

Professional Manufacturer in Instrument Ball Valve

Instrument ball valve

- Opening, Cutoff, Switching, and Sampling
- Working pressure 1000 Psig to 2500 Psig
- Temperature range 50 to 150° F (10 to 65° C)
- Double Ferrule Tube connection 1/16 to 1/2 inches and 3 to 12 mm
- Female, male thread from 1/8 to 1/2 inch and the same size straight pipe thread
- Capsule seat packing has virtually no dead space
- Multiple material selection, SS 316 / 316L, SS 304, alloy 400 and brass

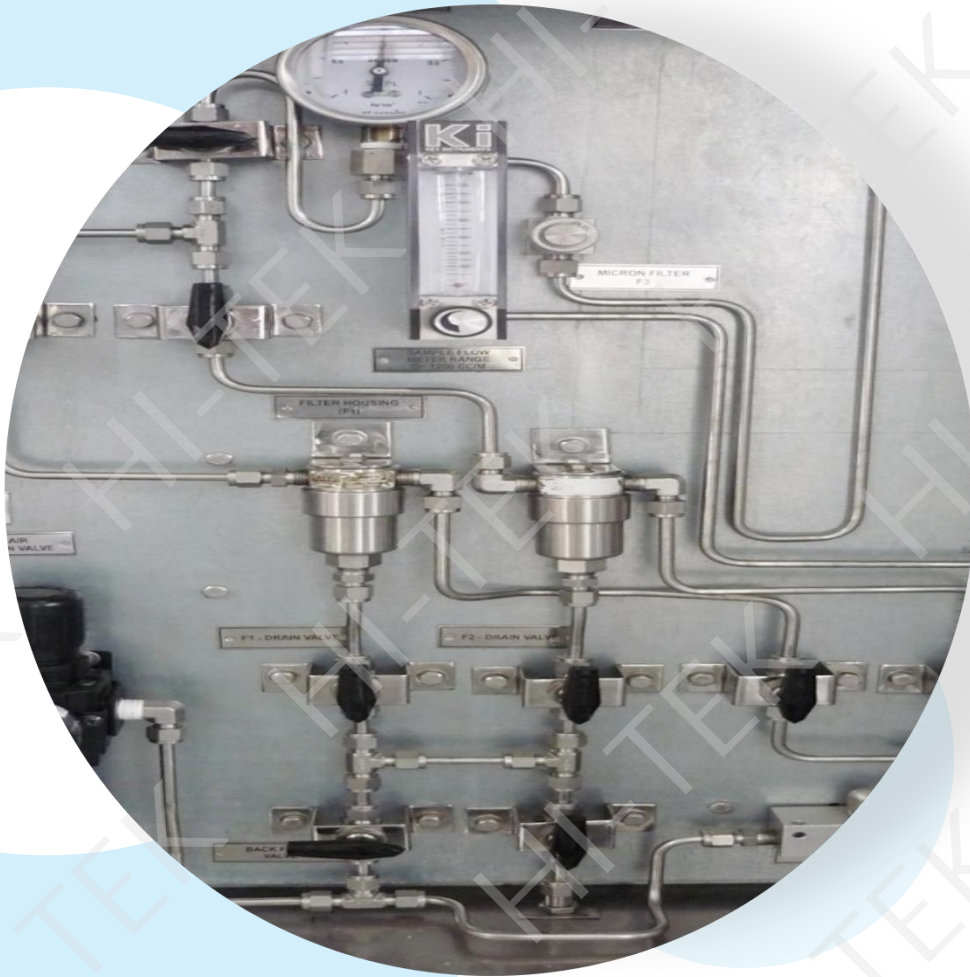


Contents

2 way, 3 way, 4 way, 5 way, 6 way, 7 way ball valve



Application



Feature

Directional handle indicates position of orifice

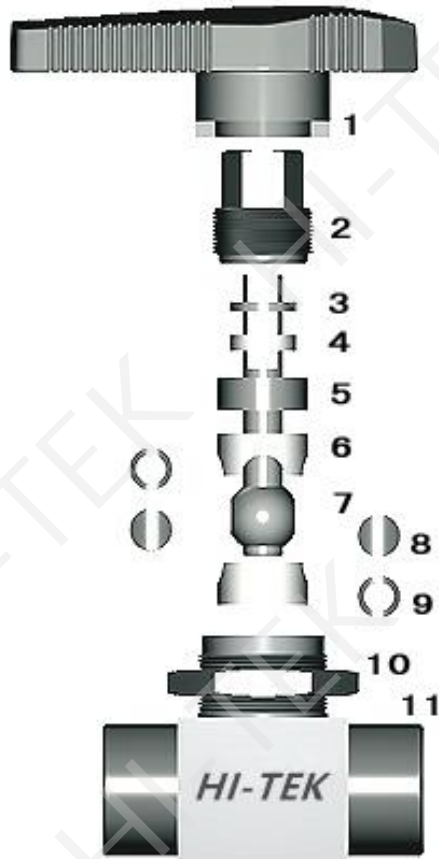
Top-loaded design allows adjustment with the valve in-line

Panel Mounting

Multiple connection ends

One-piece ball stem ensure alignment of stem and orifice

- Capsule seat packing
- * is constructed of PTFE
 - * does not require system pressure to make a seal
 - * has virtually no dead space
 - * allows bidirectional flow
 - * is easily cleaned and purged
 - * Top-mounted valve body to reduce multiple leakage points



Parts materials and standards (ASTM)

Part name	Stainless Steel
1 Handle	ABS copper inlaid
2 Packing regulator	316 SS
3 washer	316 SS
4 Stem Packing	PTFE
5 Gland	316 SS
6 Sealed packing	PTFE
7 Connecting rods ball	316 SS
8 Side plate	Powder metal
9 Side ring	Powder metal
10 Plate nuts	316 SS
11 Body	316 SS

Description of the seal packing

- In the use of the valve may be adjusted within the seal filler, if not regularly checked and maintained, may lead to valve leakage
- In a period of time not used the valve, there will be a relatively high starting pressure

