



Ball Valves *for* *Semiconductor*



TV3F Series

TV3F Series

BALL VALVE

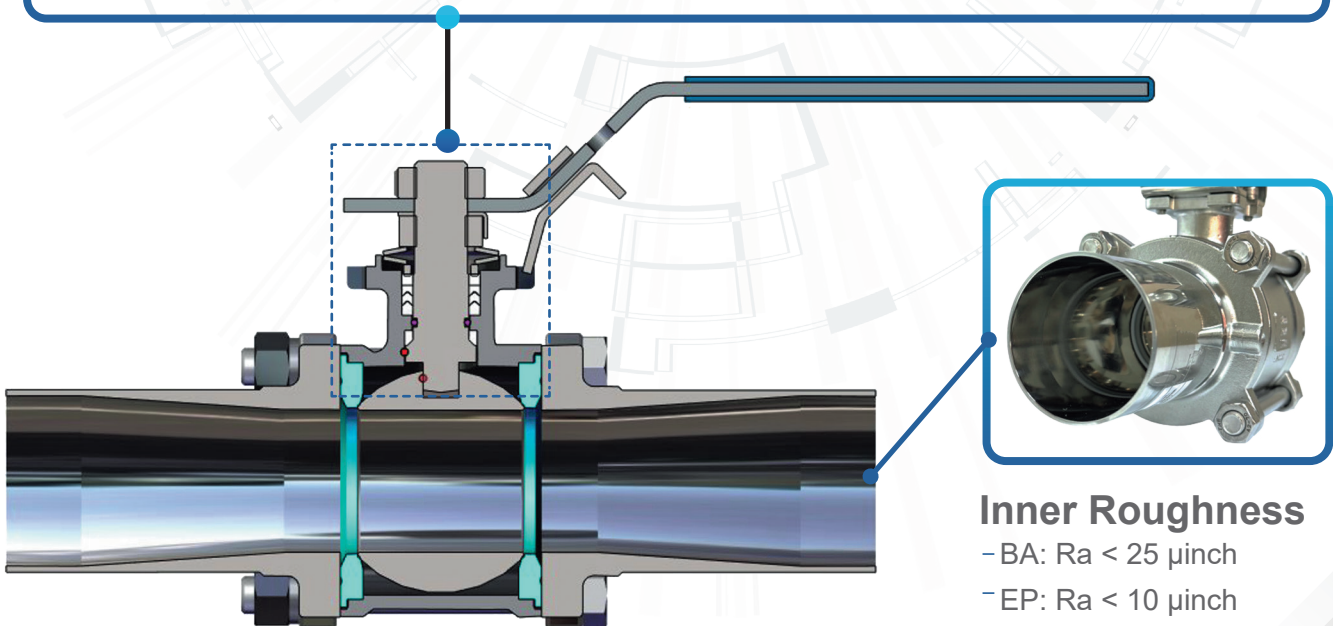
