VALVES / STRAINERS INDEX

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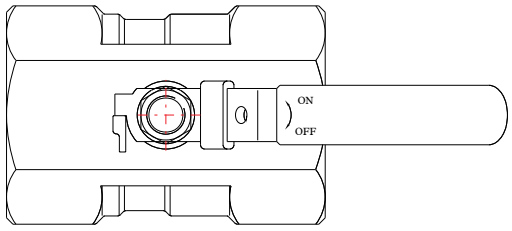
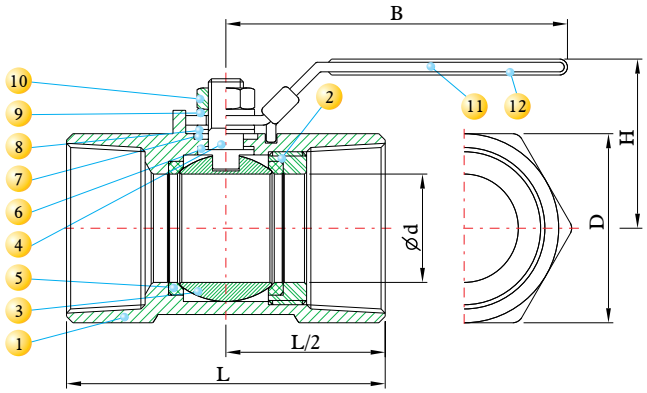
TC-01TK VALVE

1PC REDUCED PORT 1000 WOG BALL VALVE, THREADED

DESIGN FEATURES:

- Steam rating:125 psi WSP
- Blow-out-proof stem design
- Padlocking device
- Body: ASTM A351 Gr.CF8M
- Stem: SS316
- Seat: PTFE
- End Connections: Threaded End
- Working Pressure: 1000 psi
- Temperature Range: -50˚ to 400˚F
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT

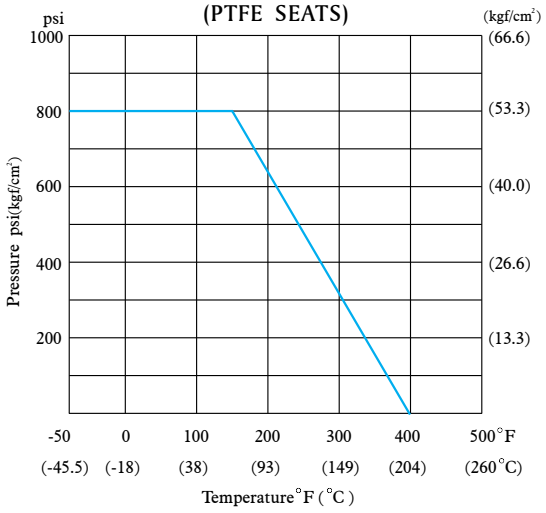




MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	PTFE	2
6	THRUST WASHER	PTFE	1
7	PACKING	PTFE	1
8	WASHER	SS304	2
9	SPRING WASHER	SS304	1
10	HANDLE NUT	SS304	1
11	HANDLE	SS304	1
12	HANDLE SLEEVE	VINYL GRIP	1
13	LOCKING PLATE	SS304	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

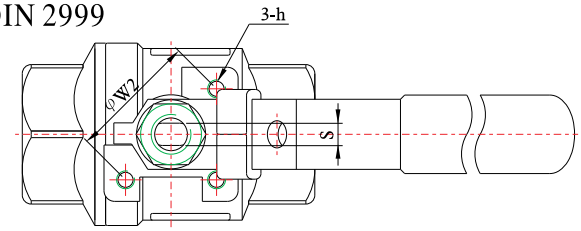
SIZE		d		B		D		L		H		Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Factor	Kg	Lb
1/4"	8	0.20	5.0	2.36	60	0.67	17.0	1.54	39.0	1.22	31	1	0.08	0.18
3/8"	10	0.28	7.0	2.76	70	0.83	21.0	1.73	44.0	1.38	35	2	0.11	0.24
1/2"	15	0.36	9.2	3.39	86	0.98	25.0	2.22	56.0	1.69	43	4	0.17	0.38
3/4"	20	0.49	12.5	3.39	86	1.26	32.0	2.32	59.0	1.81	46	7	0.25	0.55
1"	25	0.63	16.0	4.09	104	1.50	38.0	2.80	71.0	1.97	50	10	0.45	0.99
1 1/4"	32	0.79	20.0	4.09	104	1.93	49.0	3.11	79.0	2.13	54	17	0.74	1.63
1 1/2"	40	0.96	24.5	4.96	126	2.09	53.0	3.27	83.0	2.56	65	26	0.83	1.83
2"	50	1.26	32.0	4.96	126	2.56	65.0	3.94	100.0	2.83	72	45	1.25	2.75

TC-02X VALVE

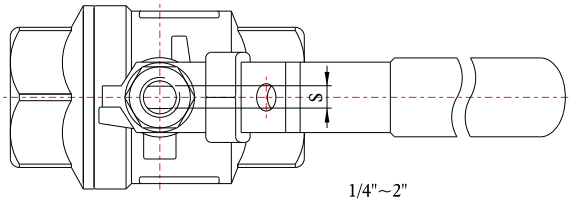
2PC FULL PORT 1000 WOG BALL VALVE, THREADED

DESIGN FEATURES:

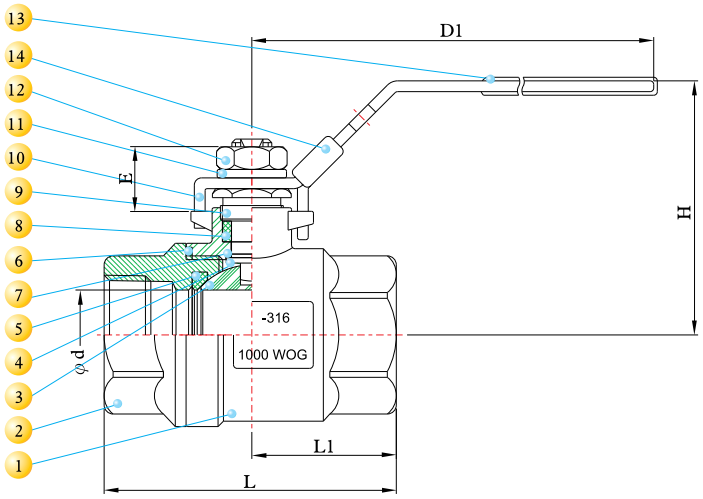
- Steam rating:150 psi WSP
- Blow-out-proof stem design
- Temperature Range: -50°F to 450°F
- Options: locking device
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT



2 1/2"~4"



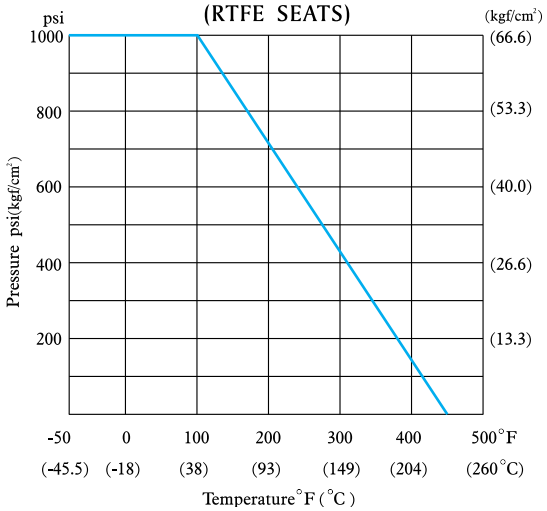
1/4"~2"



MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	2
6	GASKET	PTFE	1
7	THRUST WASHER	PTFE	1
8	PACKING	PTFE	1
9	GLAND	SS304	1
10	HANDLE	SS304	1
11	SPRING WASHER	SS304	1
12	HANDLE NUT	SS304	1
13	HANDLE SLEEVE	VINYL GRIP	1
14	LOCKING PLATE	SS304	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

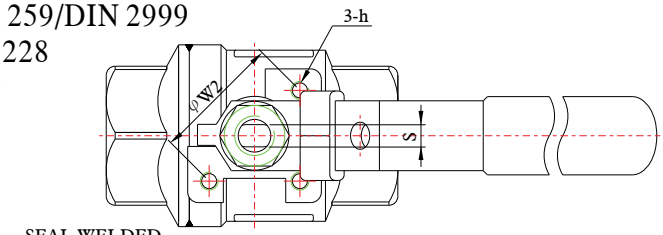
SIZE		d		E		L		L1		H		S		D1		W2		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.43	11.0	0.61	15.5	2.28	57.8	1.13	28.8	2.25	57.2	0.21	5.45	4.06	103				16	0.26	0.57
3/8"	10	0.49	12.5	0.61	15.5	2.28	57.8	1.13	28.8	2.25	57.2	0.21	5.45	4.06	103				16	0.24	0.53
1/2"	15	0.59	15.0	0.57	14.5	2.43	61.7	1.21	30.7	2.33	59.1	0.21	5.45	4.06	103				26	0.30	0.66
3/4"	20	0.79	20.0	0.83	21.0	2.76	70.1	1.38	35.0	2.46	62.6	0.21	5.45	4.06	103				55	0.42	0.93
1"	25	0.98	25.0	0.77	19.5	3.20	81.3	1.58	40.2	2.78	70.7	0.24	6.20	5.00	127				110	0.70	1.54
1 1/4"	32	1.26	32.0	1.09	27.9	3.78	96.0	1.86	47.2	3.00	76.2	0.24	6.20	5.00	127				180	1.10	2.42
1 1/2"	40	1.50	38.0	1.50	27.5	4.43	112.5	2.19	55.6	3.51	89.1	0.37	9.40	6.02	153				270	1.86	4.10
2"	50	2.00	50.8	1.08	26.7	4.96	126.0	2.46	62.4	3.87	98.2	0.37	9.40	7.60	193				500	2.85	6.28
2 1/2"	65	2.56	65.0	1.02	26.0	6.63	168.5	3.35	85.0	4.35	110.6	0.37	9.40	7.60	193	2.76	70	M8*P1.25	800	6.25	13.77
3"	80	3.15	80.0	1.50	38.0	7.54	191.4	3.78	95.9	4.88	124.0	0.47	12.00	10.98	279	4.02	102	M10*P1.5	1150	10.42	22.95
4"	100	3.94	100.0	1.89	48.0	8.52	216.5	4.26	108.3	6.63	168.5	0.47	16.00	13.19	335	4.02	102	M10*P1.5	2120	17.20	37.89

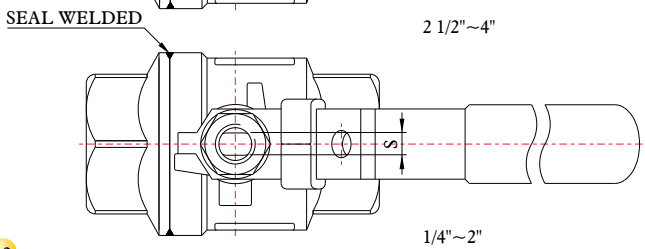
TC-02XWS VALVE

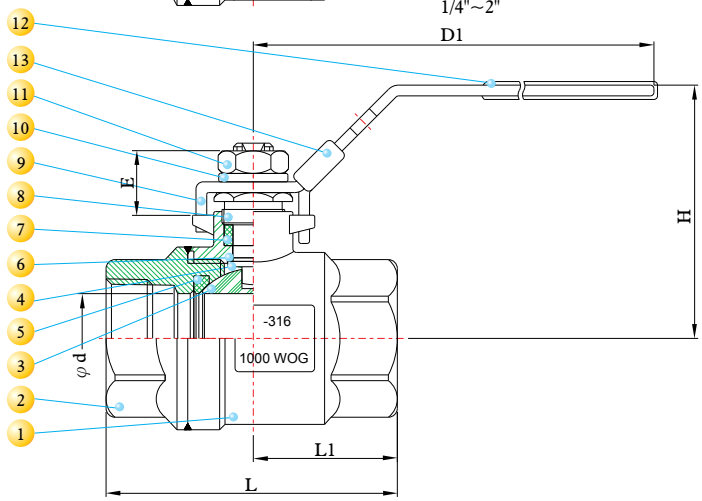
2PC FULL PORT 1000 WOG SEAL WELDED BALL VALVE, THREADED

DESIGN FEATURES:

- Steam rating:150 psi WSP
- Blow-out-proof stem design
- Temperature Range: -50˚F to 450˚F
- Options: locking device
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- NACE MR-0175 FULL COMPLIANCE
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT



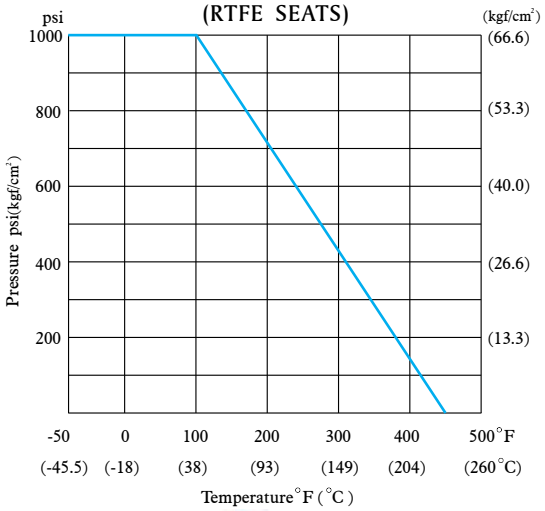




MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	2
6	THRUST WASHER	PTFE	1
7	PACKING	PTFE	1
8	GLAND	SS304	1
9	HANDLE	SS304	1
10	SPRING WASHER	SS304	1
11	HANDLE NUT	SS304	1
12	HANDLE SLEEVE	VINYL GRIP	1
13	LOCKING PLATE	SS304	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		E		L		L1		H		S		D1		W2		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.43	11.0	0.61	15.5	2.28	57.8	1.13	28.8	2.25	57.2	0.21	5.45	4.06	103				16	0.26	0.57
3/8"	10	0.49	12.5	0.61	15.5	2.28	57.8	1.13	28.8	2.25	57.2	0.21	5.45	4.06	103				16	0.24	0.53
1/2"	15	0.59	15.0	0.57	14.5	2.43	61.7	1.21	30.7	2.33	59.1	0.21	5.45	4.06	103				26	0.30	0.66
3/4"	20	0.79	20.0	0.83	21.0	2.76	70.1	1.38	35.0	2.46	62.6	0.21	5.45	4.06	103				55	0.42	0.93
1"	25	0.98	25.0	0.77	19.5	3.20	81.3	1.58	40.2	2.78	70.7	0.24	6.20	5.00	127				110	0.70	1.54
1 1/4"	32	1.26	32.0	1.09	27.9	3.78	96.0	1.86	47.2	3.00	76.2	0.24	6.20	5.00	127				180	1.10	2.42
1 1/2"	40	1.50	38.0	1.50	27.5	4.43	112.5	2.19	55.6	3.51	89.1	0.37	9.40	6.02	153				270	1.86	4.10
2"	50	2.00	50.8	1.08	26.7	4.96	126.0	2.46	62.4	3.87	98.2	0.37	9.40	7.60	193				500	2.85	6.28
2 1/2"	65	2.56	65.0	1.02	26.0	6.63	168.5	3.35	85.0	4.35	110.6	0.37	9.40	7.60	193	2.76	70	M8*P1.25	800	6.25	13.77
3"	80	3.15	80.0	1.50	38.0	7.54	191.4	3.78	95.9	4.88	124.0	0.47	12.00	10.98	279	4.02	102	M10*P1.5	1150	10.42	22.95
4"	100	3.94	100.0	1.89	48.0	8.52	216.5	4.26	108.3	6.63	168.5	0.47	16.00	13.19	335	4.02	102	M10*P1.5	2120	17.20	37.89

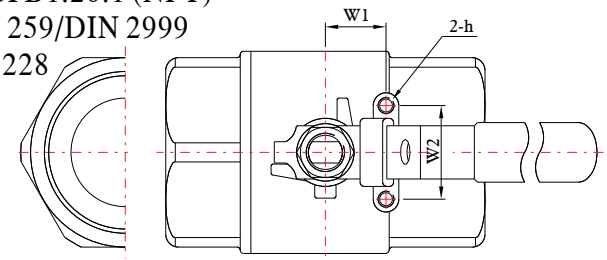
TC-02T VALVE

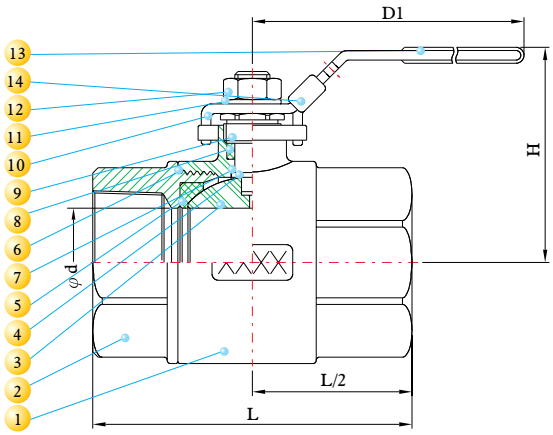
2PC FULL PORT 1000 WOG BALL VALVE, THREADED

DESIGN FEATURES:

- Steam rating:150 psi WSP
- Blow-out-proof stem design
- Body: ASTM A351 Gr.CF8M
- Ball: SS316
- Stem: SS316
- Seat: Reinforced Teflon
- End Connections: Threaded End
- Working Pressure: 1000 psi
- Temperature Range: -50° to 450° F
- Options: Padlocking device
  Tapping for Actuator
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg

Threaded Type:
ANSI B1.20.1 (NPT)
DIN 259/DIN 2999
ISO 228
BSP
PT

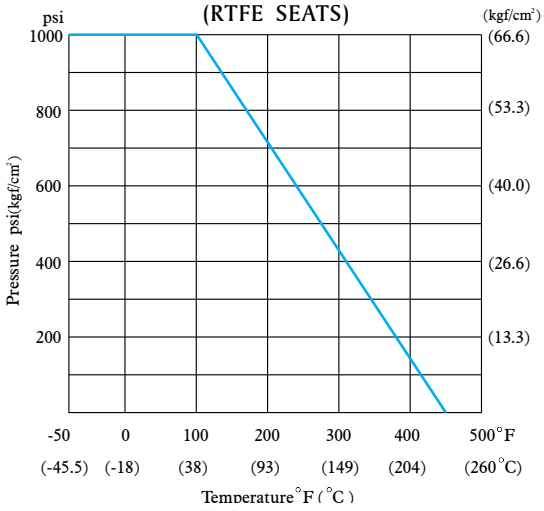




MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	2
6	GASKET	PTFE	1
7	THRUST WASHER	PTFE	1
8	PACKING	PTFE	1
9	GLAND	SS304	1
10	HANDLE	SS304	1
11	SPRING WASHER	SS304	1
12	HANDLE NUT	SS304	1
13	HANDLE SLEEVE	VINYL GRIP	1
14	LOCKING PLATE	SS304	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		L		H		D1		W1		W2		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.43	11.0	2.34	59.5	2.11	53.5	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	16	0.35	0.77
3/8"	10	0.49	12.5	2.34	59.5	2.22	56.4	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	16	0.34	0.75
1/2"	15	0.59	15.0	2.50	63.5	2.17	55.0	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	26	0.36	0.79
3/4"	20	0.79	20.0	3.02	76.7	2.60	66.0	5.00	127	0.88	22.4	1.38	35.0	M6*p1.0	55	0.65	1.43
1"	25	0.98	25.0	3.56	90.5	2.80	71.0	5.00	127	0.88	22.4	1.38	35.0	M6*p1.0	110	0.93	2.05

TC-02TM VALVE

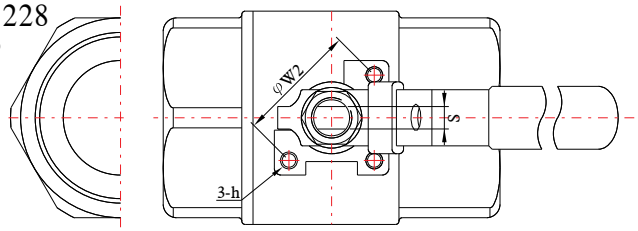
2PC FULL PORT 1000 WOG BALL VALVE, THREADED

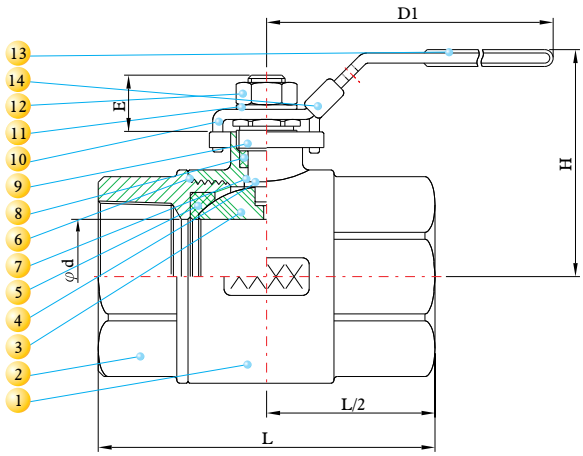
DESIGN FEATURES:

- Steam rating:150 psi WSP
- Blow-out-proof stem design
- ISO 5211 Mounting Pad
- Body:ASTM A351 Gr.CF8M
- Ball: SS316
- Stem: SS316
- Seat: Reinforced Teflon
- End Connections: Threaded End
- Working Pressure: 1000 psi
- Temperature Range: -50° to 450° F
- Options: Padlocking device
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT

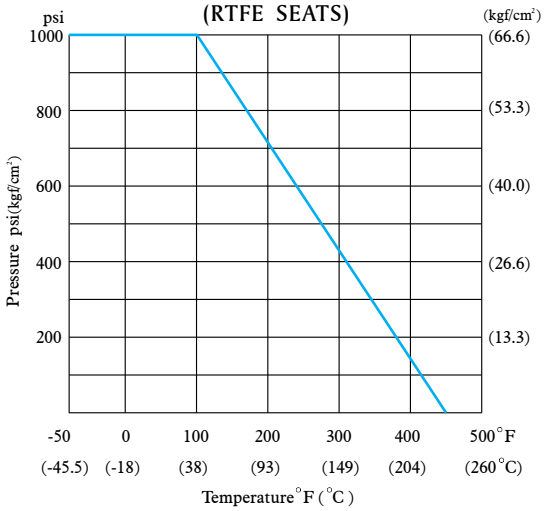
MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	2
6	GASKET	PTFE	1
7	THRUST WASHER	PTFE	1
8	PACKING	PTFE	1
9	GLAND	SS304	1
10	HANDLE	SS304	1
11	SPRING WASHER	SS304	1
12	HANDLE NUT	SS304	1
13	HANDLE SLEEVE	VINYL GRIP	1
14	LOCKING PLATE	SS304	1





PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		E		L		H		S		D1		W2		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.43	11.0	0.61	15.5	2.34	59.5	2.11	53.5	0.21	5.45	4.06	103	1.42	36	M5*p0.8	16	0.35	0.77
3/8"	10	0.49	12.5	0.61	15.5	2.34	59.5	2.22	56.4	0.21	5.45	4.06	103	1.42	36	M5*p0.8	16	0.34	0.75
1/2"	15	0.59	15.0	0.57	14.5	2.50	63.5	2.17	55.0	0.21	5.45	4.06	103	1.42	36	M5*p0.8	26	0.36	0.79
3/4"	20	0.79	20.0	0.83	21.0	3.02	76.7	2.60	66.0	0.24	6.20	5.00	127	1.42	36	M5*p0.8	55	0.65	1.43
1"	25	0.98	25.0	0.77	19.5	3.56	90.5	2.80	71.0	0.24	6.20	5.00	127	1.42	36	M5*p0.8	110	0.93	2.05
1 1/4"	32	1.26	32.0	1.09	27.9	3.88	98.5	3.50	89.0	0.37	9.40	6.02	153	1.97	50	M6*p1.0	180	1.65	3.64
1 1/2"	40	1.50	38.0	1.50	27.5	4.65	118.0	3.62	92.0	0.37	9.40	6.02	153	1.97	50	M6*p1.0	270	2.26	4.98
2"	50	2.00	50.8	1.08	26.7	5.35	136.0	4.21	107.0	0.37	9.40	7.60	193	1.97	50	M6*p1.0	500	3.62	7.97
2 1/2"	65	2.56	65.0	1.02	26.0	6.48	164.5	4.69	119.0	0.37	9.40	7.60	193	2.76	70	M8*p1.25	800	6.14	13.53
3"	80	3.15	80.0	1.50	38.0	7.62	193.5	5.16	131.0	0.47	12.00	10.98	279	4.02	102	M10*p1.5	1150	11.15	24.56
4"	100	3.94	100.0	1.89	48.0	8.50	216.0	6.73	171.0	0.47	16.00	13.19	335	4.02	102	M10*p1.5	2120	19.00	41.89

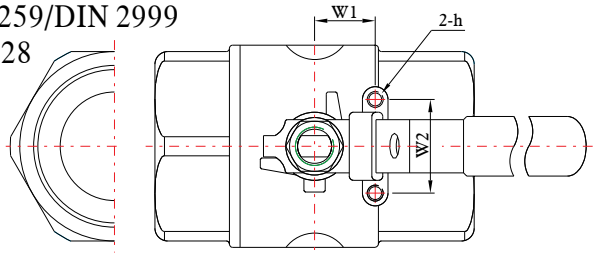
TC-0612, TC-0612C VALVE

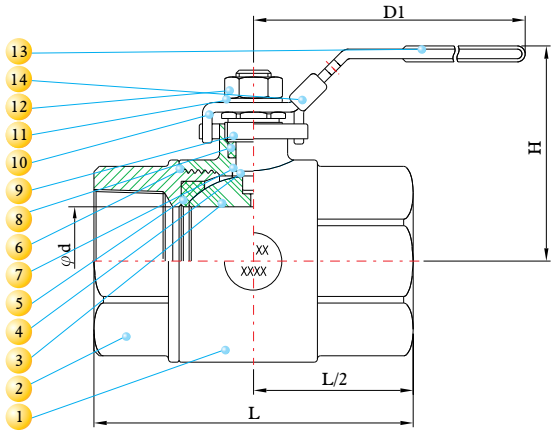
2PC STANDARD PORT 2000 WOG BALL VALVE, THREADED

DESIGN FEATURES:

- Steam rating:150 psi WSP
- Blow-out-proof stem design
- Body: ASTM A351 Gr.CF8M / ASTM A216 Gr. WCB
- Ball: SS316
- Stem: SS316
- Seat: Reinforced Teflon
- End Connections: Threaded End
- Working Pressure: 2000 psi
- Temperature Range: -50˚ to 450˚ F
- Padlocking device
- Tapping for Actuator
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg

Threaded Type:
ANSI B1.20.1 (NPT)
DIN 259/DIN 2999
ISO 228
BSP
PT

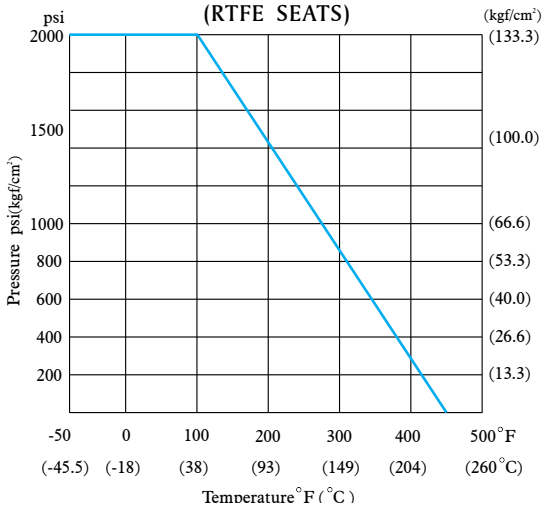




MATERIALS LIST

NO.	PART NAME	MATERIAL		Q'TY
		STAINLESS STEEL	CARBON STEEL	
1	BODY	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
2	CAP	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
3	BALL	ASTM A351 Gr.CF8M	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	PTFE+15% G/F	2
6	GASKET	PTFE	PTFE	1
7	THRUST WASHER	PTFE	PTFE	1
8	PACKING	PTFE	PTFE	1
9	GLAND	SS304	SS304	1
10	HANDLE	SS304	SS304	1
11	SPRING WASHER	SS304	SS304	1
12	HANDLE SLEEVE	VINYL GRIP	VINYL GRIP	1
13	LOCKING PLATE	SS304	SS304	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		L		H		D1		W1		W2		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.44	11.3	2.23	56.75	1.64	41.73	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	6	0.35	0.77
3/8"	10	0.49	12.5	2.23	56.75	1.64	41.73	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	9	0.35	0.77
1/2"	15	0.49	12.5	2.35	59.75	1.64	41.73	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	9	0.32	0.70
3/4"	20	0.69	17.5	3.18	80.70	1.93	48.95	5.00	127	0.88	22.4	1.38	35.0	M6*p1.0	27	0.65	1.43
1"	25	0.89	22.5	3.44	87.50	2.06	52.25	5.00	127	0.88	22.4	1.38	35.0	M6*p1.0	35	0.75	1.65

TC-0612M, TC-0612MC VALVE

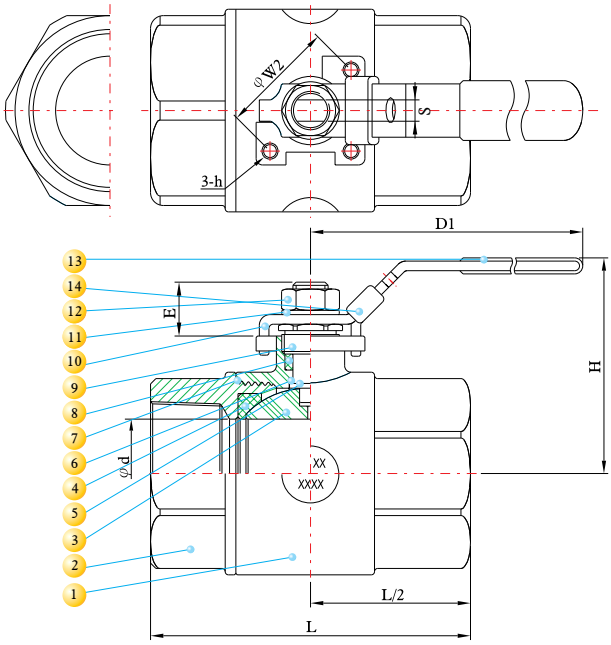
2PC STANDARD PORT 2000/1500 WOG BALL VALVE

DESIGN FEATURES:

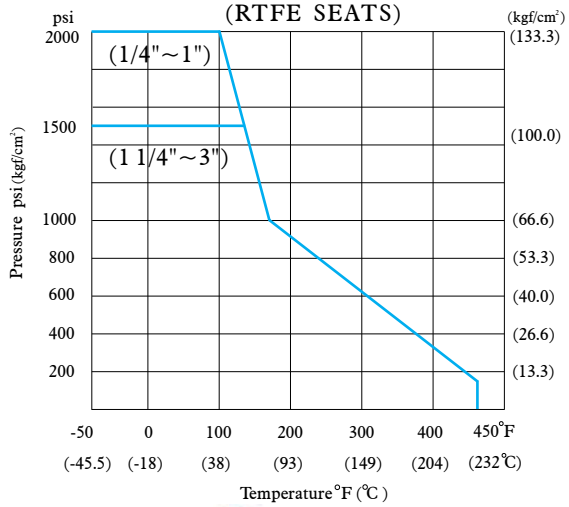
- Steam rating:150 psi WSP
- Blow-out-proof stem design
- ISO 5211 Mounting Pad
- Body: ASTM A351 Gr.CF8M / ASTM A216 Gr. WCB
- Ball: SS316
- Stem: SS316
- Seat: Reinforced Teflon
- End Connections: Threaded End
- Working Pressure: 1/4"~1" 2000 psi
  1 1/4"~3" 1500 psi
- Temperature Range: -50° to 450°F
- Padlocking device
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT

MATERIALS LIST

NO.	PART NAME	MATERIAL		Q'TY
		STAINLESS STEEL	CARBON STEEL	
1	BODY	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
2	CAP	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
3	BALL	ASTM A351 Gr.CF8M	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	PTFE+15% G/F	2
6	GASKET	PTFE	PTFE	1
7	THRUST WASHER	PTFE	PTFE	1
8	PACKING	PTFE	PTFE	1
9	GLAND	SS304	SS304	1
10	HANDLE	SS304	SS304	1
11	SPRING WASHER	SS304	SS304	1
12	HANDLE SLEEVE	VINYL GRIP	VINYL GRIP	1
13	LOCKING PLATE	SS304	SS304	1



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

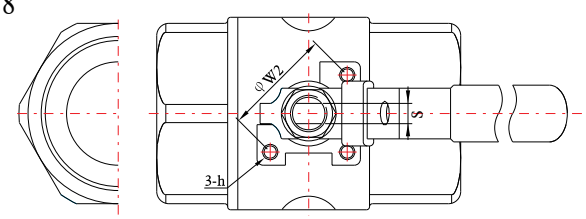
SIZE		d		E		L		H		S		D1		W2		h	Cv	Weight	
inch	Mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.44	11.3	0.59	15.0	2.23	56.75	1.64	41.73	0.21	5.45	4.06	103	1.42	36	M5*p0.8	6	0.35	0.77
3/8"	10	0.49	12.5	0.59	15.0	2.23	56.75	1.64	41.73	0.21	5.45	4.06	103	1.42	36	M5*p0.8	9	0.35	0.77
1/2"	15	0.49	12.5	0.59	15.0	2.35	59.75	1.64	41.73	0.21	5.45	4.06	103	1.42	36	M5*p0.8	9	0.32	0.71
3/4"	20	0.69	17.5	0.80	20.3	3.18	80.70	1.93	48.95	0.24	6.20	5.00	127	1.42	36	M5*p0.8	27	0.65	1.43
1"	25	0.89	22.5	0.73	18.5	3.44	87.50	2.06	52.25	0.24	6.20	5.00	127	1.42	36	M5*p0.8	35	0.75	1.65
1 1/4"	32	1.00	25.4	1.15	29.3	4.09	103.80	2.45	62.34	0.37	9.40	6.02	153	1.97	50	M6*p1.0	41	1.50	3.31
1 1/2"	40	1.26	32.0	1.09	27.7	4.45	113.00	2.67	67.74	0.37	9.40	6.02	153	1.97	50	M6*p1.0	75	1.80	3.96
2"	50	1.50	38.0	1.11	28.1	5.38	136.62	2.79	70.98	0.37	9.40	7.60	193	1.97	50	M6*p1.0	115	2.80	6.17
2 1/2"	65	2.00	51.0	1.17	29.7	5.91	150.00	3.16	80.28	0.37	9.40	7.60	193	1.97	50	M6*p1.0	200	4.34	9.56
3"	80	2.56	65.0	1.02	25.8	6.85	174.00	3.71	94.28	0.37	9.40	10.98	279	1.97	50	M6*p1.0	352	6.85	15.09