·Each of the top-mounted ball valves was adjusted and tested in nitrogen at a pressure of 1000 psi (69 bar). If the valve pressure is less than 1000 psi (69 bar), the test is carried out at the maximum rated pressure. The maximum allowable leak rate is 0.1 standard cubic centimeters per minute

·The loading ball valve requires a suitable size of the spline wrench to adjust the packing

·HI-TEK ball valve is designed to be fully open or fully closed

Flow Path Options

2 way

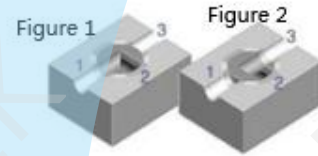


Order No: Basic order number + flow path identification number (L T)

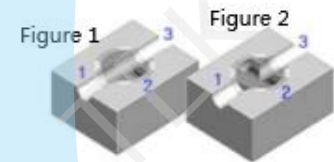
- 1 Normal Straight Type
- 2 Straight L Tpe: -4QA-6MM-L
- 3 Straight T Tpe: -4QA-6MM-T



1 Straight flow path
Picture 1: The ball is open
Picture 2: The ball is off
-The handle is rotated by 90° from on to off



2 Straight L-type flow path
Picture 1: Closure - sample
Sample flow from port 1
Picture 2: Cut off - transfer
Sample flow from port 1
-Handle rotation 90° can be achieved from the closure to the sampling



3 Straight T-type flow path
Picture 1: The ball is open
Picture 2: When there is no fluid in the ball cavity, the three-way port can be used for switching services within the pipeline. When the valve is in the open position, the system fluid can be discharged through port 3.

Angle way

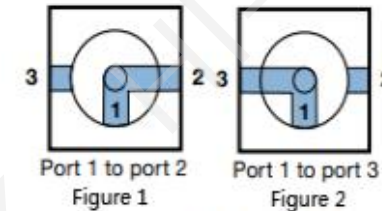


Two port - angle L-type flow path
Picture 1: The ball is open
Port 1 is connected to port 2
Picture 2: The ball is off
Port 1 and Port 2 are off

Order No: e.g.- 4QAL-6MM

-Both ports 1 and 2 can be imported or exported

3 way



Three port L-type flow path
Figure 1: Port 1 is connected to port 2
Figure 2: Port 1 is connected to port 3
-NO OFF POSITION