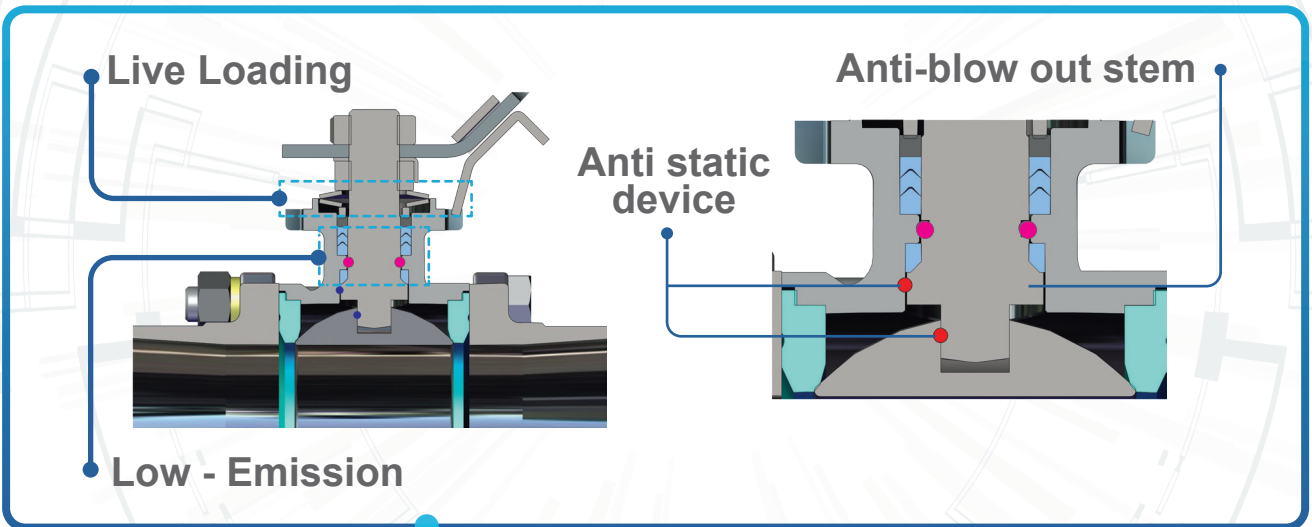
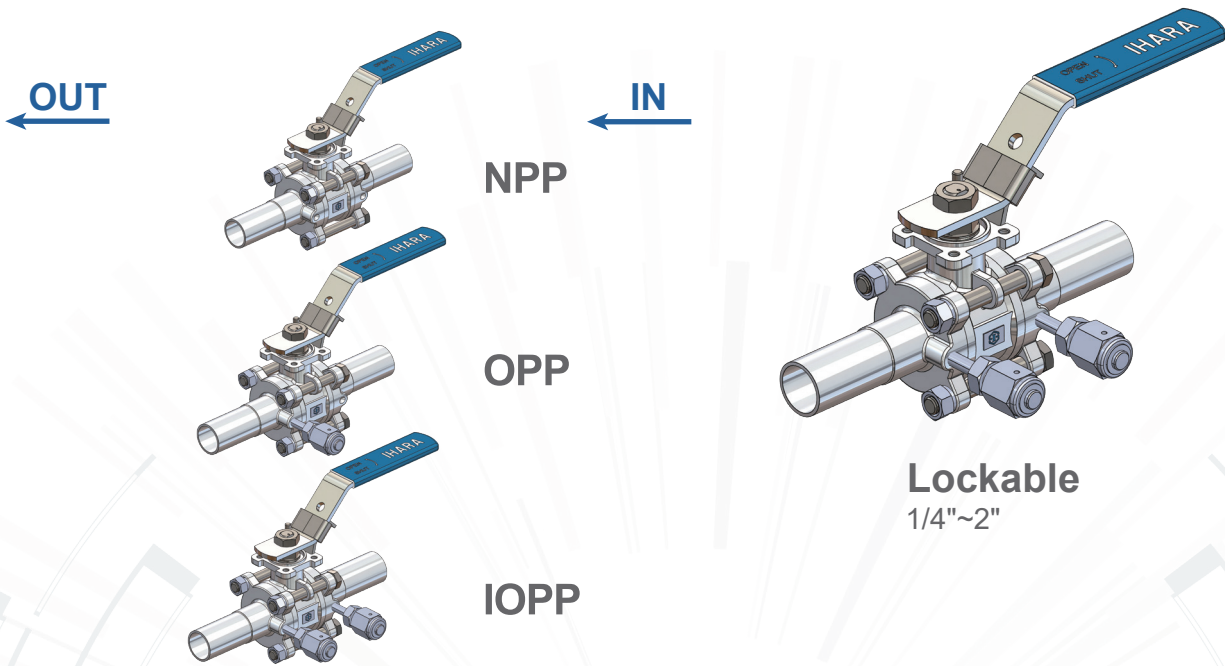
Industrial fields