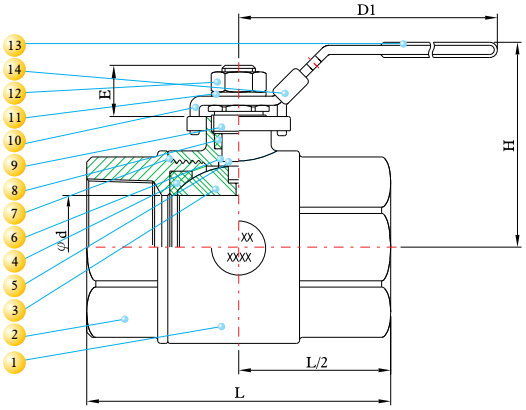
TC-0712M VALVE

2PC STANDARD PORT 2000/1500 WOG 250 PSI WSP BALL VALVE

DESIGN FEATURES:

- Steam rating:250 psi WSP
- Blow-out-proof stem design
- ISO 5211 Mounting Pad
- Body: ASTM A351 Gr.CF8M
- Ball: SS316
- Stem: SS316
- Seals: CGT (CARBON and GRAPHITE Reinforced PTFE
- Seats, seals and Packings)
- End Connections: Threaded End
- Working Pressure: 1/4"~1" 2000 psi
  1 1/4"~3" 1500 psi
- Temperature Range: -50˚ to 500˚F
- Padlocking device
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT

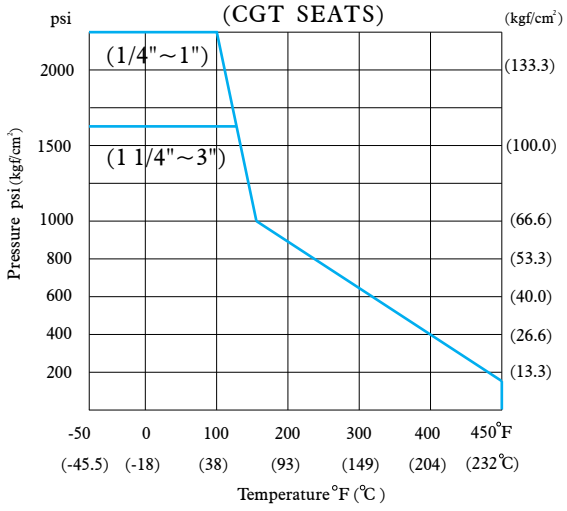




MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	CGT	2
6	GASKET	CGT	1
7	THRUST WASHER	CGT	1
8	PACKING	CGT	1
9	GLAND	SS304	1
10	HANDLE	SS304	1
11	SPRING WASHER	SS304	1
12	HANDLE SLEEVE	VINYL GRIP	1
13	LOCKING PLATE	SS304	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		E		L		H		S		D1		W2		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.44	11.3	0.59	15.0	2.23	56.75	1.64	41.73	0.21	5.45	4.06	103	1.42	36	M5*p0.8	6	0.35	0.77
3/8"	10	0.49	12.5	0.59	15.0	2.23	56.75	1.64	41.73	0.21	5.45	4.06	103	1.42	36	M5*p0.8	9	0.35	0.77
1/2"	15	0.49	12.5	0.59	15.0	2.35	59.75	1.64	41.73	0.21	5.45	4.06	103	1.42	36	M5*p0.8	9	0.32	0.71
3/4"	20	0.69	17.5	0.80	20.3	3.18	80.70	1.93	48.95	0.24	6.20	5.00	127	1.42	36	M5*p0.8	27	0.65	1.43
1"	25	0.89	22.5	0.73	18.5	3.44	87.50	2.06	52.25	0.24	6.20	5.00	127	1.42	36	M5*p0.8	35	0.75	1.65
1 1/4"	32	1.00	25.4	1.15	29.3	4.09	103.80	2.45	62.34	0.37	9.40	6.02	153	1.97	50	M6*p1.0	41	1.50	3.31
1 1/2"	40	1.26	32.0	1.09	27.7	4.45	113.00	2.67	67.74	0.37	9.40	6.02	153	1.97	50	M6*p1.0	75	1.80	3.96
2"	50	1.50	38.0	1.11	28.1	5.38	136.62	2.79	70.98	0.37	9.40	7.60	193	1.97	50	M6*p1.0	115	2.80	6.17
2 1/2"	65	2.00	51.0	1.17	29.7	5.91	150.00	3.16	80.28	0.37	9.40	7.60	193	1.97	50	M6*p1.0	200	4.34	9.56
3"	80	2.56	65.0	1.02	25.8	6.85	174.00	3.71	94.28	0.37	9.40	10.98	279	1.97	50	M6*p1.0	352	6.85	15.09

TC-2000 VALVE

2PC FULL PORT 2000/1500 WOG BALL VALVE, THREADED

DESIGN FEATURES:

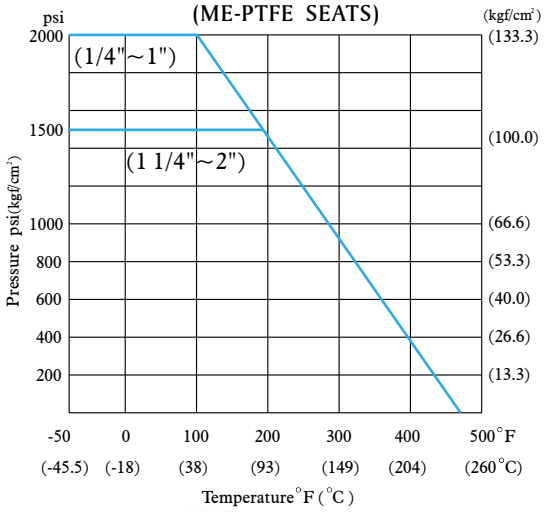
- Steam rating:150 psi WSP
- WORKING PRESSURE : 1/4"~1" 2000 PSI
  1 1/4"~2" 1500 PSI
- INVESTMENT CASTING BODY & CAP
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AN D FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- TEMPERATURE RATING : -45.5˚C (-50˚F) to 246˚C (475˚F)
- LONG CYCLE LIFE
- ADJUSTABLE STEM PACKING
- BLOW-OUT PROOF STEM
- LOCKING DEVICE
- DESIGN SPECIFICATION : ANSI B16.34 CLASS 900
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg

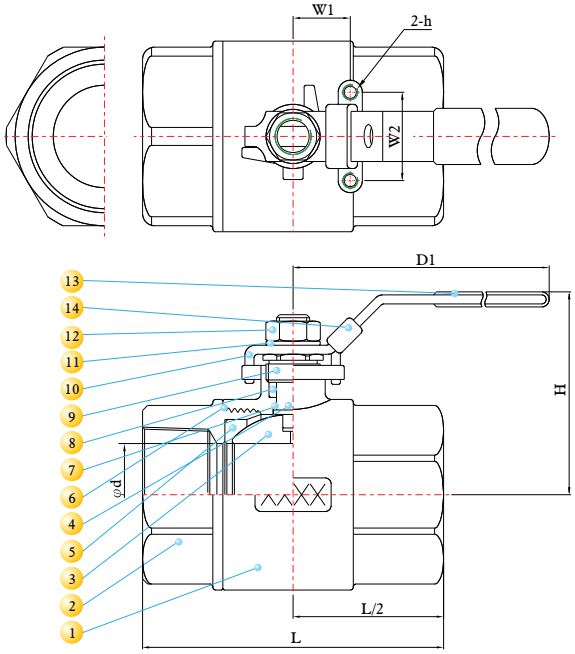
MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	ME-PTFE *	2
6	GASKET	ME-PTFE *	1
7	THRUST WASHER	ME-PTFE *	1
8	PACKING	ME-PTFE *	1
9	GLAND	SS304	1
10	HANDLE	SS304	1
11	SPRING WASHER	SS304	1
12	HANDLE NUT	SS304	1
13	HANDLE SLEEVE	VINYL GRIP	1
14	LOCKING PLATE	SS304	1

*ME-PTFE IS Molecularly Enhanced PTFE

PRESSURE TEMPERATURE RATINGS





DIMENSIONS

SIZE		d		L		H		D1		W1		W2		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.43	11.0	2.34	59.5	2.24	57.0	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	16	0.37	0.81
3/8"	10	0.49	12.5	2.34	59.5	2.24	57.0	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	16	0.36	0.79
1/2"	15	0.59	15.0	2.52	64.5	2.27	57.6	4.06	103	0.50	12.7	1.12	28.5	M5*p0.8	26	0.42	0.93
3/4"	20	0.79	20.0	3.03	77.0	2.70	68.5	5.00	127	0.88	22.4	1.38	35.0	M6*p1.0	55	0.80	1.76
1"	25	0.98	25.0	3.56	90.5	2.86	72.7	5.00	127	0.88	22.4	1.38	35.0	M6*p1.0	110	1.24	2.73
1 1/4"	32	1.26	32.0	3.92	99.5	3.45	87.7	6.14	156	1.00	25.4	1.50	38.1	M6*p1.0	180	2.05	4.52
1 1/2"	40	1.50	38.0	4.65	118.0	3.66	93.0	7.60	193	1.00	25.4	1.50	38.1	M6*p1.0	270	2.58	5.68
2"	50	2.00	50.8	5.37	136.5	4.11	104.3	7.60	193	1.00	25.4	1.50	38.1	M6*p1.0	500	4.43	9.76

TC-2000WS VALVE

2PC FULL PORT 2000 WOG SEAL WELDED BALL VALVE, THREADED

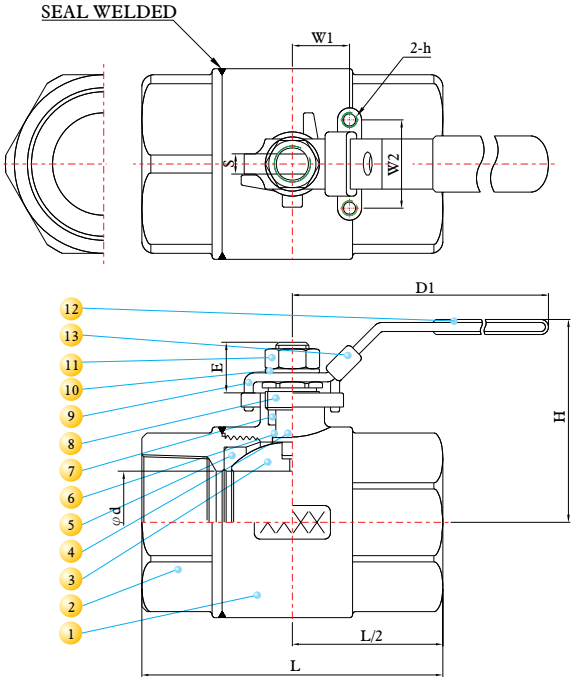
DESIGN FEATURES:

- Steam rating:150 psi WSP
- WORKING PRESSURE : 2000 PSI
- INVESTMENT CASTING BODY & CAP
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AN D FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- TEMPERATURE RATING : -45.5˚C (-50˚F) to 246˚C (475˚F)
- LONG CYCLE LIFE
- ADJUSTABLE STEM PACKING
- BLOW-OUT PROOF STEM
- LOCKING DEVICE
- DESIGN SPECIFICATION : ANSI B16.34 CLASS 900
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- NACE MR-0175 FULL COMPLIANCE

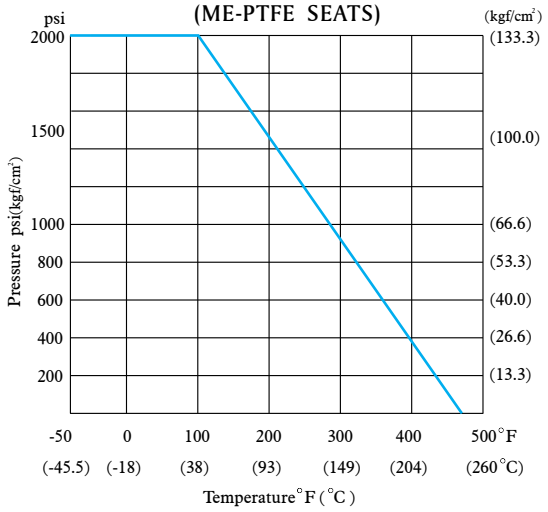
MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	ME-PTFE *	2
6	THRUST WASHER	ME-PTFE *	1
7	PACKING	ME-PTFE *	1
8	GLAND	ME-PTFE *	1
9	HANDLE	SS304	1
10	SPRING WASHER	SS304	1
11	HANDLE NUT	SS304	1
12	HANDLE SLEEVE	VINYL GRIP	1
13	LOCKING PLATE	SS304	1

*ME-PTFE IS Molecularly Enhanced PTFE



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		L		E		S		H		D1		W1		W2		h	CV	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.43	11.0	2.34	59.5	0.61	15.5	0.21	5.45	2.24	57.0	4.06	103	0.50	12.7	1.12	28.5	M5*P0.8	16	0.37	0.81
3/8"	10	0.49	12.5	2.34	59.5	0.61	15.5	0.21	5.45	2.24	57.0	4.06	103	0.50	12.7	1.12	28.5	M5*P0.8	16	0.36	0.79
1/2"	15	0.59	15.0	2.54	64.5	0.57	14.5	0.21	5.45	2.27	57.6	4.06	103	0.50	12.7	1.12	28.5	M5*P0.8	26	0.42	0.93
3/4"	20	0.79	20.0	3.03	77.0	0.80	20.3	0.24	6.20	2.70	68.5	5.00	127	0.88	22.4	1.38	35.0	M6*P1.0	55	0.80	1.76
1"	25	0.98	25.0	3.56	90.5	0.75	19.0	0.24	6.20	2.86	72.7	5.00	127	0.88	22.4	1.38	35.0	M6*P1.0	110	1.24	2.73
1-1/4"	32	1.26	32.0	3.92	99.5	1.10	27.9	0.37	9.40	3.45	87.7	6.14	156	1.00	25.4	1.50	38.1	M6*P1.0	180	2.05	4.52
1-1/2"	40	1.50	38.0	4.65	118.0	1.05	26.7	0.37	9.40	3.66	93.0	7.60	193	1.00	25.4	1.50	38.1	M6*P1.0	270	2.58	5.68
2"	50	2.00	50.8	5.37	136.5	1.05	26.7	0.37	9.40	4.11	104.3	7.60	193	1.00	25.4	1.50	38.1	M6*P1.0	500	4.43	9.76

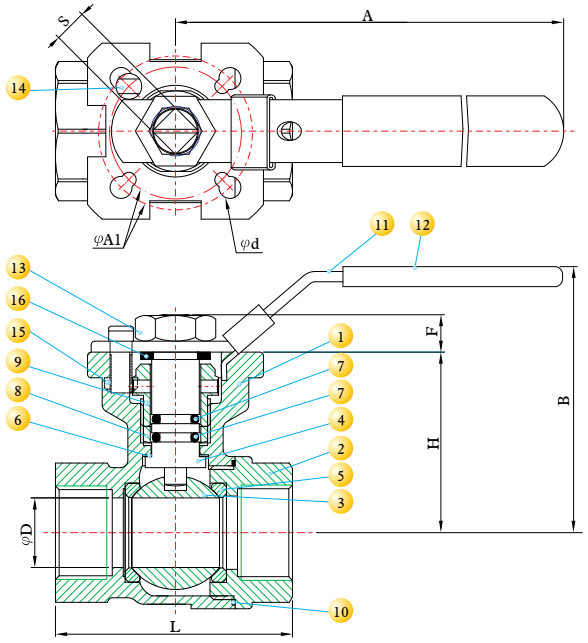
2PC FULL PORT 1000 WOG BALL VALVE, THREADED (WITH ISO 5211 DIRECT MOUNT PAD)

DESIGN FEATURES:

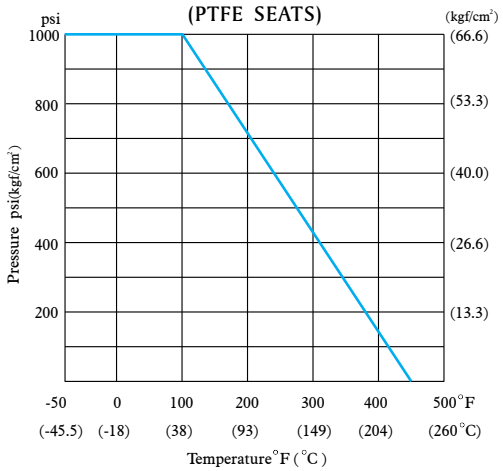
- Steam rating:150 psi WSP
- WORKING PRESSURE : 1000 PSI
- INVESTMENT CASTING BODY & CAP
- BLOW - OUT- PROOF STEM
- ADJUSTABLE STEM PACKING
- HANDLE WITH LOCKING DEVICE
- FULL ISO-5211 PAD FOR DIRECT MOUNT AUTOMATION
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- TEMPERATURE RATING : -45.5˚C (-50˚F) to 232˚C (450˚F)

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	PTFE	2
6	THRUST WASHER	PTFE	1
7	O-RING	VITON	2
8	GLAND PACKING	PTFE	1
9	GLAND	ASTM A351 Gr.CF8M	1
10	GASKET	PTFE	1
11	HANDLE	SS304	1
12	HANDLE SLEEVE	VINYL GRIP	1
13	HANDLE NUT	SS304	1
14	PIN	SS304	1
15	LOCK NUT	SS304	1
16	WASHER	SS304	1



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

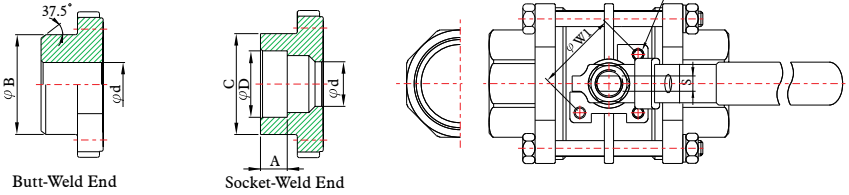
SIZE		A		B		D		L		F		H		S		d		A1		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	4.37	111	2.98	75.75	0.59	15.0	2.70	68.5	0.37	9.5	1.59	40.5	0.35	9	0.24	6.0	1.42 / 1.65	36 / 42	F03 / F04	21	0.50	1.10
3/4"	20	4.37	111	3.07	78.00	0.75	19.0	2.85	72.5	0.41	10.5	1.84	46.8	0.35	9	0.24	6.0	1.42 / 1.65	36 / 42	F03 / F04	33	0.65	1.43
1"	25	5.00	127	3.32	84.25	0.98	25.0	3.44	87.5	0.42	10.7	2.03	51.5	0.43	11	0.24|0.26	6/6.5	1.65 / 1.97	42 / 50	F04 / F05	55	0.93	2.05
1 1/4"	32	5.00	127	3.51	89.25	1.26	32.0	3.88	98.5	0.41	10.5	2.22	56.3	0.43	11	0.24|0.26	6/6.5	1.65 / 1.97	42 / 50	F04 / F05	90	1.50	3.30
1 1/2"	40	5.87	149	4.47	113.5	1.50	38.0	4.23	107.5	0.58	14.7	2.80	71.0	0.55	14	0.26|0.33	6.5/8.5	1.97 / 2.76	50 / 70	F05 / F07	150	2.20	4.85
2"	50	5.87	149	5.01	127.25	1.97	50.0	4.78	121.4	0.59	15.0	3.17	80.5	0.55	14	0.26|0.33	6.5/8.5	1.97 / 2.76	50 / 70	F05 / F07	215	3.40	7.49

TC-03T/B/S VALVE

3PC FULL PORT 1000 WOG BALL VALVE

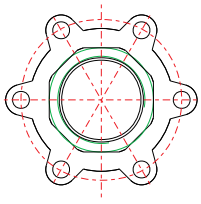
DESIGN FEATURES:

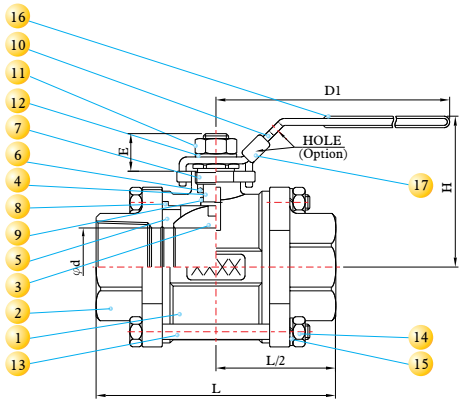
- Steam rating:150 psi WSP
- Blow-out-proof stem design
- ISO 5211 Mounting pad
- Body: ASTM A351 Gr.CF8M
- Ball: SS316
- Stem: SS 316
- Seat: Reinforced Teflon
- End Connections: Threaded End
  Socket Weld End
  Butt Weld End
- Working Pressure: 1000 psi
- Temperature Range: -50˚ to 450˚F
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- Options: Padlocking device



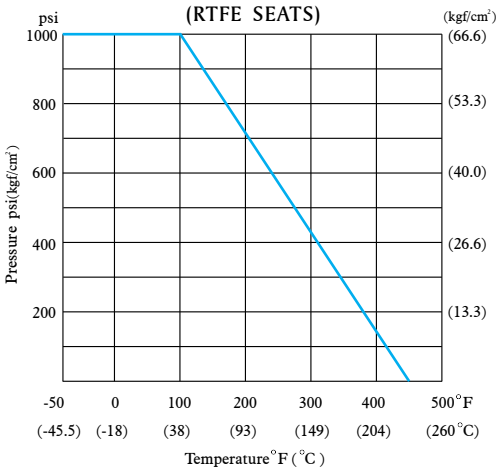
MATERIALS LIST

NO.	PART NAME	MATERIAL	QTY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	2
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	2
6	PACKING	PTFE	1
7	GLAND	SS304	1
8	END SEALS	PTFE	2
9	THRUST WASHER	PTFE	1
10	HANDLE	SS304	1
11	HANDLE NUT	SS304	1
12	SPRING WASHER	SS304	1
13	BOLTS	ASTM A193 Gr.B8	4~6
14	BOLT NUTS	ASTM A194 Gr.8	4~6
15	BOLT WASHERS	SS304	4~6
16	HANDLE SLEEVE	VINYL GRIP	1
17	LOCKING PLATE	SS304	1





PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE	A		B		C		D		E		d		L		D1		H		S		W1		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/4"	8	0.39	10	0.71	18.1	0.90	22.8	0.56	14.1	0.61	15.5	0.43	11.0	2.56	65	4.06	103	2.13	54	0.21	5.45	1.42	36	M5*P0.8	16	0.48	1.06
3/8"	10	0.39	10	0.71	18.1	0.90	22.8	0.69	17.6	0.61	15.5	0.49	12.5	2.56	65	4.06	103	2.13	54	0.21	5.45	1.42	36	M5*P0.8	16	0.46	1.01
1/2"	15	0.39	10	0.89	22.5	1.06	26.8	0.85	21.7	0.61	15.5	0.59	15.0	2.80	71	4.06	103	2.24	57	0.21	5.45	1.42	36	M5*P0.8	26	0.58	1.28
3/4"	20	0.51	13	1.11	28.3	1.36	34.6	1.07	27.1	0.77	19.5	0.79	20.0	3.35	85	5.00	127	2.64	67.1	0.24	6.2	1.42	36	M5*P0.8	55	0.92	2.02
1"	25	0.51	13	1.38	35.0	1.56	39.5	1.33	33.8	0.77	19.5	1.00	25.4	3.74	95	5.00	127	2.76	70.0	0.24	6.2	1.42	36	M5*P0.8	110	1.19	2.62
1 1/4"	32	0.51	13	1.74	44.1	1.93	49.0	1.68	42.6	1.00	25.5	1.26	32.0	4.37	111	6.02	153	3.59	91.1	0.37	9.4	1.97	50	M6*P1.0	180	2.07	4.56
1 1/2"	40	0.51	13	1.97	50.0	2.20	55.8	1.92	48.7	1.04	26.5	1.57	40.0	4.76	121	6.02	153	3.74	95.1	0.37	9.4	1.97	50	M6*P1.0	270	2.75	6.06
2"	50	0.63	16	2.38	60.5	2.68	68.0	2.41	61.1	1.00	25.5	2.00	50.8	5.51	140	7.60	193	4.02	102.0	0.37	9.4	1.97	50	M6*P1.0	500	4.07	8.96
2 1/2"	65	0.63	16	3.06	77.8	3.46	88.0	2.91	73.8	1.56	39.5	2.56	65.0	6.81	173	10.98	279	4.76	120.8	0.47	12.0	2.76	70	M8*P1.25	800	8.12	17.89
3"	80	0.63	16	3.51	89.1	4.13	105.0	3.54	89.8	1.48	37.5	3.15	80.0	7.56	192	10.98	279	5.08	129.0	0.47	12.0	4.02	102	M10*P1.5	1150	12.71	28.03
4"	100	0.75	19	4.50	114.3	5.10	129.5	4.55	115.5	1.95	49.5	3.94	100.0	8.86	225	13.19	335	6.84	173.7	0.63	16.0	4.02	102	M10*P1.5	2120	21.12	46.52

TC-03K, TC-03KC VALVE

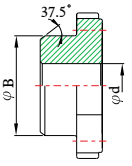
3PC FULL PORT 1000 WOG BALL VALVE, T/B/S

DESIGN FEATURES:

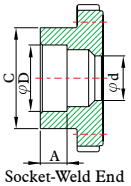
- Steam rating:150 psi WSP
- Blow-out-proof stem design
- ISO 5211 Mounting pad
- Body: ASTM A351 Gr.CF8M / A216 WCB
- Ball: SS316
- Stem: SS 316
- Seat: Reinforced Teflon
- End Connections: Threaded End
  Socket Weld End
  Butt Weld End
- Working Pressure: 1000 psi
- Temperature Range: -50˚ to 450˚F
- Padlocking device
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg

MATERIALS LIST

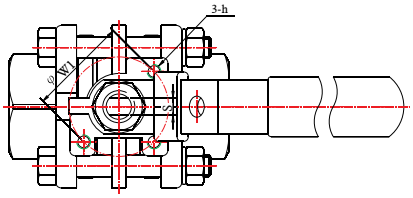
NO.	PART NAME	MATERIAL		Q'TY
		STAINLESS STEEL	CARBON STEEL	
1	BODY	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
2	CAP	ASTM A351 Gr.CF8M	ASTM A216 WCB	2
3	BALL	ASTM A351 Gr.CF8M	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	PTFE+15% G/F	2
6	PACKING	PTFE	PTFE	1
7	GLAND	SS304	SS304	1
8	END SEALS	PTFE	PTFE	2
9	THRUST WASHER	PTFE	PTFE	1
10	HANDLE	SS304	SS304	1
11	HANDLE NUT	SS304	SS304	1
12	SPRING WASHER	SS304	SS304	1
13	BOLTS	ASTM A193 Gr.B8	ASTM A193 Gr.B8	4
14	BOLT NUTS	ASTM A194 Gr.8	ASTM A194 Gr.8	4
15	BOLT WASHERS	SS304	SS304	4
16	HANDLE SLEEVE	VINYL GRIP	VINYL GRIP	1
17	LOCKING PLATE	SS304	SS304	1

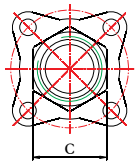


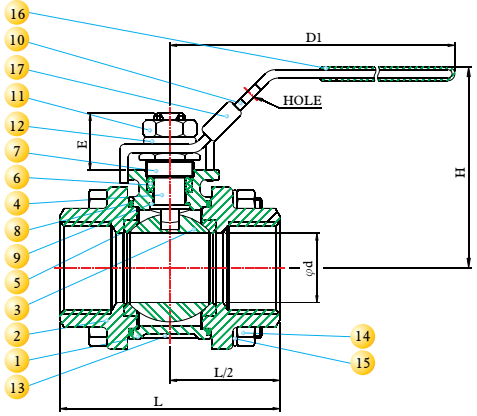
Butt-Weld End



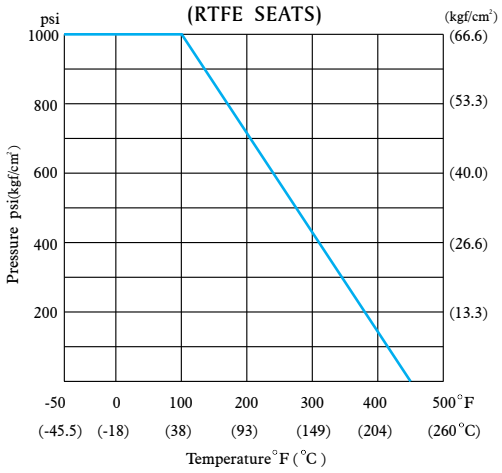
Socket-Weld End







PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE	A		B		C		D		E		d		L		D1		H		S		W1		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	0.39	10	0.89	22.5	0.98	25.0	0.85	21.7	0.61	15.5	0.59	15.0	2.21	56.2	4.06	103	2.31	58.7	0.22	5.5	1.42	36	M5*P0.8	26	0.40	0.88
3/4"	20	0.51	13	1.11	28.3	1.26	32.0	1.07	27.1	0.77	19.5	0.79	20.0	2.73	69.4	5.00	127	2.56	64.9	0.24	6.2	1.42	36	M5*P0.8	55	0.63	1.39
1"	25	0.51	13	1.38	35.0	1.50	38.0	1.33	33.8	0.77	19.5	1.00	25.4	3.13	79.6	5.00	127	2.82	71.7	0.24	6.2	1.42	36	M5*P0.8	110	0.90	1.98
1 1/4"	32	0.51	13	1.74	44.1	1.85	47.0	1.68	42.6	1.00	25.5	1.26	32.0	3.50	88.8	6.02	153	2.90	73.7	0.37	9.4	1.97	50	M6*P1.0	180	1.40	3.08
1 1/2"	40	0.51	13	1.97	50.0	2.09	53.0	1.92	48.7	1.04	26.5	1.57	40.0	4.00	101.6	6.02	153	3.47	88.2	0.37	9.4	1.97	50	M6*P1.0	270	2.04	4.49
2"	50	0.63	16	2.38	60.5	2.56	65.0	2.41	61.1	1.00	25.5	2.00	50.8	4.66	118.4	7.60	193	3.82	97.1	0.37	9.4	1.97	50	M6*P1.0	500	3.37	7.42

TC-3000T/B/S VALVE

3PC FULL PORT 1000 WOG BALL VALVE (WITH ISO 5211 DIRECT MOUNT PAD)

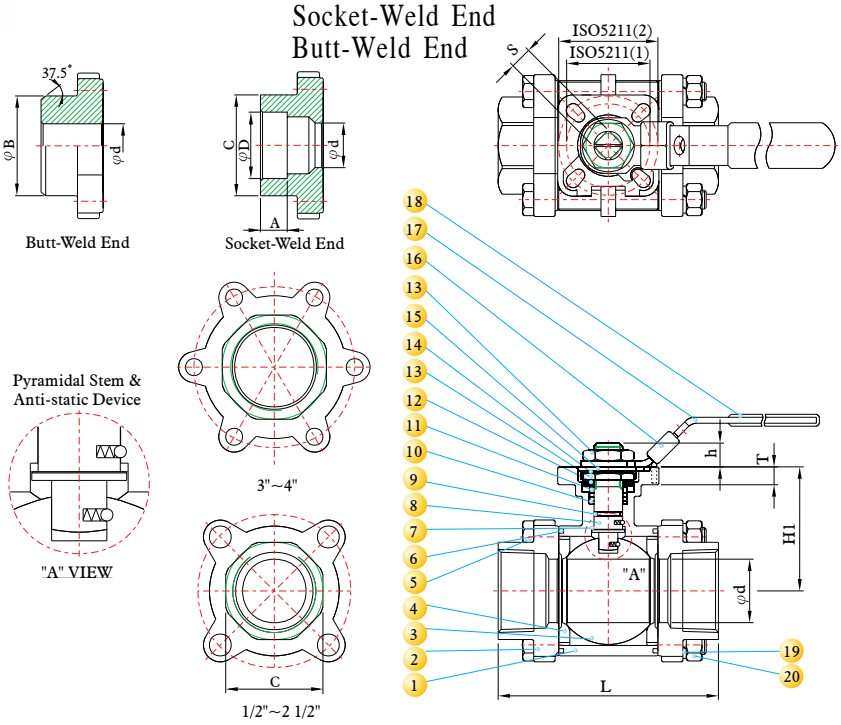
DESIGN FEATURES:

- Steam rating:150 psi WSP
- WORKING PRESSURE : 1000 PSI
- INVESTMENT CASTING BODY & CAP
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AN D FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- TEMPERATURE RATING : -45.5°C (-50°F) to 246°C (475°F)
- LONG CYCLE LIFE
- BLOW - OUT- PROOF STEM
- ANTI - STATIC DEVICE
- ADJUSTABLE STEM PACKING
- HANDLE WITH LOCKING DEVICE
- FULL ISO-5211 PAD FOR DIRECT MOUNT AUTOMATION
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- End Connections: Threaded End
  Socket-Weld End
  Butt-Weld End

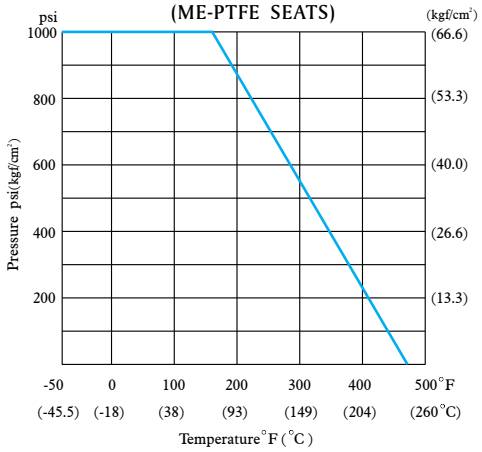
MATERIALS LIST

NO.	PART NAME	MATERIAL	QTY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	2
3	BALL	ASTM A351 Gr.CF8M	1
4	SEAT	*ME-PTFE	2
5	BOLT	ASTM A193 Gr.B8	4~6
6	GASKET	*ME-PTFE	2
7	THRUST WASHER	*ME-PTFE	1
8	STEM	ASTM A276 Gr.316	1
9	O-RING	VITON	1
10	PACKING	*ME-PTFE	1
11	RING	SS304	1
12	BELLEVEILLE WASHER	SS410	2
13	HANDLE NUT	SS304	2
14	LOCKING WASHER	SS304	1
15	STOPPER	SS304	1
16	LOCKING PLATE	SS304	1
17	HANDLE	SS304	1
18	HANDLE SLEEVE	VINYL GRIP	1
19	BOLT WASHER	SS304	4~6
20	BOLT NUT	ASTM A194 Gr.8	4~6