Order No: e.g.- 4QAT-6MM-L



Three port T-type flow path
Figure 1: The ball is open
Port 1 is connected to port 2, 3
Figure 2: The ball is off
Port 1 and Port 2, 3 are off

Order No: e.g.- 4QAT-6MM-T



Three port TL-type flow path
Figure 1: Port 1 is connected to port 2
Figure 2: Port 1 is connected to port 2, 3
Figure 3: Port 1 is connected to port 3
-NO OFF POSITION

Order No: e.g.- 4QAT-6MM-TL

• Diameter greater than (1.2mm) size, there will be cross-port flow

Flow Path Options

4 way



4 way ball valve

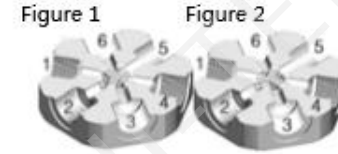
Figure 1: Port 1 is connected to port 2, Port 3 is connected to port 4

Figure 2: Port 1 is connected to port 3, Port 2 is connected to port 4

-The handle turns 90 ° to turn on and off

Order No: e.g -4QAH-4F-4X

6 way



6 way ball valve

Figure 1: Port 1 is connected to port 2, Port 3 is connected to port 4, Port 5 is connected to port 6

Figure 2: Port 1 is connected to port 6, Port 2 is connected to port 3, Port 4 is connected to port 5

-The handle turns 60 ° to turn on and off

Order No: e.g -4QAH-4F-6X

5 way



Order No: e.g. -4QAT-4F-5F

-From the bottom port to enter, to the four side ports to switch

-From the four side ports to enter, to the bottom port to switch

7 way

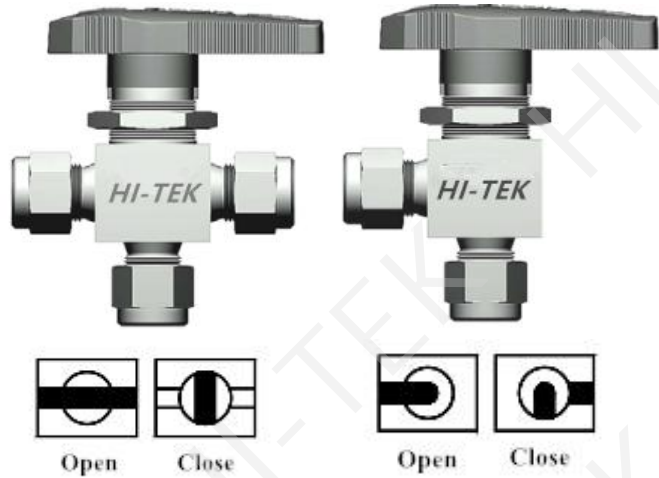


-The lower port to enter, to the upper six horizontal port to switch

-Can also be switched down from the upper six horizontal ports

Order No: e.g -4QAT-4F-7F

Open-Close (2-Way) valve



Pressure-Temperature Class

Refer to the relevant data of the pipe for the pressure rating of the double-sleeve connection.

Valve Dia.	Temperature °F (°C)	Pressure Psi
3.2	50 to 150 (10 to 65)	2000
4.5		2000
7.1		1500
10.3		1000

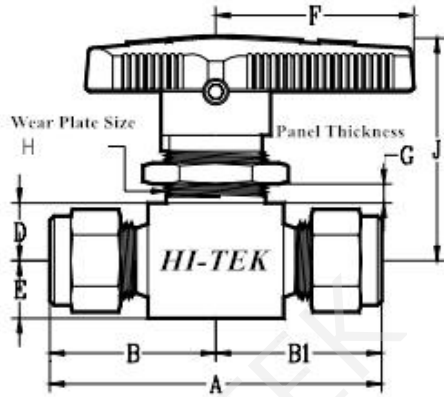
Flow data on 70°F (20°C)