- Semiconductor
- Clean For Oxygen Service
- Hook Up
- Inert Bulk Gas Distribution
- CDA / OFA Systems
- Utility Nitrogen Systems
- Bulk Chemical Delivery
- Process Vacuum Exhaust
- Point-of-Use Isolation

Application Standards / Tests

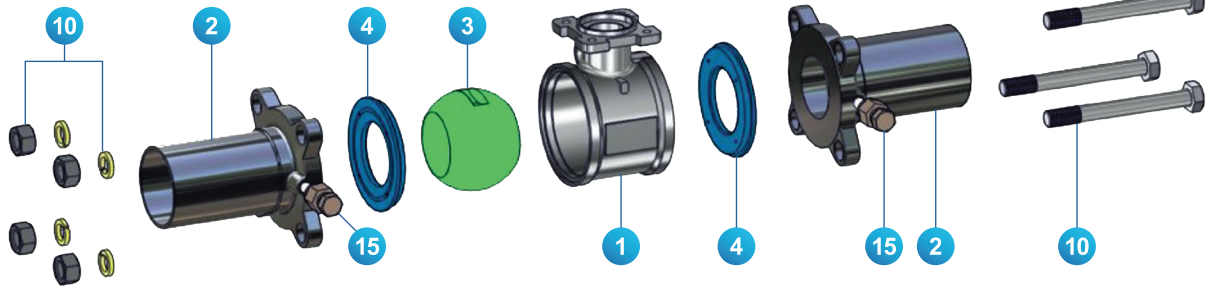
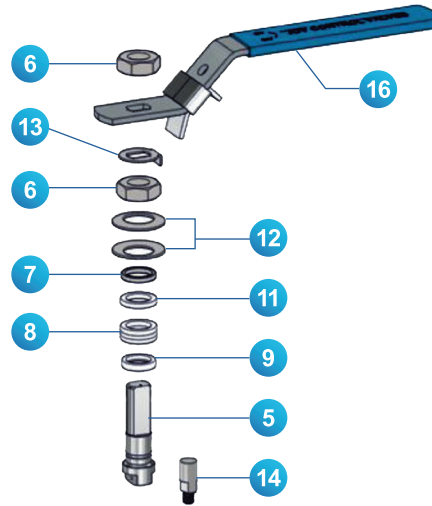
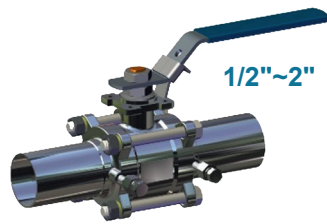
- **Valve Body Material**
 - 316 SS (Standard)
 - *Other materials upon request
- **Size Tube/Pipe**
 - Tube OD 1/4" to 2"
 - Pipe ID 1/4" to 2"
 - (Other sizes are available upon request.)
 - BI-Lok/VTF: 1/4" to 1"
- **Temperature Range**
 - 20~350°F (-29~175°C)
 - (Lower or higher temperatures available upon request.)
- **Pressure Rating**
 - 1000 psi
- **Connection Type**
 - Tube (suitable for orbital welding)
 - Pipe
 - BI-Lok® compression
 - VCR-type (VTF metal gasket face seal)
- **Clean Production Line**
 - 10,000 Particles clean room
 - Oil-free treatment
 - Fully assembly and tested in a clean room
 - Vacuum bag packaged
- **Operation Mode**
 - Locking lever in standard
 - Actuator (pneumatic/ electric)
- **Purge Port Options**
 - NPP / OPP / IOPP (size 1/4" port)
- **Casting Standard**
 - MSS-SP-25 / MSS-SP-55
- **Leak Test**
 - 100% Leak tested. (MSS SP-110)
- **Helium Leak Rate Criteria**
 - 1/4" - 2" valves leak tested to 1×10^{-8} scc / sec
- **Internal Surface Roughness Level**
 - BA: Ra 25 μinch (Standard)
 - EP: Ra 10 μinch Electrolytic Polishing
 - Average roughness can be customized
 - according to project requirements.

TV3F TYPE 1/4"~2" DESIGN FEATURES



TV3F

SIZE 1/4"~2"



MATERIAL

NO	PART NAME	MATERIAL	NO	PART NAME	MATERIAL
1	BODY	316 / CF8M	9	STEM WASHER	PTFE
2	END CAP	316L / CF3M	10	BOLT & NUT & WASHER	304SS
3	BALL	316SS	11	BEARING	50% Stainless Filled PTFE
4	SEAT	PTFE	12	SPRING	301SS
5	STEM	A276-316	13	WASHER	304SS
6	GLAND NUT	304SS	14	POSITIONING PIN	304SS
7	GLAND BEARING	304SS	15	PURGE PORT SET	316SS
8	GLAND PACKING	PTFE	16	HANDLE SET	304SS

Ihara Science Order System

TV3F – 16 TW 1.65 – BA – IOPP – GD4N –

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Valve Type

② Size

1/4"=4 | 3/8"=6 | 1/2"=8 | 3/4"=12 | 1"=16 | 1-1/4"=20 | 1-1/2"=24 | 2"=32

③ Connection

③ TW=Tube Welding

③ PW=Pipe Welding

③ D=BI-Lok® compression

③ NF=Female Screwed (NPT)

③ FJ(ANSI)=Flanged(ANSI 150#RF)

③ VM/VF=VTF Male/VTF Female (Metal gasket face seal)

