	0.125" (3.2 mm)	60-125-*
9/16"	0.188" (4.8 mm)	60-188-*
3/4"	0.250" (6.4 mm)	60-250-*

## Nipples:

BuTech stocks pre-cut coned and threaded nipples in lengths up to 12" (305mm). In addition, nipples can be purchased to any custom length.

Tube OD	Length						
	2.75"	3.00"	4.00"	6.00"	8.00"	10.00"	12.00"
1"				30N166-*	30N168-*	30N1610-*	30N1612-*
9/16"			40N994-*	40N996-*	40N998-*	40N9910-*	40N9912-*
1/4"	60N442-*	60N443-*	60N444-*	60N446-*	60N448-*	60N4410-*	60N4412-*
3/8"		60N663-*	60N664-*	60N666-*	60N668-*	60N6610-*	60N6612-*
9/16"			60N994-*	60N996-*	60N998-*	60N9910-*	60N9912-*
3/4"				60N126-*	60N128-*	60N1210-*	60N1212-*

\*Complete catalog number by adding suffix 316 for 316 stainless steel or suffix 304 for 304 stainless steel

+MAWP listed is the maximum working pressure of the fitting. Working pressure is determined by the pressure rating of the tubing.

Standard material of construction is 316 cold-worked stainless steel. Other materials are available on request. Please contact the factory.

# Equipment for 150,000 psi (10,340 bar)

Options and actuators on pages 18 & 19

**Tube Sizes: 5/16"**  
**Type: H/P Cone-and-Thread**

## Needle Valve Features:

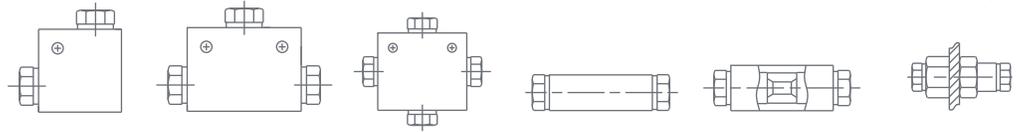
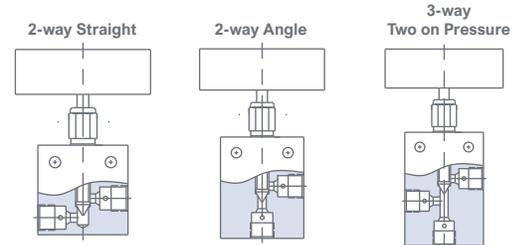
- Non-rotating stem prevents galling and scoring
- Four stem styles:
  - Vee
  - Metering
  - Regulating
  - Micro-Metering
- 17-4PH Stem for longer service life. 316 wetted parts are also available by specifying option **-316WP**
- Glass-filled packing for temperatures to **600°F (315°C)**
- Integral through holes for bracket mounting, a panel-mounting option is also available
- Positive gland locking device

## Materials of Construction:

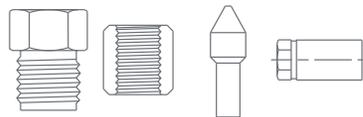
Standard materials of construction include 316 cold-worked stainless steel, 17-4PH, and glass-filled PTFE. All BuTech equipment may also be produced in any machinable metal. Some of the more common exotic materials used are:

- HC Hallestoy™ Alloy 276
- Inconel™ Alloy 625
- MO Monel 400™ Alloy 400
- 254 SMO Stainless Steel
- 2507 Duplex Stainless Steel

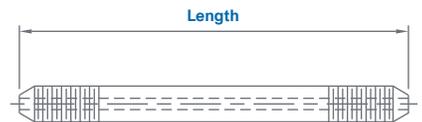
Tube OD	MAWP <sup>+</sup>	Cv <sup>*</sup>	Stem Style	2-way Straight	2-way Angle	3-way Two on Pressure
5/16"	150,000 PSI 10,340 bar	0.27	Vee Reg	150V51V 150V51R	150V52V 150V52R	150V53V 150V53R



Tube OD	MAWP <sup>+</sup>	Elbow	Tee	Cross	Coupling	Replaceable Seat Coupling	Bulkhead Coupling
5/16"	150,000 PSI 10,340 bar	150L5	150T5	150X5	150F5	150UF5	150BF5



Tube OD	MAWP <sup>+</sup>	Gland	Collar	Plug	Cap
5/16"	150,000 PSI 10,340 bar	150G5	150C5	150P5	150CA5



## Tubing:

Tubing is available in standard 20-24 foot length (6-7 meters), however, longer lengths are available on request.

Tube OD	I.D.	Catalog Number
5/16"	0.063" (1.6 mm)	150-063-316

## Nipples:

BuTech stocks pre-cut coned and threaded nipples in lengths up to 12" (305mm). In addition, nipples can be purchased to any custom length.

Tube OD	Length				
	4.00"	6.00"	8.00"	10.00"	12.00"
5/16"	150N554-*	150N556-*	150N558-*	150N5510-*	150N5512-*

\*Cv values listed are for 2-way straight pattern valves. For 2-way angle valves, increase Cv value by 50%

+Maximum pressure rating at 72°F (22°C) of the valve only. Working pressure is determined by the pressure rating of the tubing

# Needle Valve Features & Options

## Needle Valve Features:

- Non-rotating stem prevents galling and scoring
- Four stem styles:
  - Vee
  - Regulating
  - Metering
  - Micro-Metering
- 17-4PH Stem for longer service life. 316 wetted parts are also available by specifying option **-316WP**
- For Hydrogen service specify option **-H2-S**
- Glass-filled packing for temperatures to **600°F (315°C)**
- Integral through holes for bracket mounting, a panel-mounting option is also available
- Positive gland locking device

## Materials of Construction:

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

- HC Hallestoy™ Alloy 276
- Inconel™ Alloy 625
- MO Monel 400™ Alloy 400
- 254 SMO Stainless Steel
- 2507 Duplex Stainless Steel

## Packing and Stem Materials:

- **GR** Grafoil packings for service to **800°F (426°C)**
- **TFE** Virgin PTFE packing
- **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 1/4" through 9/16" sizes)
- **SS** Stainless steel handle in place of aluminum (available on 1/4" through 9/16" sizes, on 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:

- **AVG** Anti-vibration glands instead of standard glands for applications with excessive vibration or shock
- **O2** Cleaned for oxygen service
- **HT** Extended stuffing box, graphite packing, and materials for high-temperature service to **1200°F (648°C)**
- **HTF** Finned extended stuffing box, graphite packing, and materials for high-temperature service to **1200°F (648°C)**
- **LT** Extended stuffing box, teflon packing, and materials for cryogenic service to **-423°F (-251°C)**
- **LTF** Finned extended stuffing box, teflon packing, and materials for cryogenic service to **-423°F (-251°C)**

## Panel Mount:

- **PM** Panel-mount packing gland for single-hole mounting



# Air and Hydraulic Actuators

BuTech actuators are designed for remote control of tough-to-handle fluid and gas systems, such as corrosive processes, high temperature test loops, cryogenic systems, sampling of steam generators, and hazardous environments. Since BuTech air and hydraulic operators are virtually maintenance-free, they are ideally suited for service in limited access areas. The compact size and weight of these units permits installation where space or weight is at a premium.