Cv	Pressure drop on the atmosphere (Δp).Psi					
	10	50	100	10	50	100
	Air Flow ft ³ /min			Water Flow gal/min		
0.1	1.1	3	5.3	0.3	0.7	1.0
0.2	2.3	6	11	0.5	1.4	2.0
0.5	5.6	15	27	1.6	3.5	5.0
0.6	6.8	18	32	1.9	4.2	6.0
0.9	10	27	48	2.8	6.4	9.0
1.2	14	36	64	3.8	8.5	12
1.5	17	45	80	4.7	11	15
1.6	18	48	85	5.0	11	16
2.4	27	72	120	7.5	17	24
2.6	29	78	140	8.2	18	26
3.0	34	90	160	9.5	21	30
6.0	68	180	320	19	42	60
6.3	71	180	330	20	45	63
6.4	72	180	340	20	45	64
12	130	360	640	38	85	120

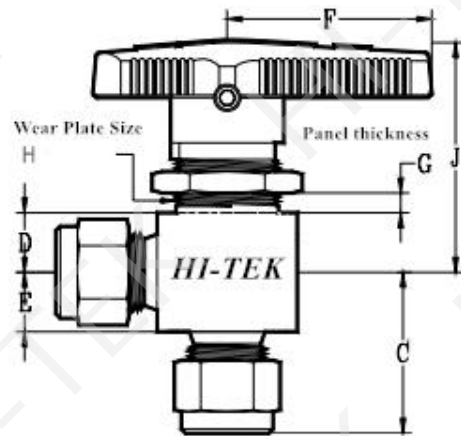
Note: W in the table is the thickness of the valve body

Connection		Port Size	Size (mm)										
Inlet/outlet	Pipe	mm	A	B	B1	C	D	E	F	G	H	J	W
HI-TEK Inch. Tube fitting	1/16	1.3	42.7	21.3	21.3	□	8.6	7.1	28.4	6.4	15.1	34.5	14.7
	1/8	2.4	51.1	25.7	25.7	24.6							
	1/4	3.2	56.1	27.9	27.9	27.2							
	1/4	4.5	59.9	30.0	30.0	29.7	11.2	9.7	38.9	4.8	19.8	39.6	19.8
	3/8	4.5	65.5	32.8	32.8	32.8							
	3/8	7.1	77.5	38.6	38.6	36.3	14.2	50.8	9.5	28.6	52.6	28.4	
	1/2	10.3	99.6	49.8	44.2	44.2	17.5	76.2					
3/4	10.3	99.6	49.8	44.2	44.2								

Connection		Port Size	Size (mm)										
Inlet/outlet	Pipe	mm	A	B	B1	C	D	E	F	G	H	J	W
HI-TEK Metric Tube fitting	3	2.4	51.1	25.7	25.7	24.6	8.6	7.1	28.4	6.4	15.1	34.5	14.7
	6	3.2	56.1	27.9	27.9	27.2							
	6	4.5	60.8	30.5	30.5	29.7	11.2	9.7	38.9	4.8	19.8	39.6	19.8
	8	4.5	62.5	31.2	31.2	30.5							
	10	7.1	78	38.9	38.9	36.9							
12	10.3	99.6	49.8	49.8	44.2	17.5	76.2	9.5	38.1	61.7	38.1		
HI-TEK Female NPT	1/8	3.2	41.2	20.6	20.6	24.6	8.6	7.1	28.4	6.4	15.1	34.5	14.7
	1/8	4.8	50.8	25.4	25.4	27.2							
	1/4	4.8	52.5	26.2	26.2	29.7	11.2	9.7	38.9	4.8	19.8	39.6	19.8
	1/4	7.1	63.5	31.8	31.8	30.5							
	3/8	7.1	63.5	31.8	31.8	36.9							
1/2	10.3	79.2	39.6	39.6	44.2	17.5	17.5	76.2	9.5	38.1	61.7	38.1	
MNPT	1/4	4.8	50.5	25	30	26.2	11.2	9.7	38.9	4.8	19.8	39.6	19.8
MNPT -Tube fitting	1/4	4.8	55.9	25.4	30.5	11.2	9.7	9.7	38.9	4.8	19.8	39.6	19.8
Male VCR Fitting	1/4	3.2	53.8	26.9	26.9	27.7	11.2	9.7	28.4	4.8	15.1	34.5	19.8
	1/4	4.8	52.3	26.2	26.2	27.7	11.2	9.7	38.9	4.8	19.8	39.6	19.8
	1/2	7.1	73.2	36.6	36.6	□	14.2	14.2	50.8	9.5	28.6	52.6	38.1
	1/2	10.3	79.2	39.6	39.6	□	17.5	17.5	76.2	9.5	38.1	61.7	38.1