*ME-PTFE IS Molecularly Enhanced PTFE



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		A		B		C		D		d		L		H1		h		S		T		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	0.39	10	0.89	22.5	1.06	26.8	0.85	21.7	0.59	15.0	2.80	71	1.67	42.5	0.35	9	0.35	9	0.35	9	F03 / F04	26	0.78	1.72
3/4"	20	0.51	13	1.11	28.3	1.36	34.6	1.07	27.1	0.79	20.0	3.35	85	1.83	46.5	0.35	9	0.35	9	0.35	9	F03 / F04	55	1.01	2.22
1"	25	0.51	13	1.38	35.0	1.56	39.5	1.33	33.8	1.00	25.4	3.74	95	2.34	59.5	0.47	12.0	0.43	11	0.35	9	F04 / F05	110	1.46	3.22
1 1/4"	32	0.51	13	1.74	44.1	1.93	49.0	1.68	42.6	1.26	32.0	4.37	111	2.48	63.0	0.47	12.0	0.43	11	0.35	9	F04 / F05	180	2.18	4.80
1 1/2"	40	0.51	13	1.97	50.0	2.20	55.8	1.92	48.7	1.57	40.0	4.76	121	3.11	79.0	0.63	16	0.55	14	0.51	13	F05 / F07	270	3.50	7.71
2"	50	0.63	16	2.38	60.5	2.68	68.0	2.41	61.1	2.00	50.8	5.51	140	3.42	86.9	0.63	16	0.55	14	0.51	13	F05 / F07	500	4.71	10.37
2 1/2"	65	0.63	16	3.06	77.8	3.46	88.0	2.91	73.8	2.56	65.0	6.81	173	4.41	112.0	0.75	19	0.67	17	0.51	13	F07 / F10	800	9.85	21.70
3"	80	0.63	16	3.51	89.1	4.13	105.0	3.54	89.8	3.15	80.0	7.56	192	4.88	124.0	0.75	19	0.67	17	0.51	13	F07 / F10	1150	15.60	34.36
4"	100	0.75	19	4.50	114.3	5.12	130.0	4.55	115.5	3.94	100.0	8.86	225	6.22	158.0	0.94	24	0.67	17	0.79	20	F07 / F10	2120	23.70	52.20

TC-3000TC T-CLAMP END VALVE

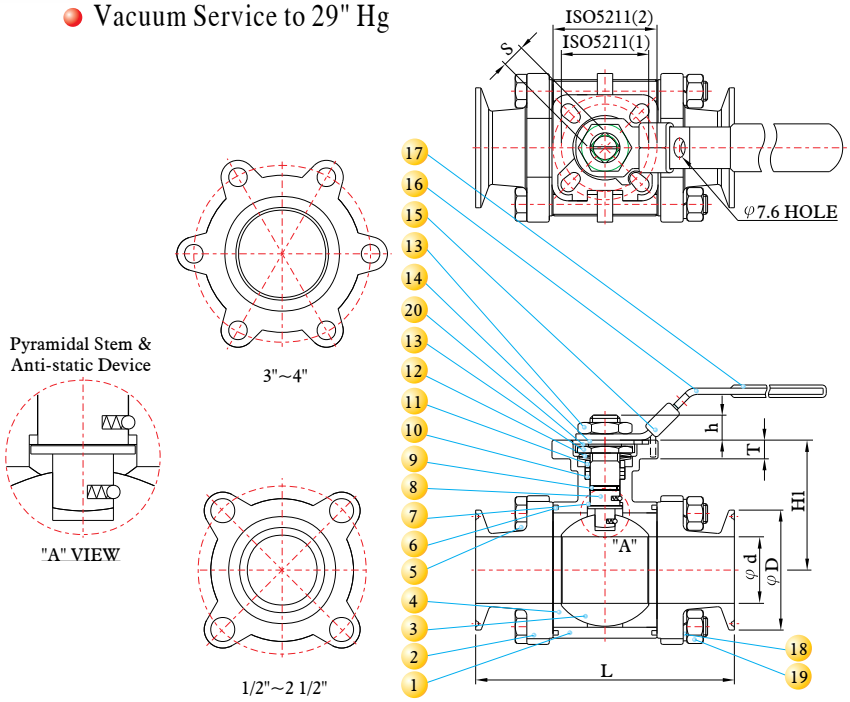
3PC 1000 WOG TRUE PORT T-CLAMP SANITARY BALL VALVE (WITH ISO 5211 DIRECT MOUNT PAD)

DESIGN FEATURES:

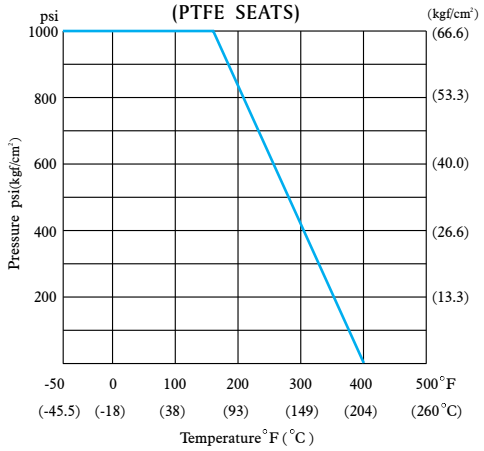
- WORKING PRESSURE : 1000 PSI
- INVESTMENT CASTING BODY & CAP
- TEMPERATURE RATING : -10℃ (-50℉) to 230℃ (400℉)
- BLOW - OUT - PROOF STEM
- ANTI - STATIC DEVICE
- ADJUSTABLE STEM PACKING
- HANDLE WITH LOCKING DEVICE
- FULL ISO-5211 PAD FOR DIRECT MOUNT AUTOMATION
- End Connections: T-Clamp END
- PTFE CAVITY FILLERS
- FOR FOOD AND GENERAL CHEMICAL SERVICE APPLICATION
- TEST STANDARD: API 598
- ME PTFE SEATS & SEALS AVAILABLE UPON REQUEST
- INTERNAL FINISH 10Ra , OTHER FINISH AVAILABLE ON REQUEST
- Vacuum Service to 29" Hg

MATERIALS LIST

NO.	PART NAME	MATERIAL	QTY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	2
3	BALL	ASTM A351 Gr.CF8M	1
4	SEAT	PTFE	2
5	BOLT	ASTM A193 Gr.B8	4~6
6	GASKET	PTFE	2
7	THRUST WASHER	PTFE	1
8	STEM	ASTM A276 Gr.316	1
9	O-RING	VITON	1
10	PACKING	PTFE	1
11	RING	SS304	1
12	BELLEVEILLE WASHER	SS410	2
13	HANDLE NUT	SS304	2
14	STOPPER	SS304	1
15	LOCKING PLATE	SS304	1
16	HANDLE	SS304	1
17	HANDLE SLEEVE	VINYL GRIP	1
18	BOLT WASHER	SS304	4~6
19	BOLT NUT	ASTM A194 Gr.8	4~6
20	STOP WASHER	SS304	1



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		D		L		H1		h		S		T		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	0.37	9.5	1.00	25.4	3.51	89.2	1.67	42.5	0.31	8.0	0.35	9	0.35	9	F03 / F04	10	0.80	1.76
3/4"	20	0.63	15.9	1.00	25.4	4.00	101.6	1.83	46.5	0.39	10.0	0.35	9	0.35	9	F03 / F04	28	1.05	2.31
1"	25	0.87	22.2	1.98	50.4	4.51	114.6	2.34	59.5	0.45	11.5	0.43	11	0.35	9	F04 / F05	60	1.55	3.41
1 1/2"	40	1.38	35.0	1.98	50.4	5.52	140.2	3.11	79.0	0.78	20.0	0.55	14	0.51	13	F05 / F07	200	3.29	7.25
2"	50	1.87	47.6	2.50	63.6	6.26	159.0	3.42	86.9	0.78	20.0	0.55	14	0.51	13	F05 / F07	450	4.70	10.35
2 1/2"	65	2.37	60.2	3.05	77.5	6.85	174.0	4.41	112.0	1.08	27.5	0.67	17	0.51	13	F07 / F10	700	9.37	20.64
3"	80	2.87	73.0	3.57	90.8	8.00	203.3	4.88	124.0	1.08	27.5	0.67	17	0.51	13	F07 / F10	1000	15.50	34.14
4"	100	3.83	97.4	4.67	118.5	8.90	226.1	6.22	158.0	0.94	24.0	0.67	17	0.79	20	F07 / F10	2000	23.50	51.76

TC-3000TE TUBE END VALVE

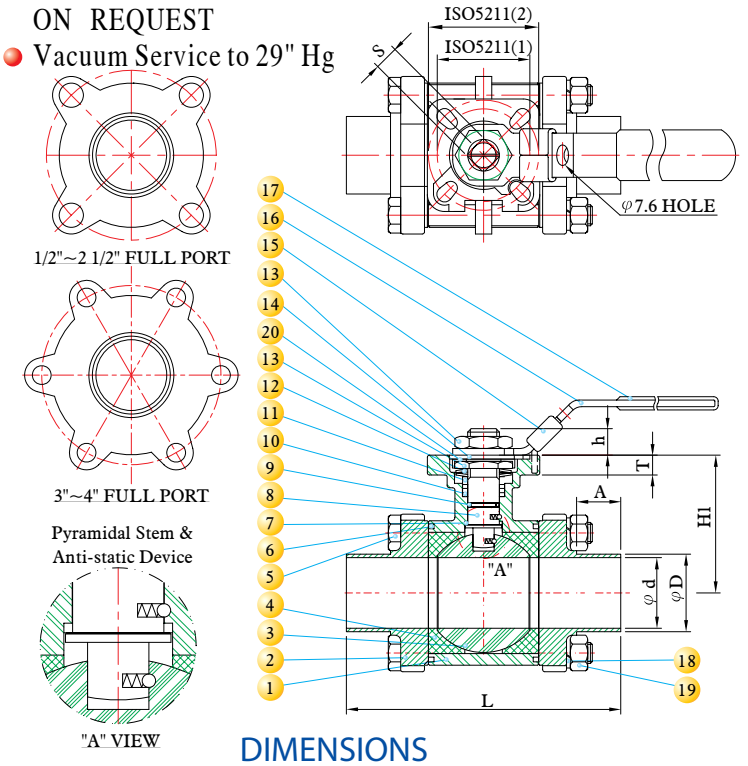
3PC 1000 WOG TRUE PORT TUBE END SANITARY BALL VALVE (WITH ISO 5211 DIRECT MOUNT PAD)

DESIGN FEATURES:

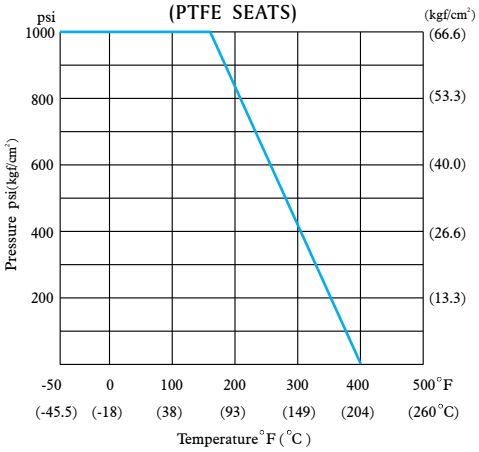
- WORKING PRESSURE : 1000 PSI
- INVESTMENT CASTING BODY & CAP
- TEMPERATURE RATING : -45.5℃ (-50°F) to 204.4℃ (400°F)
- BLOW - OUT - PROOF STEM
- ANTI - STATIC DEVICE
- ADJUSTABLE STEM PACKING
- HANDLE WITH LOCKING DEVICE
- FULL ISO-5211 PAD FOR DIRECT MOUNT AUTOMATION
- End Connections: TUBE END
- PTFE CAVITY FILLERS
- FOR FOOD AND GENERAL CHEMICAL SERVICE APPLICATION
- TEST STANDARD: API 598
- VALVES MARKED WITH HEAT NUMBERS FOR FULL IDENTIFICATION AND TRACEABILITY.
- INTERNAL FINISH 10Ra , OTHER FINISH AVAILABLE ON REQUEST
- Vacuum Service to 29" Hg

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	2
3	BALL	ASTM A351 Gr.CF8M	1
4	SEAT	PTFE	2
5	BOLT	ASTM A193 Gr.B8	4~6
6	GASKET	PTFE	2
7	THRUST WASHER	PTFE	1
8	STEM	ASTM A276 Gr.316	1
9	O-RING	VITON	1
10	PACKING	PTFE	1
11	RING	SS304	1
12	BELLEVEILLE WASHER	SS410	2
13	HANDLE NUT	SS304	2
14	STOPPER	SS304	1
15	LOCKING PLATE	SS304	1
16	HANDLE	SS304	1
17	HANDLE SLEEVE	VINYL GRIP	1
18	BOLT WASHER	SS304	4~6
19	BOLT NUT	ASTM A194 Gr.8	4~6
20	STOP WASHER	SS304	1



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		D		L		H1		h		S		T		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	0.37	9.5	0.5	12.7	3.51	89.2	1.67	42.5	0.31	8.0	0.35	9	0.35	9	F03 / F04	10	0.80	1.76
3/4"	20	0.63	15.9	0.75	19.1	4.00	101.6	1.83	46.5	0.39	10.0	0.35	9	0.35	9	F03 / F04	28	1.05	2.31
1"	25	0.87	22.2	1.00	25.4	4.51	114.6	2.34	59.5	0.45	11.5	0.43	11	0.35	9	F04 / F05	60	1.55	3.41
1 1/2"	40	1.38	35.0	1.50	38.1	5.52	140.2	3.11	79.0	0.78	20.0	0.55	14	0.51	13	F05 / F07	200	3.29	7.25
2"	50	1.87	47.6	2.00	50.8	6.26	159.0	3.42	86.9	0.78	20.0	0.55	14	0.51	13	F05 / F07	450	4.70	10.35
2 1/2"	65	2.37	60.2	2.50	63.4	6.85	174.0	4.41	112.0	1.08	27.5	0.67	17	0.51	13	F07 / F10	700	9.37	20.64
3"	80	2.87	73.0	3.00	76.2	8.00	203.3	4.88	124.0	1.08	27.5	0.67	17	0.51	13	F07 / F10	1000	15.50	34.14
4"	100	3.83	97.4	4.00	101.6	8.90	226.1	6.22	158.0	0.94	24.0	0.67	17	0.79	20	F07 / F10	2000	23.50	51.76

TC-4000 (FS), TC-4100 (FS) VALVE

3PC FULL PORT 1500/2000 WOG BALL VALVE, T/S (WITH ISO 5211 DIRECT MOUNT PAD)

DESIGN FEATURES:

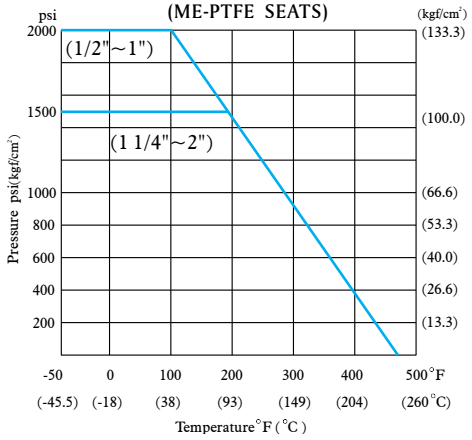
- Steam rating:150 psi WSP
- Working Pressure: 1/2"~1" 2000 psi
  1 1/4"~2" 1500 psi
- Body:ASTM A351 Gr. CF8M For TC-4000
  ASTM A216 Gr. WCB For TC-4100
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AN D FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- TEMPERATURE RATING : -45.5˚C (-50˚ F) to 246˚C (475˚F)
- LONG CYCLE LIFE
- BLOW - OUT- PROOF STEM
- ANTI - STATIC DEVICE
- ADJUSTABLE STEM PACKING
- HANDLE WITH LOCKING DEVICE
- FULL ISO 5211 PAD FOR DIRECT MOUNT AUTOMATION
- End Connections: Threaded End
  Socket-Weld End
- TEST STANDARD:API 598
- API 607 5th Edition FIRE SAFE APPROVAL
- Vacuum Service to 29" Hg

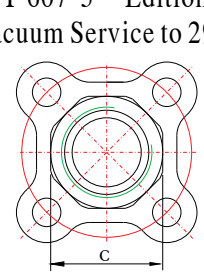
MATERIALS LIST

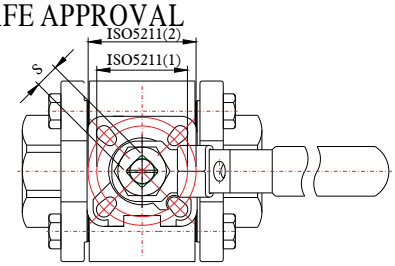
NO.	PART NAME	MATERIAL		QTY
		STAINLESS STEEL	CARBON STEEL	
1	BODY	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
2	CAP	ASTM A351 Gr.CF8M	ASTM A216 WCB	2
3	BALL	ASTM A351 Gr.CF8M	ASTM A351 Gr.CF8M	1
4	SEAT	*ME-PTFE	*ME-PTFE	2
5	BOLT	ASTM A193 Gr.B8	ASTM A193 Gr.B7	8
6	GASKET	*ME-PTFE or *GRAFOIL	*ME-PTFE or *GRAFOIL	2
7	THRUST WASHER	*ME-PTFE or *PTFE+50%S.S.	*ME-PTFE or *PTFE+50%S.S.	1
8	STEM	ASTM A276 Gr.316	ASTM A276 Gr.316	1
9	O-RING	VITON	VITON	1
10	PACKING	*ME-PTFE or *GRAFOIL	*ME-PTFE or *GRAFOIL	1
11	RING	SS304	SS304	1
12	BELLEVEILLE WASHER	SS410	SS410	2
13	HANDLE NUT	SS304	SS304	2
14	STOP WASHER	SS304	SS304	2
15	STOPPER	SS304	SS304	1
16	LOCKING PLATE	SS304	SS304	1
17	HANDLE	SS304	SS304	1
18	HANDLE SLEEVE	VINYL GRIP	VINYL GRIP	1

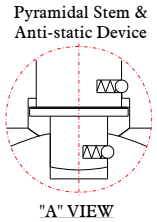
*ME-PTFE IS Molecularly Enhanced PTFE
*For Fire-Safe only

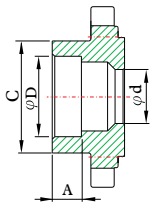
PRESSURE TEMPERATURE RATINGS

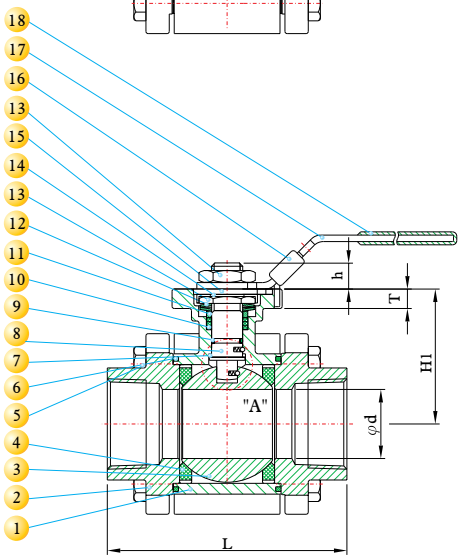












DIMENSIONS

SIZE		A		C		D		d		L		H1		h		S		T		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	0.39	10	1.15	29.1	0.85	21.7	0.59	15.0	2.89	73.5	1.67	42.50	0.35	9.0	0.35	9	0.35	9	F03 / F04	26	0.93	2.05
3/4"	20	0.51	13	1.44	36.7	1.07	27.1	0.79	20.0	3.26	83.0	1.83	46.5	0.35	9.0	0.35	9	0.35	9	F03 / F04	55	1.34	2.95
1"	25	0.51	13	1.81	46.0	1.33	33.8	1.00	25.4	3.90	99.0	2.34	59.5	0.45	11.5	0.43	11	0.35	9	F04 / F05	110	2.18	4.80
1 1/4"	32	0.51	13	2.04	51.9	1.68	42.6	1.26	32.0	4.48	114.0	2.46	62.5	0.49	12.5	0.43	11	0.35	9	F04 / F05	180	3.47	7.64
1 1/2"	40	0.51	13	2.33	59.3	1.92	48.7	1.57	40.0	5.03	128.0	3.11	79.0	0.63	16.0	0.55	14	0.51	13	F05 / F07	270	4.73	10.42
2"	50	0.63	16	2.86	72.6	2.41	61.2	2.00	50.8	5.98	152.0	3.42	86.9	0.63	16.0	0.55	14	0.51	13	F05 / F07	500	7.54	16.61

TC-6000 (FS), TC-6100 (FS) VALVE

1PC 150# REGULAR PORT BALL VALVE, FLANGED

DESIGN FEATURES:

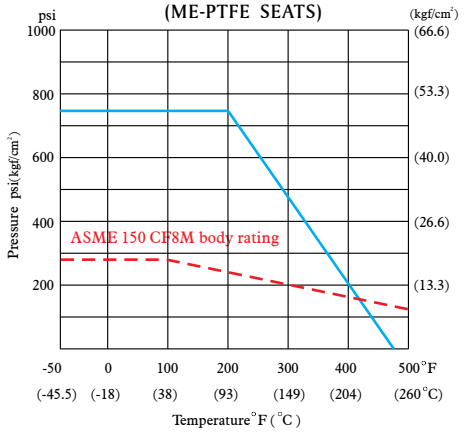
- Steam rating:150 psi WSP
- ISO 5211 Actuat or Mounting Pad
- Blow - out proof stem design
- Anti - Static device
- Adjustable Stem Packing
- Locking Device
- Body:ASTM A351 Gr. CF8M For TC-6000
  ASTM A216 Gr. WCB For TC-6100
- ME-PTFE SEAL KITS : REPLACES PTFE, RPTFE AND FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- Temperature Rating :-45.5 ℃ (-50˚F) to 246 ℃ (475 ˚F)
- Long Cycle Life
- ANSI B16.5 B16.10 and B16.34 full Compliance
- TEST STANDARD: API 598
- API 607 4th Edition FIRE SAFE APPROVAL
- Vacuum Service to 29" Hg

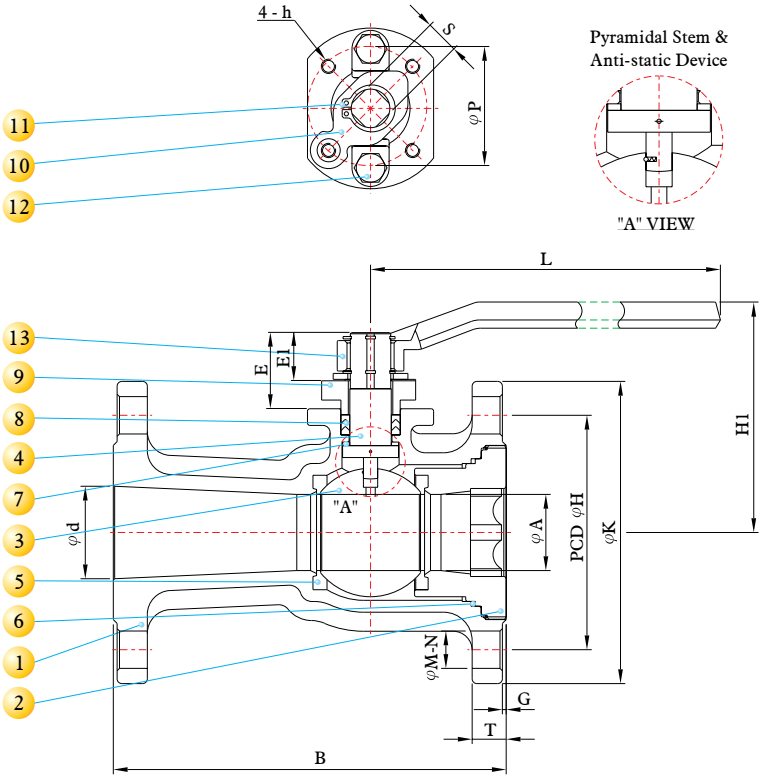
MATERIALS LIST

NO.	PART NAME	MATERIAL		Q'TY
		STAINLESS STEEL	CARBON STEEL	
1	BODY	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
2	CAP	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
3	BALL	ASTM A351 Gr.CF8M	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	ASTM A276 Gr.316	1
5	SEAT	*ME-PTFE	*ME-PTFE	2
6	GASKET	*ME-PTFE or *GRAFOIL	*ME-PTFE or *GRAFOIL	1
7	THRUST WASHER	*ME-PTFE	*ME-PTFE	1
8	PACKING	*ME-PTFE or *GRAFOIL	*ME-PTFE or *GRAFOIL	1
9	GLAND	ASTM A351 Gr.CF8	ASTM A351 Gr.CF8	1
10	STOPPER	SS304	SS304	1
11	SNAP RING	SS304	SS304	2
12	GLAND BOLT	ASTM A193 Gr.B8	ASTM A193 Gr.B8	2
13	HANDLE	ASTM A536 Gr.65-45-12	ASTM A536 Gr.65-45-12	1

*ME-PTFE IS Molecularly Enhanced PTFE *For Fire-Safe only

PRESSURE TEMPERATURE RATINGS





DIMENSIONS

SIZE		A		B		E		E1		d		G		H		K		T		M		N	P		S		L		H1		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1"	25	0.79	20	5.0	127.0	0.98	25.0	0.69	17.4	0.98	25	0.06	1.6	3.12	79.2	4.25	108.0	0.44	11.2	0.62	15.7	4	1.65	42	0.43	11	5.18	131.5	2.95	74.90	M5*P0.8	52	2.30	5.07
1 1/2"	40	1.26	32	6.5	165.1	1.24	31.5	0.83	21.0	1.57	40	0.06	1.6	3.88	98.5	5.00	127.0	0.56	14.2	0.62	15.7	4	1.97	50	0.55	14	6.42	163.0	3.81	96.85	M6*P1.0	120	4.50	9.92
2"	50	1.50	38	7.0	177.8	1.65	42.0	1.02	26.0	1.97	50	0.06	1.6	4.75	120.6	6.00	152.4	0.62	15.7	0.75	19.0	4	2.76	70	0.67	17	9.13	232.0	4.96	125.90	M8*P1.25	170	7.10	15.66
2 1/2"	65	1.97	50	7.5	190.5	1.65	42.0	1.02	26.0	2.64	67	0.06	1.6	5.50	139.7	7.00	177.8	0.69	17.6	0.75	19.0	4	2.76	70	0.67	17	9.13	232.0	5.32	135.20	M8*P1.25	255	10.80	23.79
3"	80	2.56	65	8.0	203.2	2.20	56.0	1.44	36.7	3.15	80	0.06	1.6	6.00	152.4	7.50	190.5	0.75	19.0	0.75	19.0	4	4.02	102	0.87	22	12.87	327.0	5.98	152.00	M10*P1.5	430	14.20	31.31
4"	100	3.15	80	9.0	228.6	2.20	56.0	1.44	36.7	3.94	100	0.06	1.6	7.50	190.5	9.00	228.6	0.94	23.8	0.75	19.0	8	4.02	102	0.87	22	12.87	327.0	6.30	160.10	M10*P1.5	565	23.58	56.34
6"	150	3.94	100	10.5	266.7	2.20	56.0	1.44	36.7	5.91	150	0.06	1.6	9.50	241.3	11.00	279.4	1.00	25.4	0.88	22.3	8	4.02	102	0.87	22	12.87	327.0	7.01	178.00	M10*P1.5	600	36.95	81.39

TC-0802A VALVE

2PC 150# FULL PORT BALL VALVE, FLANGED

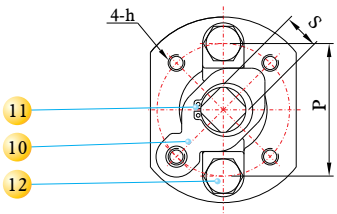
DESIGN FEATURES:

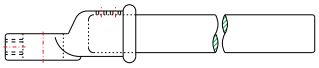
- Steam rating:150 psi WSP
- ISO 5211 Actuator Mounting Pad
- Blow-out-proof stem design
- Anti - Static Device
- Body: ASTM A351 Gr.CF8M
- Ball: SS316
- Stem: SS316
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AND FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- Temperature Rating :-45.5˚C (-50˚F) to 246˚C (475˚F)
- Face to Face: ANSI B16.10
- Flange Dimensions: ANSI B16.5 150#
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg

MATERIALS LIST

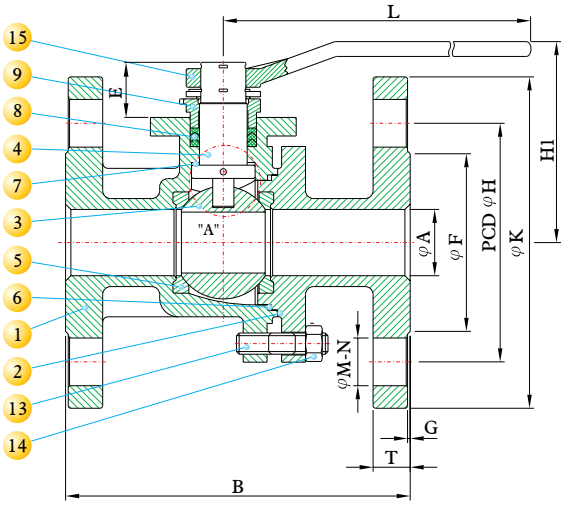
NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	ME-PTFE	2
6	GASKET	ME-PTFE	1
7	THRUST WASHER	ME-PTFE	1
8	PACKING	ME-PTFE	1
9	GLAND	ASTM A351 Gr.CF8	1
10	STOPPER	SS304	1
11	SNAP RING	SS304	2
12	GLAND BOLT	ASTM A193 Gr.B8	2
13	STUD BOLT	ASTM A193 Gr.B8	4~12
14	SET NUT	ASTM A194 Gr.8M	4~12
15	HANDLE	ASTM A536 Gr.B 65-45-12	1

ME-PTFE IS Molecularly Enhanced PTFE

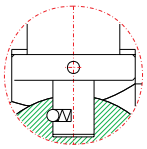




HANDLE FOR 5" ~8"

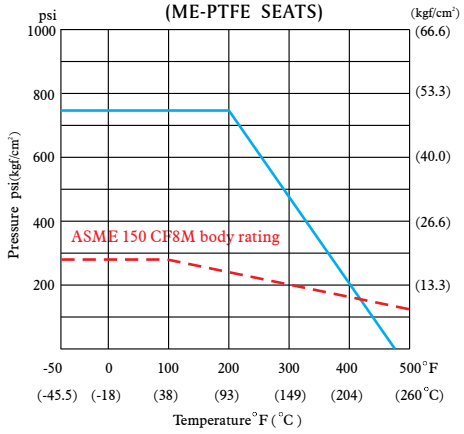


Pyramidal Stem & Anti-static Device



"A" VIEW

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		A		B		E		F		G		H		K		T		M		N	P		S		L		H1		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	0.59	15.0	4.25	107.9	0.98	25.0	1.38	35.0	0.06	1.6	2.38	60.4	3.50	88.9	0.44	11.2	0.62	15.7	4	1.65	42	0.43	11	5.18	131.5	2.91	73.8	M5*P0.8	26	2.00	4.41
3/4"	20	0.79	20.0	4.62	117.3	1.02	26.0	1.69	42.9	0.06	1.6	2.75	69.8	3.88	98.5	0.44	11.2	0.62	15.7	4	1.65	42	0.43	11	5.18	131.5	2.94	74.8	M5*P0.8	55	2.50	5.51
1"	25	0.98	25.0	5.00	127.0	1.24	31.5	2.00	50.8	0.06	1.6	3.12	79.2	4.25	107.9	0.44	11.2	0.62	15.7	4	1.97	50	0.55	14	6.42	163.0	3.44	87.4	M6*P1.0	110	3.00	6.61
1 1/4"	32	1.26	32.0	5.50	139.7	1.24	31.5	2.50	63.5	0.06	1.6	3.50	88.9	4.62	117.3	0.50	12.7	0.62	15.7	4	1.97	50	0.55	14	6.42	163.0	3.63	92.2	M6*P1.0	180	4.50	9.91
1 1/2"	40	1.50	38.0	6.50	165.1	1.65	42.0	2.88	73.1	0.06	1.6	3.88	98.5	5.00	127.0	0.56	14.2	0.62	15.7	4	2.76	70	0.67	17	9.13	232.0	4.76	121.0	M8*P1.25	270	6.00	13.22
2"	50	1.97	50.0	7.00	177.8	1.65	42.0	3.62	91.9	0.06	1.6	4.75	120.6	6.00	152.4	0.62	15.7	0.75	19.0	4	2.76	70	0.67	17	9.13	232.0	5.08	129.0	M8*P1.25	500	8.50	18.72
2 1/2"	65	2.56	65.0	7.50	190.5	1.65	42.0	4.12	104.6	0.06	1.6	5.50	139.7	7.00	177.8	0.69	17.5	0.75	19.0	4	2.76	70	0.67	17	9.13	232.0	5.55	141.0	M8*P1.25	800	13.00	28.63
3"	80	3.15	80.0	8.00	203.2	2.20	56.0	5.00	127.0	0.06	1.6	6.00	152.4	7.50	190.5	0.75	19.0	0.75	19.0	4	4.02	102	0.87	22	12.87	327.0	6.52	165.7	M10*P1.5	1150	18.00	39.65
4"	100	3.94	100.0	9.00	228.6	2.20	56.0	6.19	157.2	0.06	1.6	7.50	190.5	9.00	228.6	0.94	23.8	0.75	19.0	8	4.02	102	0.87	22	12.87	327.0	7.11	180.7	M10*P1.5	2120	28.00	61.67
6"	150	5.91	150.0	15.50	393.7	2.64	67.0	8.50	215.9	0.06	1.6	9.50	241.3	11.00	279.4	1.00	25.4	0.88	22.3	8	4.92	125	1.06	27	42.20	1072.0	9.95	252.8	M12*P1.75	5100	75.00	165.20
8"	200	7.87	200.0	18.00	457.2	2.62	66.5	10.62	269.7	0.06	1.6	11.75	298.4	13.50	342.9	1.12	28.4	0.88	22.3	8	5.51	140	1.30	33	42.52	1080.0	11.73	297.9	M16*P2.0	9400	110.00	242.29