The single-acting actuators have a fail-safe feature: The Air-to-Open actuator closes the valve on loss of operating pressure, while the Air-to-Close actuator opens the valve on loss of operating pressure. These very desirable safety features are necessary in critical systems.

BuTech offers both 5" and 8" air actuators for the valves shown in this catalog. Also available are the compact hydraulic actuators. See chart below for proper selection.



\*MAWP rating based on liquid applications; for gas application, consult factory.

Valve Model			Normally Open, Air-to-Close Actuators			Normally Closed, Air-to-Open Actuators			Pneumatic Double-Acting Actuators			Double-Acting Hydraulic Actuators	
			ATC5	ATC8	2XATC5	ATO5	ATO8	2XATO5	DA5	DA8	2XDA5	DAH	DAH2
SLPV4	MAWP*	PSI	12,000			11,500			12,000			12,000	
		bar	830			790			830			830	
SLPV6	Req'd Actuator Pressure	PSI	59			82			38			355	
		bar	4.1			5.7			2.6			20	
SLPV6	MAWP	PSI	6,000			5,500			6,000			6,000	
		bar	410			380			410			410	
SLPV8	Req'd Actuator Pressure	PSI	41			75			29			277	
		bar	2.8			5.2			2.0			20	
DHP2 DHP4 DHP6 DHP8	MAWP	PSI	15,000			15,000	15,000		15,000			15,000	
		bar	1030			1030	1030		1030			1030	
DHP12 DHP16	Req'd Actuator Pressure	PSI	59			81	50		47			444	
		bar	4.1			5.6	3.4		3.2			3.4	
DHP12 DHP16	MAWP	PSI		8,000	6,000		5,000	4,250		9,000	5,000		10,000
		bar		550	410		340	90		620	340		690
DHP12 DHP16	Req'd Actuator Pressure	PSI		100	95		66	79		100	91		1,400
		bar		6.9	6.5		4.6	5.4		6.9	6.3		100.0
SFPV2 SFPV4	MAWP	PSI	15,000			15,000			15,000			15,000	
		bar	1030			1030			1030			1030	
SFPV2 SFPV4	Req'd Actuator Pressure	PSI	59			81			47			444	
		bar	4.1			5.6			3.2			31.0	
SFPV6 SFPV8	MAWP	PSI	15,000	15,000	15,000	14,000	15,000		15,000			15,000	
		bar	1030	1030	1030	970	1030		1030			1030	
SFPV6 SFPV8	Req'd Actuator Pressure	PSI	85	40	40	84	56		73			693	
		bar	5.9	2.8	2.8	5.8	3.9		5.0			48.0	
FPV12 FPV16	MAWP	PSI	10,000	9,000		7,500	6,500			10,000	8,000		10,000
		bar	830	620		520	450			900	550		1030
FPV12 FPV16	Req'd Actuator Pressure	PSI	100	96		66	78		96	96		1,406	
		bar	6.9	6.6		4.6	5.4		6.6	6.6		100.0	
20UV4 20UV6	MAWP	PSI	20,000			20,000	20,000		20,000			20,000	
		bar	1380			1380	1380		1380			1380	
20UV4 20UV6	Req'd Actuator Pressure	PSI	74			82	55		63			592	
		bar	5.1			5.7	3.8		4.3			41.0	
20UV9	MAWP	PSI	18,000	20,000	20,000	14,000	20,000	20,000	20,000		20,000	20,000	20,000
		bar	1240	1380	1380	970	1380	1380	1380		1380	1380	1380
20UV9	Req'd Actuator Pressure	PSI	100	49	55	84	58	67	98		67	925	
		bar	6.9	3.4	3.8	5.8	4.0	4.6	6.8		5.0	64.0	
20V12	MAWP	PSI		20,000	14,000		12,500	10,500		20,000	12,000		20,000
		bar		1380	970		860	720		1380	830		1380
20V12	Req'd Actuator Pressure	PSI		101	90		66	79		90	89		1,134
		bar		7.0	6.2		4.6	5.4		6.2	6.1		80.0
20V16	MAWP	PSI		12,000	8,000		7,500			12,000			16,000
		bar		830	550		520			830			1100
20V16	Req'd Actuator Pressure	PSI		100	52		66			89			1,500
		bar		6.9	3.6		4.6			6.1			100.0
30UV	MAWP	PSI	30,000			30,000			30,000			30,000	
		bar	2070			2070			2070			2070	
30UV	Req'd Actuator Pressure	PSI	35			78			23			222	
		bar	2.4			5.4			1.6			15.3	
30V	MAWP	PSI		18,000	15,000		12,500			22,000	12,000		26,000
		bar		1240	1030		860			1520	830		1790
30V	Req'd Actuator Pressure	PSI		92	96		66			99	89		1,475
		bar		6.3	6.6		4.6			6.8	6.1		100.0
40UV	MAWP	PSI	40,000			40,000			40,000			40,000	
		bar	2760			2760			2760			2760	
40UV	Req'd Actuator Pressure	PSI	36			78			24			227	
		bar	2.5			5.4			1.7			15.6	
60UV	MAWP	PSI	60,000			60,000			60,000			60,000	
		bar	4140			4140			4140			4140	
60UV	Req'd Actuator Pressure	PSI	23			88			12			111	
		bar	1.6			6.1			0.8			8.0	
60V	MAWP	PSI		60,000	60,000		60,000	60,000		60,000	60,000		60,000
		bar		4140	4140		4140	4140		4140	4140		4140
60V	Req'd Actuator Pressure	PSI		45	65		61	80		30	45		850
		bar		3.1	4.5		4.2	5.5		2.1	3.1		58.6
150V	MAWP	PSI	150,000	150,000		150,000	150,000		150,000			150,000	
		bar	10340	10340		10340	10340		10340			10340	
150V	Req'd Actuator Pressure	PSI	78	37		86	54		66			624	
		bar	5.4	2.6		5.9	3.7		4.6			43.0	

# Male-Male Adapters

BuTech stocks a wide variety of male-male adapters. The charts below show the most common combinations. Other connections and sizes are available. Standard material of construction is 316 cold-worked stainless steel. Other materials are available on request. Please consult the BuTech sales staff.