④ Tube Size

④ Tube Thickness (mm)

④ NPS Sch.5=5, NPS Sch.10=10, NPS Sch.40=40

⑤ Internal Wetted Surface Condition

BA (Standard) Ra< 25μ-inch

EP (Option) Ra< 10μ-inch

⑥ Purge Port

Blank= No Purge Port (NPP)

IOPP= Inlet/Outlet (2 purge ports)

OPP= One purge port (inlet PP or outlet PP, customer orientation choice)

⑦ Purge Port Size & Cap

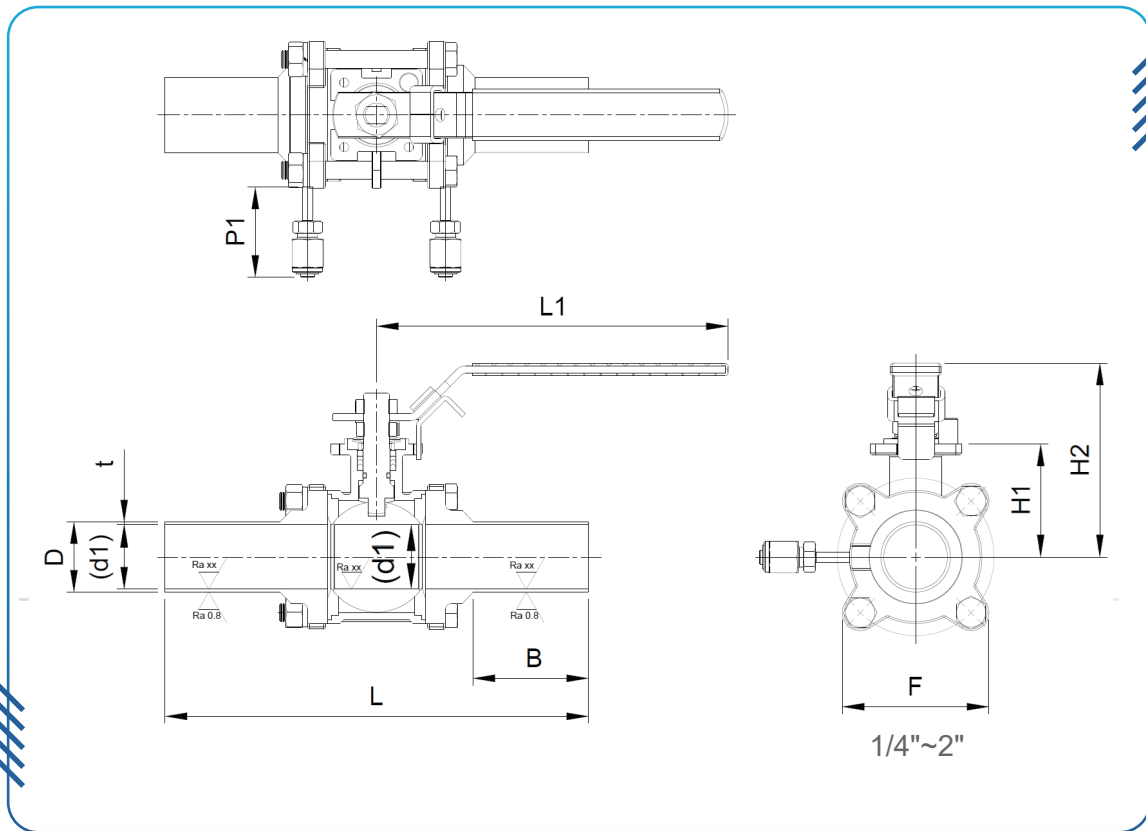
GD4N: GD type gland in size 4 (1/4"), N=Nickel gasket with VCR-type cap