TC-0802A VALVE

2PC 300# FULL PORT BALL VALVE, FLANGED

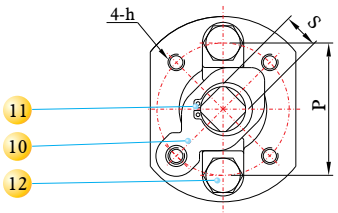
DESIGN FEATURES:

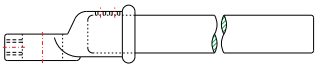
- Steam rating:150 psi WSP
- ISO 5211 Actuator Mounting Pad
- Blow-out-proof stem design
- Anti - Static Device
- Body: ASTM A351 Gr.CF8M
- Ball: SS316
- Stem: SS316
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AN D FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- Temperature Rating :-45.5 °C (-50 °F) to 246 °C (475 °F)
- Face to Face: ANSI B16.10
- Flange Dimensions: ANSI B16.5 300 #
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg

MATERIALS LIST

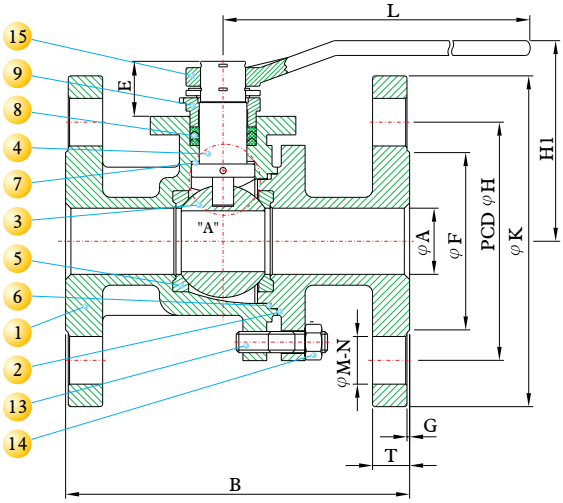
NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	ME-PTFE	2
6	GASKET	ME-PTFE	1
7	THRUST WASHER	ME-PTFE	1
8	PACKING	ME-PTFE	1
9	GLAND	ASTM A351 Gr.CF8	1
10	STOPPER	SS304	1
11	SNAP RING	SS304	2
12	GLAND BOLT	ASTM A193 Gr.B8	2
13	STUD BOLT	ASTM A193 Gr.B8	4~12
14	SET NUT	ASTM A194 Gr.8M	4~12
15	HANDLE	ASTM A536 Gr.B 65-45-12	1

ME-PTFE IS Molecularly Enhanced PTFE

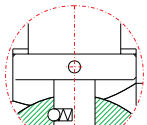




HANDLE FOR 5" ~8"

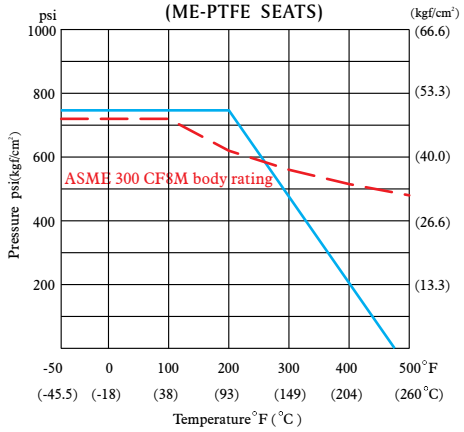


Pyramidal Stem &
Anti-static Device



"A" VIEW

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		A		B		E		F		G		H		K		T		M		N	P		S		L		H1		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	0.59	15.0	5.50	139.7	1.00	25.5	1.38	35.0	0.06	1.6	2.62	66.5	3.75	95.2	0.56	14.2	0.62	15.7	4	1.65	42	0.43	11	5.18	131.5	2.91	73.8	M5*P0.8	26	2.53	5.58
3/4"	20	0.79	20.0	6.00	152.4	0.98	25.0	1.69	42.9	0.06	1.6	3.25	82.5	4.62	117.3	0.62	15.7	0.75	19.0	4	1.65	42	0.43	11	5.18	131.5	2.94	74.8	M5*P0.8	55	3.50	7.72
1"	25	0.98	25.0	6.50	165.1	1.26	32.0	2.00	50.8	0.06	1.6	3.50	88.9	4.88	123.9	0.69	17.5	0.75	19.0	4	1.97	50	0.55	14	6.42	163.0	3.44	87.4	M6*P1.0	110	4.54	10.01
1 1/4"	32	1.26	32.0	7.00	177.8	1.28	32.5	2.50	63.5	0.06	1.6	3.88	98.5	5.25	133.3	0.75	19.0	0.75	19.0	4	1.97	50	0.55	14	6.42	163.0	3.63	92.2	M6*P1.0	180	5.75	12.67
1 1/2"	40	1.50	38.0	7.50	190.5	1.65	42.0	2.88	73.1	0.06	1.6	4.50	114.3	6.12	155.4	0.81	20.5	0.88	22.3	4	2.76	70	0.67	17	9.13	232.0	4.76	121.0	M8*P1.25	270	9.50	20.95
2"	50	1.97	50.0	8.50	215.9	1.65	42.0	3.62	91.9	0.06	1.6	5.00	127.0	6.50	165.1	0.88	22.3	0.75	19.0	8	2.76	70	0.67	17	9.13	232.0	5.08	129.0	M8*P1.25	500	11.30	24.92
2 1/2"	65	2.56	65.0	9.50	241.3	1.65	42.0	4.12	104.6	0.06	1.6	5.88	149.3	7.50	190.5	1.00	25.4	0.88	22.3	8	2.76	70	0.67	17	9.13	232.0	5.55	141.0	M8*P1.25	800	18.80	41.45
3"	80	3.15	80.0	11.12	282.4	2.20	56.0	5.00	127.0	0.06	1.6	6.62	168.1	8.25	209.5	1.12	28.4	0.88	22.3	8	4.02	102	0.87	22	12.87	327.0	6.52	165.7	M10*P1.5	1150	26.60	58.65
4"	100	3.94	100.0	12.00	304.8	2.20	56.0	6.19	157.2	0.06	1.6	7.88	200.1	10.00	254.0	1.25	31.7	0.88	22.3	8	4.02	102	0.87	22	12.87	327.0	7.11	180.7	M10*P1.5	2120	41.40	91.29
6"	150	5.91	150.0	15.88	403.3	2.24	57.0	8.50	215.9	0.06	1.6	10.62	269.7	12.50	317.5	1.44	36.5	0.88	22.3	12	4.92	125	1.06	27	42.26	1073.4	9.95	252.8	M12*P1.75	5100	92.00	202.86
8"	200	7.87	200.0	19.75	501.6	2.26	57.5	10.62	269.7	0.06	1.6	13.00	330.2	15.00	381.0	1.62	41.1	1.00	25.4	12	5.51	140	1.30	33	42.52	1080.0	11.73	297.9	M16*P2.0	9400	124.00	273.13

TC-0802A VALVE

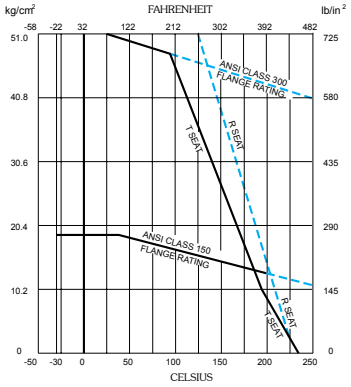
2PC 150#/300# FULL PORT BALL VALVE, FLANGED

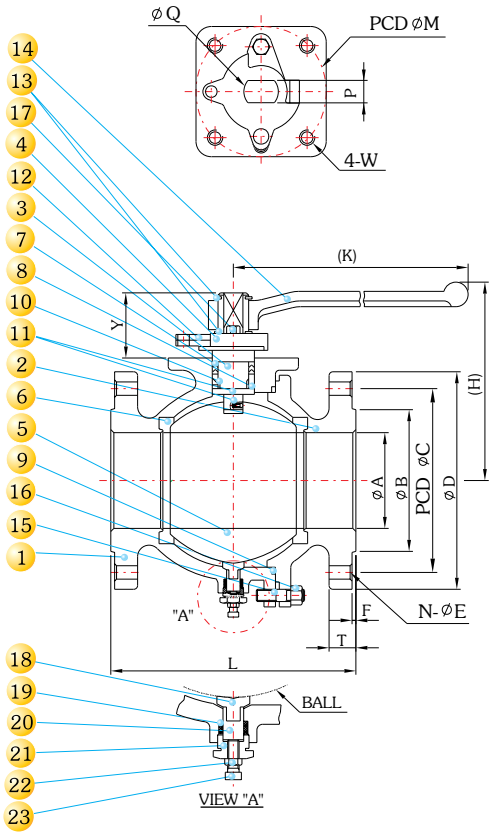
DESIGN FEATURES:

- FACE TO FACE: ANSI B16.10
- FLANGE DIMENSION: ANSI B16.5
- WALL THICKNESS: ANSI B16.34
- TEST STANDARD: API 598
- GEAR OPERATION

PRESSURE TEMPERATURE RATINGS

(RTFE SEAT)





MATERIALS LIST

NO.	PART NAME	MATERIAL		Q'TY
		STAINLESS STEEL	CARBON STEEL	
1	BODY	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
2	CAP	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
3	STEM	ASTM A276 Gr.316	ASTM A276 Gr.304	1
4	GLAND	SS304	STEEL	1
5	BALL	ASTM A351 Gr.CF8M	ASTM A351 Gr.CF8	1
6	SEAT	REINFORCED PTFE		2
7	PACKING	GRAFOIL		1
8	THRUST WASHER	RPTFE		2
9	GASKET	RPTFE		1
10	STEM BEARING	RPTFE		1
11	ANTI-STATIC	SS304	SS304	2
12	TRAVEL STOPPER	SS304	STEEL PLATED	1
13	SNAP RING	STEEL	STEEL	2
14	HANDLE	ASTM A536 Gr.65-45-12		1
15	STUD BOLT	ASTM A193 Gr.B8	STEEL	4~16
16	SET NUT	ASTM A194 Gr.8M	STEEL	4~16
17	GLAND BOLT	SS304	STEEL	2
18	PIN SEAT	RPTFE	RPTFE	1
19	PIN PACKING	RPTFE	RPTFE	1
20	SUPPORT PIN	SS304	SS304	1
21	SUPPORT NUT	SS304	SS304	1
22	SET NUT	SS304	SS304	1
23	TUNING SCREW	SS304	SS304	1

DIMENSIONS

ANSI-150 2-PC F/P FLANGE BALL VALVE

SIZE		A		B		C		D		E		F		H		K		L		M	N	T		P	Q	Y	W	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm			inch	mm					Factor	Kg	Lb
10"	250	10	250	12.76	324	14.25	362	16	406	0.98	25	0.06	1.6	GEAR OPERATION				21	533	140	12	1.19	30.2	35	50	98	M16	16000	204.5	450.44
12"	300	12	300	15.00	381	17.00	432	19	483	0.98	25	0.06	1.6					24	610	140	12	1.25	31.8	35	50	98	M16	24000	286.0	629.96

ANSI-300 2-PC F/P FLANGE BALL VALVE

SIZE		A		B		C		D		E		F		H		K		L		M	N	T		P	Q	Y	W	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm			inch	mm					Factor	Kg	Lb
10"	250	10	250	12.76	324	15.26	387.5	17.48	444	1.14	29	0.06	1.6	GEAR OPERATION				22.36	568	140	16	1.88	47.7	35	50	98	M16	16000	295.0	649.78
12"	300	12	300	15.00	381	17.76	451.0	20.51	521	1.26	32	0.06	1.6					25.51	648	140	16	2.00	50.8	35	50	98	M16	24000	402.0	885.46

TC-5000 (FS), TC-5100 (FS) VALVE

2PC 150# FULL PORT BALL VALVE, FLANGED

DESIGN FEATURES:

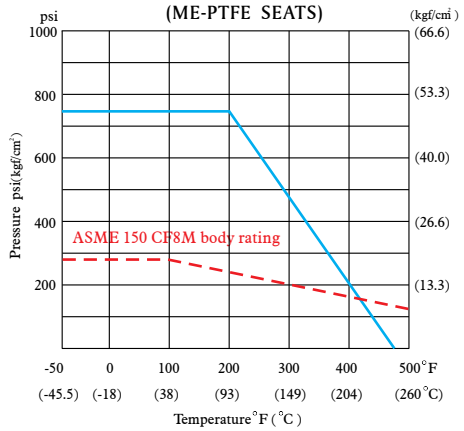
- Steam rating:150 psi WSP
- ISO 5211 Actuator Mounting Pad
- Blow-out-proof stem design
- Anti - Static Device
- Adjustable Stem Packing
- Locking Device
- Body:ASTM A351 Gr. CF8M For TC-5000
  ASTM A216 Gr. WCB For TC-5100
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AND FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- Temperature Rating :-45.5°C (-50°F) to 246 C°(475°F)
- Long Cycle Life
- ANSI B16.5 B16.10 and B16.34 Full Compliance
- API 607 4th Edition FIRE SAFE APPROVAL
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg

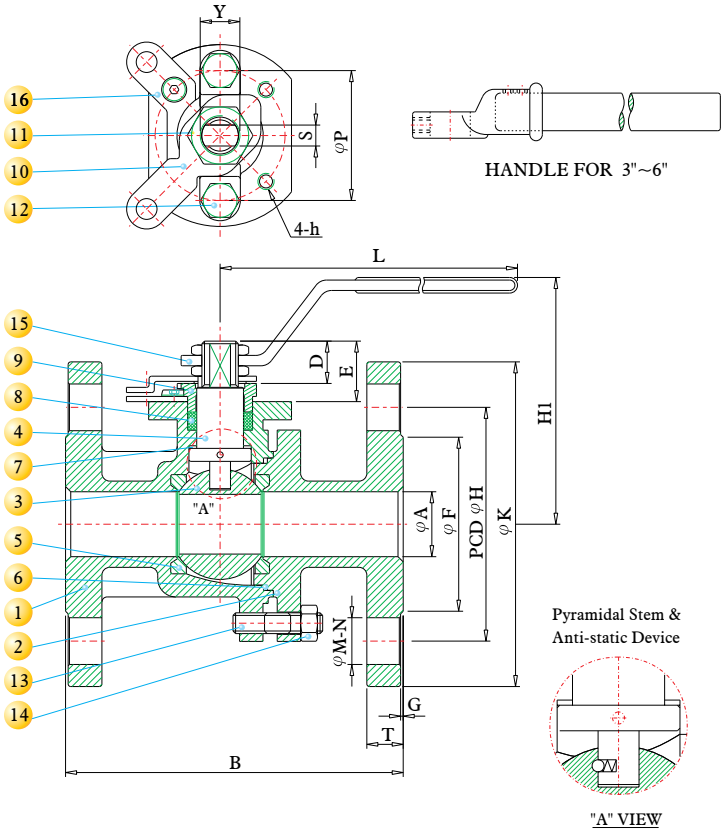
MATERIALS LIST

NO.	PART NAME	MATERIAL		QTY
		STAINLESS STEEL	CARBON STEEL	
1	BODY	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
2	CAP	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
3	BALL	ASTM A351 Gr.CF8M	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	ASTM A276 Gr.316	1
5	SEAT	✻ME-PTFE	✻ME-PTFE	2
6	GASKET	GRAFOIL	GRAFOIL	1
7	THRUST WASHER	✻ME-PTFE	✻ME-PTFE	1
8	PACKING	GRAFOIL	GRAFOIL	1
9	GLAND	ASTM A351 Gr.CF8	ASTM A351 Gr.CF8	1
10	STOPPER	SS304	SS304	1
11	HANDLE NUT	SS304	SS304	2
12	GLAND BOLT	ASTM A193 Gr.B8	ASTM A193 Gr.B8	2
13	STUD BOLT	ASTM A193 Gr.B8	ASTM A193 Gr.B7M	4~10
14	SET NUT	ASTM A194 Gr.8	ASTM A194 Gr.2HM	4~10
15	HANDLE	SS304	SS304	1
16	LOCKING PLATE	SS304	SS304	1

✻ ME-PTFE IS Molecularly Enhanced PTFE

PRESSURE TEMPERATURE RATINGS





DIMENSIONS

SIZE		A		B		D		E		F		G		H		K		T		M		N	P		S		L		H1		h	Y	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		inch	mm	inch	mm	inch	mm	inch	mm			Factor	Kg	Lb
1/2"	15	0.59	15.0	4.25	107.9	0.56	14.1	0.98	25.0	1.38	35.0	0.06	1.6	2.38	60.4	3.50	88.9	0.44	11.1	0.62	15.7	4	1.65	42	0.32	8	5.18	131.5	2.91	73.8	M5*P0.8	M14*P2.0	26	1.81	3.99
3/4"	20	0.79	20.0	4.62	117.3	0.59	15.1	0.98	25.0	1.69	42.9	0.06	1.6	2.75	69.8	3.88	98.5	0.44	11.1	0.62	15.7	4	1.65	42	0.32	8	5.18	131.5	2.94	74.8	M5*P0.8	M14*P2.0	55	2.10	4.63
1"	25	0.98	25.0	5.00	127.0	0.62	15.8	1.24	31.5	2.00	50.8	0.06	1.6	3.12	79.2	4.25	107.9	0.44	11.1	0.62	15.7	4	1.97	50	0.39	10	6.42	163.0	3.44	87.4	M6*P1.0	M16*P2.0	110	3.00	6.61
1 1/4"	32	1.26	32.0	5.50	139.7	0.62	15.8	1.24	31.5	2.50	63.5	0.06	1.6	3.50	88.9	4.62	117.3	0.50	12.7	0.62	15.7	4	1.97	50	0.39	10	6.42	163.0	3.63	92.2	M6*P1.0	M16*P2.0	180	4.50	9.91
1 1/2"	40	1.50	38.0	6.50	165.1	0.86	21.8	1.67	42.3	2.88	73.1	0.06	1.6	3.88	98.5	5.00	127.0	0.56	14.2	0.62	15.7	4	2.76	70	0.39	10	9.13	232.0	4.76	121.0	M8*P1.25	M16*P2.0	270	6.20	13.66
2"	50	1.97	50.0	7.00	177.8	0.86	21.8	1.67	42.3	3.62	91.9	0.06	1.6	4.75	120.6	6.00	152.4	0.62	15.7	0.75	19.0	4	2.76	70	0.39	10	9.13	232.0	5.08	129.0	M8*P1.25	M16*P2.0	500	9.00	19.82
2 1/2"	65	2.56	65.0	7.50	190.5	0.86	21.8	1.67	42.3	4.12	104.6	0.06	1.6	5.50	139.7	7.00	177.8	0.69	17.5	0.75	19.0	4	2.76	70	0.55	14	9.13	232.0	5.55	141.0	M8*P1.25	M22*P2.5	800	13.00	28.63
3"	80	3.15	80.0	8.00	203.2	1.10	28.0	2.21	56.3	5.00	127.0	0.06	1.6	6.00	152.4	7.50	190.5	0.75	19.0	0.75	19.0	4	4.02	102	0.55	14	12.87	327.0	6.52	165.7	M10*P1.5	M22*P2.5	1150	21.00	46.26
4"	100	3.94	100.0	9.00	228.6	1.10	28.0	2.21	56.3	6.19	157.2	0.06	1.6	7.50	190.5	9.00	228.6	0.94	23.8	0.75	19.0	8	4.02	102	0.55	14	12.87	327.0	7.11	180.7	M10*P1.5	M22*P2.5	2120	32.00	70.48
6"	150	5.91	150.0	15.50	393.7	1.48	37.7	2.65	67.3	8.50	215.9	0.06	1.6	9.50	241.3	11.00	279.4	1.00	25.4	0.88	22.3	8	4.92	125	0.79	20	42.20	1072.0	9.95	252.8	M12*P1.75	M30*P3.5	5100	75.00	165.20

TC-5300 (FS), TC-5400 (FS) VALVE

2PC 300# FULL PORT BALL VALVE, FLANGED

DESIGN FEATURES:

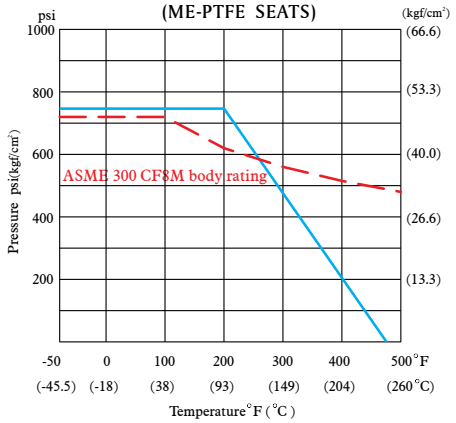
- Steam rating:150 psi WSP
- ISO 5211 Actuator Mounting Pad
- Blow-out-proof stem design
- Anti - Static Device
- Adjustable Stem Packing
- Locking Device
- Body:ASTM A351 Gr. CF8M For TC-5300
  ASTM A216 Gr. WCB For TC-5400
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AND FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- Temperature Rating :-45.5˚C (-50˚F) to 246˚C (475˚F)
- Long Cycle Life
- ANSI B16.5 B16.10 and B16.34 Full Compliance
- API 607 5th Edition FIRE SAFE APPROVAL
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg

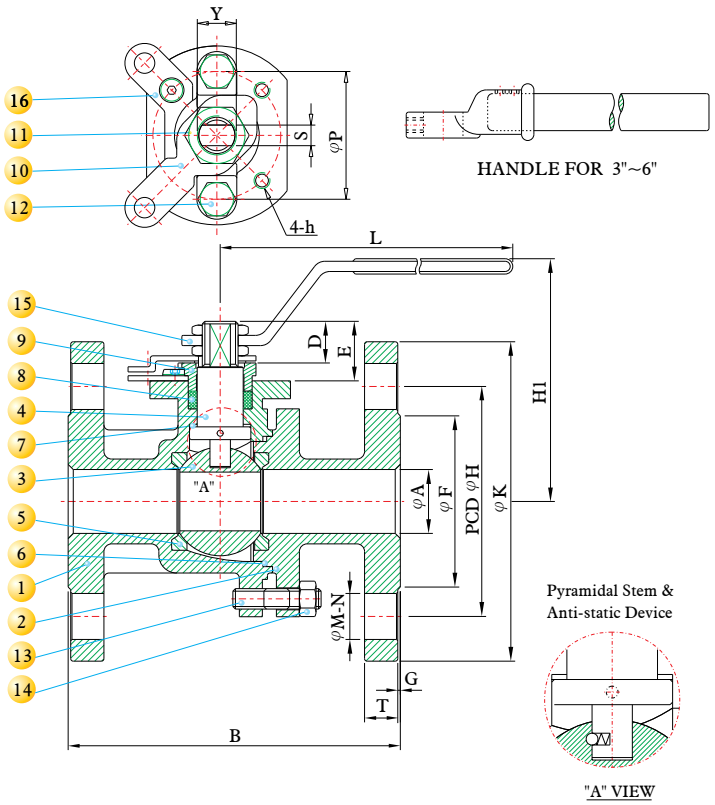
MATERIALS LIST

NO.	PART NAME	MATERIAL		Q'TY
		STAINLESS STEEL	CARBON STEEL	
1	BODY	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
2	CAP	ASTM A351 Gr.CF8M	ASTM A216 WCB	1
3	BALL	ASTM A351 Gr.CF8M	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	ASTM A276 Gr.316	1
5	SEAT	✻ME-PTFE	✻ME-PTFE	2
6	GASKET	GRAFOIL	GRAFOIL	1
7	THRUST WASHER	✻ME-PTFE	✻ME-PTFE	1
8	PACKING	GRAFOIL	GRAFOIL	1
9	GLAND	ASTM A351 Gr.CF8	ASTM A351 Gr.CF8	1
10	STOPPER	SS304	SS304	1
11	HANDLE NUT	SS304	SS304	2
12	GLAND BOLT	ASTM A193 Gr.B8	ASTM A193 Gr.B8	2
13	STUD BOLT	ASTM A193 Gr.B8	ASTM A193 Gr.B7M	4~10
14	SET NUT	ASTM A194 Gr.8	ASTM A194 Gr.2HM	4~10
15	HANDLE	SS304	SS304	1
16	LOCKING PLATE	SS304	SS304	1

✻ ME-PTFE IS Molecularly Enhanced PTFE

PRESSURE TEMPERATURE RATINGS





DIMENSIONS

SIZE		A		B		D		E		F		G		H		H1		K		L		T		M		N	P		S		h	Y	CV	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		inch	mm	inch	mm			Factor	Kg	Lb
1/2"	15	0.59	15.0	5.50	139.7	1.01	25.6	1.02	26.0	1.38	35.1	0.06	1.6	2.62	66.6	3.35	85.2	3.75	95.3	6.69	170	0.50	12.7	0.63	15.9	4	1.65	42	0.31	8	M5*P0.8	M14*P2.0	26	2.57	5.67
3/4"	20	0.79	20.0	6.00	152.4	1.01	25.6	1.02	26.0	1.69	42.9	0.06	1.6	3.25	82.6	3.39	86.2	4.62	117.4	6.69	170	0.56	14.3	0.75	19.1	4	1.65	42	0.31	8	M5*P0.8	M14*P2.0	55	3.64	8.03
1"	25	0.98	25.0	6.50	165.1	1.26	32.0	1.28	32.5	2.00	50.8	0.06	1.6	3.50	88.9	4.04	102.7	4.88	124.0	6.69	170	0.62	15.8	0.75	19.1	4	1.97	50	0.39	10	M5*P0.8	M16*P2.0	110	4.90	10.80
1-1/4"	32	1.26	32.0	7.00	177.8	1.26	32.0	1.28	32.5	2.50	63.5	0.06	1.6	3.88	98.6	4.23	107.5	5.25	133.4	6.69	170	0.69	17.6	0.75	19.1	4	1.97	50	0.39	10	M6*P1.0	M16*P2.0	180	6.54	14.42
1-1/2"	40	1.50	38.0	7.50	190.5	1.67	42.5	1.70	43.3	2.88	73.2	0.06	1.6	4.50	114.3	4.95	125.8	6.12	155.4	9.84	250	0.75	19.1	0.87	22.2	4	2.76	70	0.39	10	M6*P1.0	M16*P2.0	270	9.59	21.15
2"	50	1.97	50.0	8.50	215.9	1.67	42.5	1.70	43.3	3.62	91.9	0.06	1.6	5.00	127.0	5.26	133.5	6.50	165.1	9.84	250	0.81	20.6	0.75	19.1	8	2.76	70	0.39	10	M8*P1.25	M16*P2.0	500	12.50	27.15
2-1/2"	65	2.56	65.0	9.50	241.3	1.71	43.5	1.70	43.3	4.12	104.9	0.06	1.6	5.88	149.4	5.87	149.0	7.50	190.5	14.37	365	0.94	23.9	0.87	22.2	8	2.76	70	0.55	14	M8*P1.25	M22*P2.5	800	19.30	42.56
3"	80	3.15	80.0	11.12	282.4	2.38	60.5	2.26	57.3	5.00	127.0	0.06	1.6	6.62	168.2	6.92	175.7	8.25	209.6	14.37	365	1.06	26.9	0.87	22.2	8	4.02	102	0.55	14	M10*P1.5	M22*P2.5	226	31.50	69.46
4"	100	3.94	100.0	12.00	304.8	2.38	60.5	2.26	57.3	6.19	157.2	0.06	1.6	7.88	200.2	7.81	198.4	10.00	254.0	14.37	365	1.19	30.3	0.87	22.2	8	4.02	102	0.55	14	M10*P1.5	M22*P2.5	2120	46.50	102.5
6"	150	5.91	150.0	15.90	403.4	2.74	69.5	2.69	68.3	8.50	215.9	0.06	1.6	10.62	269.8	10.37	263.5	12.50	317.5	40.63	1032	1.38	35.1	0.87	22.2	12	4.92	125	0.79	20	M12*P1.75	M30*P3.5	5100	97.00	213.89

TC-7000 (FS) VALVE

2PC 150# FULL PORT BALL VALVE, FLANGED (WITH ISO 5211 DIRECT MOUNT PAD)

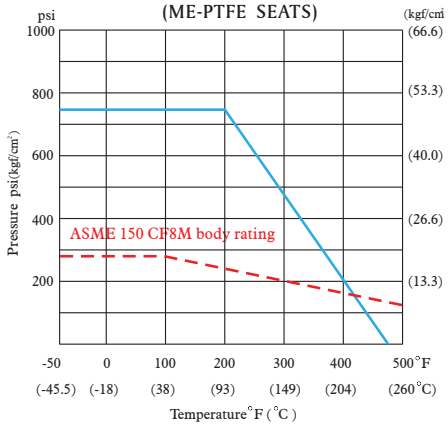
DESIGN FEATURES:

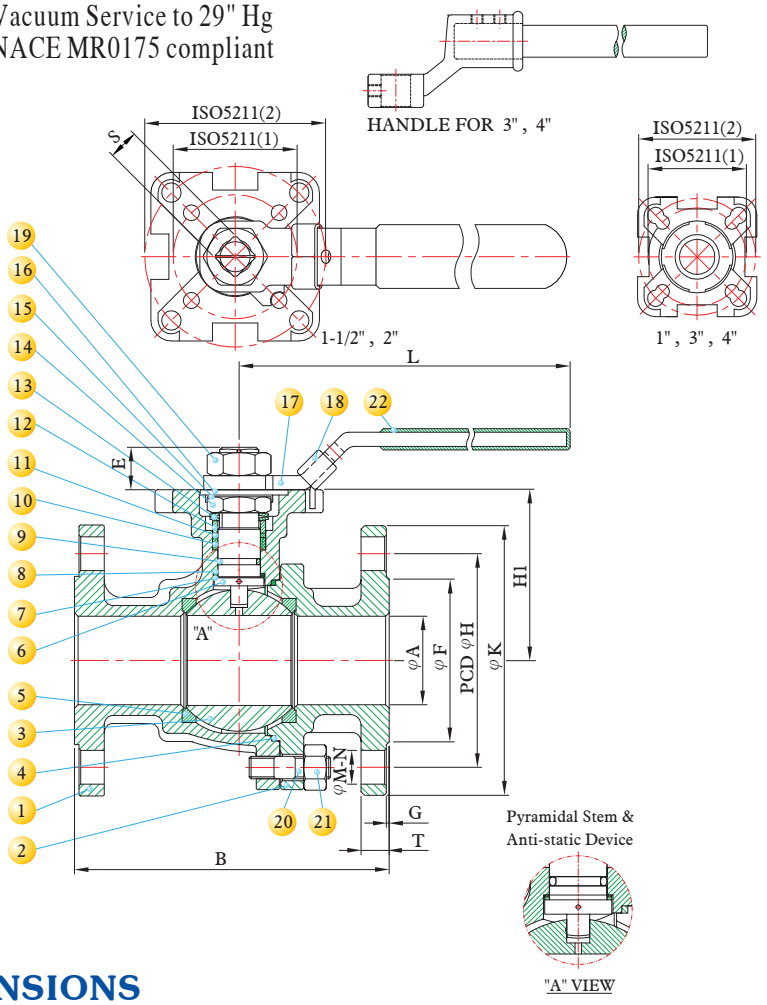
- Steam rating:150 psi WSP
- Blow-out-proof stem design
- Anti - Static Device
- Adjustable Stem Packing
- Locking Device
- ME-PTFE SEAT KITS : REPLACES PTFE ,RPTFE AND FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- Temperature Rating :-45.5°C (-50°F) to 246°C (475°F)
- **FULL ISO-5211 PAD FOR DIRECT MOUNT AUTOMATION**
- ANSI B16.5 B16.10 and B16.34 Full Compliance
- TEST STANDARD:API 598
- API 607 5th Edition FIRE SAFE APPROVAL
- Vacuum Service to 29" Hg
- NACE MR0175 compliant

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	GASKET	GRAFOIL	1
5	SEAT	ME-PTFE	2
6	STEM	ASTM A276 Gr.316	1
7	THRUST WASHER	ME-PTFE	1
8	STEM BUSHING	50%S.S.+50%PTFE	1
9	O-RING	VITON	1
10	PACKING	GRAFOIL	1
11	STEM BEARING	50%S.S.+50%PTFE	1
12	RING	SS304	1
13	BELLEVEILLE WASHER	SS410	2
14	STEM NUT	SS304	1
15	STOP WASHER	SS304	1
16	STOPPER	SS304	1
17	HANDLE	SS304	1
18	LOCKING PLATE	SS304	1
19	HANDLE NUT	SS304	1
20	STUD BOLT	SS304	4~8
21	SET NUT	SS304	4~8
22	HANDLE SLEEVE	VINYL GRIP	1

PRESSURE TEMPERATURE RATINGS





DIMENSIONS

SIZE		A		B		E		F		G		H		K		L		M		N	S		T		H1		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1"	25	0.98	25.0	5.00	127.0	0.45	11.5	2.00	50.8	0.06	1.6	3.12	79.2	4.25	107.9	6.42	163.0	0.62	15.7	4	0.43	11	0.44	11.1	2.31	58.8	F04/F05	110	2.90	6.39
1 1/2"	40	1.50	38.0	6.50	165.1	0.63	16.0	2.88	73.1	0.06	1.6	3.88	98.5	5.00	127.0	9.13	232.0	0.62	15.7	4	0.67	17	0.56	14.2	3.50	89.1	F07/F10	270	6.70	14.76
2"	50	1.97	50.0	7.00	177.8	0.74	19.0	3.62	91.9	0.06	1.6	4.75	120.6	6.00	152.4	9.13	232.0	0.75	19.0	4	0.67	17	0.62	15.7	3.80	96.5	F07/F10	500	9.50	20.93
3"	80	3.15	80.0	8.00	203.2	0.74	19.0	5.00	127.0	0.06	1.6	6.00	152.4	7.50	190.5	12.87	327.0	0.75	19.0	4	0.87	22	0.75	19.0	5.22	132.5	F10/F12	1150	20.90	46.04
4"	100	3.94	100.0	9.00	228.6	0.94	24.0	6.19	157.2	0.06	1.6	7.50	190.5	9.00	228.6	12.87	327.0	0.75	19.0	8	0.87	22	0.94	23.8	6.18	157.0	F10/F12	2120	33.00	72.69