Male End		NPT Pipe						Single-Ferrule Compression Tube			
		1/8" 15,000 PSI (1030 bar)	1/4" 15,000 PSI (1030 bar)	3/8" 15,000 PSI (1030 bar)	1/2" 15,000 PSI (1030 bar)	3/4" 10,000 PSI (690 bar)	1/8" 15,000 PSI (1030 bar)	1" 10,000 PSI (690 bar)	1/4" 11,500 PSI (790 bar)	3/8" 7,500 PSI (520 bar)	1/2" 5,500 PSI (380 bar)
NPT Pipe	1/8"	MA2P2P	MA2P4P	MA2P6P	MA2P8P	MA2P12P	MA2P16P	MA2L2P	MA4L2P	MA6L2P	MA8L2P
	1/4"	MA2P4P	MA4P4P	MA4P6P	MA4P8P	MA4P12P	MA4P16P	MA2L4P	MA4L4P	MA6L4P	MA8L4P
	3/8"	MA2P6P	MA4P6P	MA6P6P	MA6P8P	MA6P12P	MA6P16P	MA2L6P	MA4L6P	MA6L6P	MA8L6P
	1/2"	MA2P8P	MA4P8P	MA6P8P	MA8P8P	MA8P12P	MA8P16P	MA2L8P	MA4L8P	MA6L8P	MA8L8P
	3/4"	MA2P12P	MA4P12P	MA6P12P	MA8P12P	MA12P12P	MA12P16P	MA2L12P	MA4L12P	MA6L12P	MA8L12P
	1"	MA2P16P	MA4P16P	MA6P16P	MA8P16P	MA12P16P	MA16P16P	MA2L16P	MA4L16P	MA6L16P	MA8L16P
Single-Ferrule Compression	1/8"	MA2L2P	MA2L4P	MA2L6P	MA2L8P	MA2L12P	MA2L16P		MA2L4L	MA2L6L	MA2L8L
	1/4"	MA4L2P	MA4L4P	MA4L6P	MA4L8P	MA4L12P	MA4L16P	MA2L4L		MA4L6L	MA4L8L
	3/8"	MA6L2P	MA6L4P	MA6L6P	MA6L8P	MA6L12P	MA6L16P	MA2L6L	MA4L6L		MA6L8L
	1/2"	MA8L2P	MA8L4P	MA8L6P	MA8L8P	MA8L12P	MA8L16P	MA2L8L	MA4L8L	MA6L8L	
Medium Pressure Cone & Thread	1/4"	MA4M2P	MA4M4P	MA4M6P	MA4M8P	MA4M12P	MA4M16P	MA2L4M	MA4L4M	MA6L4M	MA8L4M
	3/8"	MA6M2P	MA6M4P	MA6M6P	MA6M8P	MA6M12P	MA6M16P	MA2L6M	MA4L6M	MA6L6M	MA8L6M
	9/16"	MA9M2P	MA9M4P	MA9M6P	MA9M8P	MA9M12P	MA9M16P	MA2L9M	MA4L9M	MA6L9M	MA8L9M
	3/4"	MA12M2P	MA12M4P	MA12M6P	MA12M8P	MA12M12P	MA12M16P	MA2L12M	MA4L12M	MA6L12M	MA8L12M
	1"	MA16M2P	MA16M4P	MA16M6P	MA16M8P	MA16M12P	MA16M16P	MA2L16M	MA4L16M	MA6L16M	MA8L16M
High Pressure Cone & Thread	1/4"	MA4H2P	MA4H4P	MA4H6P	MA4H8P	MA4H12P	MA4H16P	MA2L4H	MA4L4H	MA6L4H	MA8L4H
	3/8"	MA6H2P	MA6H4P	MA6H6P	MA6H8P	MA6H12P	MA6H16P	MA2L6H	MA4L6H	MA6L6H	MA8L6H
	9/16"	MA9H2P	MA9H4P	MA9H6P	MA9H8P	MA9H12P	MA9H16P	MA2L9H	MA4L9H	MA6L9H	MA8L9H
	3/4"	MA12H2P	MA12H4P	MA12H6P	MA12H8P	MA12H12P	MA12H16P	MA2L12H	MA4L12H	MA6L12H	MA8L12H
	1"	MA16H2P	MA16H4P	MA16H6P	MA16H8P	MA16H12P	MA16H16P	MA2L16H	MA4L16H	MA6L16H	MA8L16H

Male End		Medium Pressure Cone & Thread					High Pressure Cone & Thread				
		1/4" 20,000 PSI (1380 bar)	3/8" 20,000 PSI (1380 bar)	9/16" 20,000 PSI (1380 bar)	3/4" 20,000 PSI (1380 bar)	1" 20,000 PSI (1380 bar)	1/4" 60,000 PSI (4140 bar)	3/8" 60,000 PSI (4140 bar)	9/16" 60,000 PSI (4140 bar)	3/4" 60,000 PSI (4140 bar)	1" 30,000 PSI (2070 bar)
NPT Pipe	1/8"	MA4M2P	MA6M2P	MA9M2P	MA12M2P	MA16M2P	MA4H2P	MA6H2P	MA9H2P	MA12H2P	MA16H2P
	1/4"	MA4M4P	MA6M4P	MA9M4P	MA12M4P	MA16M4P	MA4H4P	MA6H4P	MA9H4P	MA12H4P	MA16H4P
	3/8"	MA4M6P	MA6M6P	MA9M6P	MA12M6P	MA16M6P	MA4H6P	MA6H6P	MA9H6P	MA12H6P	MA16H6P
	1/2"	MA4M8P	MA6M8P	MA9M8P	MA12M8P	MA16M8P	MA4H8P	MA6H8P	MA9H8P	MA12H8P	MA16H8P
	3/4"	MA4M12P	MA6M12P	MA9M12P	MA12M12P	MA16M12P	MA4H12P	MA6H12P	MA9H12P	MA12H12P	MA16H12P
	1"	MA4M16P	MA6M16P	MA9M16P	MA12M16P	MA16M16P	MA4H16P	MA6H16P	MA9H16P	MA12H16P	MA16H16P
Single-Fer- rile Com- pression	1/8"	MA2L4M	MA2L6M	MA2L9M	MA2L12M	MA2L16M	MA2L4H	MA2L6H	MA2L9H	MA2L12H	MA2L16H
	1/4"	MA4L4M	MA4L6M	MA4L9M	MA4L12M	MA4L16M	MA4L4H	MA4L6H	MA4L9H	MA4L12H	MA4L16H
	3/8"	MA6L4M	MA6L6M	MA6L9M	MA6L12M	MA6L16M	MA6L4H	MA6L6H	MA6L9H	MA6L12H	MA6L16H
	1/2"	MA8L4M	MA8L6M	MA8L9M	MA8L12M	MA8L16M	MA8L4H	MA8L6H	MA8L9H	MA8L12H	MA8L16H
Medium Pressure Cone & Thread	1/4"	MA4M4M	MA4M6M	MA4M9M	MA4M12M	MA4M16M	MA4M4H	MA4M6H	MA4M9H	MA4M12H	MA4M16H
	3/8"	MA4M6M	MA6M6M	MA6M9M	MA6M12M	MA6M16M	MA6M4H	MA6M6H	MA6M9H	MA6M12H	MA6M16H
	9/16"	MA4M9M	MA6M9M	MA9M9M	MA9M12M	MA9M16M	MA9M4H	MA9M6H	MA9M9H	MA9M12H	MA9M16H
	3/4"	MA4M12M	MA6M12M	MA9M12M	MA12M12M	MA12M16M	MA12M4H	MA12M6H	MA12M9H	MA12M12H	MA12M16H
	1"	MA4M16M	MA6M16M	MA9M16M	MA12M16M	MA16M16M	MA16M4H	MA16M6H	MA16M9H	MA16M12H	MA16M16H
High Pressure Cone & Thread	1/4"	MA4M4H	MA6M4H	MA9M4H	MA12M4H	MA16M4H	MA4H4H	MA4H6H	MA4H9H	MA4H12H	MA4H16H
	3/8"	MA4M6H	MA6M6H	MA9M6H	MA12M6H	MA16M6H	MA4H6H	MA6H6H	MA6H9H	MA6H12H	MA6H16H
	9/16"	MA4M9H	MA6M9H	MA9M9H	MA12M9H	MA16M9H	MA4H9H	MA6H9H	MA9H9H	MA9H12H	MA9H16H
	3/4"	MA4M12H	MA6M12H	MA9M12H	MA12M12H	MA16M12H	MA4H12H	MA6H12H	MA9H12H	MA12H12H	MA12H16H
	1"	MA4M16H	MA6M16H	MA9M16H	MA12M16H	MA16M16H	MA4H16H	MA6H16H	MA9H16H	MA12H16H	MA16H16H

Note: The Maximum Allowable Working Pressure of an adapter or coupling shall not exceed the MAWP of the selected connection.

