BuTech

Hydrogen Rated High-Pressure Valves, Fittings and Tubing

BuTech is a leading brand of high-pressure valves, fittings and tubing designed to meet the critical requirements of today's most severe applications. We prove our commitment to quality, customer service and innovation through continuously enhanced performance, increased safety factors, and extended life cycles in our high-pressure valves and equipment. We listen carefully to our customers' needs, and work closely with them to provide the most effective high-pressure solutions.

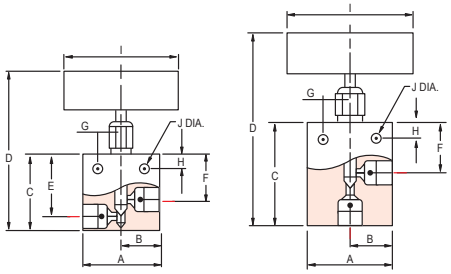
Hydrogen: Gas & Liquid

For use in high-pressure fluid and gas systems, BuTech high-pressure valves and components handle Hydrogen rated with pressures to 20,000 PSI (3,378 bar).

Needle Valves and Air Actuators 20K PSI

Needle Valves

Available in a variety of body styles designed for operation at temperatures ranging from -100° to +400°F (-73° - +204°C). Optional stem packings and/or extended stuffing boxes increase the range to -423° to +1200°F (-253° to +648°C).



20K PSI 2-Way Straight Needle Valve

Description	Part No.
1/4" MP Needle Valve	20UV41V-H2-*
3/8" MP Needle Valve	20UV61V-H2-*
9/16" MP Needle Valve	20UV91V-H2-*
3/4" MP Needle Valve	20V121V-H2-*
1" MP Needle Valve	20V161V-H2-*
Low Temperature (Liquid)	Add-LT to part number

* H2-S = Treated 316 Stem
H2-N = High Nickel

Catalog Number	Stem Style	Connection	A	B	C	D	E	F	G	H	I	J	K	L	Thk.	Fig.
20UV41V-H2-*	Vee	1/4" M/P Tube	2.00"	1.00"	2.00"	4.50"	1.62"	1.19"	0.62"	0.38"	3.00"	0.25"	-	-	0.75"	1
20UV41R-H2-*	Reg		(50.8)	(25.4)	(50.8)	(114.3)	(41.1)	(30.2)	(15.7)	(9.7)	(76.2)	(6.4)	-	-	(19.1)	1
20UV61V-H2-*	Vee	3/8" M/P Tube	2.00"	1.00"	2.00"	4.50"	1.62"	1.19"	0.62"	0.38"	3.00"	0.25"	-	-	0.75"	1
20UV61R-H2-*	Reg		(50.8)	(25.4)	(50.8)	(114.3)	(41.1)	(30.2)	(15.7)	(9.7)	(76.2)	(6.4)	-	-	(19.1)	1
20UV91V-H2-*	Vee	9/16" M/P Tube	2.50"	1.25"	2.88"	6.32"	2.38"	1.75"	0.69"	0.50"	4.00"	0.34"	-	-	1.00"	1
20UV91R-H2-*	Reg		(63.5)	(31.8)	(73.2)	(160.5)	(60.5)	(44.5)	(17.5)	(12.7)	(101.6)	(8.6)	-	-	(25.4)	1
20V121V-H2-*	Vee	3/4" M/P Tube	3.00"	1.50"	3.75"	8.75"	3.00"	2.25"	0.88"	0.62"	8.00"	0.43"	-	-	1.38"	1
20V121R-H2-*	Reg		(76.2)	(38.1)	(95.3)	(222.3)	(76.2)	(57.2)	(22.4)	(15.7)	(203.2)	(10.9)	-	-	(35.1)	1
20V161V-H2-*	Vee	1" M/P Tube	4.12"	2.06"	4.75"	10.19"	3.75"	2.81"	1.25"	1.12"	10.00"	0.56"	-	-	1.75"	1
20V161R-H2-*	Reg		(104.6)	(52.3)	(258.8)	(258.8)	(95.3)	(71.4)	(31.8)	(28.4)	(254.0)	(14.2)	-	-	(44.5)	1

20K PSI 2-Way Angle Needle Valve

Description	Part No.
1/4" MP Needle Valve	20UV42V-H2-*
3/8" MP Needle Valve	20UV62V-H2-*
9/16" MP Needle Valve	20UV92V-H2-*
3/4" MP Needle Valve	20V122V-H2-*
1" MP Needle Valve	20V162V-H2-*
Low Temperature (Liquid)	Add-LT to part number