3 WAY REDUCED PORT 1000 WOG BALL VALVE, THREADED "L" PORT, "T" PORT

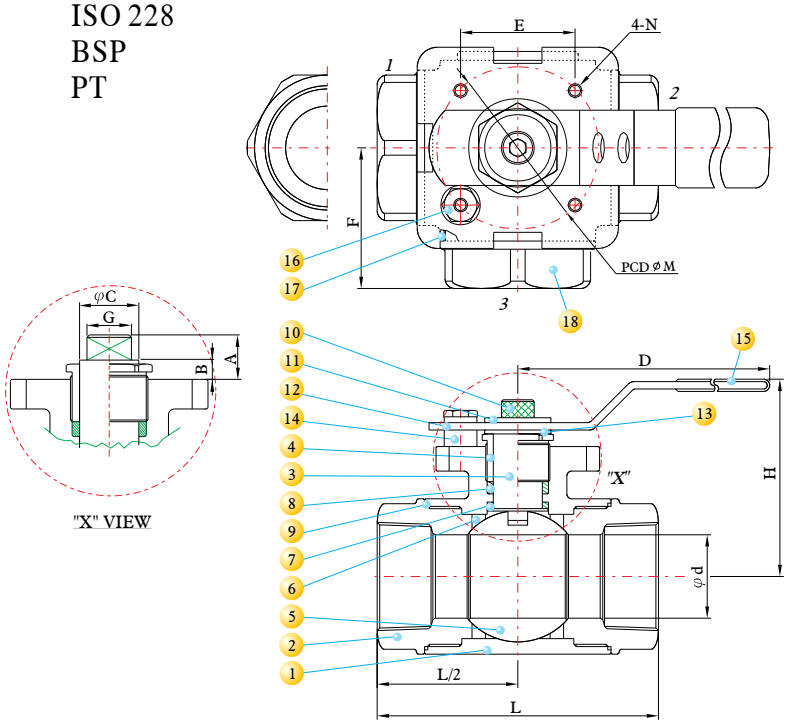
DESIGN FEATURES:

- Steam rating:150 psi WSP
- Blow-out-proof stem design
- ISO 5211 Actuator Mounting Pad
- Body: ASTM A351 Gr.CF8M
- Ball: SS316
- Stem: SS316
- Seat: Reinforced Teflon
- End Connections: Threaded End
- Working Pressure: 1000 psi
- Temperature Range: -50° to 450° F
- TEST STANDARD:API 598
- Options: Padlocking device
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT

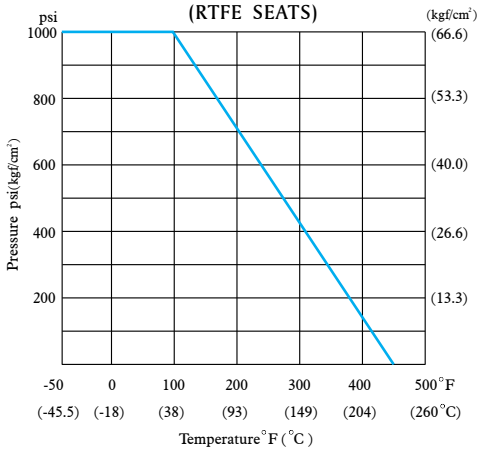
POSITION	A	B	C	D
L PORT				
T PORT				

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP2	ASTM A351 Gr.CF8M	2
3	STEM	ASTM A276 Gr.316	1
4	GLAND NUT	SS304	1
5	BALL	ASTM A351 Gr.CF8M	1
6	SEAT	PTFE+15% G/F	4
7	THRUST WASHER	PTFE	1
8	PACKING	PTFE	1
9	JOINT GASKET1	PTFE	2
10	STEM BOLT	SS304	1
11	WASHER	SS304	1
12	HANDLE	SS304	1
13	STEM WASHER	SS304	1
14	SET SCREW	SS304	1
15	HANDLE SLEEVE	VINYL GRIP	1
16	SET BOLT	SS304	1
17	JOINT GASKET	PTFE	1
18	CAP1	ASTM A351 Gr. CF8M	1



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		A		B		C		G		d		L		H		D		E		F		M		N	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/4"	8	0.42	10.7	0.22	5.7	0.47	12.0	0.35	9.0	0.43	11.0	2.73	69.4	2.46	62.5	5.25	133.4	1.18	30.0	1.40	35.5	1.65	42	M5*P0.8	6	0.82	1.81
3/8"	10	0.42	10.7	0.22	5.7	0.47	12.0	0.35	9.0	0.43	11.0	2.73	69.4	2.46	62.5	5.25	133.4	1.18	30.0	1.40	35.5	1.65	42	M5*P0.8	6	0.78	1.72
1/2"	15	0.42	10.7	0.22	5.7	0.47	12.0	0.35	9.0	0.50	12.7	2.98	75.7	2.59	65.9	5.25	133.4	1.38	35.0	1.57	40.0	1.65	42	M5*P0.8	12	0.74	1.63
3/4"	20	0.43	10.9	0.15	3.9	0.59	15.0	0.43	11.0	0.63	16.0	3.40	86.6	3.34	84.9	7.03	178.5	1.38	35.0	1.65	42.0	1.97	50	M6*P1.0	16	1.18	2.60
1"	25	0.79	20.0	0.33	8.5	0.59	15.0	0.43	11.0	0.79	20.0	4.03	102.4	3.49	88.7	7.03	178.5	1.38	35.0	1.73	44.0	1.97	50	M6*P1.0	20	1.70	3.74
1 1/4"	32	0.92	23.4	0.31	7.9	0.59	15.0	0.43	11.0	0.98	25.0	4.65	118.2	3.30	83.9	8.26	209.9	1.38	35.0	1.81	46.0	1.97	50	M6*P1.0	37	2.82	6.21
1 1/2"	40	1.01	25.8	0.41	10.3	0.59	15.0	0.43	11.0	1.26	32.0	4.95	125.8	4.07	103.3	8.19	208.0	1.95	49.5	2.24	57.0	2.76	70	M8*P1.25	103	3.96	8.72
2"	50	1.00	25.3	0.39	9.8	0.73	18.5	0.55	14.0	1.50	38.1	5.87	149.0	4.39	111.5	9.05	229.9	1.97	50.0	2.52	64.0	2.76	70	M8*P1.25	143	6.78	14.93

TC-WLT-DM, TC-WTT-DM VALVE

3 WAY REDUCED PORT 1000 WOG BALL VALVE, THREADED "L" PORT, "T" PORT
(with ISO 5211 direct mount pad)

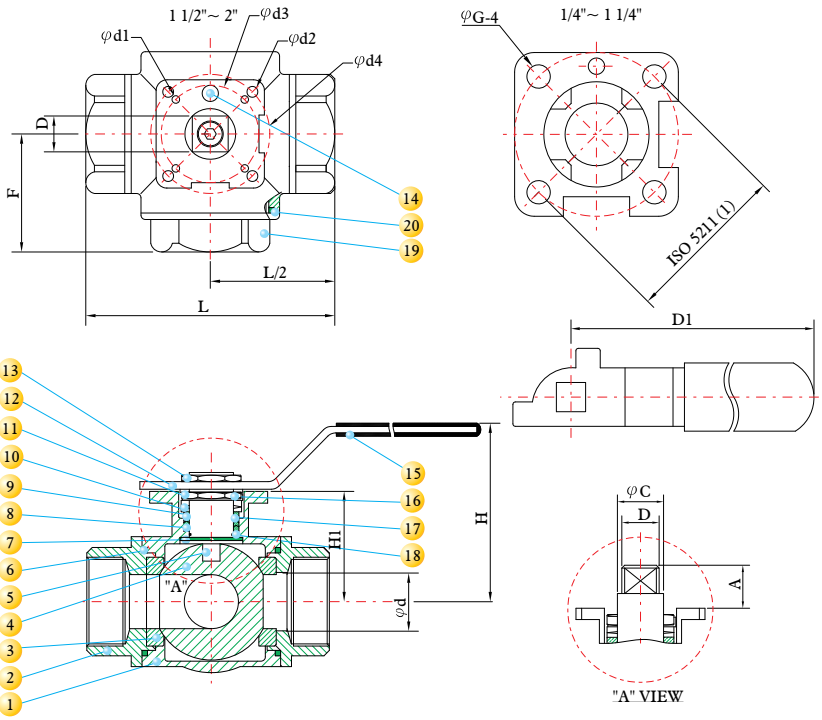
DESIGN FEATURES:

- Steam rating:150 psi WSP
- WORKING PRESSURE : 1000 PSI
- INVESTMENT CASTING BODY & CAP
- ME-PTFE SEAL KITS : REPLACES PTFE ,RPTFE AN D FPA
  LOW DEFORMATION UNDER LOAD
  LOW PERMEATION
- TEMPERATURE RATING : -45.5°C (-50°F) to 246°C (475°F)
- FULL ISO-5211 PAD FOR DIRECT MOUNT AUTOMATION
- HANDLE WITH LOCKING DEVICE
- ADJUSTABLE STEM PACKING
- BLOW - OUT- PROOF STEM
- ANTI - STATIC DEVICE
- LONG CYCLE LIFE
- TEST STANDARD:API 598
- End Connections: Threaded End
  Socket-Weld End
  Butt-Weld End

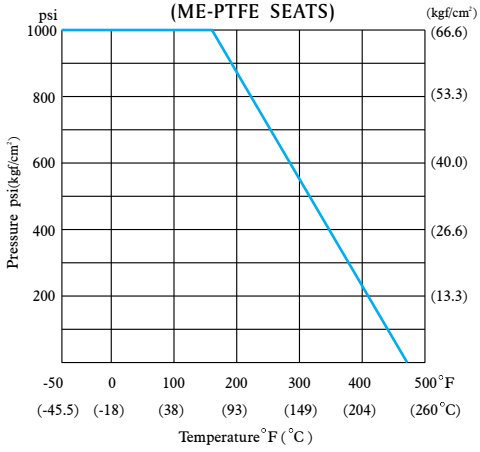
POSITION	A	B	C	D
L PORT	1 2 3	1 2 3	1 2 3	1 2 3
T PORT	1 2 3	1 2 3	1 2 3	1 2 3

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	2
3	SEAT	ME-PTFE	4
4	BALL	ASTM A351 Gr.CF8M	1
5	STEM	SS316	1
6	GASKET	ME-PTFE	2
7	THRUST WASHER	ME-PTFE	1
8	STEM PACKING	ME-PTFE	1
9	GLAND BUSH	SS304	1
10	BELLEVEILLE WASHER	SUS304-CSP	2
11	HANDLE NUT	SS304	1
12	HANDLE	SS304	1
13	HANDLE NUT	SS304	1
14	STOP PIN	SS304	1
15	HANDLE SLEEVE	PLASTIC	1
16	STOP WASHER	SS304	1
17	THRUSP WASHER	ME-PTFE	1
18	O-RING	VITON	1
19	END CAP	ASTM A351 Gr. CF8M	1
20	GASKET	ME-PTFE	2



PRESSURE TEMPERATURE RATINGS



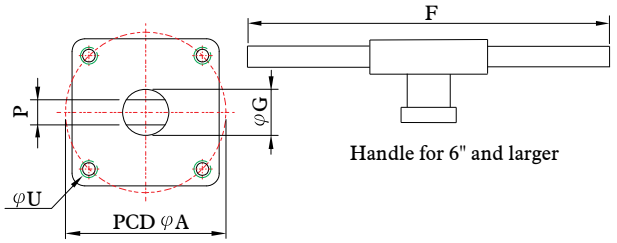
DIMENSIONS

SIZE		A		C		D		F		H		L		D1		H1		d		d1		d2		d3		d4		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/4"	8	0.33	8.5	0.47	12.0	0.35	9.0	1.47	37.25	3.05	77.45	2.98	75.7	4.41	112.0	15.03	38.2	0.43	11.0			0.24	6.0			1.65	42	F04	6	0.75	1.65
3/8"	10	0.33	8.5	0.47	12.0	0.35	9.0	1.47	37.25	3.05	77.45	2.98	75.7	4.41	112.0	15.03	38.2	0.43	11.0			0.24	6.0			1.65	42	F04	6	0.75	1.65
1/2"	15	0.33	8.5	0.47	12.0	0.35	9.0	1.47	37.25	3.05	77.45	2.98	75.7	4.41	112.0	15.03	38.2	0.50	12.7			0.24	6.0			1.65	42	F04	12	0.75	1.65
3/4"	20	0.33	8.5	0.47	12.0	0.35	9.0	1.76	44.7	3.22	82.00	3.40	86.6	4.41	112.0	1.78	45.2	0.63	16.0			0.24	6.0			1.65	42	F04	16	1.07	2.36
1"	25	0.44	11.4	0.62	15.8	0.43	11.0	2.02	51.4	3.69	93.70	4.03	102.4	5.37	136.5	2.22	56.5	0.79	20.0			0.28	7.1			1.97	50	F05	20	1.68	3.70
1 1/4"	32	0.44	11.4	0.62	15.8	0.43	11.0	2.27	57.7	3.98	101.1	4.65	118.2	7.40	188.0	2.44	61.9	0.98	25.0			0.28	7.1			1.97	50	F05	37	2.44	5.37
1 1/2"	40	0.55	14.0	0.82	20.8	0.55	14.0	2.47	62.7	4.73	120.25	4.95	125.8	7.78	197.5	3.08	78.25	1.26	32.0	0.28	7.1	0.36	9.2	1.97	50	2.76	70	F05/F07	103	3.61	7.95
2"	50	0.55	13.7	0.82	20.8	0.55	14.0	2.94	74.6	5.11	129.85	5.87	149.0	7.78	197.5	3.44	87.35	1.50	38.1	0.28	7.1	0.36	9.2	1.97	50	2.76	70	F05/F07	143	5.81	12.80

150# MULTI-PORT FLANGED 3 WAY BALL VALVE “L” PORT, “T” PORT

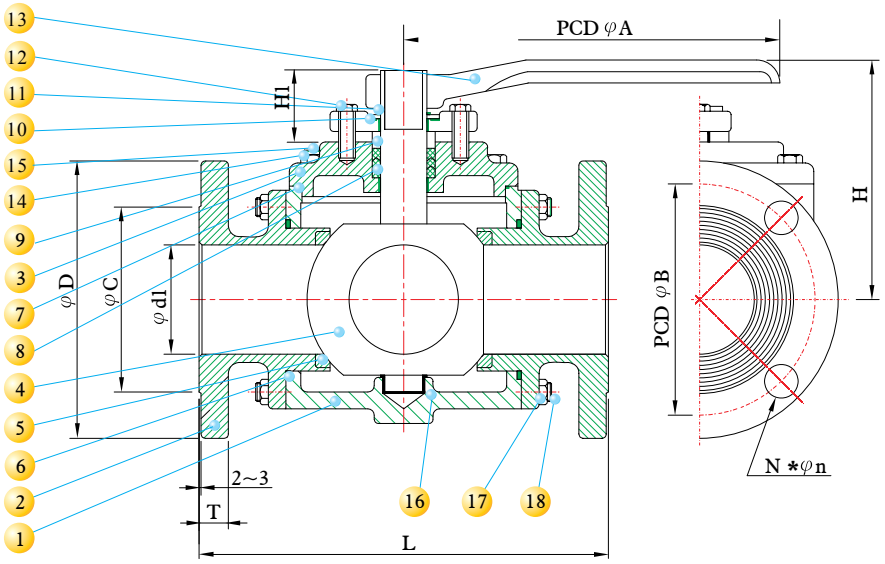
DESIGN FEATURES:

- Steam rating:150 psi WSP
- Blow-out-proof stem design
- ISO 5211 Actuator Mounting Pad
- Body: ASTM A351 Gr.CF8M
- Ball: SS316
- Stem: SS316
- Seat: PTFE
- Temperature Range: -50° to 450° F
- Multiport design
- Flange Dimensions: ANSI B16.5 150 #
- TEST STANDARD:API 598

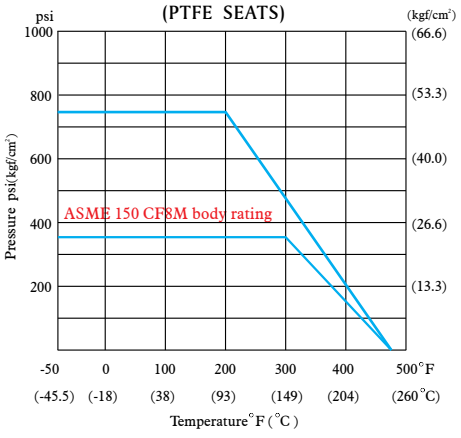


MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	FLANGED CAP	ASTM A351 Gr.CF8M	3
3	COVER	ASTM A351 Gr.CF8M	1
4	BALL & STEM	SS316	1
5	BALL SEAT	PTFE	3
6	JOINT GASKET	PTFE	3
7	GASKET	PTFE	1
8	STEM PACKING	PTFE	1
9	GLAND	ASTM A351 Gr.CF8	1
10	STOPPER	SS304	1
11	C RETAINER RING	SK7	1
12	BOLT	ASTM A193 B8	2
13	HANDLE	FCD45	1
14	BOLT	ASTM A193 B8	4~12
15	NUT	ASTM A194 8	4~12
16	SLEEVE	PTFE	1
17	STUD BOLT	ASTM A193 B8	12~24
18	NUT	ASTM A194 8	12~24



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

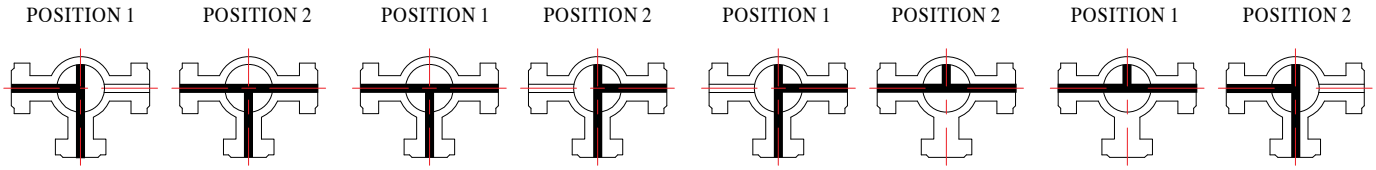
SIZE	A		B		C		D		d1		G		H		H1	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
2 "	50	2.76	70	4.74	120.5	3.62	92	5.98	152	1.97	50	0.87	22.0	4.80	122	1.73	44
2 1/2 "	50	2.76	70	5.49	139.5	4.13	105	7.00	178	2.60	66	1.16	29.5	6.42	163	2.56	65
3 "	80	4.02	102	6.00	152.5	5.00	127	7.48	190	2.99	76	1.16	29.5	6.34	161	2.40	61
4 "	100	4.92	125	7.50	190.5	6.18	157	9.01	229	3.98	101	1.34	34.0	8.46	215	2.20	56
6 "	150	4.92	125	9.51	241.5	8.50	216	10.98	279	5.94	151	1.77	45.0	10.08	256	3.03	77

SIZE		L		T		N	n		P		F		U	ISO5211	Cv	Weight	
inch	mm	inch	mm	inch	mm		inch	mm	inch	mm	inch	mm			Factor	Kg	Lb
2 "	50	8.67	220	0.63	15.9	4	0.75	19	0.67	17	11.81	300	3/8 " -16	F07	500	16	35.2
2 1/2 "	50	11.10	282	0.69	17.5	4	0.75	19	0.67	17	11.81	300	7/16 " -14	F10	850	17	37.4
3 "	80	11.10	283	0.75	19.1	4	0.75	19	0.67	17	15.35	390	7/16 " -14	F10	1150	34	74.9
4 "	100	13.70	348	0.94	23.9	8	0.75	19	0.91	23	15.35	390	1/2 " -12	F12	2120	55	121.2
6 "	150	16.77	426	1.00	25.4	8	0.87	22	1.38	35	39.37	1000	1/2 " -12	F12	5100	136	299.6

FLOW PATTERNS

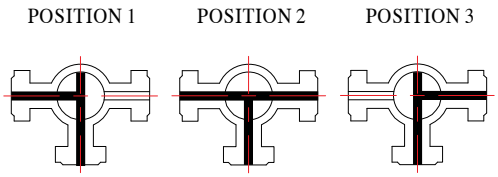
All T-Port Flow Patterns can be changed in the field without disassembling valve

T-PORT:90°

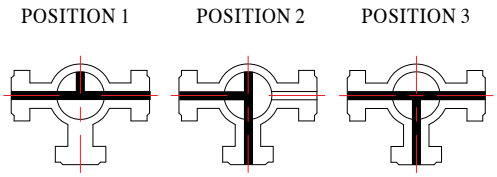


FLOW PLAN D | FLOW PLAN E | FLOW PLAN F | FLOW PLAN G

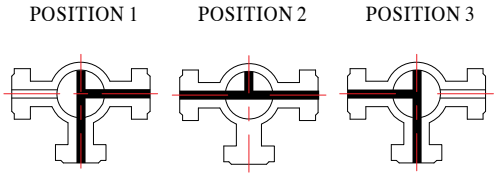
T-PORT:180°



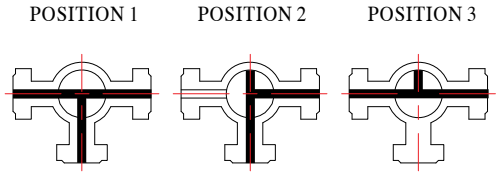
FLOW PLAN H



FLOW PLAN K

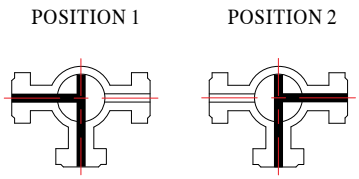


FLOW PLAN I



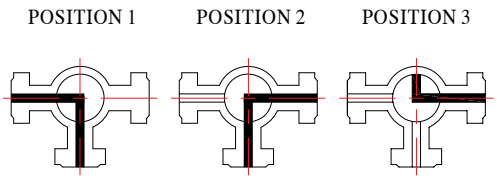
FLOW PLAN J

L-PORT:90°



FLOW PLAN A

L-PORT:180°



FLOW PLAN B

OFF Position

TC-8000 VALVE

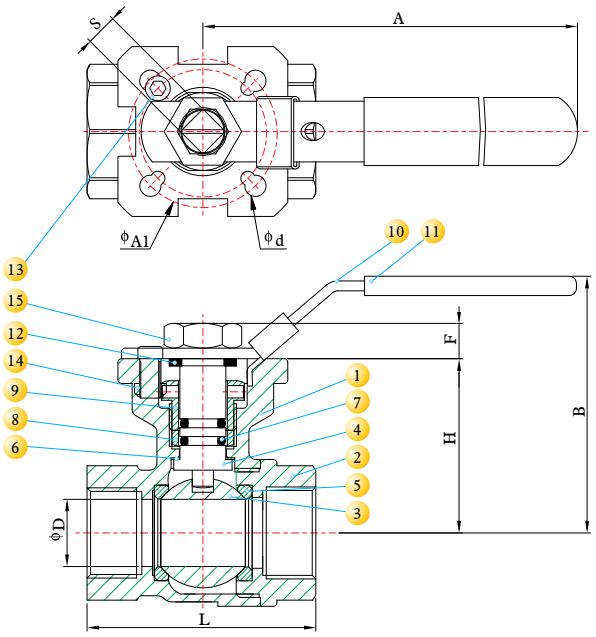
2PC FULL PORT BRONZE 600/400 WOG BALL VALVE, THREADED
(with ISO 5211 direct mount pad)

DESIGN FEATURES:

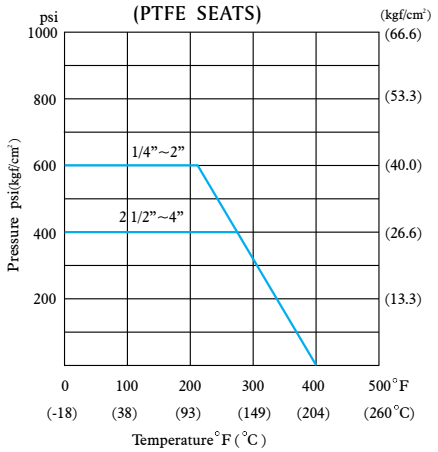
- Steam rating:150 psi WSP
- WORKING PRESSURE: 1/4"~2" : 600 PSI
  2 1/2"~4" : 400 PSI
- STEM & BALL: 1/4"~2": Brass
  2 1/4"~ 4": Stainless Steel
- FULL ISO-5211 PAD FOR DIRECT MOUNT AUTOMATION
- TFE®SEATS AND SEALS
- VITON®BODY O-RINGS
- TRIPLE STEM SEAL DESIGN
- BLOW-OUT PROOF STEM
- ADJUSTABLE STEAM PACKING
- TEMPERATURE RATING: -18℃ (0℉) TO 204℃ (400℉)
- Vacuum Service to 29" Hg

MATERIALS LIST

NO.	PART NAME	MATERIAL	QTY
1	BODY	BRONZE C84400	1
2	CAP	BRONZE C84400	1
3	BALL	BRASS(1/4"~2")-CHROME PLATED C36000	1
		CF8(2-1/2"~4")	
4	STEM	BRASS C36000 (1/4"~2")	1
		SS304(2-1/2"~4")	
5	SEAT	PTFE	2
6	THRUST WASHER	PTFE	1
7	O-RING	VITON	2
8	GLAND PACKING	PTFE	1
9	GLAND	BRASS C36000	1
10	HANDLE	STEEL	1
11	HANDLE COVER	PVC	1
12	HANDLE NUT	STEEL	1
13	PIN	BRASS C36000	1
14	LOCK NUT	BRASS C36000	1
15	WASHER	SS304	1



PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		A		B		D		L		F		H		S		d		A1		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/4"	8	4.37	111	2.98	75.8	0.39	10.0	2.50	63.5	0.37	9.5	1.60	40.5	0.35	9	0.24	6.0	1.42 / 1.65	36 / 42	F03 / F04	7	0.53	1.17
3/8"	10	4.37	111	2.98	75.8	0.39	10.0	2.50	63.5	0.37	9.5	1.60	40.5	0.35	9	0.24	6.0	1.42 / 1.65	36 / 42	F03 / F04	7	0.51	1.12
1/2"	15	4.37	111	2.98	75.8	0.59	15.0	2.50	63.5	0.37	9.5	1.60	40.5	0.35	9	0.24	6.0	1.42 / 1.65	36 / 42	F03 / F04	21	0.50	1.10
3/4"	20	4.37	111	3.08	78.3	0.75	19.0	2.70	68.6	0.43	11.0	1.88	47.7	0.35	9	0.24	6.0	1.42 / 1.65	36 / 42	F03 / F04	33	0.61	1.34
1"	25	5.00	127	3.38	85.8	0.98	25.0	3.23	82.0	0.39	10.0	2.03	51.5	0.43	11	0.24/0.26	6/6.5	1.65 / 1.97	42 / 50	F04 / F05	55	0.92	2.03
1 1/4"	32	5.00	127	3.54	90.0	1.26	32.0	3.68	93.5	0.39	10.0	2.24	57.0	0.43	11	0.24/0.26	6/6.5	1.65 / 1.97	42 / 50	F04 / F05	90	1.20	2.64
1 1/2"	40	5.87	149	4.15	105.3	1.50	38.0	3.96	100.5	0.57	14.5	2.83	72.0	0.55	14	0.26/0.33	6.5/8.5	1.97 / 2.76	50 / 70	F05 / F07	150	2.02	4.45
2"	50	5.87	149	4.88	124.0	1.97	50.0	4.53	115.0	0.57	14.5	3.23	82.0	0.55	14	0.26/0.33	6.5/8.5	1.97 / 2.76	50 / 70	F05 / F07	215	3.00	6.61
2 1/2"	65	7.09	180	5.51	140.0	2.52	64.0	6.10	155.0	0.67	17.0	3.94	100.0	0.67	17	0.35	9.0	2.76	70	F07	800	6.60	14.54
3"	80	7.09	180	5.87	149.0	3.00	76.0	6.89	175.0	0.67	17.0	4.30	109.0	0.67	17	0.35	9.0	2.76	70	F07	1150	9.00	19.82
4"	100	7.09	180	6.52	165.5	3.74	95.0	8.07	205.0	0.67	17.0	4.94	125.5	0.67	17	0.35	9.0	2.76	70	F07	2120	16.50	36.34

3 WAY FULL PORT BRONZE 600/400 WOG BALL VALVE, THREADED "L" PORT, "T" PORT
(with ISO 5211 direct mount pad)

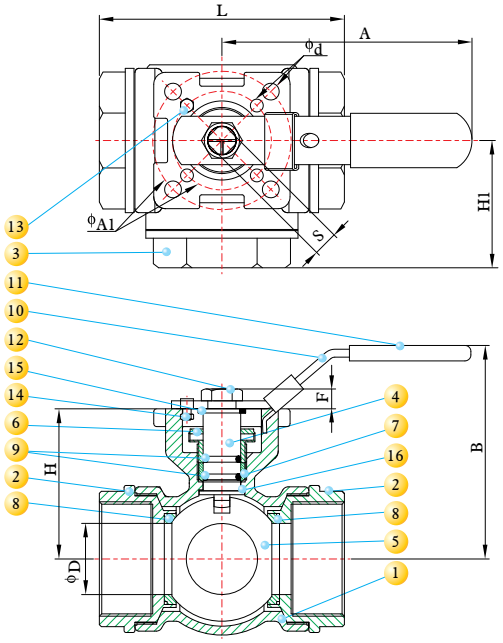
DESIGN FEATURES:

- Steam rating:150 psi WSP
- WORKING PRESSURE: 1/2"~1 1/2" : 600 PSI
  1 1/2"~2" : 400 PSI
- 1/2"~1 1/2": FULL PORT
  2 ": STANDARD PORT
- STEM & BALL: BRASS
- WITH ISO-5211 DIRECT MOUNTING OF ACTUATORS
- TFE®SEATS AND SEALS
- VITON®BODY O-RINGS
- TRIPLE STEM SEAL DESIGN
- BLOW-OUT PROOF STEM
- ADJUSTABLE STEAM PACKING
- TEMPERATURE RATING: -18 C (0°F) TO 204°C (400°F)
- Vacuum Service to 29" Hg

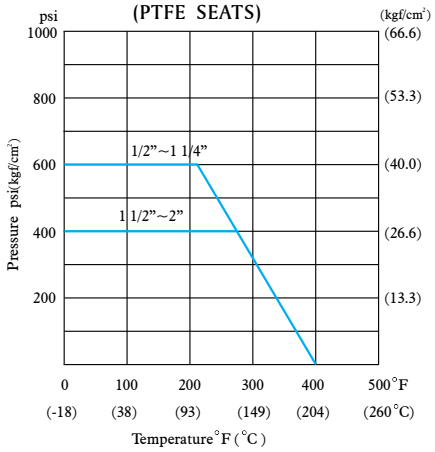
POSITION	A	B	C	D
L PORT				
T PORT				

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	BRONZE C84400	1
2	CAP1	BRONZE C84400	2
3	CAP2	BRONZE C84400	1
4	STEM	BRASS C36000	1
5	BALL	BRASS-CHROME PLATED	1
6	PACKING NUT	BRASS C36000	1
7	GLAND PACKING	PTFE	1
8	SEAT	PTFE	4
9	O-RING	VITON	2
10	HANDLE	SUS304	1
11	HANDLE COVER	PVC	1
12	HANDLE NUT	STEEL	1
13	LOCK PIN	BRASS C36000	1
14	NUT	BRASS C36000	1
15	WASHER	SS304	1
16	THRUST WASHER	PTFE	1



PRESSURE TEMPERATURE RATINGS



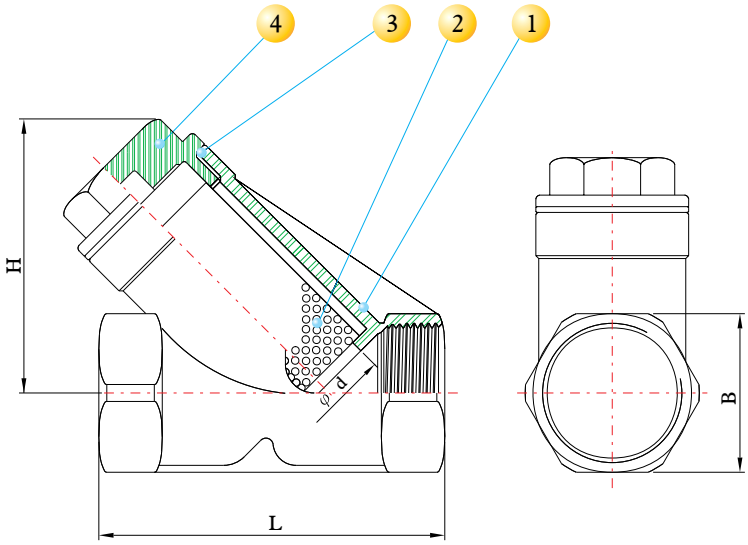
DIMENSIONS

SIZE		A		B		D		L		F		H		S		d		A1		ISO 5211	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	4.37	111	2.83	72.0	0.59	15.0	2.92	74.2	0.37	9.5	1.59	40.3	0.35	9	0.24/0.26	6/6.5	1.42 / 1.65	36 / 42	F03 / F04	21	0.69	1.52
3/4"	20	4.37	111	3.13	79.5	0.75	19.0	3.32	84.4	0.43	11.0	1.91	48.5	0.35	9	0.24/0.26	6/6.5	1.42 / 1.65	36 / 42	F03 / F04	33	0.94	2.07
1"	25	5.00	127	3.46	88.0	0.94	24.0	3.83	97.4	0.39	10.0	2.07	52.5	0.43	11	0.24/0.26	6/6.5	1.65 / 1.65	42 / 50	F04 / F05	53	1.50	3.30
1 1/4"	32	5.00	127	3.71	94.3	1.22	31.0	4.44	112.8	0.39	10.0	2.26	57.6	0.43	11	0.24/0.26	6/6.5	1.65 / 1.65	42 / 50	F04 / F05	90	2.14	4.71
1 1/2"	40	5.87	149	4.57	116.0	1.42	36.0	4.86	123.5	0.57	14.5	2.95	75.0	0.55	14	0.26/0.33	6.5/8.5	1.97 / 2.76	50 / 70	F05 / F07	148	3.50	7.71
2"	50	5.87	149	4.57	116.0	1.42	36.0	5.02	127.6	0.57	14.5	2.95	75.0	0.55	14	0.26/0.33	6.5/8.5	1.97 / 2.76	50 / 70	F05 / F07	215	3.35	7.38