# Male-Female Adapters

BuTech stocks a wide variety of male-female adapters. The charts below show the most common combinations. Other connections and sizes are available. Standard material of construction is 316 cold-worked stainless steel. Other materials are available on request. Please consult the BuTech sales staff.



Female End		NPT Pipe						Single-Ferrule Compression Tube			
		1/8" 15,000 PSI (1030 bar)	1/4" 15,000 PSI (1030 bar)	3/8" 15,000 PSI (1030 bar)	1/2" 15,000 PSI (1030 bar)	3/4" 10,000 PSI (690 bar)	1/8" 15,000 PSI (1030 bar)	1" 10,000 PSI (690 bar)	1/4" 11,500 PSI (790 bar)	3/8" 7,500 PSI (520 bar)	1/2" 5,500 PSI (380 bar)
Male End											
NPT Pipe	1/8"	10A2P2P	10A2P4P	10A2P6P	10A2P8P	10A2P12P	10A2P16P	LPA2P2L	LPA2P4L	LPA2P6L	LPA2P8L
	1/4"	10A4P2P	10A4P4P	10A4P6P	10A4P8P	10A4P12P	10A4P16P	LPA4P2L	LPA4P4L	LPA4P6L	LPA4P8L
	3/8"	10A6P2P	10A6P4P	10A6P6P	10A6P8P	10A6P12P	10A6P16P	LPA6P2L	LPA6P4L	LPA6P6L	LPA6P8L
	1/2"	10A8P2P	10A8P4P	10A8P6P	10A8P8P	10A8P12P	10A8P16P	LPA8P2L	LPA8P4L	LPA8P6L	LPA8P8L
	3/4"	10A12P2P	10A12P4P	10A12P6P	10A12P8P	10A12P12P	10A12P16P	LPA12P2L	LPA12P4L	LPA12P6L	LPA12P8L
	1"	10A16P2P	10A16P4P	10A16P6P	10A16P8P	10A16P12P	10A16P16P	LPA16P2L	LPA16P4L	LPA16P6L	LPA16P8L
Single-Ferrule Compression	1/8"	LPA2L2P	LPA2L4P	LPA2L6P	LPA2L8P	LPA2L12P	LPA2L16P	LPA2L2L	LPA2L4L	LPA2L6L	LPA2L8L
	1/4"	LPA4L2P	LPA4L4P	LPA4L6P	LPA4L8P	LPA4L12P	LPA4L16P	LPA4L2L	LPA4L4L	LPA4L6L	LPA4L8L
	3/8"	LPA6L2P	LPA6L4P	LPA6L6P	LPA6L8P	LPA6L12P	LPA6L16P	LPA6L2L	LPA6L4L	LPA6L6L	LPA6L8L
	1/2"	LPA8L2P	LPA8L4P	LPA8L6P	LPA8L8P	LPA8L12P	LPA8L16P	LPA8L2L	LPA8L4L	LPA8L6L	LPA8L8L
Medium Pressure Cone & Thread	1/4"	10A4M2P	10A4M4P	10A4M6P	10A4M8P	10A4M12P	10A4M16P	LPA4M2L	LPA4M4L	LPA4M6L	LPA4M8L
	3/8"	10A6M2P	10A6M4P	10A6M6P	10A6M8P	10A6M12P	10A6M16P	LPA6M2L	LPA6M4L	LPA6M6L	LPA6M8L
	9/16"	10A9M2P	10A9M4P	10A9M6P	10A9M8P	10A9M12P	10A9M16P	LPA9M2L	LPA9M4L	LPA9M6L	LPA9M8L
	3/4"	10A12M2P	10A12M4P	10A12M6P	10A12M8P	10A12M12P	10A12M16P	LPA12M2L	LPA12M4L	LPA12M6L	LPA12M8L
	1"	10A16M2P	10A16M4P	10A16M6P	10A16M8P	10A16M12P	10A16M16P	LPA16M2L	LPA16M4L	LPA16M6L	LPA16M8L
High Pressure Cone & Thread	1/4"	10A4H2P	10A4H4P	10A4H6P	10A4H8P	10A4H12P	10A4H16P	LPA4H2L	LPA4H4L	LPA4H6L	LPA4H8L
	3/8"	10A6H2P	10A6H4P	10A6H6P	10A6H8P	10A6H12P	10A6H16P	LPA6H2L	LPA6H4L	LPA6H6L	LPA6H8L
	9/16"	10A9H2P	10A9H4P	10A9H6P	10A9H8P	10A9H12P	10A9H16P	LPA9H2L	LPA9H4L	LPA9H6L	LPA9H8L
	3/4"	10A12H2P	10A12H4P	10A12H6P	10A12H8P	10A12H12P	10A12H16P	LPA12H2L	LPA12H4L	LPA12H6L	LPA12H8L
	1"	10A16H2P	10A16H4P	10A16H6P	10A16H8P	10A16H12P	10A16H16P	LPA16H2L	LPA16H4L	LPA16H6L	LPA16H8L