2 way



Switching (3 way,5 way and 7 way) valve

Pressure-Temperature Class Flow data on 70°F (20°C)

Dia.	Path Qty.	Temperature °F (°C)	Pressure Psi	Pressure drop on the atmosphere (Δp).Psi							
				Cv	Air Flow ft³/min			Water Flow gal/min			
3.2	3 Way	50 to 150 (10 to 65)	2000		Angle Type 2 Way and 3 Way						
4.5	3 Way		2000	Angle Type 2 Way and 3 Way							
7.1	3 Way		1500	0.08	0.8	2.4	4.3	0.3	0.6	0.8	
10.3	3 Way		1000	0.15	1.7	4.5	8	0.4	1.0	1.5	
1.6	3 Way		1500	0.3	3.4	9.0	16	0.9	2.1	3.0	
10.3	3 Way		1000	0.35	4.0	10	19	1.1	2.4	3.5	
1.6	7 Way		500	0.75	8.5	22	40	2.3	5.3	7.5	
					0.8	9.0	24	42	2.5	5.6	8.0
					0.9	10	27	48	2.8	6.3	9.0
				1.5	17	45	80	4.7	11	15	
				1.7	19	51	90	5.3	12	17	
				2	22	60	100	6.3	14	20	
				3.5	39	100	180	11	25	35	
				3.8	43	110	200	12	27	38	
				4.6	52	140	240	15	33	46	
				5 Way							
				0.07	0.8	2.1	3.7	0.2	0.5	0.7	
				3.5	39	100	180	11	25	35	
				7 Way							
				0.05	0.6	1.5	2.6	0.1	0.3	0.5	
				0.07	0.8	2.1	3.7	0.2	0.5	0.7	

·Top bearing box packing ensures reliable switching

·The fluid can be transferred from a single inlet or transferred from multiple inlet to public outlet

·3-way valve with center truncated position

·Refer to the relevant data of the pipe for the pressure level of the double card sleeve connection

Switching (4 way and 6 way) valve

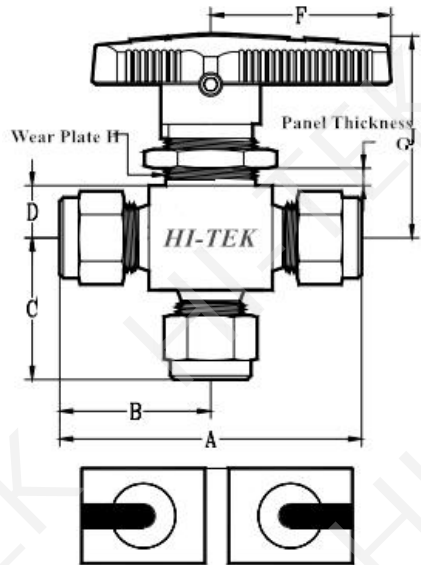
Temperature-Pressure Class

Flow data on 70°F (20°C)

Dia.	Path Qty.	Temperature °F (°C)	Pressure Psi	Pressure drop on the atmosphere (Δp).Psi						
				Cv	Air Flow ft³/min			Water Flow gal/min		
4.1/1.3	4 Way	50 to 150 (10 to 65)	1000		4 Way Valve (2 Position-2 Way)					
4.1/1.6	4 Way		1000	4 Way Valve (2 Position-2 Way)						
6.1/1.3	6 Way		500	0.06	0.7	1.8	3.2	0.2	0.4	0.6
6.1/1.6	6 Way		500	0.08	0.9	2.4	4.2	0.2	0.5	0.8
					1.6	18	48	85	5	11
				6 Way Valve (3 Position-3 Way)						
				0.06	0.7	1.8	3.2	0.2	0.4	0.5
				0.08	0.9	2.4	4.2	0.2	0.5	0.8