Additional Specification

*Please inquiry to our sales department

TV3F-TW

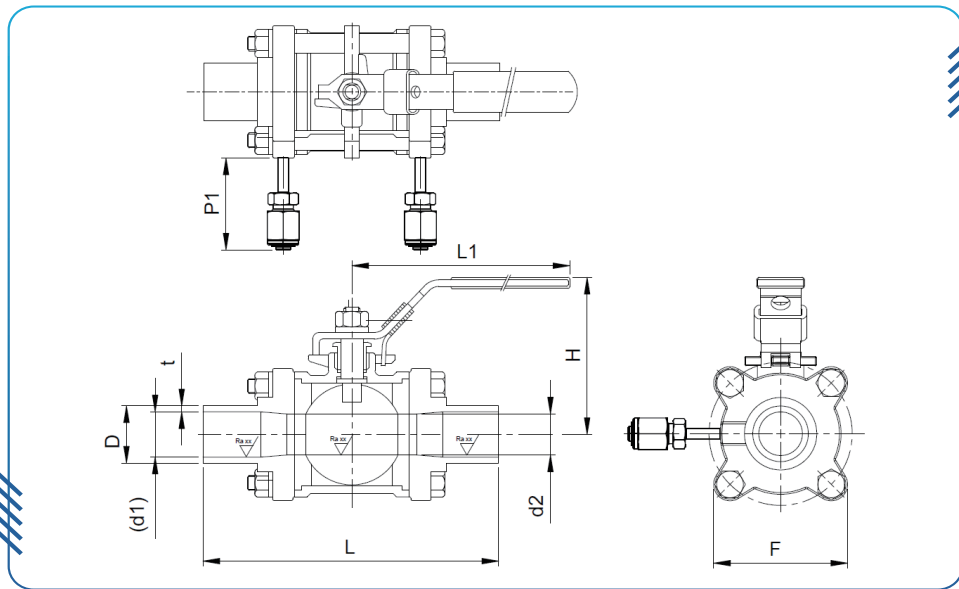
SIZE 1/4"~2"



DIMENSIONS

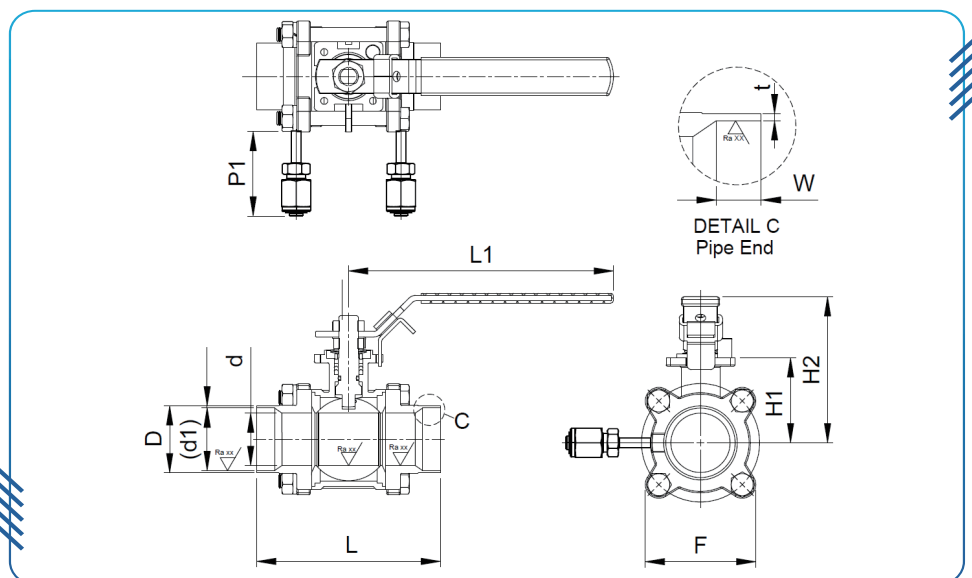
(mm)

SIZE	d1	D	t	L	F	B	P1	H1	H2	L1	TUBE	PURGE PORT	
4	1/4"	4.57	6.35	0.89	100.4	37	25.4	53.2	-	50	105	V	
6	3/8"	7.75	9.53	0.89	100.4	37	25.4	53.2	-	50	105	V	
8	1/2"	10.22	12.7	1.24	150.8	46.2	39	53.2	34.5	71.7	136	V	1/4"
12	3/4"	15.75	19.05	1.65	155.7	51.2	41.8	53.2	37	74.2	136	V	1/4"
16	1"	22.1	25.4	1.65	186.2	56.9	43.4	53.2	43.5	95.4	152	V	1/4"
20	1-1/4"	28.5	31.8	1.65	195.6	65	50	53.2	49	100.9	152	V	1/4"
24	1-1/2"	34.8	38.1	1.65	231.6	78.7	54.4	53.2	57.1	105.7	190	V	1/4"
32	2"	47.5	50.8	1.65	243.4	90.4	56.7	53.2	65.3	113.9	190	V	1/4"

TV3F-PW**SIZE 1/4"~2"****DIMENSIONS**

(mm)