Female End		Medium Pressure Cone & Thread					High Pressure Cone & Thread				
		1/4" 20,000 PSI (1380 bar)	3/8" 20,000 PSI (1380 bar)	9/16" 20,000 PSI (1380 bar)	3/4" 20,000 PSI (1380 bar)	1" 20,000 PSI (1380 bar)	1/4" 60,000 PSI (4140 bar)	3/8" 60,000 PSI (4140 bar)	9/16" 60,000 PSI (4140 bar)	3/4" 60,000 PSI (4140 bar)	1" 30,000 PSI (2070 bar)
Male End											
NPT Pipe	1/8"	10A2P4M	10A2P6M	10A2P9M	10A2P12M	10A2P16M	10A2P4H	10A2P6H	10A2P9H	10A2P12H	10A2P16H
	1/4"	10A4P4M	10A4P6M	10A4P9M	10A4P12M	10A4P16M	10A4P4H	10A4P6H	10A4P9H	10A4P12H	10A4P16H
	3/8"	10A6P4M	10A6P6M	10A6P9M	10A6P12M	10A6P16M	10A6P4H	10A6P6H	10A6P9H	10A6P12H	10A6P16H
	1/2"	10A8P4M	10A8P6M	10A8P9M	10A8P12M	10A8P16M	10A8P4H	10A8P6H	10A8P9H	10A8P12H	10A8P16H
	3/4"	10A12P4M	10A12P6M	10A12P9M	10A12P12M	10A12P16M	10A12P4H	10A12P6H	10A12P9H	10A12P12H	10A12P16H
	1"	10A16P4M	10A16P6M	10A16P9M	10A16P12M	10A16P16M	10A16P4H	10A16P6H	10A16P9H	10A16P12H	10A16P16H
Single-Ferrule Compression	1/8"	LPA2L4M	LPA2L6M	LPA2L9M	LPA2L12M	LPA2L16M	LPA2L4H	LPA2L6H	LPA2L9H	LPA2L12H	LPA2L16H
	1/4"	LPA4L4M	LPA4L6M	LPA4L9M	LPA4L12M	LPA4L16M	LPA4L4H	LPA4L6H	LPA4L9H	LPA4L12H	LPA4L16H
	3/8"	LPA6L4M	LPA6L6M	LPA6L9M	LPA6L12M	LPA6L16M	LPA6L4H	LPA6L6H	LPA6L9H	LPA6L12H	LPA6L16H
	1/2"	LPA8L4M	LPA8L6M	LPA8L9M	LPA8L12M	LPA8L16M	LPA8L4H	LPA8L6H	LPA8L9H	LPA8L12H	LPA8L16H
Medium Pressure Cone & Thread	1/4"	20A4M4M	20A4M6M	20A4M9M	20A4M12M	20A4M16M	20A4M4H	20A4M6H	20A4M9H	20A4M12H	20A4M16H
	3/8"	20A6M4M	20A6M6M	20A6M9M	20A6M12M	20A6M16M	20A6M4H	20A6M6H	20A6M9H	20A6M12H	20A6M16H
	9/16"	20A9M4M	20A9M6M	20A9M9M	20A9M12M	20A9M16M	20A9M4H	20A9M6H	20A9M9H	20A9M12H	20A9M16H
	3/4"	20A12M4M	20A12M6M	20A12M9M	20A12M12M	20A12M16M	20A12M4H	20A12M6H	20A12M9H	20A12M12H	20A12M16H
	1"	20A16M4M	20A16M6M	20A16M9M	20A16M12M	20A16M16M	20A16M4H	20A16M6H	20A16M9H	20A16M12H	20A16M16H
High Pressure Cone & Thread	1/4"	20A4H4M	20A4H6M	20A4H9M	20A4H12M	20A4H16M	60A4H4H	60A4H6H	60A4H9H	60A4H12H	30A4H16H
	3/8"	20A6H4M	20A6H6M	20A6H9M	20A6H12M	20A6H16M	60A6H4H	60A6H6H	60A6H9H	60A6H12H	30A6H16H
	9/16"	20A9H4M	20A9H6M	20A9H9M	20A9H12M	20A9H16M	60A9H4H	60A9H6H	60A9H9H	60A9H12H	30A9H16H
	3/4"	20A12H4M	20A12H6M	20A12H9M	20A12H12M	20A12H16M	60A12H4H	60A12H6H	60A12H9H	60A12H12H	30A12H16H
	1"	20A16H4M	20A16H6M	20A16H9M	20A16H12M	20A16H16M	30A16H4H	30A16H6H	30A16H9H	30A16H12H	30A16H16H

Note: The Maximum Allowable Working Pressure of an adapter or coupling shall not exceed the MAWP of the selected connection.

# Female-Female Couplings

BuTech stocks a wide variety of female-female couplings. The charts below show the most common combinations. Other connections and sizes are available. Standard material of construction is 316 cold-worked stainless steel. Other materials are available on request. Please consult the BuTech sales staff.



Female End		NPT Pipe						Single-Ferrule Compression Tube			
		1/8" 15,000 PSI (1030 bar)	1/4" 15,000 PSI (1030 bar)	3/8" 15,000 PSI (1030 bar)	1/2" 15,000 PSI (1030 bar)	3/4" 10,000 PSI (690 bar)	1/8" 15,000 PSI (1030 bar)	1" 10,000 PSI (690 bar)	1/4" 11,500 PSI (790 bar)	3/8" 7,500 PSI (520 bar)	1/2" 5,500 PSI (380 bar)
NPT Pipe	1/8"	FPF2	10F2P4P	10F2P6P	10F2P8P	10F2P12P	10F2P16P	LPC2L2P	LPC4L2P	LPC6L2P	LPC8L2P
	1/4"	10F2P4P	FPF4	10F4P6P	10F4P8P	10F4P12P	10F4P16P	LPC2L4P	LPC4L4P	LPC6L4P	LPC8L4P
	3/8"	10F2P6P	10F4P6P	FPF6	10F6P8P	10F6P12P	10F6P16P	LPC2L6P	LPC4L6P	LPC6L6P	LPC8L6P
	1/2"	10F2P8P	10F4P8P	10F6P8P	FPF8	10F8P12P	10F8P16P	LPC2L8P	LPC4L8P	LPC6L8P	LPC8L8P
	3/4"	10F2P12P	10F4P12P	10F6P12P	10F8P12P	FPF12	10F12P16P	LPC2L12P	LPC4L12P	LPC6L12P	LPC8L12P
	1"	10F2P16P	10F4P16P	10F6P16P	10F8P16P	10F12P16P	FPF16	LPC2L16P	LPC4L16P	LPC6L16P	LPC8L16P
Single-Fer- rule Com- pression	1/8"	LPC2L2P	LPC2L4P	LPC2L6P	LPC2L8P	LPC2L12P	LPC2L16P	LPC2	LPC2L4L	LPC2L6L	LPC2L8L
	1/4"	LPC4L2P	LPC4L4P	LPC4L6P	LPC4L8P	LPC4L12P	LPC4L16P	LPC2L4L	LPC4	LPC4L6L	LPC4L8L
	3/8"	LPC6L2P	LPC6L4P	LPC6L6P	LPC6L8P	LPC6L12P	LPC6L16P	LPC2L6L	LPC4L6L	LPC6	LPC6L8L
	1/2"	LPC8L2P	LPC8L4P	LPC8L6P	LPC8L8P	LPC8L12P	LPC8L16P	LPC2L8L	LPC4L8L	LPC6L8L	LPC8
Medium Pressure Cone & Thread	1/4"	10F4M2P	10F4M4P	10F4M6P	10F4M8P	10F4M12P	10F4M16P	LPC2L4M	LPC4L4M	LPC6L4M	LPC8L4M
	3/8"	10F6M2P	10F6M4P	10F6M6P	10F6M8P	10F6M12P	10F6M16P	LPC2L6M	LPC4L6M	LPC6L6M	LPC8L6M
	9/16"	10F9M2P	10F9M4P	10F9M6P	10F9M8P	10F9M12P	10F9M16P	LPC2L9M	LPC4L9M	LPC6L9M	LPC8L9M
	3/4"	10F12M2P	10F12M4P	10F12M6P	10F12M8P	10F12M12P	10F12M16P	LPC2L12M	LPC4L12M	LPC6L12M	LPC8L12M
	1"	10F16M2P	10F16M4P	10F16M6P	10F16M8P	10F16M12P	10F16M16P	LPC2L16M	LPC4L16M	LPC6L16M	LPC8L16M
High Pressure Cone & Thread	1/4"	10F4H2P	10F4H4P	10F4H6P	10F4H8P	10F4H12P	10F4H16P	LPC2L4H	LPC4L4H	LPC6L4H	LPC8L4H
	3/8"	10F6H2P	10F6H4P	10F6H6P	10F6H8P	10F6H12P	10F6H16P	LPC2L6H	LPC4L6H	LPC6L6H	LPC8L6H
	9/16"	10F9H2P	10F9H4P	10F9H6P	10F9H8P	10F9H12P	10F9H16P	LPC2L9H	LPC4L9H	LPC6L9H	LPC8L9H
	3/4"	10F12H2P	10F12H4P	10F12H6P	10F12H8P	10F12H12P	10F12H16P	LPC2L12H	LPC4L12H	LPC6L12H	LPC8L12H
	1"	10F16H2P	10F16H4P	10F16H6P	10F16H8P	10F16H12P	10F16H16P	LPC2L16H	LPC4L16H	LPC6L16H	LPC8L16H