800 WOG Y STRAINER, THREADED, SOCKET-WELD

DESIGN FEATURES:

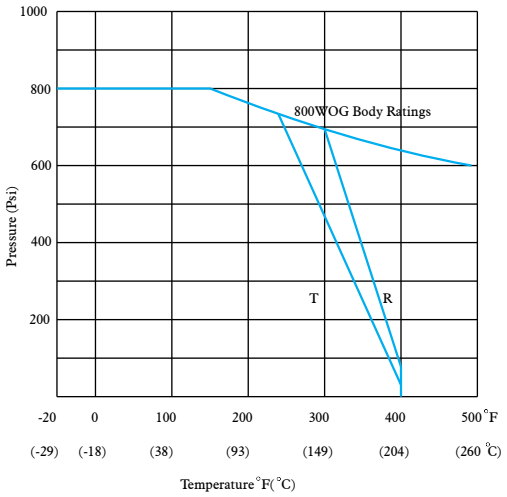
- Body: ASTM A351 Gr.CF8M
- Screen: SS316
- Packing: PTFE.
- Working Pressure: 800 psi
- TEST STANDARD:API 598
- End Connections: Threaded End
  Socket-Weld End
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259 / DIN 2999
  ISO 228
  BSP
  PT



MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	SCREEN	SS316	1
3	GASKET	TEFLON	1
4	CAP	ASTM A351 Gr.CF8M	1

PRESSURE TEMPERATURE RATINGS



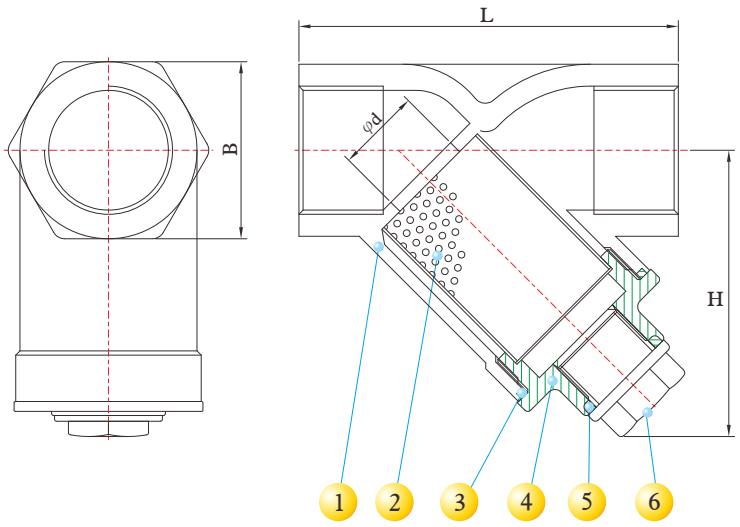
DIMENSIONS

SIZE		d		B		H		L		Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Kg	Lb
1/4"	8	0.31	8	1.02	26	2.01	51	2.56	65	0.24	0.53
3/8"	10	0.39	10	1.02	26	2.01	51	2.56	65	0.23	0.50
1/2"	15	0.59	15	1.02	26	2.01	51	2.56	65	0.23	0.50
3/4"	20	0.79	20	1.30	33	2.36	60	3.15	80	0.36	0.79
1"	25	0.98	25	1.61	41	2.83	72	3.54	90	0.70	1.54
1 1/4"	32	1.26	32	1.93	49	3.03	77	4.13	105	0.90	1.98
1 1/2"	40	1.57	40	2.20	56	3.43	87	4.72	120	1.20	2.64
2"	50	1.97	50	2.72	69	4.06	103	5.51	140	1.90	4.19
2 1/2"	65	2.56	65	3.43	87	4.72	120	6.69	170	4.30	9.47
3"	80	3.15	80	4.02	102	5.51	140	7.87	200	6.30	13.88

800 WOG Y STRAINER, THREADED, SOCKET-WELD

DESIGN FEATURES:

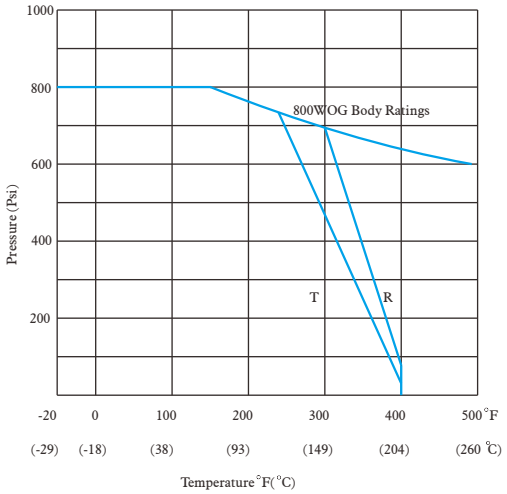
- Body: ASTM A351 Gr.CF8M
- Screen: SS316
- Packing: PTFE
- Working Pressure: 800 psi
- TEST STANDARD:API 598
- End Connections: Threaded End
  Socket-Weld End
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259 / DIN 2999
  ISO 228
  BSP
  PT



MATERIALS LIST

NO	PARTS NAME	SPECIFICATION	Q,TY
1	BODY	ASTM A-351 Gr. CF8M	1
2	SCREEN	12MESH (SS316)	1
3	GASKET	PTFE	1
4	BONNET	ASTM A-351 Gr. CF8M	1
5	PLUG GASKET	PTFE	1
6	PLUG	ASTM A-351 Gr. CF8M	1

PRESSURE TEMPERATURE RATINGS



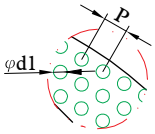
DIMENSIONS

SIZE		d		B		H		L		Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Kg	Lb
1/4"	8	0.43	11	0.91	23	1.81	46	2.56	65	0.24	0.53
3/8"	10	0.51	13	0.91	23	1.81	46	2.56	65	0.23	0.5
1/2"	15	0.59	15	1.02	26	1.81	46	2.56	65	0.23	0.5
3/4"	20	0.79	20	1.26	32	2.17	55	3.15	80	0.36	0.79
1"	25	0.98	25	1.61	41	2.76	70	3.54	90	0.70	1.54
1-1/4"	32	1.26	32	2.01	51	2.87	73	4.13	105	0.90	1.98
1-1/2"	40	1.57	40	2.24	57	3.19	81	4.72	120	1.20	2.64
2"	50	1.97	50	2.72	69	3.70	94	5.51	140	1.90	4.19
2-1/2"	65	2.56	65	3.43	87	4.72	120	6.69	170	4.30	9.47
3"	80	3.15	80	4.02	102	5.51	140	7.87	200	6.30	13.88

150# R.F. FLANGED Y STRAINERS STAINLESS STEEL

DESIGN FEATURES:

- Body: ASTM A351 Gr.CF8M
- Screen: SS304
- Gasket: PTFE
- Flange Dimensions: ANSI B16.5 150 #
- TEST STANDARD:API 598



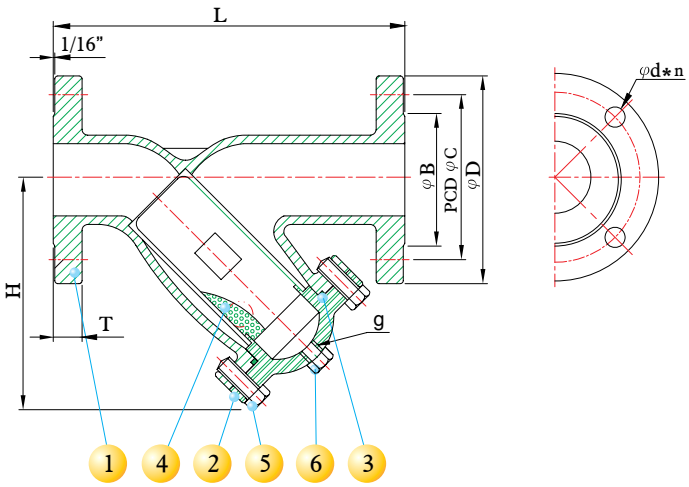
Screen Detall

SIZE		d1		P	
inch	mm	inch	mm	inch	mm
2"	50	0.04	1	0.08	2
3"	80	0.04	1	0.08	2
4"	100	0.04	1	0.08	2
6"	150	0.12	3	0.20	5

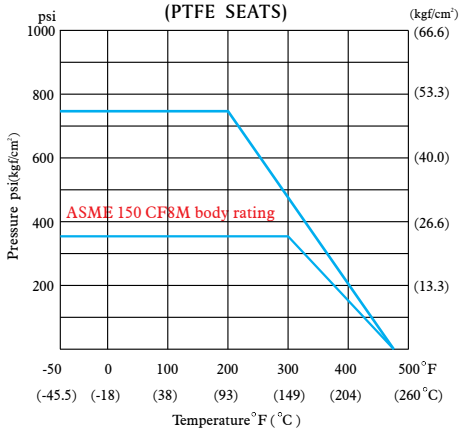
MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	GASKET	PTFE	1
4	SCREEN	* SS304	1
5	BOLT	ASTM A193 B8	4~8
6	PLUG	SS316	1

* 316 SCREENS AVAILABLE UPON REQUEST



PRESSURE TEMPERATURE RATINGS

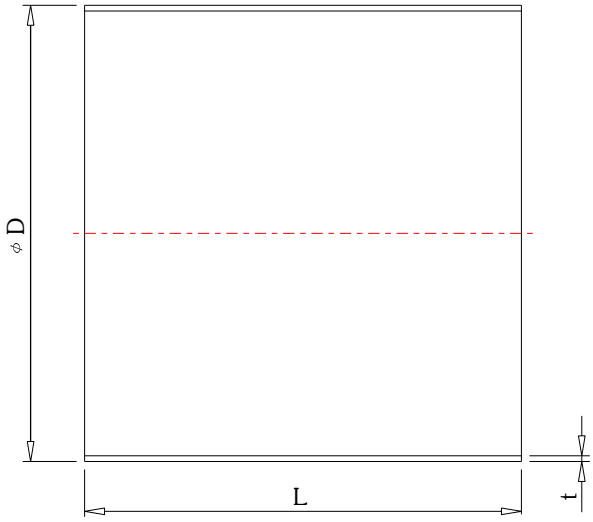


DIMENSIONS

SIZE		B		C		D		d		H		L		n	T		g	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		inch	mm		Factor	Kg	Lb
2"	50	3.62	92	4.74	120.5	5.98	152	0.75	19	5.75	146	8.58	218	4	0.63	15.9	1/2"	500	13	28.6
2 1/2"	80	4.13	105	5.49	139.5	7.00	178	0.75	19	7.09	180	10.28	261	4	0.69	17.5	3/4"	850	23	50.6
3"	80	5.00	127	6.00	152.5	7.48	190	0.75	19	7.87	200	11.61	295	4	0.75	19.1	1"	1150	25	55.1
4"	100	6.18	157	7.50	190.5	9.02	229	0.75	19	9.45	240	14.21	361	8	0.94	23.9	1 1/2"	2120	33	72.7
6"	150	8.50	216	9.51	241.5	10.98	279	0.87	22	13.39	340	18.46	469	8	1.00	25.4	2"	5100	76	167.4

SCREEN FOR TC-YS / TC-YSF (Y STRAINER)

Material:SS316

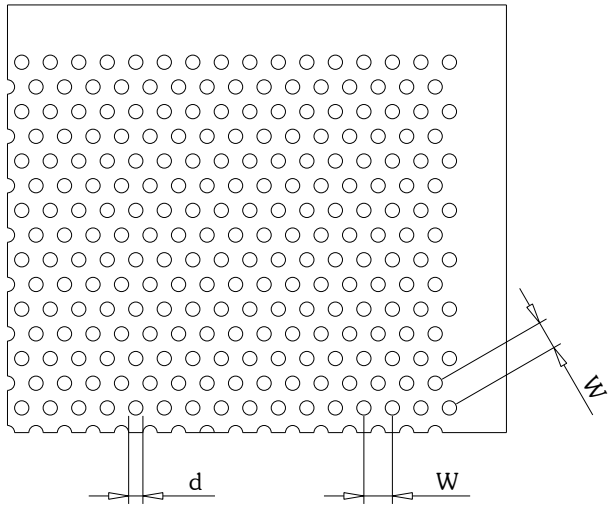


TC-YS 800 WOG THREADED, SOCKET-WELD Y STRAINER

DIMENSIONS

SIZE	D		L		W		d		t	
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
1/4",3/8",1/2"	0.787	20	1.102	28.0	0.079	2	0.039	1	0.016	0.4
3/4"	0.984	25	1.535	39.0	0.079	2	0.039	1	0.016	0.4
1"	1.260	32	1.890	48.0	0.079	2	0.039	1	0.016	0.4
1-1/4"	1.496	38	2.087	53.0	0.079	2	0.039	1	0.016	0.4
1-1/2"	1.732	44	2.461	62.5	0.079	2	0.039	1	0.016	0.4
2"	2.205	56	2.953	75.0	0.079	2	0.039	1	0.016	0.4
2-1/2"	2.874	73	3.543	90.0	0.079	2	0.039	1	0.016	0.4
3"	3.465	88	3.898	99.0	0.079	2	0.039	1	0.016	0.4

Material:SS304



TC-YSF 150# R.F. FLANGED Y STRAINERS

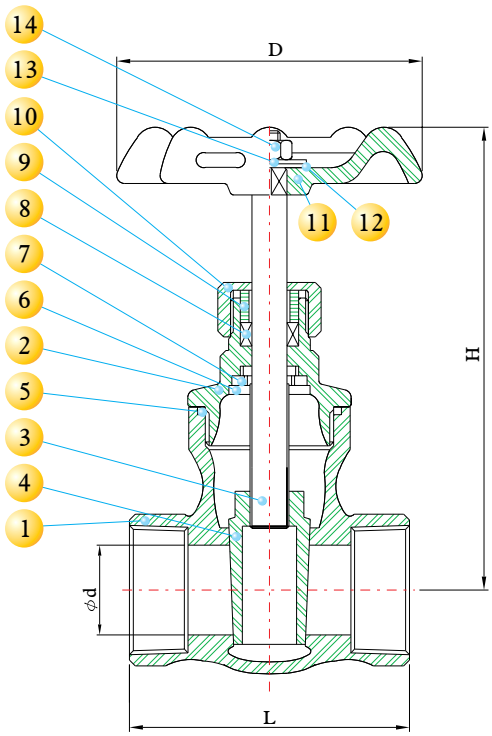
DIMENSIONS

SIZE	D		L		W		d		t	
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
2"	1.890	48	4.409	112.0	0.079	2	0.039	1	0.020	0.5
2-1/2"	2.480	63	5.906	150.0	0.079	2	0.039	1	0.020	0.5
3"	3.189	81	6.457	164.0	0.079	2	0.039	1	0.020	0.5
4"	3.622	92	7.717	196.0	0.079	2	0.039	1	0.031	0.8
6"	5.906	150	11.417	290.0	0.197	5	0.118	3	0.039	1.0

200 WOG GATE VALVE, THREADED

DESIGN FEATURES:

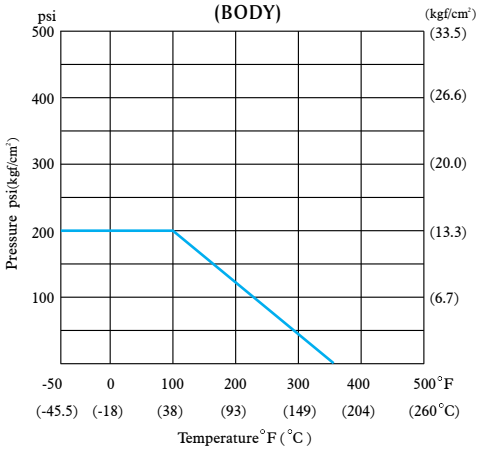
- Non-Rising Stem
- Solid Wedge Disc
- Body: ASTM A351 Gr.CF8M
- DISC: ASTM A351 Gr.CF8M
- Seat: SS316
- Packing: PTFE
- Working Pressure: 200 psi
- TEST STANDARD:API 598
- End Connections: Threaded End
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT



MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	BONNET	ASTM A351 Gr.CF8M	1
3	STEM	ASTM A276 Gr.316	1
4	DISC	ASTM A351 Gr.CF8M	1
5	GASKET	PTFE	1
6	STOP RING	SS304	1
7	STEM HOLDER	SS316	1
8	STEM PACKING	PTFE	1
9	GLAND	SS304	1
10	GLAND NUT	SS316	1
11	HANDLE WHEEL	SS400	1
12	NAME PLATE	ALUMINUM	1
13	HANDLEWHEEL WASHER	SS304	1
14	HANDLEWHEEL NUT	SS304	1

PRESSURE TEMPERATURE RATINGS



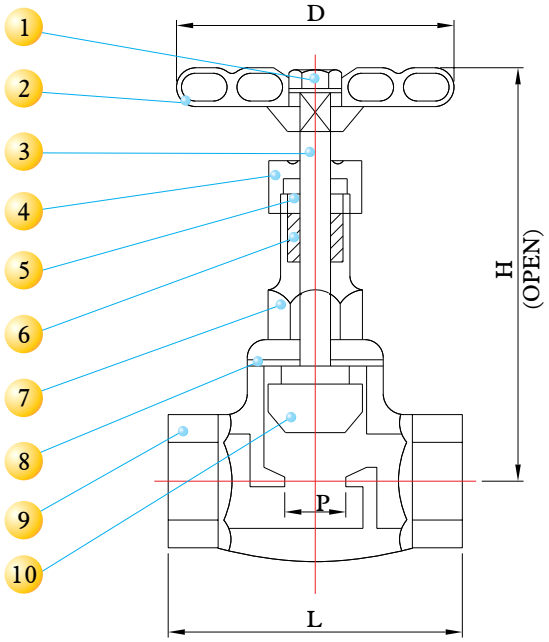
DIMENSIONS

SIZE		d		D		H		L		Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Factor	Kg	Lb
1/2"	15	0.63	16.1	2.76	70.0	3.88	98.6	2.24	57.0	15	0.52	1.15
3/4"	20	0.80	20.3	2.76	70.0	4.06	103.0	2.38	60.5	37	0.63	1.39
1"	25	1.02	26.0	3.01	76.5	4.53	115.0	2.64	67.0	72	0.81	1.78
1 1/4"	32	1.25	31.8	3.01	76.5	5.04	128.0	2.99	76.0	110	1.18	2.60
1 1/2"	40	1.57	31.8	4.07	103.5	6.81	173.0	3.43	87.0	165	2.00	4.41
2"	50	1.98	50.3	4.76	121.0	7.44	189.0	3.74	95.0	320	2.82	6.21

200 WOG GLOBE VALVE, THREADED

DESIGN FEATURES:

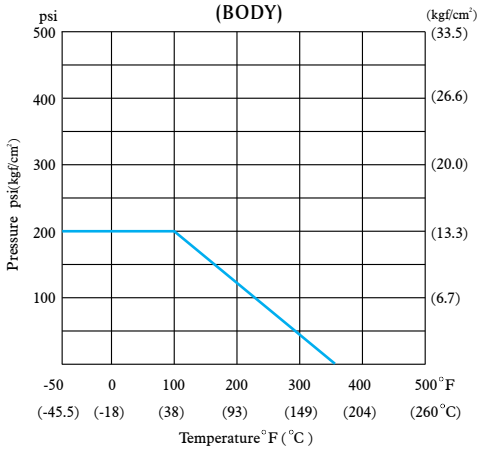
- Rising Stem And Wheel
- Body: ASTM A351 Gr.CF8M
- Disc: ASTM A351 Gr.CF8M
- Seat: SS 316
- Packing: PTFE
- Working Pressure: 200 psi
- TEST STANDARD:API 598
- End Connections: Threaded End
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT



MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	NUT	SS304	1
2	HANDWHEEL	SS400	1
3	STEM	ASTM A276 Gr.316	1
4	GLAND NUT	ASTM A351 Gr.CF8M	1
5	GLAND	ASTM A351 Gr.CF8M	1
6	GLAND PACKING	PTFE	1
7	BONNET	ASTM A351 Gr.CF8M	1
8	GASKET	PTFE	1
9	BODY	ASTM A351 Gr.CF8M	1
10	DISC	ASTM A351 Gr.CF8M	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

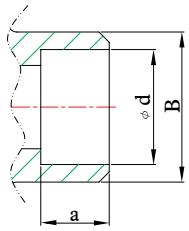
SIZE		D		L		H		P		Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Factor	Kg	Lb
1/4"	8	2.36	60.0	2.05	52.0	4.02	102	0.39	10	1.0	0.33	0.73
3/8"	10	2.36	60.0	2.05	52.0	4.02	102	0.47	12	1.5	0.31	0.68
1/2"	15	2.76	70.0	2.60	66.0	3.74	95	0.47	12	2.5	0.42	0.93
3/4"	20	2.76	70.0	2.70	68.5	3.90	99	0.59	15	5.6	0.46	1.01
1"	25	3.01	76.5	3.08	78.3	4.02	102	0.79	20	10.5	0.62	1.37
1 1/4"	32	4.07	103.5	3.39	86.0	4.96	126	0.98	25	17.0	1.05	2.31
1 1/2"	40	4.07	103.5	3.86	98.0	5.35	136	1.30	33	25.0	1.40	3.08
2"	50	4.76	121.0	4.35	110.5	6.14	156	1.57	40	46.0	2.10	4.63

200 WOG SWING CHECK VALVE, THREADED

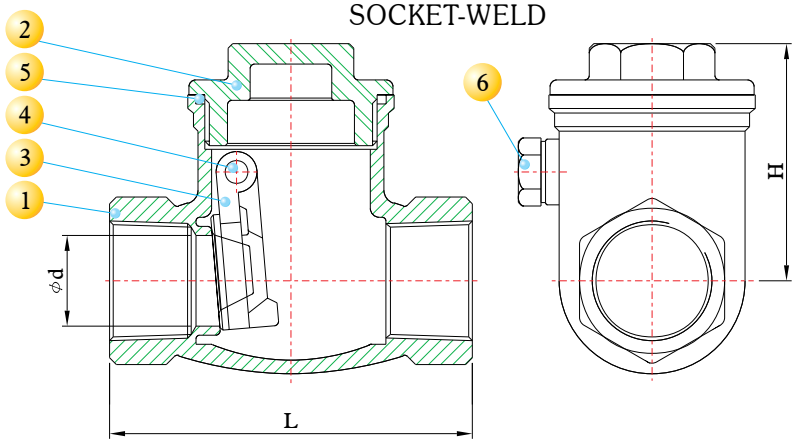
DESIGN FEATURES:

- Swing Type
- Body: ASTM A351 Gr.CF8M
- Disc: ASTM A351 Gr.CF8M
- Packing: PTFE.
- Working Pressure: 200 psi
- End Connections: Threaded End
- TEST STANDARD:API 598

Threaded Type:
ANSI B1.20.1 (NPT)
DIN 259/DIN 2999
ISO 228
BSP
PT



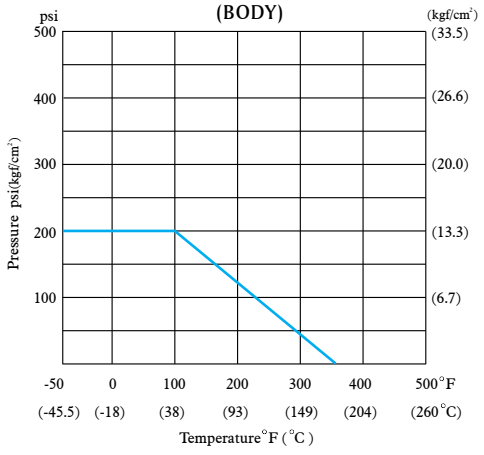
SOCKET-WELD



MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	DISC	ASTM A351 Gr.CF8M	1
4	HINGE PIN	SS316	1
5	GASKET	PTFE	1
6	PLUG	SS316	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		L		H		a		d		B		Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Factor	Kg	Lb
1/4"	8	0.39	10	2.56	65.0	1.77	45	0.39	10	0.55	14.1	0.9	22.8	3.0	0.33	0.73
3/8"	10	0.47	12	2.56	65.0	1.77	45	0.39	10	0.69	17.6	0.9	22.8	4.0	0.35	0.77
1/2"	15	0.59	15	2.60	66.0	1.81	46	0.39	10	0.85	21.7	1.06	26.8	6.5	0.30	0.66
3/4"	20	0.79	20	3.19	81.0	2.13	54	0.51	13	1.07	27.1	1.36	34.6	15.0	0.48	1.06
1"	25	0.98	25	3.58	91.0	2.36	60	0.51	13	1.33	33.8	1.56	39.5	28.0	0.75	1.65
1 1/4"	32	1.26	32	4.19	106.5	2.83	72	0.51	13	1.68	42.6	1.93	49.0	45.0	1.15	2.53
1 1/2"	40	1.57	40	4.76	121.0	2.95	75	0.51	13	1.92	48.7	2.20	55.8	65.0	1.54	3.39
2"	50	1.97	50	5.59	142.0	3.23	82	0.63	16	2.41	61.1	2.68	68.0	120.0	2.54	5.59
2 1/2"	65	2.56	65	6.26	159.0	3.54	90	0.63	16	2.91	73.8	3.46	88.0	190.0	3.80	8.37
3"	80	3.15	80	7.48	190.0	4.09	104	0.63	16	3.54	89.8	4.13	105.0	280.0	5.90	13.00

TC-GTF-ANSI VALVE

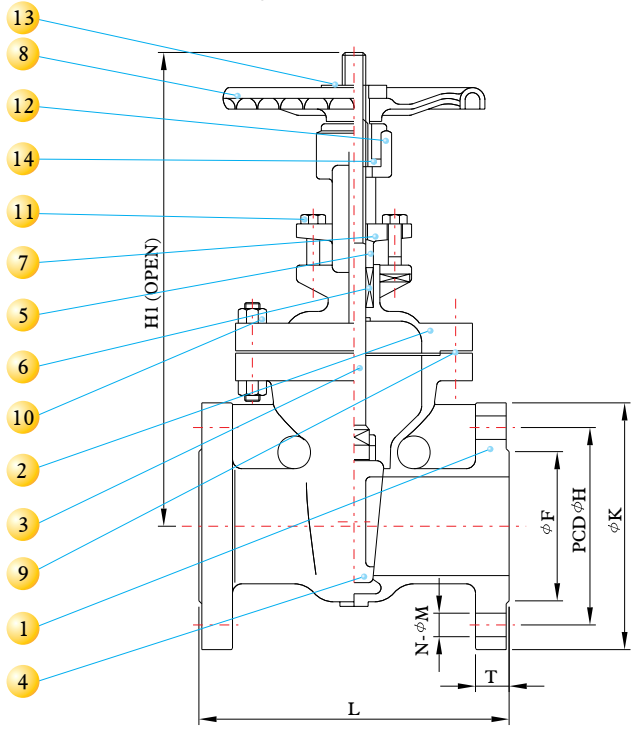
150 LB FLANGE END GATE VALVE

DESIGN FEATURES:

- Rising Stem
- O.S. & Yoke, Flexible Wedge
- Body: ASTM A351 Gr.CF8M
- Disc: ASTM A351 Gr.CF8M
- Stem: SS316
- Packing: PTFE
- End Type: Flange End
- Face to Face: ANSI B16.10
- Flange Dimensions: ANSI B16.5 150
- Wall Thickness:ANSI B16.34
- TEST STANDARD:API 598
- Pressure/ Temperature ratings in accordance with ASME/ASTM B16.34

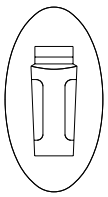
MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	BONNET	ASTM A351 Gr.CF8M	1
3	STEM	ASTM A276 Gr.316	1
4	DISC	ASTM A351 Gr.CF8M	1
5	GLAND	ASTM A351 Gr.CF8	1
6	GLAND PACKING	PTFE	1
7	GLAND FLANGE	ASTM A351 Gr.CF8	1
8	HAND WHEEL	ASTM A536 Gr.B65-45-12	1
9	GASKET	PTFE (OR NON ASBESTOS)	1
10	BONNET BOLT/NUT	ASTM A193 Gr.B8/ASTM A194 Gr.8	4-16
11	GLAND BOLT/NUT	ASTM A193 Gr.B8/ASTM A194 Gr.8	2
12	YOKE SLEEVE	BRONZE (OR DUCTILENI-RESIST)	1
13	HAND WHEEL NUT	STEEL	1
14	YOKE SLEEVE NUT	SS304	1

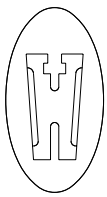


DIMENSIONS

SIZE		L		H1		K		H		F		T		M		N	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	4.25	108	8.03	204	3.94	100	2.38	60.5	1.38	35	0.44	11.2	0.62	15.7	4	19	3.40	7.49
3/4"	20	4.63	117	8.23	209	3.94	100	2.76	70.0	1.69	43	0.44	11.2	0.62	15.7	4	36	4.50	9.91
1"	25	5.00	127	9.02	229	3.94	100	3.13	79.5	2.01	51	0.44	11.2	0.62	15.7	4	57	5.50	12.11
1 1/4"	32	5.51	140	10.63	270	4.61	117	3.50	89.0	2.52	64	0.56	14.3	0.62	15.7	4	100	6.50	14.32
1 1/2"	40	6.50	165	11.14	283	5.51	140	3.88	98.5	2.87	73	0.56	14.3	0.62	15.7	4	120	9.00	19.82
2"	50	7.00	178	13.07	332	6.30	160	4.74	120.5	3.62	92	0.63	15.9	0.75	19.0	4	140	11.50	25.33
2 1/2"	65	7.50	190	15.63	397	7.09	180	5.49	139.5	4.13	105	0.69	17.5	0.75	19.0	4	240	18.00	39.65
3"	80	8.00	203	17.28	439	7.87	200	6.00	152.5	5.00	127	0.75	19.1	0.75	19.0	4	360	20.00	44.05
4"	100	9.00	229	20.39	518	8.82	224	7.50	190.5	6.18	157	0.94	23.9	0.75	19.0	8	580	30.00	66.08
5"	125	10.00	254	24.45	621	9.84	250	8.52	216.5	7.32	186	0.94	23.9	0.88	22.3	8	950	44.00	96.92
6"	150	10.50	267	28.11	714	11.02	280	9.51	241.5	8.50	216	1.00	25.4	0.88	22.3	8	2400	56.00	123.35
8"	200	11.50	292	35.98	914	11.81	300	11.75	298.5	10.63	270	1.13	28.6	0.88	22.3	8	4200	82.00	180.62
10"	250	13.00	330	43.62	1108	13.98	355	14.25	362.0	12.76	324	1.19	30.2	1.00	25.4	12	6800	132.00	290.75
12"	300	14.00	356	61.14	1553	23.62	600	17.01	432.0	15.00	381	1.25	31.8	1.00	25.4	12	9900	196.50	432.82



UNDER-3"



4"-UP

TC-GTF-ANSI VALVE

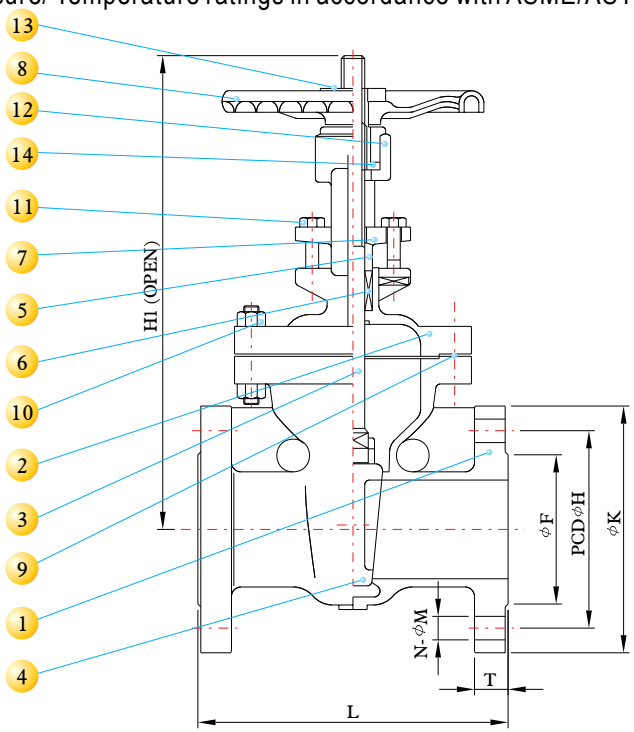
300 LB FLANGE END GATE VALVE

DESIGN FEATURES:

- Rising Stem
- O.S. & Yoke, Flexible Wedge
- Body: ASTM A351 Gr.CF8M
- Disc: ASTM A351 Gr.CF8M
- Stem: SS316
- Packing: PTFE.
- End Type: Flange End
- Face to Face: ANSI B16.10
- Flange Dimensions: ANSI B16.5 300
- Wall Thickness:ANSI B16.34
- TEST STANDARD:API 598
- Pressure/ Temperature ratings in accordance with ASME/ASTM B16.34

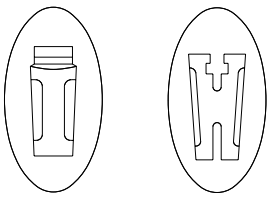
MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	BONNET	ASTM A351 Gr.CF8M	1
3	STEM	ASTM A276 Gr.316	1
4	DISC	ASTM A351 Gr.CF8M	1
5	GLAND	ASTM A351 Gr.CF8	1
6	GLAND PACKING	PTFE	1
7	GLAND FLANGE	ASTM A351 Gr.CF8	1
8	HAND WHEEL	ASTM A536 Gr.B65-45-12	1
9	GASKET	PTFE (OR NON ASBESTOS)	1
10	BONNET BOLT/NUT	ASTM A193 Gr.B8/ASTM A194 Gr.8	4-16
11	GLAND BOLT/NUT	ASTM A193 Gr.B8/ASTM A194 Gr.8	2
12	YOKE SLEEVE	BRONZE (OR DUCTILENI-RESIST)	1
13	HAND WHEEL NUT	STEEL	1
14	YOKE SLEEVE NUT	SS304	1