SIZE	d1	d2	D	t(10S)	L	H	P1	L1	F	
4	1/4"	10.42	9.6	13.72	1.65	70	50	53.2	105	37
6	3/8"	13.85	9.6	17.15	1.65	70	50	53.2	105	37

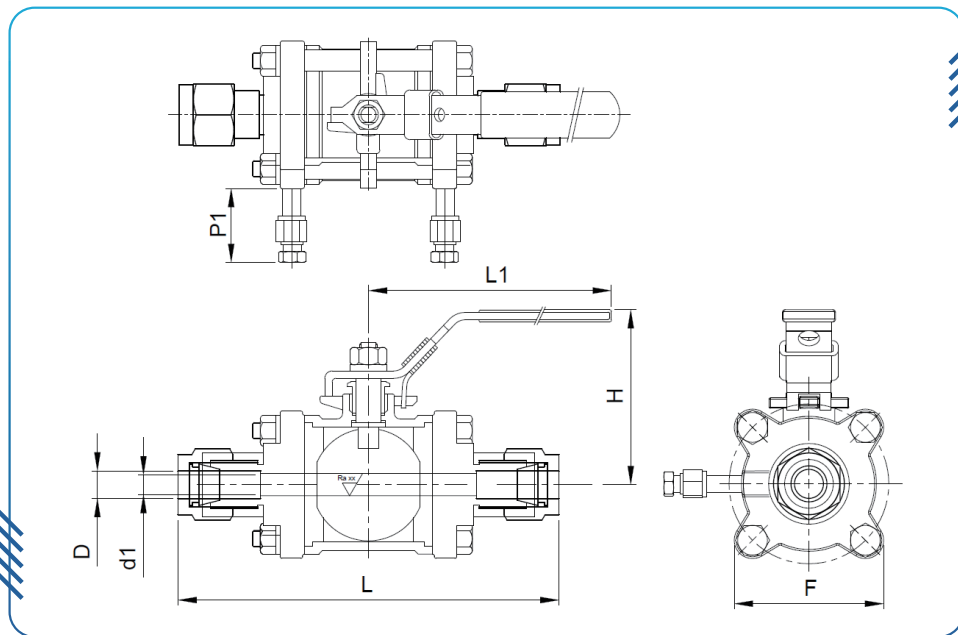
**DIMENSIONS**

(mm)

SIZE	d	d1	D	t(10S)	L	W	F	P1	H1	H2	L1	
8	1/2"	15	17.12	21.34	2.11	78	7	46.2	53.2	34.5	71.7	136
12	3/4"	20	22.45	26.67	2.11	78	7	51.2	53.2	37	74.2	136

TV3F-D

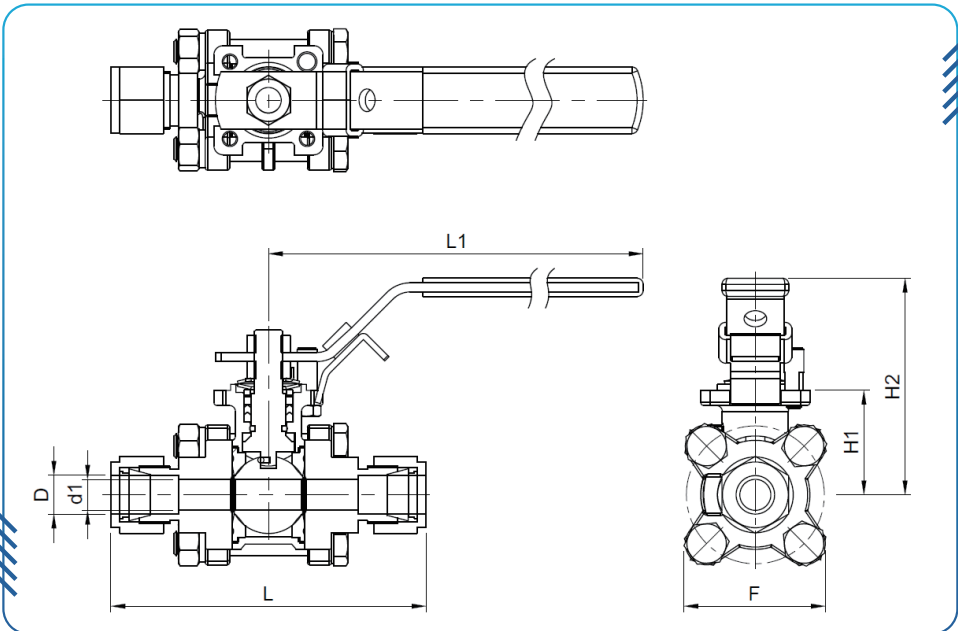
BI-Lok connection



DIMENSIONS

(mm)