* H2-S = Treated 316 Stem
H2-N = High Nickel

Catalog Number	Stem Style	Connection	A	B	C	D	E	F	G	H	I	J	K	L	Thk.	Fig.
20UV42V-H2-*	Vee	1/4" M/P Tube	2.00"	1.00"	2.00"	4.50"	1.62"	1.19"	0.62"	0.38"	3.00"	0.25"	-	-	0.75"	1
20UV42R-H2-*	Reg		(50.8)	(25.4)	(50.8)	(114.3)	(41.1)	(30.2)	(15.7)	(9.7)	(76.2)	(6.4)	-	-	(19.1)	1
20UV62V-H2-*	Vee	3/8" M/P Tube	2.00"	1.00"	2.00"	4.50"	1.62"	1.19"	0.62"	0.38"	3.00"	0.25"	-	-	0.75"	1
20UV62R-H2-*	Reg		(50.8)	(25.4)	(50.8)	(114.3)	(41.1)	(30.2)	(15.7)	(9.7)	(76.2)	(6.4)	-	-	(19.1)	1
20UV92V-H2-*	Vee	9/16" M/P Tube	2.50"	1.25"	2.88"	6.32"	2.38"	1.75"	0.69"	0.50"	4.00"	0.34"	-	-	1.00"	1
20UV92R-H2-*	Reg		(63.5)	(31.8)	(73.2)	(160.5)	(60.5)	(44.5)	(17.5)	(12.7)	(101.6)	(8.6)	-	-	(25.4)	1
20V122V-H2-*	Vee	3/4" M/P Tube	3.00"	1.50"	3.75"	8.75"	3.00"	2.25"	0.88"	0.62"	8.00"	0.43"	-	-	1.38"	1
20V122R-H2-*	Reg		(76.2)	(38.1)	(95.3)	(222.3)	(76.2)	(57.2)	(22.4)	(15.7)	(203.2)	(10.9)	-	-	(35.1)	1
20V162V-H2-*	Vee	1" M/P Tube	4.12"	2.06"	4.75"	10.19"	3.75"	2.81"	1.25"	1.12"	10.00"	0.56"	-	-	1.75"	1
20V162R-H2-*	Reg		(104.6)	(52.3)	(258.8)	(258.8)	(95.3)	(71.4)	(31.8)	(28.4)	(254.0)	(14.2)	-	-	(44.5)	1

Air Actuators

Designed for remote control or tough-to-handle fluid and gas systems, such as corrosive processes, high temperature test loops, cryogenic systems, sampling of steam generators, and hazardous environments. BuTech air operators are virtually maintenance free - ideally suited for service in limited access areas. Their compact size and weight 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 safety features are necessary in critical systems.

Valve Model			Normally Open Air-to-Close Actuators psi (bar)			Normally Closed Air-to-Close Actuators psi (bar)			Double-Acting Pneumatic Actuators psi (bar)		
			ATC5	ATC8	2XATC5	AT05	AT08	2XAT05	DA5	DA8	2XDA05
20UV4-20UV6	MAWP	psi (bar)	20,000 (1380)			20,000 (1380)			20,000 (1380)		
	Req'd Actuator Pressure	psi (bar)	74 (5)			82 (6)	55 (4)		63 (4)		
20UV9	MAWP	psi (bar)	18,000 (1240)	20,000 (1380)	20,000 (1380)	14,000 (970)	20,000 (1380)	20,000 (1380)	20,000 (1380)		20,000 (1380)
	Req'd Actuator Pressure	psi (bar)	100 (7)	49 (3)	55 (4)	84 (6)	58 (5)	67 (5)	98 (7)		(5)
20V12	MAWP	psi (bar)		20,000 (1380)	14,000 (970)		12,500 (860)	10,500 (720)		20,000 (1380)	12,000 (830)
	Req'd Actuator Pressure	psi (bar)		100 (7)	90 (6)		66 (1)	79 (5)			89 (2)
20V16	MAWP	psi (bar)		12,000 (830)	8,000 (550)		7,500 (520)			12,000 (830)	
	Req'd Actuator Pressure	psi (bar)		100 (3)	52 (4)		66 (5)			89 (4)	

Tubing, Fittings, Connection Components 20K PSI

Tubing

Description	Part No.
1/4" MP Tube 0.109" ID	20-109-316
3/8" MP Tube 0.203" ID	20-203-316
9/16" MP Tube 0.312" ID	20-312-316
3/4" MP Tube 0.438" ID	20-438-316
1" MP Tube 0.562" ID	20-562-316