Female End		Medium Pressure Cone & Thread					High Pressure Cone & Thread				
		1/4" 20,000 PSI (1380 bar)	3/8" 20,000 PSI (1380 bar)	9/16" 20,000 PSI (1380 bar)	3/4" 20,000 PSI (1380 bar)	1" 20,000 PSI (1380 bar)	1/4" 60,000 PSI (4140 bar)	3/8" 60,000 PSI (4140 bar)	9/16" 60,000 PSI (4140 bar)	3/4" 60,000 PSI (4140 bar)	1" 30,000 PSI (2070 bar)
NPT Pipe	1/8"	10F4M2P	10F6M2P	10F9M2P	10F12M2P	10F16M2P	10F4H2P	10F6H2P	10F9H2P	10F12H2P	10F16H2P
	1/4"	10F4M4P	10F6M4P	10F9M4P	10F12M4P	10F16M4P	10F4H4P	10F6H4P	10F9H4P	10F12H4P	10F16H4P
	3/8"	10F4M6P	10F6M6P	10F9M6P	10F12M6P	10F16M6P	10F4H6P	10F6H6P	10F9H6P	10F12H6P	10F16H6P
	1/2"	10F4M8P	10F6M8P	10F9M8P	10F12M8P	10F16M8P	10F4H8P	10F6H8P	10F9H8P	10F12H8P	10F16H8P
	3/4"	10F4M12P	10F6M12P	10F9M12P	10F12M12P	10F16M12P	10F4H12P	10F6H12P	10F9H12P	10F12H12P	10F16H12P
	1"	10F4M16P	10F6M16P	10F9M16P	10F12M16P	10F16M16P	10F4H16P	10F6H16P	10F9H16P	10F12H16P	10F16H16P
Single-Fer- rule Com- pression	1/8"	LPC2L4M	LPC2L6M	LPC2L9M	LPC2L12M	LPC2L16M	LPC2L4H	LPC2L6H	LPC2L9H	LPC2L12H	LPC2L16H
	1/4"	LPC4L4M	LPC4L6M	LPC4L9M	LPC4L12M	LPC4L16M	LPC4L4H	LPC4L6H	LPC4L9H	LPC4L12H	LPC4L16H
	3/8"	LPC6L4M	LPC6L6M	LPC6L9M	LPC6L12M	LPC6L16M	LPC6L4H	LPC6L6H	LPC6L9H	LPC6L12H	LPC6L16H
	1/2"	LPC8L4M	LPC8L6M	LPC8L9M	LPC8L12M	LPC8L16M	LPC8L4H	LPC8L6H	LPC8L9H	LPC8L12H	LPC8L16H
Medium Pressure Cone & Thread	1/4"	20F4	20F4M6M	20F4M9M	20F4M12M	20F4M16M	20F4M4H	20F4M6H	20F4M9H	20F4M12H	20F4M16H
	3/8"	20F4M6M	20F6	20F6M9M	20F6M12M	20F6M16M	20F6M4H	20F6M6H	20F6M9H	20F6M12H	20F6M16H
	9/16"	20F4M9M	20F6M9M	20F9	20F9M12M	20F9M16M	20F9M4H	20F9M6H	20F9M9H	20F9M12H	20F9M16H
	3/4"	20F4M12M	20F6M12M	20F9M12M	20F12	20F12M16M	20F12M4H	20F12M6H	20F12M9H	20F12M12H	20F12M16H
	1"	20F4M16M	20F6M16M	20F9M16M	20F12M16M	20F16	20F16M4H	20F16M6H	20F16M9H	20F16M12H	20F16M16H
High Pressure Cone & Thread	1/4"	20F4M4H	20F6M4H	20F9M4H	20F12M4H	20F16M4H	60F4	60F4H6H	60F4H9H	60F4H12H	30F4H16H
	3/8"	20F4M6H	20F6M6H	20F9M6H	20F12M6H	20F16M6H	60F4H6H	60F6	60F6H9H	60F6H12H	30F6H16H
	9/16"	20F4M9H	20F6M9H	20F9M9H	20F12M9H	20F16M9H	60F4H9H	60F6H9H	60F9	60F9H12H	30F9H16H
	3/4"	20F4M12H	20F6M12H	20F9M12H	20F12M12H	20F16M12H	60F4H12H	60F6H12H	60F9H12H	60F12	30F12H16H
	1"	20F4M16H	20F6M16H	20F9M16H	20F12M16H	20F16M16H	30F4H16H	30F6H16H	30F9H16H	30F12H16H	30F16

Note: The Maximum Allowable Working Pressure of an adapter or coupling shall not exceed the MAWP of the selected connection.

# Relief Valves

BuTech offers a line of adjustable high pressure relief valves that are engineered to provide reliable, repeatable venting of gases or liquids in pressure gas systems, cryogenic systems and petrochemical application where flow is not important.