DIMENSIONS

SIZE		L		H1		K		H		F		T		M		N	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	5.50	140	8.23	209	3.94	100	2.62	66.5	1.38	35	0.56	14.3	0.62	15.70	4	19	5.00	11.01
3/4"	20	6.00	152	8.27	210	3.94	100	3.25	82.5	1.69	43	0.63	15.9	0.75	19.00	4	36	4.50	9.91
1"	25	6.50	165	8.90	226	3.94	100	3.50	89.0	2.01	51	0.69	17.5	0.75	19.00	4	57	10.00	22.03
1 1/2"	40	7.50	190	11.54	293	6.30	160	4.51	114.5	2.87	73	0.81	20.7	0.88	22.30	4	120	15.00	33.04
2"	50	8.50	216	13.78	350	7.09	180	5.00	127.0	3.62	92	0.88	22.3	0.75	19.00	8	140	18.40	40.53
2 1/2"	65	9.50	241	15.94	405	7.87	200	5.87	149.0	4.13	105	1.00	25.4	0.88	22.30	8	240	22.00	48.46
3"	80	11.12	283	17.87	454	8.82	224	6.61	168.0	5.00	127	1.13	28.6	0.88	22.30	8	360	36.50	80.40
4"	100	12.00	305	20.67	525	9.84	250	7.87	200.0	6.18	157	1.25	31.8	0.88	22.30	8	580	56.00	123.35
5"	125	15.00	381	25.16	639	11.81	300	9.25	235.0	7.32	186	1.38	35.0	0.88	22.30	8	950	72.00	158.59
6"	150	15.87	403	29.09	739	13.98	355	10.63	270.0	8.50	216	1.44	36.6	0.88	22.30	12	2400	99.00	218.06
8"	200	16.50	419	36.73	933	15.75	400	12.99	330.0	10.63	270	1.63	41.3	1.00	25.40	12	4200	158.00	348.02
10"	250	18.00	457	44.80	1138	19.69	500	15.25	387.5	12.76	324	1.88	47.7	1.12	28.40	16	6800	280.0	616.74
12"	300	19.75	502	52.68	1338	23.62	600	17.76	451.0	15.00	381	2.00	50.8	1.25	31.75	16	9900	373.50	822.69



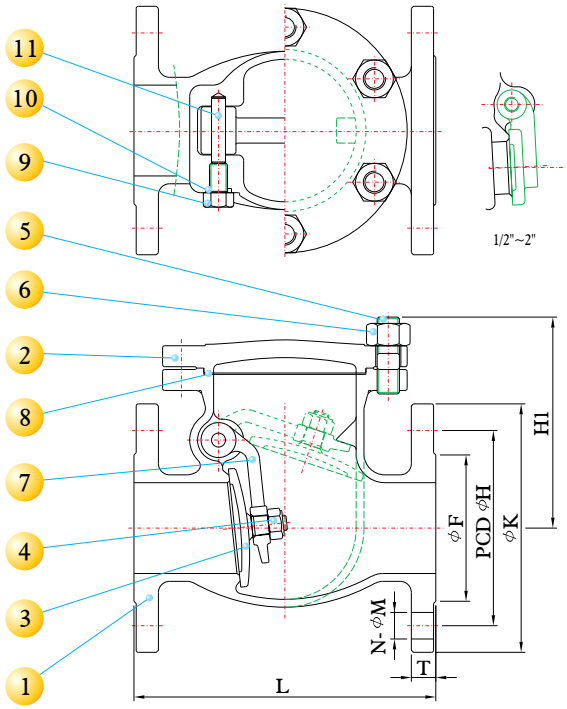
UNDER-3" 4"-UP

TC-CKF-ANSI VALVE

150 LB FLANGE END SWING CHECK VALVE

DESIGN FEATURES:

- Swing Type
- Body: ASTM A 351 Gr.CF8M
- Disc: ASTM A 351 Gr.CF8M
- End Type: Flange End
- Face to Face: ANSI B16.10
- Flange Dimensions: ANSI B16.5 150
- Wall Thickness:ANSI B16.34
- TEST STANDARD:API 598
- Pressure/ Temperature ratings in accordance with ASME/ASTM B16.34



MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	COVER	ASTM A351 Gr.CF8M	1
3	DISC	ASTM A351 Gr.CF8M	1
4	DISC NUT	ASTM A194 Gr.8	1
5	COVER BOLT	ASTM A193 Gr.B8	4 - 12
6	COVER NUT	ASTM A194 Gr.8	4 - 12
7	ARM	ASTM A351 Gr.CF8M	1
8	GASKET	PTFE	1
9	PLUG	SS316	1
10	PLUG GASKET	SS304	1
11	HINGE PIN	SS316	1

DIMENSIONS

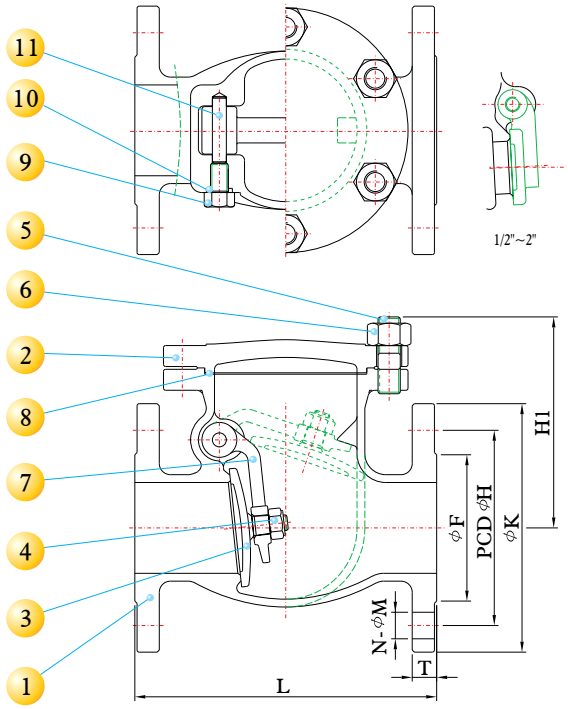
SIZE		L		H1		K		H		F		T		M		N	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	4.25	108	2.87	73	3.50	89	2.38	60.5	1.38	35	0.44	11.2	0.62	15.7	4	9.5	2.30	5.07
3/4"	20	4.63	117	2.95	75	3.86	98	2.76	70.0	1.69	43	0.44	11.2	0.62	15.7	4	16	2.80	6.17
1"	25	5.00	127	3.15	80	4.25	108	3.13	79.5	2.01	51	0.44	11.2	0.62	15.7	4	27	4.30	9.47
1 1/2"	40	6.50	165	4.37	111	5.00	127	3.88	98.5	2.87	73	0.56	14.3	0.62	15.7	4	51	6.50	14.32
2"	50	8.00	203	4.84	123	5.98	152	4.74	120.5	3.62	92	0.63	15.9	0.75	19.0	4	70	9.30	20.48
2 1/2"	65	8.50	216	5.28	134	7.01	178	5.49	139.5	4.13	105	0.69	17.5	0.75	19.0	4	120	15.00	33.04
3"	80	9.50	241	5.83	148	7.48	190	6.00	152.5	5.00	127	0.75	19.1	0.75	19.0	4	170	18.00	39.65
4"	100	11.50	292	6.22	158	9.02	229	7.50	190.5	6.18	157	0.94	23.9	0.75	19.0	8	250	26.80	59.03
5"	125	13.00	330	7.56	192	10.00	254	8.50	216.0	7.32	186	0.94	23.9	0.88	22.3	8	470	35.00	77.09
6"	150	14.00	356	8.78	223	10.98	279	9.51	241.5	8.50	216	1.00	25.4	0.88	22.3	8	1100	49.30	108.59
8"	200	19.50	495	11.14	283	13.50	343	11.75	298.5	10.63	270	1.13	28.6	0.88	22.3	8	2000	78.00	171.81
10"	250	24.50	622	12.52	318	15.98	406	14.25	362.0	12.76	324	1.19	30.2	1.00	25.4	12	3300	138.00	303.96
12"	300	27.50	698	14.06	357	19.02	483	17.01	432.0	15.00	381	1.25	31.8	1.00	25.4	12	4900	205.00	451.54

TC-CKF-ANSI VALVE

300 LB FLANGE END SWING CHECK VALVE

DESIGN FEATURES:

- Swing Type
- Body: ASTM A351 Gr.CF8M
- Disc: ASTM A351 Gr.CF8M
- End Type: Flange End
- Face to Face: ANSI B16.10
- Flange Dimensions: ANSI B16.5 300
- Wall Thickness: ANSI B16.34
- TEST STANDARD: API 598
- Pressure/ Temperature ratings in accordance with ASME/ASTM B16.34



MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	COVER	ASTM A351 Gr.CF8M	1
3	DISC	ASTM A351 Gr.CF8M	1
4	DISC NUT	ASTM A194 Gr.8	1
5	COVER BOLT	ASTM A193 Gr.B8	4 - 12
6	COVER NUT	ASTM A194 Gr.8	4 - 12
7	ARM	ASTM A351 Gr.CF8M	1
8	GASKET	PTFE	1
9	PLUG	SS316	1
10	PLUG GASKET	SS304	1
11	HINGE PIN	SS316	1

DIMENSIONS

SIZE		L		H1		K		H		F		T		M		N	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	6.00	152	2.99	76	3.74	95	2.62	66.5	1.38	35	0.56	14.3	0.62	15.70	4	9.5	3.90	8.59
3/4"	20	7.00	178	3.07	78	4.61	117	3.25	82.5	1.69	43	0.63	15.9	0.75	19.00	4	16	5.00	11.01
1"	25	8.50	216	3.27	83	4.88	124	3.50	89.0	2.01	51	0.69	17.5	0.75	19.00	4	27	6.80	14.98
1 1/2"	40	9.50	241	4.57	116	6.14	156	4.51	114.5	2.87	73	0.81	20.7	0.88	22.30	4	51	11.50	25.33
2"	50	10.50	267	5.08	129	6.50	165	5.00	127.0	3.62	92	0.88	22.3	0.75	19.00	8	70	16.50	36.34
2 1/2"	65	11.50	292	5.63	143	7.48	190	5.87	149.0	4.13	105	1.00	25.4	0.88	22.30	8	120	23.00	50.66
3"	80	12.50	318	6.46	164	8.27	210	6.61	168.0	5.00	127	1.13	28.6	0.88	22.30	8	170	30.00	66.08
4"	100	14.00	356	6.97	177	10.00	254	7.87	200.0	6.18	157	1.25	31.8	0.88	22.30	8	250	45.50	100.22
5"	125	15.75	400	8.54	217	10.98	297	9.25	235.0	7.32	186	1.38	35.0	0.88	22.30	8	470	58.00	127.75
6"	150	17.50	444	9.80	249	12.52	318	10.63	270.0	8.50	216	1.44	36.6	0.88	22.30	12	1100	81.00	178.41
8"	200	21.00	533	12.28	312	15.00	381	12.99	330.0	10.63	270	1.63	41.3	1.00	25.40	12	2000	125.00	275.33
10"	250	24.50	622	14.13	359	17.48	444	15.26	387.5	12.76	324	1.88	47.7	1.12	28.40	16	3300	172.00	378.85
12"	300	28.00	711	15.71	399	20.51	521	17.76	451.0	15.00	381	2.00	50.8	1.25	31.75	16	4900	430.00	948.14

TC-GBF-ANSI VALVE

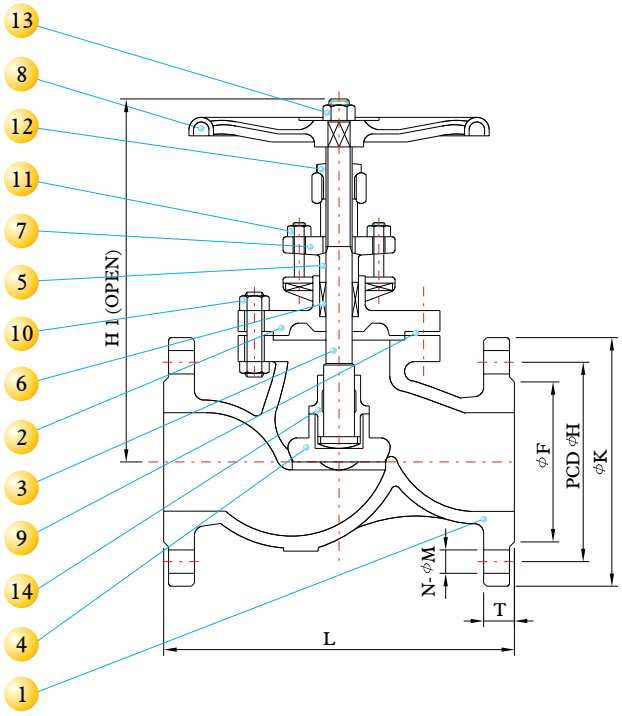
150 LB FLANGE END GLOBE VALVE

DESIGN FEATURES:

- Rising Stem
- Body: ASTM A 351 Gr.CF8M
- Disc: ASTM A 351 Gr.CF8M
- Stem: SS316
- End Type: Flange End
- Face to Face: ANSI B16.10
- Flange Dimensions: ANSI B16.5 150
- Wall Thickness:ANSI B16.34
- TEST STANDARD:API 598
- Pressure/ Temperature ratings in accordance with ASME/ASTM B16.34

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	BONNET	ASTM A351 Gr.CF8M	1
3	STEM	ASTM A276 Gr.316	1
4	DISC	ASTM A351 Gr.CF8M	1
5	GLAND	ASTM A351 Gr.CF8	1
6	GLAND PACKING	PTFE	1
7	GLAND FLANGE	ASTM A351 Gr.CF8	1
8	HAND WHEEL	ASTM A536 Gr.B65-45-12	1
9	GASKET	PTFE (OR NON ASBESTOS)	1
10	BONNET BOLT/NUT	ASTM A193 Gr.B8/ASTM A194 Gr.8	4-16
11	GLAND BOLT/NUT	ASTM A193 Gr.B8/ASTM A194 Gr.8	2
12	YOKE SLEEVE	BRONZE (OR DUCTILENI-RESIST)	1
13	HAND WHEEL NUT	STEEL	1
14	DISC GLAND	SS316	1



DIMENSIONS

SIZE		L		H1		K		H		F		T		M		N	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	4.25	108	6.77	172	3.94	100	2.38	60.5	1.38	35	0.44	11.2	0.62	15.7	4	5.0	3.00	6.61
3/4"	20	4.63	117	6.77	172	3.94	100	2.76	70.0	1.69	43	0.44	11.2	0.62	15.7	4	8.5	3.50	7.71
1"	25	5.00	127	6.89	175	3.94	100	3.13	79.5	2.01	51	0.44	11.2	0.62	15.7	4	11.0	4.40	9.69
1 1/4"	32	5.50	140	8.78	223	4.62	117	3.50	88.9	2.50	64	0.50	12.7	0.62	15.7	4	16.0	6.75	14.87
1 1/2"	40	6.50	165	8.15	207	5.51	140	3.88	98.5	2.87	73	0.56	14.3	0.62	15.7	4	19.0	7.90	17.40
2"	50	8.00	203	9.13	232	6.30	160	4.74	120.5	3.62	92	0.63	15.9	0.75	19.0	4	32.0	11.40	25.11
2 1/2"	65	8.50	216	10.75	273	7.09	180	5.49	139.5	4.13	105	0.69	17.5	0.75	19.0	4	48.0	17.00	37.44
3"	80	9.50	241	11.93	303	7.87	200	6.00	152.5	5.00	127	0.75	19.1	0.75	19.0	4	80.0	20.50	45.15
4"	100	11.50	292	13.39	340	8.82	224	7.50	190.5	6.18	157	0.94	23.9	0.75	19.0	8	110.0	31.00	68.28
5"	125	14.00	356	15.16	385	9.84	250	8.50	216.0	7.32	186	0.94	23.9	0.88	22.3	8	190.0	45.00	99.12
6"	150	16.00	406	17.64	448	11.81	300	9.51	241.5	8.50	216	1.00	25.4	0.88	22.3	8	450.0	60.00	132.16
8"	200	19.50	495	21.46	545	13.98	355	11.75	298.5	10.63	270	1.13	28.6	0.88	22.3	8	800.0	100.00	220.26
10"	250	24.50	622	26.22	666	17.72	450	14.25	362.0	12.76	324	1.19	30.2	1.00	25.4	12	1200.0	173.00	381.06

TC-GBF-ANSI VALVE

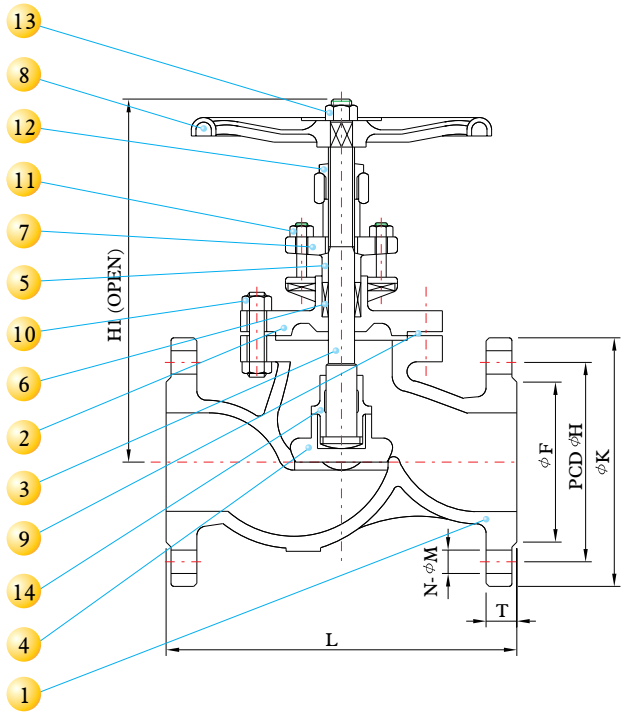
300 LB FLANGE END GLOBE VALVE

DESIGN FEATURES:

- Rising Stem
- Body: ASTM A 351 Gr.CF8M
- Disc: ASTM A 351 Gr.CF8M
- Stem: SS316
- End Type: Flange End
- Face to Face: ANSI B16.10
- Flange Dimensions: ANSI B16.5 300
- Wall Thickness: ANSI B16.34
- TEST STANDARD: API 598
- Pressure/ Temperature ratings in accordance with ASME/ASTM B16.34

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	BONNET	ASTM A351 Gr.CF8M	1
3	STEM	ASTM A276 Gr.316	1
4	DISC	ASTM A351 Gr.CF8M	1
5	GLAND	ASTM A351 Gr.CF8	1
6	GLAND PACKING	PTFE	1
7	GLAND FLANGE	ASTM A351 Gr.CF8	1
8	HAND WHEEL	ASTM A536 Gr.B65-45-12	1
9	GASKET	PTFE (OR NON ASBESTOS)	1
10	BONNET BOLT/NUT	ASTM A193 Gr.B8/ASTM A194 Gr.8	4-16
11	GLAND BOLT/NUT	ASTM A193 Gr.B8/ASTM A194 Gr.8	2
12	YOKE SLEEVE	BRONZE (OR DUCTILENI-RESIST)	1
13	HAND WHEEL NUT	STEEL	1
14	DISC GLAND	SS316	1



DIMENSIONS

SIZE		L		H1		K		H		F		T		M		N	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Factor	Kg	Lb
1/2"	15	6.00	152	6.77	172	3.94	100	2.62	66.5	1.38	35	0.56	14.3	0.62	15.7	4	5	4.00	8.81
3/4"	20	7.00	178	6.77	172	3.94	100	3.25	82.5	1.69	43	0.63	15.9	0.75	19.0	4	8.5	5.00	11.01
1"	25	8.00	203	6.89	175	3.94	100	3.50	89.0	2.01	51	0.69	17.5	0.75	19.0	4	11	9.00	19.82
1 1/2"	40	9.00	229	8.86	225	6.30	160	4.51	114.5	2.87	73	0.81	20.7	0.88	22.3	4	190	13.50	29.74
2"	50	10.50	267	10.55	268	7.09	180	5.00	127.0	3.62	92	0.88	22.3	0.75	19.0	8	32	16.50	36.34
2 1/2"	65	11.50	292	11.85	301	7.87	200	5.87	149.0	4.13	105	1.00	25.4	0.88	22.3	8	48	31.00	68.28
3"	80	12.50	318	13.82	351	9.84	250	6.61	168.0	5.00	127	1.13	28.6	0.88	22.3	8	80	36.00	79.30
4"	100	14.00	356	16.14	410	11.81	300	7.87	200.0	6.18	157	1.25	31.8	0.88	22.3	8	110	52.50	115.64
5"	125	15.75	400	18.27	464	13.98	355	9.25	235.0	7.32	186	1.38	35.0	0.88	22.3	8	190	79.00	174.01
6"	150	17.50	444	20.83	529	15.75	400	10.63	270.0	8.50	216	1.44	36.6	0.88	22.3	12	450	98.50	216.96
8"	200	22.00	559	26.38	670	17.72	450	12.99	330.0	10.63	270	1.63	41.3	1.00	25.4	12	800	146.00	321.59

TC-NDL VALVE

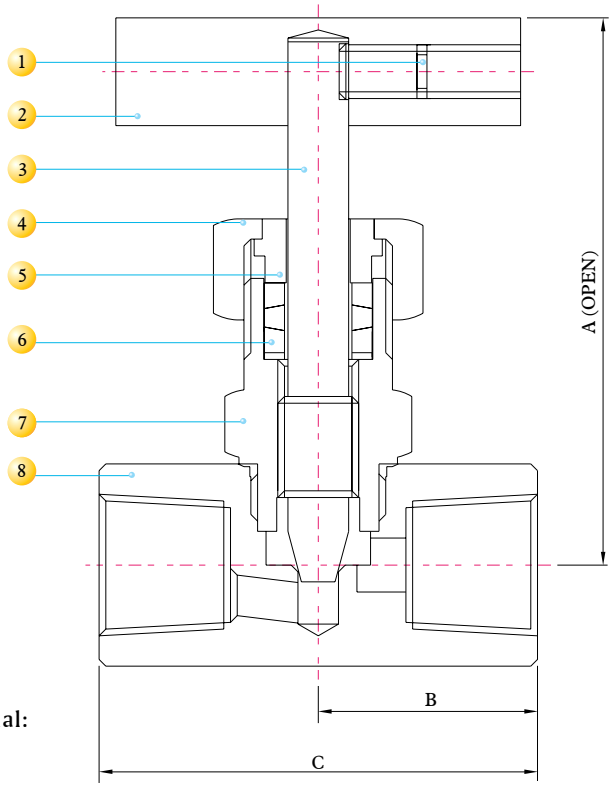
6000 PSI STAINLESS STEEL NEEDLE VALVES

DESIGN FEATURES:

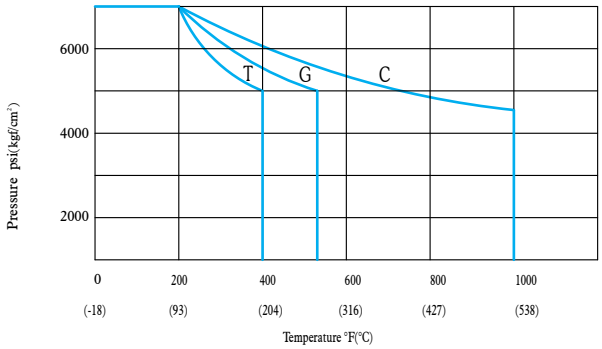
- INVESTMENT CASTING
- SCREWED-IN BONNET
- RISING STEM
- HANDLE OPERATION
- WORKING PRESSURE: 6000 PSI
- TEST STANDARD:API 598

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	SET SCREW	SS304	1
2	HANDLE	SS410	1
3	STEM	SS316	1
4	GLAND NUT	SS304	1
5	GLAND	SS304	1
6	PACKING	PTFE	1
7	BONNET	ASTM A351 Gr.CF8M	1
8	BODY	ASTM A351 Gr.CF8M	1



PRESSURE TEMPERATURE RATINGS



Packing Material:

T: PTFE
G: PTFE+25%C
C: CARBON FIBER

DIMENSIONS

SIZE		A		B		C		Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	Factor	Kg	Lb
1/8"	15	29.5	75.0	11.5	29.0	1.00	25.5	0.7	0.35	0.77
1/4"	20	29.5	75.0	11.5	29.0	0.98	25.0	0.8	0.35	0.77
3/8"	25	29.5	75.0	11.5	29.0	1.26	32.0	0.9	0.35	0.77
1/2"	32	34.5	87.0	12.8	32.5	1.28	32.5	1.2	0.56	1.23
3/4"	40	35.5	90.0	13.8	35.0	1.65	42.0	1.3	0.70	1.54
1"	50	40.5	103.0	15.8	40.0	1.65	42.0	1.8	1.30	2.86

EXTENDED HANDLE / OVAL HANDLE

EXTENDED HANDLE

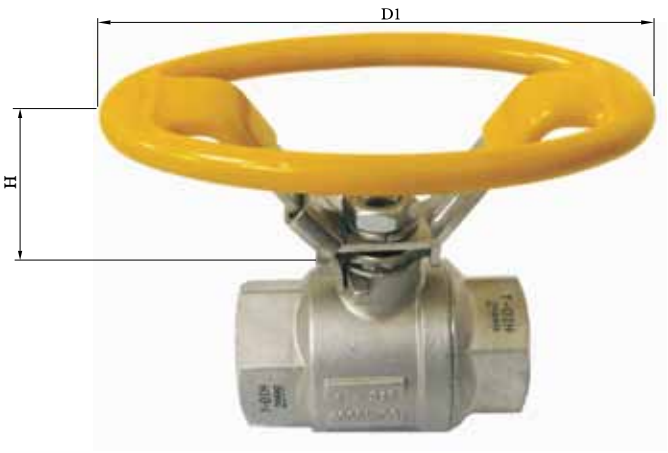
Applicable Products:

TC-02T / TC-02TM / TC-02X / TC-0612 / TC-0612M / TC-0712M / TC-2000/ TC-03T/B/S / TC-03K

OVAL HANDLE

Applicable Products:

TC-02T / TC-02TM / TC-02X / TC-0612 / TC-0612M / TC-0712M / TC-2000/ TC-03T/B/S / TC-03K



DIMENSIONS

Part NO.	D1		TC-02T/ TC-02TM/ TC-0612/ TC-0612M/ TC-0712M/ TC-2000/ TC-03T/B/S/	TC-02X / TC-03K
	inch	mm		
V10B2TFPXEXT00D	4.06	103.0	1/4"~1/2"	1/4"~3/4"
V10B2TFPXEXT010	5.00	127.0	3/4"~1"	1"~1-1/4"
V10B2TFPXEXT01D	6.02	153.0	1-1/4"~2-1/2"	1-1/2"~2-1/2"
V10B2TFPXEXT030	7.60	193.0	3"	3"
V10B2TFPXEXT040	13.19	335.0	4"	4"

DIMENSIONS

H		D1		TC-02T/ TC-02TM/ TC-0612/ TC-0612M/ TC-0712M/ TC-2000/ TC-03T/B/S	TC-02X/ TC-03K
inch	mm	inch	mm		
1.49	37.8	3.39	86.0	1/4"~3/8"	1/4",3/8",3/4"
1.51	38.3	3.43	87.0	1/2"	1/2"
1.53	38.8	5.28	134.0	3/4"~1"	1"~1-1/4"
2.09	53.2	6.77	172.0	1-1/4"~2"	1-1/2"~2"

NOTE: WE RECOMMEND TO ADD 20%~25% SAFETY FACTORS FOR VALVE SERVICE CONDITION OR APPLICATION IF CUSTOMER WISH TO MOUNT AN ACTULATOR.

FIGURE:TC-01TK

OPERATING TORQUE

VALVE SIZE	1000/800WOG	
	N-m	Lbf-in
1/4"	2.94	26.04
3/8"	2.94	26.04
1/2"	3.92	34.72
3/4"	4.90	43.40
1"	7.36	65.10
1 1/4"	9.81	86.80
1 1/2"	17.65	156.24
2"	24.52	217.00

FIGURE:TC-02T、TC-02TM、TC-02X、TC-03T/B/S、TC-03K/03KC

OPERATING TORQUE

VALVE SIZE	1000WOG	
	N-m	Lbf-in
1/4"	3.0	26.55
3/8"	3.0	26.55
1/2"	4.5	39.83
3/4"	8.5	75.23
1"	11.0	97.35
1 1/4"	15.0	132.75
1 1/2"	24.0	212.40
2"	32.0	283.20
2 1/2"	45.0	398.25
3"	65.0	575.25
4"	100.0	885.00

FIGURE:TC-0612/0612C、TC-0612M/0612MC

OPERATING TORQUE

VALVE SIZE	1500/2000WOG	
	N-m	Lbf-in
1/4"	4.90	43.40
3/8"	4.90	43.40
1/2"	4.90	43.40
3/4"	5.90	52.08
1"	8.80	78.12
1 1/4"	14.70	130.20
1 1/2"	19.60	173.60
2"	34.30	303.80
2 1/2"	49.00	434.00
3"	58.80	520.80

FIGURE:TC-0712M

OPERATING TORQUE

VALVE SIZE	1500/2000WOG	
	N-m	Lbf-in
1/4"	3.09	27.34
3/8"	3.09	27.34
1/2"	4.12	36.46
3/4"	4.90	45.57
1"	7.72	68.36
1 1/4"	10.3	91.14
1 1/2"	18.54	164.05
2"	25.74	227.85
2 1/2"	30.89	273.42
3"	36.04	318.99

FIGURE:TC-2000

OPERATING TORQUE

VALVE SIZE	1500/2000WOG	
	N-m	Lbf-in
1/4"	4.9	43.40
3/8"	4.9	43.40
1/2"	5.9	52.08
3/4"	8.8	78.12
1"	14.7	130.20
1 1/4"	19.6	173.60
1 1/2"	34.3	303.80
2"	39.2	347.20

FIGURE:TC-3000T/B/S

OPERATING TORQUE

VALVE SIZE	1000WOG	
	N-m	Lbf-in
1/2"	4.50	39.83
3/4"	8.30	73.46
1"	10.70	94.70
1 1/4"	15.00	132.75
1 1/2"	24.00	212.40
2"	31.80	283.20
2 1/2"	45.00	398.25
3"	65.00	575.25
4"	100.00	885.00

FIGURE:TC-4000/4100 (FS)

OPERATING TORQUE

VALVE SIZE	1500/2000 WOG	
	N-m	Lbf-in
1/2"	5.88	52.08
3/4"	8.80	78.12
1"	14.70	130.20
1 1/4"	19.60	173.60
1 1/2"	39.23	347.20
2"	49.04	434.00

FIGURE:TC-3000TC、TC-3000TE

OPERATING TORQUE

VALVE SIZE	1000WOG	
	N-m	Lbf-in
1/2"	4.5	39.83
3/4"	10.70	94.70
1"	23.50	208.30
1 1/2"	31.80	281.30
2"	53.90	477.40
2 1/2"	78.50	694.40
3"	112.80	998.20
4"	148.00	1309.8

FIGURE:TC-WLF、TC-WTF

OPERATING TORQUE

VALVE SIZE	150#	
	N-m	Lbf-in
2"	90.4	800
3"	237.3	2100
4"	316.4	2800
6"	904.0	8000

FIGURE:TC-6000/6100 (FS)

OPERATING TORQUE

VALVE SIZE	150#	
	N-m	Lbf-in
1"	8.0	70.80
1 1/2"	12.5	110.60
2"	24.0	212.40
2 1/2"	34.0	300.90
3"	59.0	522.20
4"	79.0	699.15
6"	137.0	1212.45

FIGURE:TC-0802A-150# TC-5000/5100 (FS)

OPERATING TORQUE

VALVE SIZE	150#	
	N-m	Lbf-in
1/2"	6.0	53.10
3/4"	8.0	70.80
1"	10.0	88.50
1 1/4"	12.5	110.60
1 1/2"	24.0	212.40
2"	30.0	265.50
2 1/2"	35.0	309.75
3"	60.0	531.00
4"	102.0	902.70
5"	150.0	1327.50
6"	210.0	1858.50
8"	400.0	3540.00
10"	843.4	7464.80
12"	1529.9	13540.80

FIGURE:TC-0802A-300#

OPERATING TORQUE

VALVE SIZE	300#	
	N-m	Lbf-in
1/2"	6.0	53.10
3/4"	8.0	70.80
1"	10.0	88.50
1 1/4"	12.0	110.63
1 1/2"	24.0	212.40
2"	30.0	265.50
2 1/2"	45.0	398.25
3"	79.0	699.15
4"	110.0	973.50
5"	150.0	1327.50
6"	220.0	1947.00
8"	500.0	4425.00

FIGURE:TC-WL、TC-WT

OPERATING TORQUE

VALVE SIZE	1000 WOG	
	N-m	Lbf-in
1/4"	3.92	34.72
3/8"	3.92	34.72
1/2"	7.91	70.00
3/4"	11.87	105.00
1"	15.48	137.00
1 1/4"	26.00	230.00
1 1/2"	35.60	315.00
2"	68.93	608.00

FIGURE:TC-7000 (FS)

OPERATING TORQUE

VALVE SIZE	150#	
	N-m	Lbf-in
1"	11.00	97.35
1 1/2"	26.40	233.64
2"	33.00	292.05
3"	66.00	584.10
4"	112.20	992.97

FIGURE:TC-WLT-DM TC-WTT-DM

OPERATING TORQUE

VALVE SIZE	1000 WOG	
	N-m	Lbf-in
1/4"	4.4	39.06
3/8"	4.4	39.06
1/2"	5.9	52.08
3/4"	8.3	73.78
1"	9.8	86.80
1 1/4"	13.7	121.52
1 1/2"	29.4	260.4
2"	47.1	416.6

FIGURE:TC-8000 TC-WL-BR TC-WT-BR

OPERATING TORQUE

VALVE SIZE	400/600WOG	
	N-m	Lbf-in
1/4"	6.78	60
3/8"	6.78	60
1/2"	6.78	60
3/4"	13.56	120
1"	18.08	160
1 1/4"	20.34	180
1 1/2"	29.38	260
2"	39.55	350
2 1/2"	45.20	400
3"	65.54	580
4"	71.19	630

FIGURE:TC-9000

OPERATING TORQUE

VALVE SIZE	1000 WOG	
	N-m	Lbf-in
1/2"	3.96	35.00
3/4"	4.52	40.00
1"	9.04	80.00
1 1/4"	14.13	125.00
1 1/2"	20.34	180.00
2"	24.86	220.00

TÜV

CERTIFICATE

Nr. GF1.1(T)-FS-06-0026

Certificate of conformity with technical requirements in :

ANSI/API STD 607 – 5th Edition, 2005

(Identical to ISO 10497-5:2004)

Report No.: FT0664073 **Date:** June 12, 2007

Name of applicant / license holder : Ta Chen Stainless Pipe Company Limited

Name, Address of manufacturer : No. 125, Hsin-Tien 2ND Street, Jeng-Teh, Tainan, Taiwan, R.O.C.