Elbow

Description	Part No.
1/4" MP Elbow	20L4
3/8" MP Elbow	20L6
9/16" MP Elbow	20L9
3/4" MP Elbow	20L12
1" MP Elbow	20L16

Tee

Description	Part No.
1/4" MP Tee	20T4
3/8" MP Tee	20T6
9/16" MP Tee	20T9
3/4" MP Tee	20T12
1" MP Tee	20T16

Cross

Description	Part No.
1/4" MP Cross	20X4
3/8" MP Cross	20X6
9/16" MP Cross	20X9
3/4" MP Cross	20X12
1" MP Cross	20X16

Straight Coupling

Description	Part No.
1/4" MP Straight Coupling	20F4
3/8" MP Straight Coupling	20F6
9/16" MP Straight Coupling	20F9
3/4" MP Straight Coupling	20F12
1" MP Straight Coupling	20F16

Bulk Coupling

Description	Part No.
1/4" MP Bulkhead	20BF4
3/8" MP Bulkhead	20BF6
9/16" MP Bulkhead	20BF9
3/4" MP Bulkhead	20BF12
1" MP Bulkhead	20BF16

Gland

Description	Part No.
1/4" MP Gland	20G4
3/8" MP Gland	20G6
9/16" MP Gland	20G9
3/4" MP Gland	20G12
1" MP Gland	20G16

Collar

Description	Part No.
1/4" MP Collar	20C4
3/8" MP Collar	20C6
9/16" MP Collar	20C9
3/4" MP Collar	20C12
1" MP Collar	20C16

Plug

Description	Part No.
1/4" MP Plug	20P4
3/8" MP Plug	20P6
9/16" MP Plug	20P9
3/4" MP Plug	20P12
1" MP Plug	20P16

Anti-Vibration Collet Gland

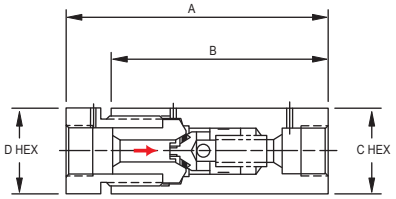
Description	Part No.
1/4" MP Anti-Vibration Assembly	20AVCG4
3/8" MP Anti-Vibration Assembly	20AVCG6
9/16" MP Anti-Vibration Assembly	20AVCG9
3/4" MP Anti-Vibration Assembly	20AVCG12
1" MP Anti-Vibration Assembly	20AVCG16

Cap

Description	Part No.
1/4" MP Cap	20CA4
3/8" MP Cap	20CA6
9/16" MP Cap	20CA9
3/4" MP Cap	20CA12
1" MP Cap	20CA16

Check Valves

Rugged construction provides assurance of fail-safe operation at pressures up to 20,000 psi (1,380 bar). For operation in temperatures ranging from -320° to 500°F (-195° to 260°C).

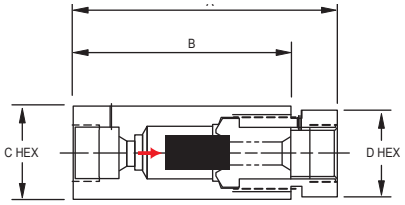


Catalog	Connection	MAWP	Cv	A	B	C	D
20SC4	1/4" M/P Tube	20,000 PSI 1380 bar	0.25	2.94" (74.7)	2.50" (63.5)	1.00" (25.4)	0.88" (22.4)
20SC6	3/8" M/P Tube	20,000 PSI 1380 bar	0.80	3.12" (79.2)	2.62" (66.5)	1.12" (28.4)	0.88" (22.4)
20SC9	9/16" M/P Tube	20,000 PSI 1380 bar	2.30	4.23" (107.4)	3.50" (88.9)	1.38" (35.1)	1.38" (35.1)
20SC12	3/4" M/P Tube	20,000 PSI 1380 bar	3.40	5.89" (149.6)	4.75" (120.7)	1.75" (44.5)	1.38" (35.1)
20SC16	1" M/P Tube	20,000 PSI 1380 bar	7.40	6.50" (165.1)	5.55" (141.0)	2.12" (53.8)	1.75" (44.5)