SIZE	D	d1	L	L1	P1	H	F
4	1/4"	6.35	86	105	39	50	37
6	3/8"	9.53	90	105	39	50	37



DIMENSIONS

(mm)

SIZE	D	d1	L	L1	H1	H2	F
8	1/2"	12.7	104	136	34.5	71.7	46.2
12	3/4"	19.05	109	136	37	74.2	51.2
16	1"	25.4	119	152	43.5	95.4	56.9

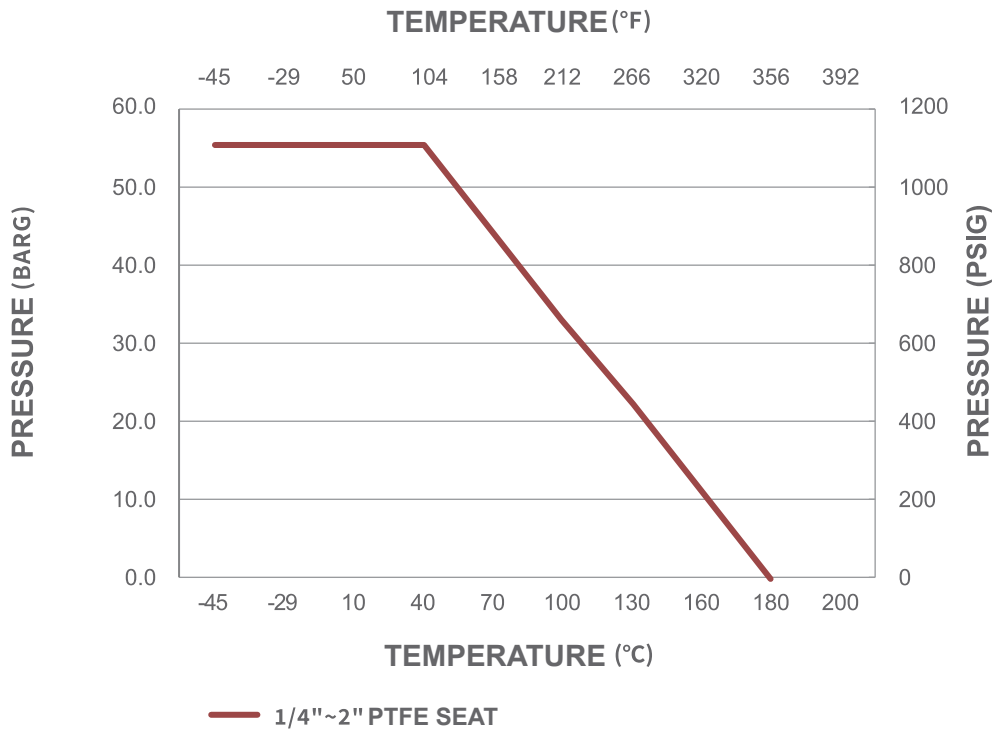
PIPE DIMENSIONS

ASME PIPE Dimensions							JIS PIPE Dimensions in Millimeters			
SIZE	O.D.		5S Wall		10S Wall		SIZE	O.D.	5S Wall	10S Wall
	in	mm	in	mm	in	mm				
NPS 1/2	0.840	21.34	0.065	1.65	0.083	2.11	15A	21.7	1.65	2.10
NPS 3/4	1.050	26.67	0.065	1.65	0.083	2.11	20A	27.2	1.65	2.10
NPS 1	1.320	33.53	0.065	1.65	0.109	2.77	25A	34.0	1.65	2.80
NPS 1-1/4	1.660	42.16	0.065	1.65	0.109	2.77	32A	42.7	1.65	2.80
NPS 1-1/2	1.900	48.26	0.065	1.65	0.109	2.77	40A	48.6	1.65	2.80
NPS 2	2.380	60.45	0.065	1.65	0.109	2.77	50A	60.5	1.65	2.80
NPS 2-1/2	2.880	73.15	0.083	2.11	0.120	3.05	65A	76.3	2.10	3.00
NPS 3	3.500	88.90	0.083	2.11	0.120	3.05	80A	89.1	2.10	3.00
NPS 3-1/2	4.000	101.60	0.083	2.11	0.120	3.05	90A	101.6	2.10	3.00
NPS 4	4.500	114.30	0.083	2.11	0.120	3.05	100A	114.3	2.10	3.00
NPS 5	5.560	141.22	0.109	2.77	0.134	3.40	125A	139.8	2.80	3.40
NPS 6	6.620	168.15	0.109	2.77	0.134	3.40	150A	165.2	2.80	3.40
NPS 8	8.620	218.95	0.109	2.77	0.148	3.76	200A	216.3	2.80	4.00
NPS 10	10.750	273.05	0.134	3.40	0.165	4.19	250A	267.4	3.40	4.00
NPS 12	12.750	323.85	0.156	3.96	0.180	4.57	300A	318.5	4.00	4.50
NPS 14	14.000	355.60	0.156	3.96	0.188	4.78	350A	355.6	4.00	5.00
NPS 16	16.000	406.40	0.165	4.19	0.188	4.78	400A	406.4	4.50	5.00
NPS 18	18.000	457.20	0.165	4.19	0.188	4.78	450A	457.2	4.50	5.00
NPS 20	20.000	508.00	0.188	4.78	0.218	5.54	500A	508.0	5.00	5.50
NPS 22	22.000	558.80	0.188	4.78	0.218	5.54	550A	558.8	5.00	5.50
NPS 24	24.000	609.60	0.218	5.54	0.250	6.35	600A	609.6	5.50	6.50
							650A	660.4	5.50	6.50

TUBE DIMENSIONS

ASME / JIS TUBE Dimensions					ASME / JIS TUBE Dimensions				
SIZE	O.D.		Wall		SIZE	O.D.		Wall	
	in	mm	in	mm		in	mm	in	mm
1/8"	0.125	3.18	0.028	0.71	1-1/2"	1.500	38.10	0.065	1.65
1/4"	0.250	6.35	0.035	0.89	2"	2.000	50.80	0.065	1.65