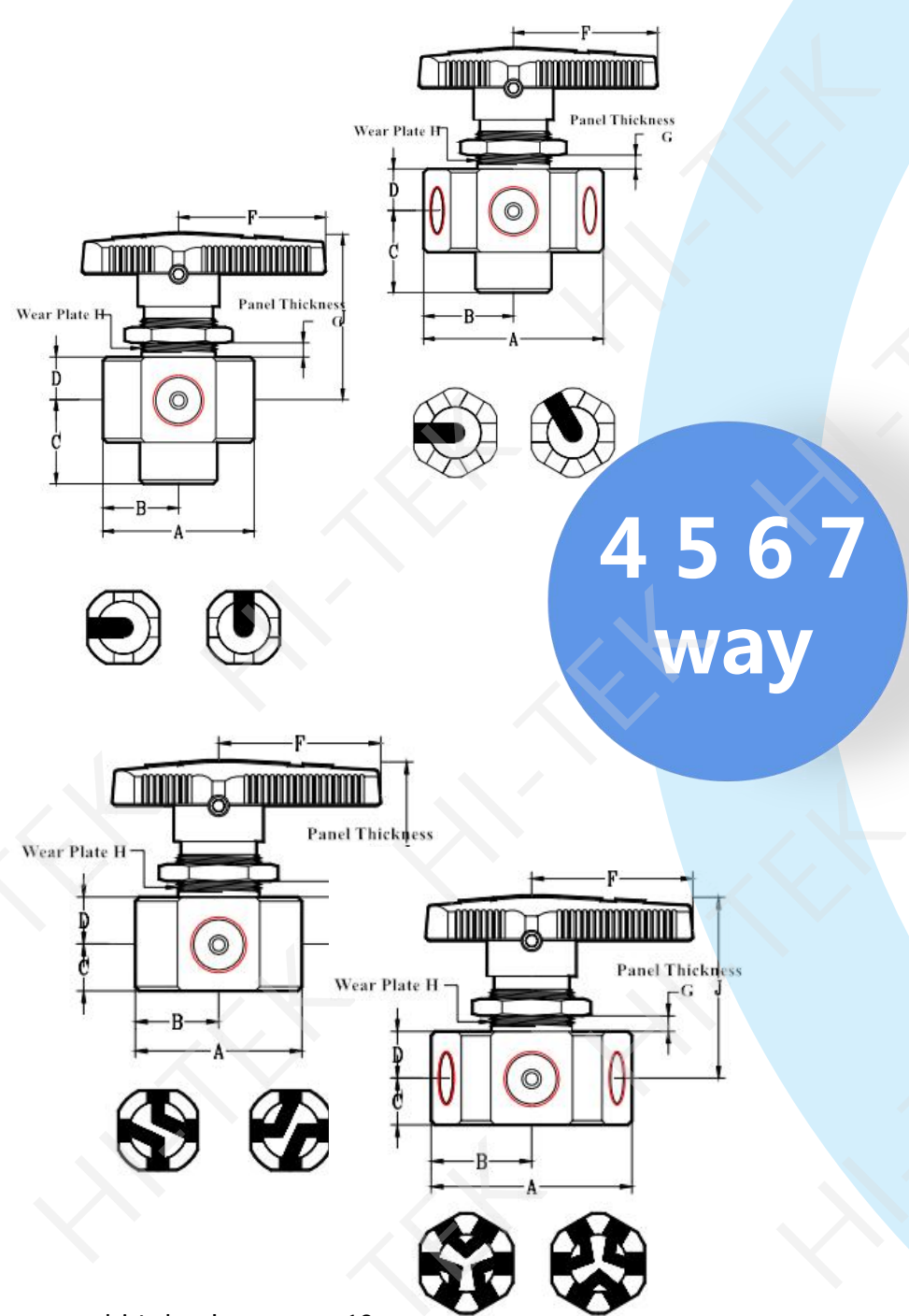
·Top bearing box packing ensures reliable switching