## Specifications:

- Pressure range from 1,500 psig (103 bar) to 20,000 psig (1378 bar)
- Standard temperature range is **-328°F (-200°C) to 400°F (204°C)**

## Key Features:

- Constructed of 316 SS, Nitronic 60, 17-7 spring
- Proportionally actuated

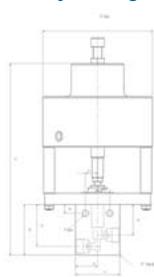
Catalog Number	CONNECTION SIZE & TYPE		Orifice Diameter Inches (mm)	PRESSURE RATING PSI (BAR @ 100°F (38°C))		
	Inlet Connection	Outlet Connection		Minimum Setting	Maximum Setting	Maximum Back Pressure
5RVHS	9/16" M/P	3/4" FNPT	0.312 (7.92)	1,500 (103.42)	5,000 (344.73)	500 (34.47)
10RVHS	9/16" M/P	3/4" FNPT	0.250 (6.35)	5,000 (344.73)	10,000 (689.46)	500 (34.47)
15RVHS	9/16" M/P	3/4" FNPT	0.188 (4.78)	10,000 (689.46)	15,000 (1034.20)	500 (34.47)
20RVHS	9/16" M/P	3/4" FNPT	0.156 (3.96)	15,000 (1034.20)	20,000 (1378.93)	500 (34.47)

# Soft Seat Needle Valve

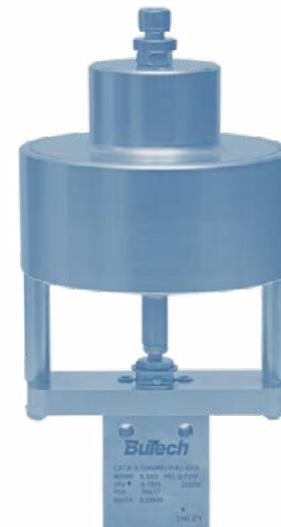
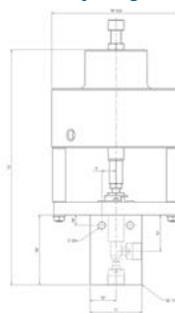
Traditional metal-to-metal seated needle valves often fall short when it comes to achieving a leak-tight seal with gases. BuTech's Soft Seat Needle Valve combines the trusted performance of a traditional needle valve, with Chevron packing and a soft seat, delivering a true leak-tight seal when closed.

- Reliable containment for hydrogen and other gases
- Tested to ISO standards
- Ideal for Hydrogen refueling stations and compression systems, H2 generation, storage, and transfer, R&D lab gas distribution, test stands, tube trailer filling and general system shut off valves for most gases: Nitrogen, Hydrogen, Helium, Argon

2-Way Straight



2-Way Angle



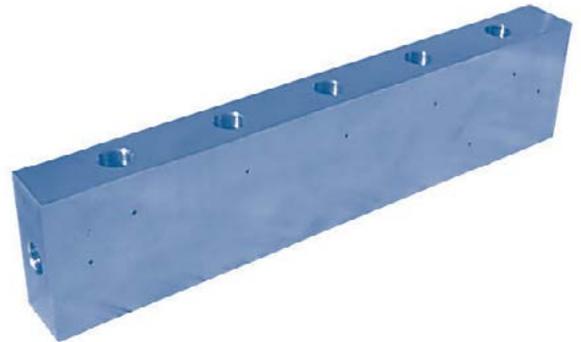
Catalog Number	Connection	MAWP	Min. Orifice	Cv	Dimensional & Connection Data										
					A	B	C	D	E	F	G	H	I	J	K
8.5SNVM91-P-H2-AT05	9/16" M/P	8,500 PSI	.25"	.78	10.88"	6.25"	2.50"	2.88"	1.25"	2.38"	1.75"	.50"	.69"	.34" Dia.	1.00"
8.5SNVM92-P-H2-AT05	9/16" M/P	8,500 PSI	.25"	1.17	11.37"	6.25"	2.50"	3.38"	1.25"	N/A	1.75"	.50"	.69"	.34" Dia.	1.00"
8.5SNVP81-P-H2-AT05	1/2" FNPT	8,500 PSI	.25"	.78	11.00"	6.25"	2.50"	3.00"	1.25"	2.38"	1.75"	.50"	.69"	.34" Dia.	1.00"
8.5SNVP82-P-H2-AT05	1/2" FNPT	8,500 PSI	.25"	1.17	11.37"	6.25"	2.50"	3.38"	1.25"	N/A	1.75"	.50"	.69"	.34" Dia.	1.00"

# Specialty Products

## Manifolds

Specialty pressure manifolds minimize space requirements and reduce installation time necessary to plumb a pressure system. In addition, by reducing the number of components used in a system, manifolds reduce the number of potential leak joints.

BuTech will design and build pressure manifolds to meet specific installation, layout and pressure requirements. These manifolds are capable of withstanding pressures from vacuum to 60,000 PSI (4140 bar), and are available in a variety of materials and sizes. Among the pressure connections that can be incorporated are low pressure compression, medium and high pressure cone-and-thread, NPT, SAE, BSP and others. Transitions in system line sizes and tubing pressure series can be accomplished through a specialty manifold. These manifolds are appropriate wherever pressure tubing systems are utilized.



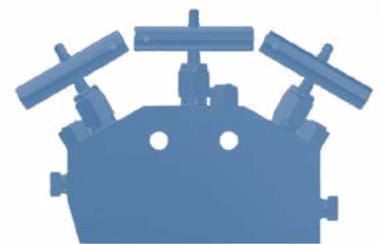
## Block and bleed & double block and bleed valves

Block and bleed valves and double block and bleed valves (DBB valves) provide safe isolation, pressure verification, and simplified maintenance for oil & gas, hydrogen, industrial process control, and instrumentation systems.

- A block and bleed valve includes one block valve and one bleed valve, ideal for instrument isolation, sampling, and calibration
- A double block and bleed valve integrates two isolation valves and a bleed valve into one compact body, reducing leak paths and enabling safe venting between blocks

### The Double Block and Bleed series offers both needle and ball valve options.

- DBB needle valves are designed for pressures up to 60,000 PSI (4137 bar) at 72°F (22°C)
- DBB ball valves (B-N-B) are designed for pressures up to 15,000 PSI (1034 bar) at 72°F (22°C)
- Constructed from 316 Stainless Steel, but machinable in other alloys and with special seal materials
- Configurable for most sizes of tubing with all connection styles



Learn more about  
**OUR SUBSEA  
SOLUTIONS:**



Learn more about  
**OUR HYDROGEN  
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# Tools



## Tube Bender

The BuTech tube bender is designed to provide fast, accurate and reliable bending of heavy wall tubing with only one setup.

Tube OD	Catalog Number
1/4"	MTB4
3/8"	MTB6
9/16"	MTB9
1/4", 3/8", 9/16"	MTB469



## Tube Vises

BuTech tube vises are the lightweight and inexpensive way to hold tubing tightly during coning and threading operations.

Tube OD	Catalog Number
1/4"	TV4
3/8"	TV6
9/16"	TV9
3/4"	TV12

## Hand Tools

BuTech hand tools are designed to permit on-sight end preparation for tubing. The coning tool uses a precision collet to maintain concentricity between the tube and the cutter blades. The threading tool uses an adjustable split die and a precision guide bushing to cut a perfect thread.



Tube OD	Series	Coning Tool	Threading Tool
1/4"	20,000 PSI	20HCT4	THT4-H
3/8"	20,000 PSI	20HCT6	THT6-H
9/16"	20,000 PSI	20HCT9	THT9-H
3/4"	20,000 PSI	20HCT12	THT12-H
1"	20,000 PSI	20HCT16	THT16-H

Tube OD	Series	Coning Tool	Threading Tool
1/4"	60,000 PSI	60HCT4	THT4-H
3/8"	60,000 PSI	60HCT6	THT6-H
9/16"	60,000 PSI	60HCT9	THT9-H
3/4"	60,000 PSI	60HCT12	THT12-H
1"	30,000 PSI	30HCT16	THT16-H

## Power Tools

BuTech power tools are designed to be used with any variable speed power hand drill. This unique feature makes them perfect for fast machining of several tube ends.