3/8"	0.375	9.53	0.035	0.89	2-1/2"	2.500	63.50	0.065	1.65
1/2"	0.500	12.70	0.049	1.24	3"	3.000	76.20	0.065	1.65
3/4"	0.750	19.05	0.065	1.65	4"	4.000	101.60	0.083	2.11
1"	1.000	25.40	0.065	1.65	6"	6.000	152.40	0.109	2.77

TV3F Pressure-Temperature Chart



TORQUE TABLE

TV3F BALL VALVE (1/4"~2")

(N-m)

SIZE	1 Mpa	2 Mpa	SIZE
1/4"	3	7	TUBE
3/8"	3	7	TUBE
1/2"	6	13	PIPE / TUBE
3/4"	10	21	PIPE / TUBE
1"	12	25	PIPE / TUBE
1-1/4"	16	33	PIPE / TUBE
1-1/2"	18	37	PIPE / TUBE
2"	22	45	PIPE / TUBE

TV3F Cv VALUES

	8A	10A	15A	20A	25A	32A	40A	50A
SIZE	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
TUBE	2.9	9	16	41	86	146	223	432
PIPE	-	-	37	69	110	178	269	481



■ Pipe-welded Y-Type Bellows valve
(size 1-1/2" to 12")



■ High Flow Diaphragm Valve



■ Ihara Science Bellows Valves



■ Ihara Science Diaphragm Valves

WARNING

If you don't select and handle fittings, valves and related accessories in an adequate manner, it may damage human beings and applicable systems.

Within the responsibility and authorization of users and piping designers, fittings, valves and related accessories shall be adequately selected, used and maintained based on the applicable conditions and product conformity to the system to be applied. Please read carefully the operation manual and feel free to contact with Ihara if you have any question or request.

WARRANTY CLAUSE

1. Warranty Period

The warranty period of the products is one (1) year from putting into service or one and half (1.5) years after delivery whichever comes earlier. However, the products specially specified and/or the cases used under deviating from the specification shall be exempted.

2. Scope of Warranty

Any failure and damage under maker's responsibility will be found during the warranty period, the substitutes and/or replacement parts shall be provided free of charge. The warranty shall not be applied to a claim for the liquidated damages.



Ihara Science USA Corporation
17971 Sky Park Circle, Suite B
Irvine, CA, 92614

info@iharascience.com
TEL: (949)387-3727

Fax: (949)387-3739