·Box-like packing allows the conversion of 2 way or 3 way fluids



3 way

Connection	Size	Cv	Port Dia.	A	B	C	D	F	G	H	J	W
Inlet/Outlet			mm									
3 way ball valve												
HI-TEK Inch. Tube fitting	1/16	0.08	1.3	42.7	21.3	20.6	8.6	28.7	6.4	15	35.4	14.7
	1/8	0.15	2.4	51.1	25.7	24.6	8.6	28.7	6.4	15	35.4	14.7
	1/4	0.35	3.2	56.1	27.9	27.2	8.6	28.7	6.4	15	35.4	14.7
	1/4	0.9	4.8	60.7	30.5	29.7	11.2	38.9	4.8	19.8	39.6	18.8
	3/8	2.0	7.1	73.4	36.5	36.3	11.4	50.8	9.7	28.7	52.6	28.4
	1/2	4.6	10.3	88.4	44.2	44.2	17.5	76.2	9.7	38.1	61.7	38.1
	3/4	3.8	10.3	88.4	44.2	44.2	17.5	76.2	9.7	38.1	61.7	38.1
HI-TEK Metric Tube fitting	3mm	0.15	2.4	51.1	25.7	24.6	8.6	28.7	6.4	15	34.5	14.7
	6mm	0.35	3.2	56.1	27.9	27.2	8.6	28.7	6.4	15	34.5	14.7
	6mm	0.9	4.8	60.7	30.5	29.7	11.2	38.9	4.8	19.8	39.6	19.8
	8mm	0.8	4.8	62.5	31.2	30.5	11.2	38.9	4.8	19.8	39.6	19.8
	10mm	2	7.1	73.4	36.8	36.3	14.2	50.8	9.7	28.7	52.6	28.4
	12mm	4.6	10.3	88.4	44.2	44.2	17.5	76.2	9.7	38.1	61.7	38.1
HI-TEK Female NPT	1/8	0.3	3.2	41.4	20.6	20.6	8.6	28.7	6.4	15	34.5	14.7
	1/4	0.75	4.8	52.3	26.2	26.2	11.2	38.9	4.8	19.8	39.5	19.8
	1/4	1.7	7.1	63.5	31.8	31.8	14.2	50.8	9.7	28.7	52.6	28.4
	3/8	1.5	7.1	63.5	31.8	31.8	14.2	50.8	9.7	28.7	52.6	28.4
	1/2	3.5	10.3	79.5	39.6	39.6	17.5	76.2	9.7	38.1	61.7	38.1
NPTM- Double Ferule	1/4	0.8	4.8	61	30.5	26.2	11.2	38.9	4.8	19.8	39.6	19.8
Cone ISO·F	1/4	0.75	4.8	52.3	26.2	26.2	11.2	38.9	4.8	19.8	39.6	19.8
	3/8	1.5	7.1	63.5	31.8	31.8	14.2	50.8	9.7	28.7	52.6	28.4
	1/2	3.5	10.3	79.5	39.6	39.6	17.5	76.2	9.7	38.1	61.7	38.1
Male VCRFitting	1/4	0.9	3.2	54.1	26.9	27.2	11.2	28.7	4.8	15	34.5	19.8
	1/4	0.9	4.8	54.1	26.9	27.2	11.2	38.9	4.8	19.8	39.6	19.8



Connection	Size	Cv	Port Dia. mm	A	B	D	E	F	G	H	J	W
4 way ball valve												
Female Tube fitting	1/16	0.06	1.3	39.4	19.8	11.2	11.2	38.9	4.8	23.1	42.7	-
	1/8	0.08	1.6	49.5	24.9	11.2	11.2	38.9	4.8	23.1	42.7	-
Female NPT	1/8	0.08	1.6	39.4	19.8	11.2	11.2	38.9	4.8	23.1	42.9	-
	1/2	1.6	7.1	79.5	39.6	39.6	17.5	76.2	9.7	38.1	61.7	-
5 way ball valve												
Female Tube Fitting	1/8	0.07	1.6	49.3	24.6	24.6	11.2	38.9	4.1	23.1	42.9	-
Female NPT	1/8	0.07	1.6	39.4	19.8	22.4	11.2	38.9	4.1	23.1	42.9	-
	1/2	3.5	10.3	79.5	39.6	39.6	17.5	76.2	9.7	38.1	61.7	-
6 way ball valve												
Female Tube fitting	1/16	0.06	1.3	49.5	24.6	11.2	11.2	38.9	4.8	23.1	42.7	-
	1/8	0.08	1.6	49.5	24.6	11.2	11.2	38.9	4.8	23.1	42.7	-
7 way ball valve												
FNPT Tube Fitting	1/16	0.05	1.3	49.3	24.6	24.6	11.2	38.9	4.1	23.1	42.9	-
	1/8	0.07	1.6	49.3	24.6	24.6	11.2	38.9	4.1	23.1	42.9	-