Operating Temperature Ranges:		
O-Ring Material	**Operating Temp Range**	**Catalog Suffix**
Buna-N	-65° to +250° F (-54° to +121° C)	-
Viton	-40° to +500° F (-40° to +260° C)	-VA
Teflon	-320° to +400° F (-195° to +204° C)	-TFE

Sintered Cup Filters

Provide maximum filtration surface area for removal of contaminating particles from the fluid system. May be used in systems requiring high flow rates with minimum pressure drop. Available in nominal ratings of: 5, 10, 20, 40 and 100 micron



Catalog	Connection	MAWP	Area*	A	B	C	D
20SCF4	1/4" M/P Tube	20,000 PSI 1380 bar	0.54 in2 348 mm2	3.22" (81.8	2.50" (63.5)	1.00" (25.4)	0.88" (22.4)
20SCF6	3/8" M/P Tube	20,000 PSI 1380 bar	0.99 in2 639 mm2	3.12" (79.2)	2.50" (63.5)	1.38" (34.9)	1.12" (28.4)
20SCF9	9/16" M/P Tube	20,000 PSI 1380 bar	1.47 in2 948 mm2	4.22" (107.2)	3.50" (88.9)	1.38" (34.9)	1.38" (34.9)
20SCF12	3/4" M/P Tube	20,000 PSI 1380 bar	1.75 in2 1129 mm2	5.90" (149.9)	4.75" (120.7)	1.75" (44.5)	1.38" (34.9)
20SCF16	1" M/P Tube	20,000 PSI 1380 bar	4.86 in2 3135 mm2	6.48" (164.6)	5.55" (141.0)	2.12" (53.8)	1.75" (44.5)

* Effective area of filter element

Tools

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

Power Tools

BuTech power tools are designed to be used with a 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

Tube Vises

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

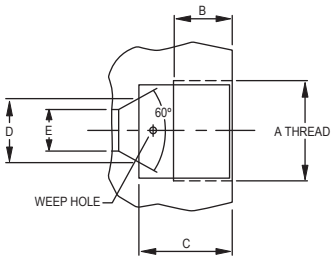
Tube OD	Catalog Number
1/4”	TV4
3/8”	TV6
9/16”	TV9
3/4”	TV12
1”	TV16

Tube Bender

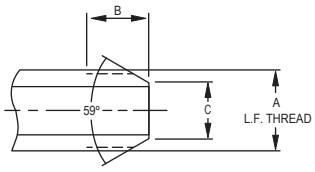
The BuTech tube bender is designed to provide fast, accurate and reliable bending of heavy wall tubing with only one setup.

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

Connections



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

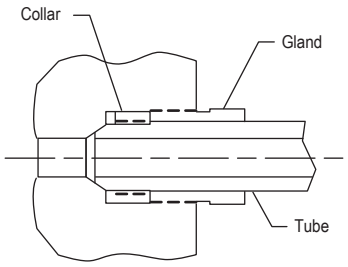


Connection	A Thread	B	C
1/4" M/P	1/4" -28	0.34" (8.6)	0.140" (3.6)
3/8" M/P	3/8" -24	0.44" (11.2)	0.250" (6.4)
9/16" M/P	9/16" -18	0.50" (12.7)	0.406" (10.3)
3/4" M/P	3/4" -14	0.62" (15.7)	0.562" (14.3)
1" M/P	1" -16	0.78" (19.8)	0.718" (18.2)

Assembly Procedure

1. Slip gland nut onto tubing or nipple
2. Screw collar onto threaded end of tubing or nipple. Allow one or two threads to be exposed on tubing or nipple between collar and coned tubing.
3. Lubricate male threads of gland nut with a non-hardening lubricant suitable for use on stainless steel. Lubricant chosen should also be compatible with working temperature requirements.
4. Insert tubing into female connection of valve or fitting. Screw gland into connection until finger-tight.
5. Tighten gland nut to torque valshown at right which corresponds to connection size being assembled.

Tube Size	Engagement Allowance	Required Torque
1/4"	0.55" (14.0)	20 lb-ft (27 Nm)
3/8"	0.69" (17.5)	30 lb-ft (41 Nm)
9/16"	0.84" (21.3)	55 lb-ft (75 Nm)
3/4"	1.01" (25.7)	90 lb-ft (122 Nm)
1"	1.47" (31.3)	125 lb-ft (170 Nm)



For more information on our high-pressure products, visit butech-valve.com or contact your local BuTech representative.

BuTech is part of Ingersoll Rand. Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands— including Club Car®, Ingersoll Rand®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are committed to a world of sustainable progress and enduring results.

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