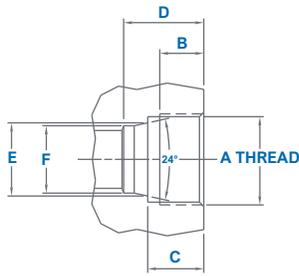


Tube OD	Series	Coning Tool	Threading Tool
1/4"	20,000 PSI	20CT4	THT4-P
3/8"	20,000 PSI	20CT6	THT6-P
9/16"	20,000 PSI	20CT9	THT9-P
3/4"	20,000 PSI	20CT12	THT12-P
1"	20,000 PSI	20CT16	THT16-P

Tube OD	Series	Coning Tool	Threading Tool
1/4"	60,000 PSI	60CT4	THT4-P
3/8"	60,000 PSI	60CT6	THT6-P
9/16"	60,000 PSI	60CT9	THT9-P
3/4"	60,000 PSI	60CT12	THT12-P
1"	30,000 PSI	30CT16	THT16-P

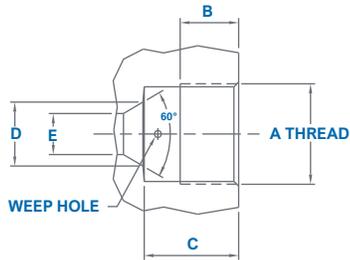
# Connection Dimensions

## L/P Connection

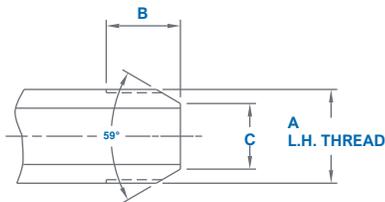


Connection	A Thread	B	C	D	E	F
1/8" L/P	3/8"-24	0.22" (5.6)	0.31" (7.9)	0.47" (11.9)	0.19" (4.8)	0.128" (3.3)
1/4" L/P	3/4"-16	0.34" (8.6)	0.44" (11.2)	0.69" (17.5)	0.35" (8.9)	0.257" (6.5)
1/4" SL/P	1/2"-20	0.38" (9.7)	0.44" (11.2)	0.69" (17.5)	0.35" (8.9)	0.257" (6.5)
3/8" L/P	3/4"-16	0.38" (9.7)	0.44" (11.2)	0.69" (17.5)	0.47" (11.9)	0.386" (9.8)
3/8" SL/P	5/8"-18	0.38" (9.7)	0.47" (11.9)	0.75" (19.1)	0.47" (11.9)	0.386" (9.8)
1/2" L/P	13/16"-16	0.41" (10.4)	0.50" (12.7)	0.81" (20.6)	0.60" (15.2)	0.515" (13.1)

## M/P Connections

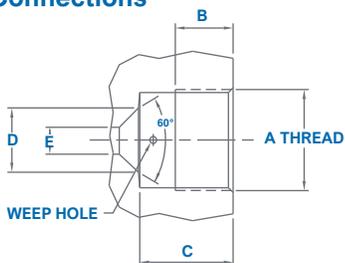


Connection	A Thread	B	C	D	E	F
1/4" M/P	7/16"-20	0.28" (7.1)	0.50" (12.7)	0.19" (4.8)	0.109" (2.8)	0.128" (3.3)
3/8" M/P	9/16"-18	0.38" (9.7)	0.62" (15.7)	0.31" (7.9)	0.203" (5.2)	0.257" (6.5)
9/16" M/P	13/16"-16	0.44" (11.2)	0.75" (19.1)	0.50" (12.7)	0.312" (7.9)	0.257" (6.5)
3/4" M/P	3/4"-14 NPSM	0.50" (12.7)	0.94" (23.9)	0.62" (15.7)	0.437" (11.1)	0.386" (9.8)
1" M/P	1-3/8"-12	0.81" (20.6)	1.31" (33.3)	0.88" (22.4)	0.562" (14.3)	0.515" (13.1)

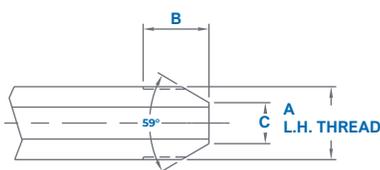


Connection	A Thread	B	C
1/4" M/P	1/4"-28	0.34" (8.6)	0.140" (3.6)
3/8" M/P	3/8"-24	0.44" (11.2)	0.250" (6.4)
9/16" M/P	9/16"-18	0.50" (12.7)	0.406" (10.3)
3/4" M/P	3/4"-16	0.62" (15.7)	0.562" (14.3)
1" M/P	1"-14	0.78" (19.8)	0.718" (18.2)

## H/P Connections



Connection	A Thread	B	C	D	E	F
1/4" H/P	9/16"-18	0.38" (9.7)	0.44" (11.2)	0.17" (4.3)	0.17" (4.3)	0.093" (2.4)
3/8" H/P	3/4"-16	0.53" (13.5)	0.62" (15.7)	0.26" (6.6)	0.26" (6.6)	0.125" (3.2)
9/16" H/P	1-1/8"-12	0.62" (15.7)	0.75" (19.1)	0.38" (9.7)	0.38" (9.7)	0.188" (4.8)
3/4" H/P	1-7/16"-12	0.88" (22.4)	1.03" (26.2)	0.63" (15.9)	0.63" (15.9)	0.250" (6.4)
1" H/P	1-3/8"-12	0.81" (20.6)	1.31" (33.3)	0.88" (22.2)	0.88" (22.2)	0.438" (11.1)



Connection	A Thread	B	C
1/4" H/P	1/4"-28	0.56" (14.2)	0.125" (3.2)
3/8" H/P	3/8"-24	0.75" (19.1)	0.219" (5.6)
9/16" H/P	9/16"-18	0.94" (23.9)	0.281" (7.1)
3/4" H/P	3/4"-16	1.16" (29.5)	0.375" (9.5)
1" H/P	1"-14	0.92" (23.2)	0.562" (14.3)



# BuTech®

An Ingersoll Rand Business

BuTech high quality valves and components for hydrogen service are constructed of high-performance 316 Stainless Steel with a minimum of 12.5% Nickel content and engineered to withstand the demands of hydrogen service. Their durability and resistance to hydrogen embrittlement make them ideal for applications such as compression for hydrogen storage, transfer and dispensing, or fuel cell testing.

BuTech, a business of Ingersoll Rand, is a leading brand of high-pressure valves, fittings and tubing designed to meet the rigorous requirements of today's most critical applications.

**For more information on our high-pressure products, visit [butech-valve.com](http://butech-valve.com) or contact your local BuTech representative at [hq@butech-valve.com](mailto:hq@butech-valve.com).**

Ingersoll Rand (NYSE:IR), is a global leader in mission-critical flow creation and industrial technologies.

For more information, visit [www.IRCO.com](http://www.IRCO.com)



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