Herewith is stated that a conformity test according to the a.m. standard has been conducted. The maximum allowed leakage rates according to the a.m. standard have not been exceeded by the test specimen.

Model Identification:	TC-4000FS/TC-03N (V-3N)
Nominal Size / Pressure :	2" / Class 600
Type of Valve :	3 PC., Socket ball valve
Material of Valve Body :	ASTM A351 CF8M
Range of Qualifications	
Qualified Sizes :	2" and below, 2½", 3", 4"
Qualified Ratings :	600, 800, 900 ; PN 100, 160
Materials :	ASTM A351 CF8M, TFM1600©
Technical details of components :	See appendix in test report

This certificate refers to the above mentioned product. This is to certify that the test specimen provided is in conformity with the standard(s) mentioned above. This certificate does not imply assessment of the production of the product.

(Ort, Datum)

Taipei, Taiwan

June 12, 2007.

TÜV Rheinland Group Industrie Service GmbH

TÜV Rheinland Taiwan Ltd.
Industrial Services Division

Thomas Fuhrmann (Division Director)

API-cert

Rev. 1

TÜV

CERTIFICATE

(Certificate of conformity with technical requirements in:)

ANSI / API STD 607 – 1993

Certificate No.:	BU1.1(T) FS 02-0010	Report No.:	M 0264032 E01 M 0164026 E01 M 0164027 E01 M 0264036 E01

Name of applicant / license holder : Ta Chen Stainless Pipe Co., Ltd.

Name, Address of manufacturer : Ta Chen Stainless Pipe Co., Ltd.
No. 125, Hsin-Tien 2nd St., Jeng-Teh, Tainan,
Taiwan, R.O.C.

Herewith is stated that a conformity test according a.m. standard has been conducted. The maximal allowed leakage rates according a.m. standard have not been exceeded by the testing sample(s).

Type Designation of tested valve(s)	TC-5100 / 2PC			
Identification:	Flange Type 2 PC Ball valve (softseated)			
Nominal Size(s) :	½"	1"	2"	4"
Pressure rating (ANSI Class):	150	150	150	150-
Body Material :	WCB	WCB	WCB	WCB-
Qualification range : Technical details of valve components :	The range of qualification is according table 3, API 607, 4th edition, listed in Appendix 1. See : Appendix 1, CDF			

The certificate refers to the above mentioned product. This is to certify that the test specimen provided is in conformity with the standard(s) mentioned above. This certificate does not imply assessment of the production of the product.

(Place, Date)

Taipei Taiwan 04/09/2002

TÜV Rheinland / Berlin- Brandenburg Group
BU1.1 – Pressure Vessels & Material Technology
Regional Manager Taiwan

TÜV Rheinland/Berlin/Brandenburg • Anlagentechnik

(Dipl.-Ing. F. Herzing)

Rev 0

CERTIFICATE

GF1.1(T) FS 10-0060

Certificate of conformity with technical requirements in :

ANSI/API STD 607 – 5th Edition, 2005

(Identical to ISO 10497-5:2004)

Report No.: FT1065187 **Date:** 2010/09/06

Name of applicant / license holder : Ta Chen Stainless Pipe Company Limited

Name, Address of manufacturer : No. 122, Yi Lin Road, Jeng-Teh, Tainan, Taiwan,R.O.C.

Herewith is stated that a conformity test according to the a.m. standard has been conducted. The maximum allowed leakage rates according to the a.m. standard have not been exceeded by the test specimen.

Model Identification:	TC-5300/TC-5400
Nominal Size / Pressure :	2"/ Class 300
Type of Valve :	2PC Flanged-End Ball Valve (Full Bore)
Material of Valve Body :	CF8M
Range of Qualifications	
Qualified Sizes :	2" and below; 2-1/2"; 3"; 4".
Qualified Ratings :	Class 300, 400, 600; PN 40, 63, 100
Materials :	CF8M, PTFE
Technical details of components :	See appendix in test report

This certificate refers to the above mentioned product. This is to certify that the test specimen provided is in conformity with the standard(s) mentioned above. This certificate does not imply assessment of the production of the product.

Taipei, Taiwan 2010/9/21

TÜVRheinland® Inspection Body

TÜV Rheinland Taiwan Ltd.
Industrial Services II

James W. C. Liu (Manager)

API-cert Rev. 1

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CERTIFICATE

(Certificate of conformity with technical requirements in:)

ANSI / API STD 607 – 1993

Certificate No.:	BU1.1(T) FS 02-0009	Report No.:	M 0264033 E01 M 0264034 E01 M 0264035 E01

Name of applicant / license holder : Ta Chen Stainless Pipe Co., Ltd.

Name, Address of manufacturer : Ta Chen Stainless Pipe Co., Ltd.
No. 125, Hsin-Tien 2nd St., Jeng-The, Tainan,
Taiwan, R.O.C.

Herewith is stated that a conformity test according a.m. standard has been conducted. The maximal allowed leakage rates according a.m. standard have not been exceeded by the testing sample(s).

Type Designation of tested valve(s)	TC-6100 / 1PC		
Identification:	Flange Type 1 PC Ball valve (softseated)		
Nominal Size(s) :	1"	2"	4"
Pressure rating (ANSI Class):	150	150	150-
Body Material :	WCB	WCB	WCB-
Qualification range : Technical details of valve components :	The range of qualification is according table 3, API 607, 4th edition, listed in Appendix 1. See : Appendix 1, CDF		

The certificate refers to the above mentioned product. This is to certify that the test specimen provided is in conformity with the standard(s) mentioned above. This certificate does not imply assessment of the production of the product.

(Place, Date)

Taipei, Taiwan, 29 Aug. 2002

TÜV Rheinland / Berlin- Brandenburg Group
BU1.1 – Pressure Vessels & Material Technology
Regional Manager Taiwan

TÜV Rheinland/Berlin-Brandenburg Anlagentechnik

(Dipl.-Ing. F. Herzing)

Rev 0

TÜV

CERTIFICATE

Nr. GF1.1(T)-FS-06-0024

Certificate of conformity with technical requirements in :

ANSI/API STD 607 – 5th Edition, 2005
(Identical to ISO 10497-5:2004)

Report No.: FT0664070 **Date:** November 6, 2006

Name of applicant / license holder : Ta Chen Stainless Pipe Company Limited

Name, Address of manufacturer : No. 125, Hsin-Tien 2ND Street, Jeng-The, Tainan, Taiwan, R.O.C.

Herewith is stated that a conformity test according to the a.m. standard has been conducted. The maximum allowed leakage rates according to the a.m. standard have not been exceeded by the test specimen.

Model Identification:	TC-7000
Nominal Size / Pressure :	2" / Class 150
Type of Valve :	2 PC., ball valve with flange ends
Material of Valve Body :	ASTM A351 CF8M
Range of Qualifications	
Qualified Sizes :	2" and below, 2½", 3", 4"
Qualified Ratings :	150, 300 ; PN 10, 16, 25, 40
Materials :	ASTM A351 CF8M, PTFE
Technical details of components :	See appendix in test report

This certificate refers to the above mentioned product. This is to certify that the test specimen provided is in conformity with the standard(s) mentioned above. This certificate does not imply assessment of the production of the product.

(Ort, Datum)

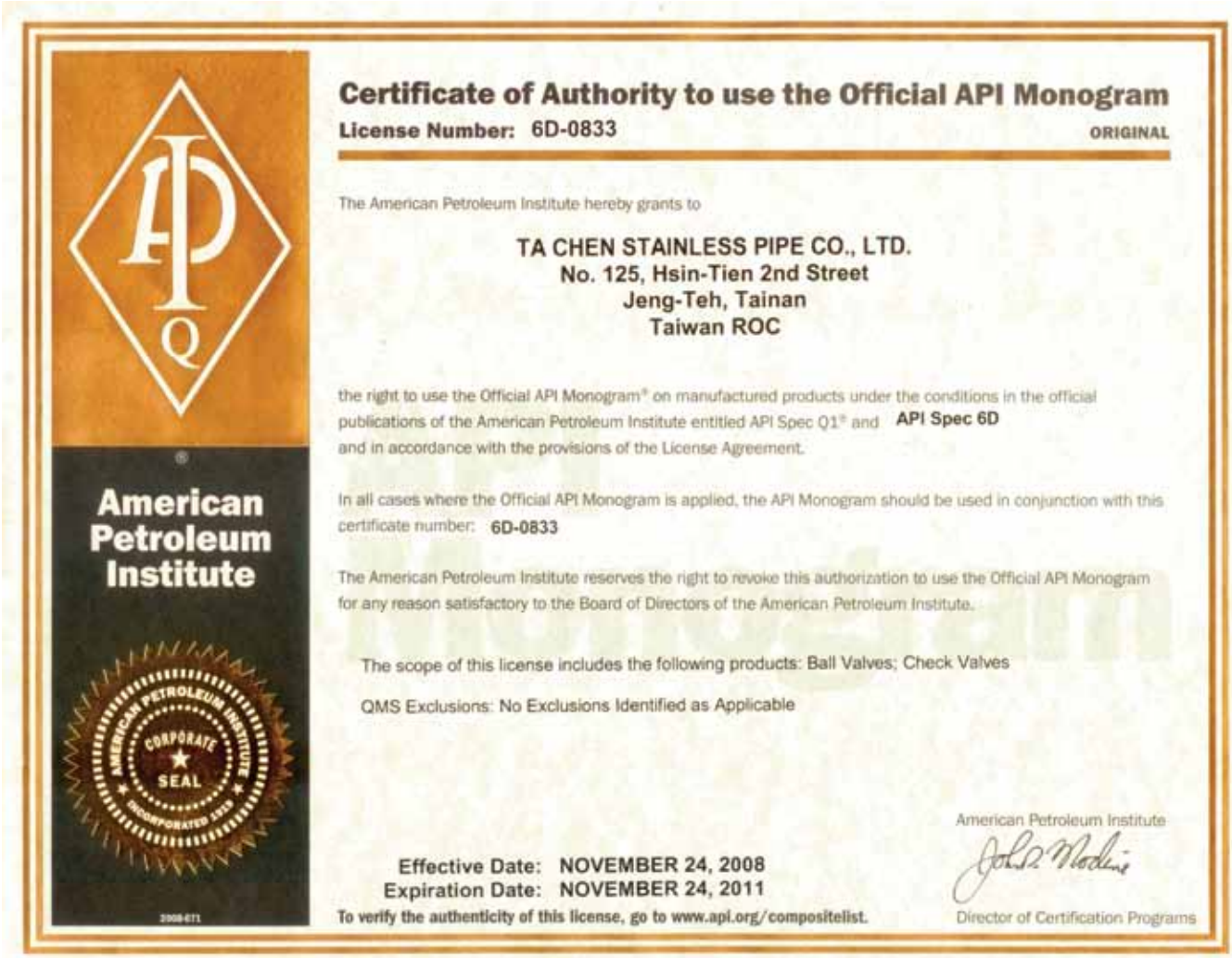
Taipei, Taiwan

November 15, 2006

TÜV Rheinland Taiwan Ltd.
Industrial Services Division

Thomas Fuhrmann (Division Director)

API-cert Rev 1



American Petroleum Institute

Certificate of Authority to use the Official API Monogram

License Number: 6D-0833 ORIGINAL

The American Petroleum Institute hereby grants to

TA CHEN STAINLESS PIPE CO., LTD.
No. 125, Hsin-Tien 2nd Street
Jeng-Teh, Tainan
Taiwan ROC

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In all cases where the Official API Monogram is applied, the API Monogram should be used in conjunction with this certificate number: **6D-0833**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following products: Ball Valves; Check Valves

QMS Exclusions: No Exclusions Identified as Applicable

American Petroleum Institute

Effective Date: NOVEMBER 24, 2008
Expiration Date: NOVEMBER 24, 2011

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Director of Certification Programs

All of the Valves Manufactured by TA CHEN STAINLESS PIPE CO., LTD. Are “SILICONE Free”

ONE PIECE BALL VALVE

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

INSTALLATION

1.TCI one piece ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.

2. After installation, cycle valve several times before putting into service.

3. Valves can't be used on unstable gases.

4. Max. working pressure is 800 psi (55.2 bar) .

5.Max. working temperature is 200℃(392℉).

OPERATION

1.A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, crossline the valve is closed. Also, the stem flats indicate the direction of the ball port.

2.Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temperature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

3.Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, DO NOT forces the valve in either direction; disassemble and clean before resuming service.

4.Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary depending on the media, pressure and length of time between cycles.

The following data will act as a guide regarding break-away torques:

VALVE SIZE	RECOMMENDED BREAK-AWAY TORQUE
DN8 (1/4")	2.94 N-M
DN10 (3/8")	2.94 N-M
DN15 (1/2")	3.92 N-M
DN20 (3/4")	4.90 N-M
DN25 (1")	7.40 N-M
DN32 (1-1/4")	9.80 N-M
DN40 (1-1/2")	17.70 N-M
DN50 (2")	24.50 N-M

The above figures were obtained at 25 degrees C., 7 bar after 24 hours.

5.The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required, the adjustment of the handle nut should be no more than one quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

Rebuilding

WARNING- Ball Valves Can Trap Fluids in Ball Cavity When Closed

If the valve has been used to control hazardous media, it must be decontaminated before disassembly

. It is recommended that the following steps are taken for safe removal and disassembly:

-Relieve the line pressure.

-Place the valve in half-open position and flush the line to remove any hazardous material from valve.

-All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.

-A standard repair kit can be ordered which contains all necessary seats and seals to rebuild the valve. To order the repair kit, simply specify the valve size and figure number.

-If spare parts are necessary, include the complete valve code as given on the order, and then the part(s) that is (are) being ordered. For part description refer to the appropriate parts list.

CAUTION: Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

1.Stem flats should be in line with valve body before valve is removed from line.

2.Remove valve from pipeline. Place valve on a clean surface and secure by clamping or bolting.

3.Unscrew and take body and end cap apart.

4.Remove end seal and cap seat.

5.With stem flats rotated perpendicular to valve body, remove body seat and ball.

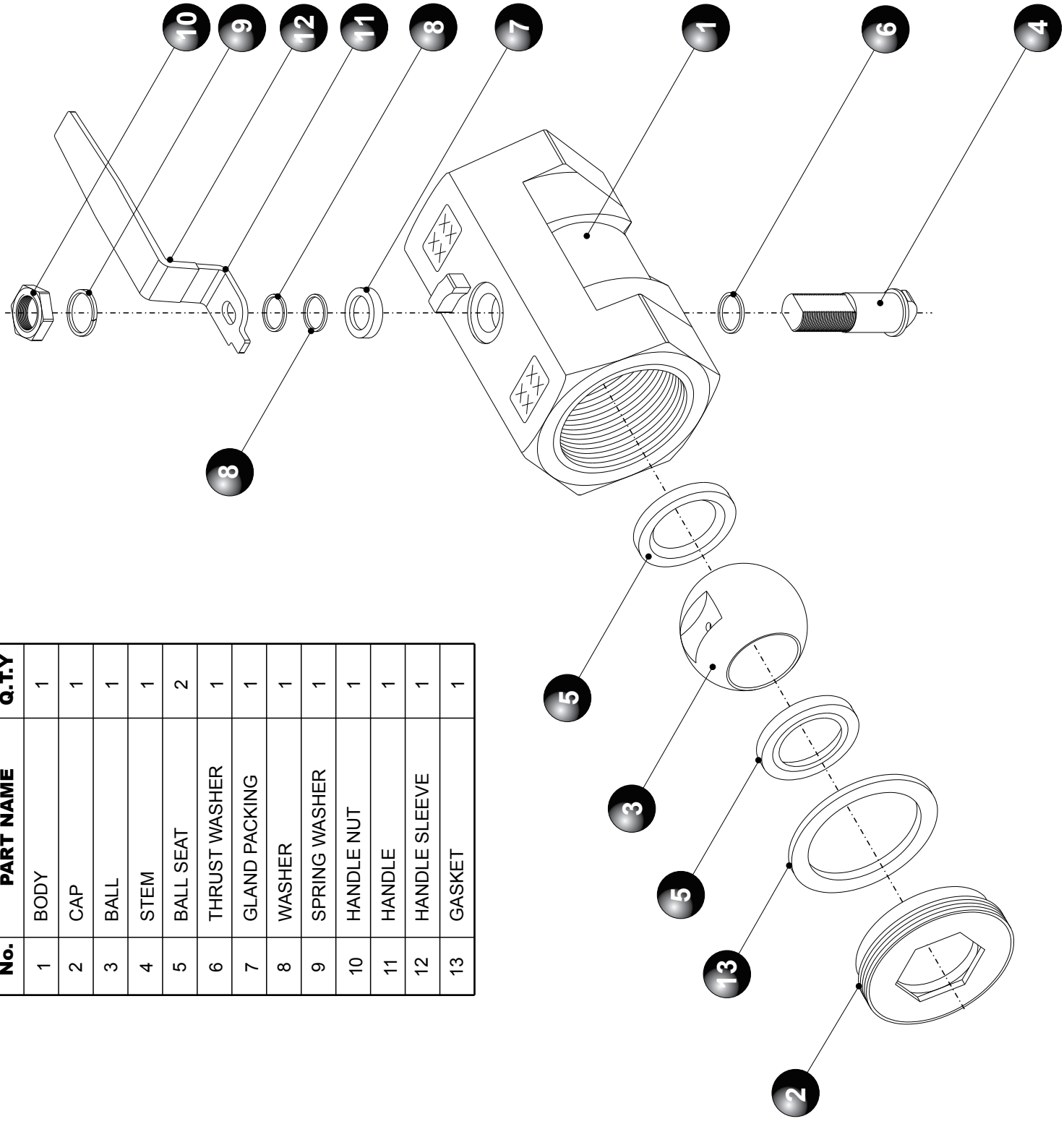
6.If it is necessary to replace stem packing, remove handle nut, spring washer, handle and washers. Lower stem into body cavity and remove stem packing.

7.Clean and inspect all components to be sure they are free from foreign matter and pit marks, paying attention to areas that must maintain a seal (the surface against which the seats are installed, finished diameter on stem, inside pipe end surface, ball). These areas must be free from scratches and pitting.

8.Light marring from the action of the ball against the seats is normal and will not affect the operation.

9. Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.
10. Slide new thrust washer over stem and insert assembly through ball cavity and fully up into stem hole recess.
11. Assemble new stem packing, washers, handle, spring washer and screw the handle nut. Adjust stem packing to feel firm. DO NOT over-tighten.
12. Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.
13. Put into new body seat.
14. Replace ball into cavity with stem flats in perpendicular position, making sure that port holes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.
15. Insert new seat and end seal into cap. Screw end cap into body and tighten sufficiently to ensure it is fully seated.
16. If practical, check leak tightness before reinstalling valve inline.

TC-01T/TC-01TK



No.	PART NAME	Q.T.Y
1	BODY	1
2	CAP	1
3	BALL	1
4	STEM	1
5	BALL SEAT	2
6	THRUST WASHER	1
7	GLAND PACKING	1
8	WASHER	1
9	SPRING WASHER	1
10	HANDLE NUT	1
11	HANDLE	1
12	HANDLE SLEEVE	1
13	GASKET	1

TWO PIECE BALL VALVE

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

INSTALLATION

1.TCI two piece ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.

2. After installation, cycle valve several times before putting into service.

3. Valves can't be used on unstable gases.

4.Max. working pressure:TC-02T:1000 psi (69bar),

TC-0612/TC-2000:1/4" ~1" is 2000 psi (138 bar) 1 1/4" ~3" is 1500 psi (103.5 bar)

5.Max. working temperature is 200℃(392℉).

OPERATION

1.A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, crossline the valve is closed. Also, the stem flats indicate the direction of the ball port.

2.Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temperature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

3.Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, DO NOT forces the valve in either direction; disassemble and clean before resuming service.

4.Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary depen ding on the media, pressure and length of time between cycles.

The following data will act as a guide regarding break-away torques:

VALVE SIZE	RECOMMENDED BREAK-AWAY TORQUE
DN8 (1/4")	3.0 N-M
DN10 (3/8")	3.0 N-M
DN15 (1/2")	4.5 N-M
DN20 (3/4")	4.5 N-M
DN25 (1")	11.0 N-M
DN32 (1-1/4")	15.0 N-M
DN40 (1-1/2")	24.0 N-M
DN50 (2")	32.0 N-M
DN65 (2-1/2")	45.0 N-M
DN80 (3")	65.0 N-M
DN100 (4")	100.0 N-M

The above figures were obtained at 25 degrees C., 7 bar after 24 hours.

1.The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required the gland may be taken up on by first loosening the handle nut. Adjustment of the gland should be no more than one quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

Maintenance

A repair kit containing two seats, two body seals, one thrust washer and one stem packing is available for rebuilding each size and style valve.

Be sure to specify size, style, seat and seal materials when ordering. Optional components are also available (ball, stem, handle, etc.).

Refer to illustration on last page for part identification and assembly.

Rebuilding

WARNING- Ball Valves Can Trap Fluids in Ball Cavity When Closed

If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps are taken for safe removal and disassembly:

-Relieve the line pressure.

-Place the valve in half-open position and flush the line to remove any hazardous material from valve.

-All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.

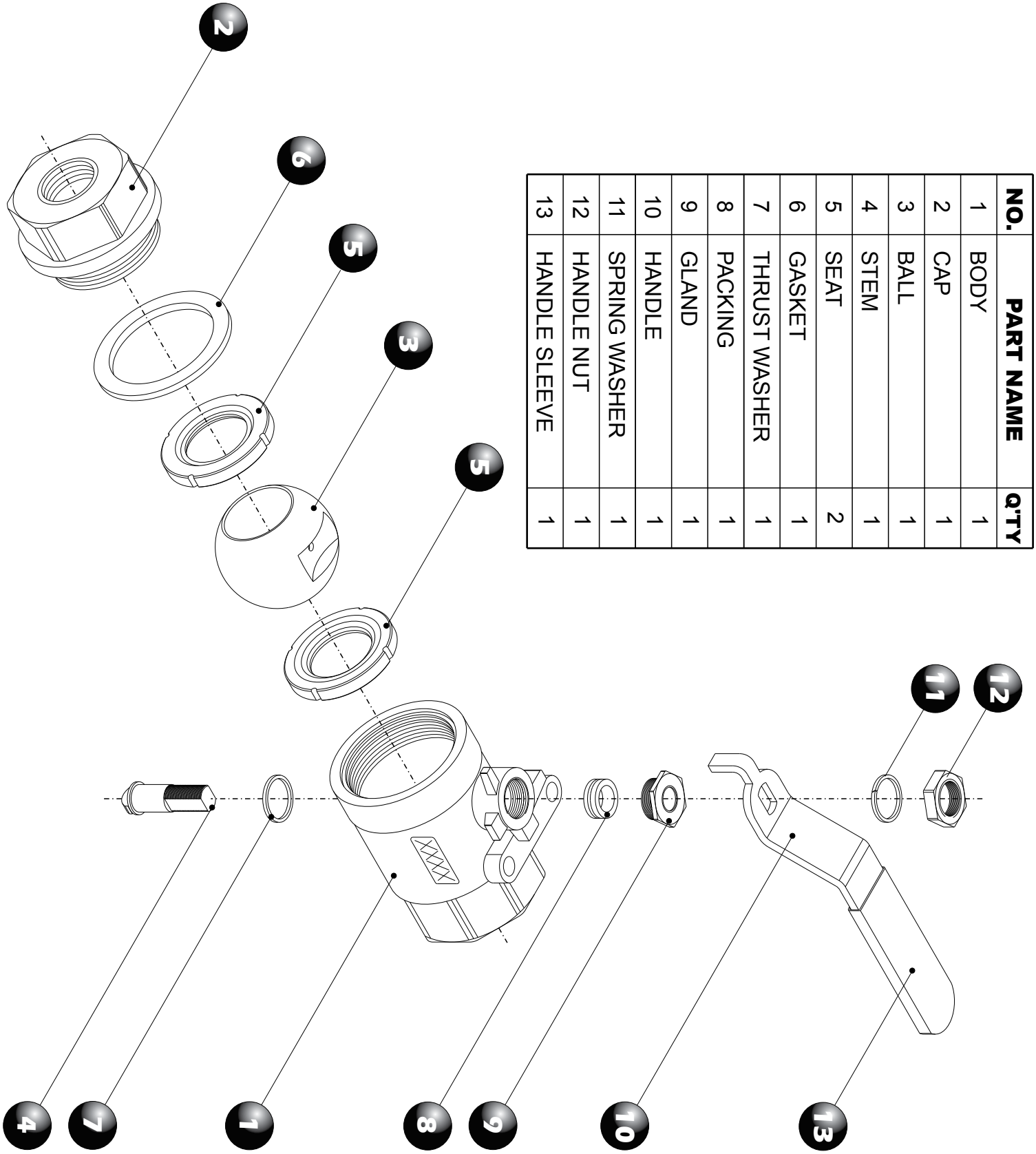
-A standard repair kit can be ordered which contains all necessary seats and seals to rebuild the valve. To order the repair kit, simply specify the valve size and figure number.

-If spare parts are necessary, include the complete valve code as given on the order, and then the part(s) that is (are) being ordered. For part description refer to the appropriate parts list.

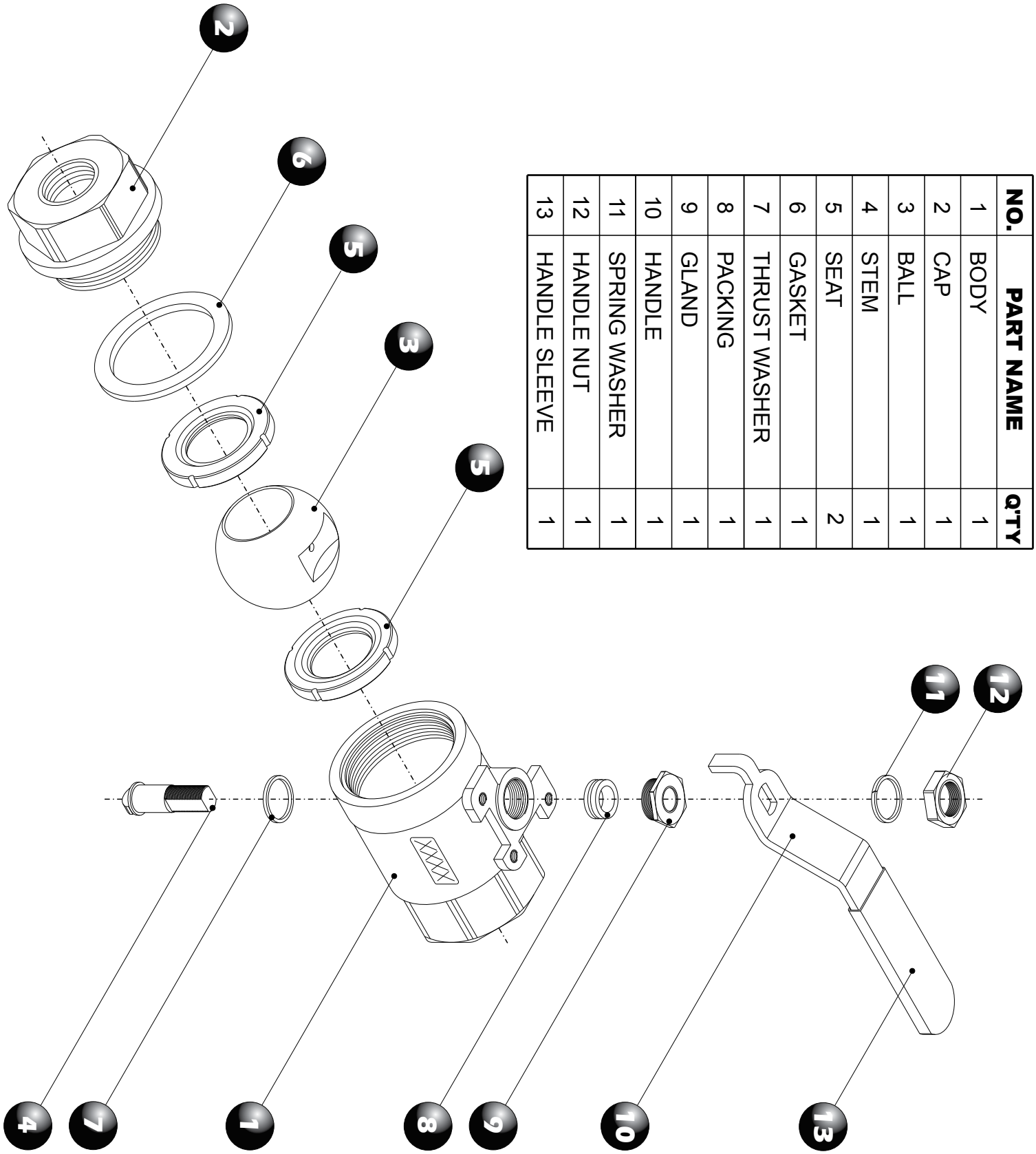
CAUTION: Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

1. Stem flats should be in line with valve body before valve is removed from line.
2. Remove valve from pipeline. Place valve on a clean surface and secure by clamping or bolting.
3. Unscrew and take body and end cap apart.
4. Remove end seal and cap seat.
5. With stem flats rotated perpendicular to valve body, remove body seat and ball.
6. If it is necessary to replace stem packing, remove handle nut, spring washer, handle and gland. Lower stem into body cavity and remove stem packing.

7. Clean and inspect all components to be sure they are free from foreign matter and pit marks, paying attention to areas that must maintain a seal (the surface against which the seats are installed, finished diameter on stem, inside pipe end surface, ball). These areas must be free from scratches and pitting.
8. Light marring from the action of the ball against the seats is normal and will not affect the operation.
9. Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.
10. Slide new thrust washer over stem and insert assembly through ball cavity and fully up into stem hole recess.
11. Assemble new stem packing and screw the gland. Adjust stem packing to feel firm.
    DO NOT over-tighten.
12. Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.
13. Put into new body seat.
14. Replace ball into cavity with stem flats in perpendicular position, making sure that port holes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.
15. Insert new seat and end seal into cap. Screw end cap into body and tighten sufficiently to ensure it is fully seated.
16. If practical, check leak tightness before reinstalling valve inline.



NO.	PART NAME	Q'TY
1	BODY	1
2	CAP	1
3	BALL	1
4	STEM	1
5	SEAT	2
6	GASKET	1
7	THRUST WASHER	1
8	PACKING	1
9	GLAND	1
10	HANDLE	1
11	SPRING WASHER	1
12	HANDLE NUT	1
13	HANDLE SLEEVE	1



NO.	PART NAME	Q'TY
1	BODY	1
2	CAP	1
3	BALL	1
4	STEM	1
5	SEAT	2
6	GASKET	1
7	THRUST WASHER	1
8	PACKING	1
9	GLAND	1
10	HANDLE	1
11	SPRING WASHER	1
12	HANDLE NUT	1
13	HANDLE SLEEVE	1

THREE PIECE BALL VALVE

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

INSTALLATION

1.TCI three piece ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.

2.After installation, cycle valve several times before putting into service.

3.Valves can't be used on unstable gases.

4.Max. working pressure: TC-03T/B/S/L & TC-03K/TC-03KC:1000 psi (69bar) ,

5.Max. working temperature is 200℃(392°F).

Caution for Brazing, Soldering, or Welding

1.If valve is to be brazed, soldered, or welded, the seats and body seals must be removed before installation in the following manner:

(a) Rotate valve ball into open position.

(b) Remove four body bolts.

(c) Rotate valve ball back to closed position and remove seats and ball.

(d) Remove body seals from pipe ends.

(e) Place ball, seats, and body seals in a clean suitable container during installation.

(f) Reassemble pipe ends to body.

2.When brazing, follow standard brazing procedures minimizing a direct flame on the valve body (ce nter section).

3.When welding, it may be desirable to wrap a damp towel around the center section.

4.After brazing or welding allow the valve to cool. Reassemble the seats, seals, and ball with the valve.

5.Carefully tighten the body bolts diagonally across from each other before securing to the following recommended torque:

VALVE SIZE	RECOMMENDED BOLT TORQUE
DN8~DN10 (1/4"~3/8")	6-8 N-M
DN15~DN25 (1/2"~1")	11-14 N-M
DN32~DN50 (1-1/4"~2")	16-19 N-M
Dn65 (2-1/2")	40-45 N-M
DN80~DN100 (3"~4")	74-80 N-M

6.After installation, cycle valve several times before putting into service.

OPERATION

1.A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, cross line the valve is closed. Also, the stem flats indicate the direction of the ball port.

2.Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temp erature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

3.Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, **DO NOT** Forces the valve in either direction; disassemble and clean before resuming service.

4.Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary depen ding on the media, pressure and length of time between cycles.

The following data w ill act as a guide regarding break-away torques:

VALVE SIZE	MAXIMUM BREAK-AWAY TORQUE
DN8 (1/4 ”)	3.0 N-M
DN10 (3/8 ”)	3.0 N-M
DN15 (1/2 ”)	4.5 N-M
DN20 (3/4 ”)	8.5 N-M
DN25 (1 ”)	11.0 N-M
DN32 (1-1/4 ”)	15.0 N-M
DN40 (1-1/2 ”)	24.0 N-M
DN50 (2 ”)	32.0 N-M
DN65 (2-1/2 ”)	45.0 N-M
DN80 (3 ”)	65.0 N-M
DN100 (4 ”)	100.0 N-M

The above figures were obtained at 25 degrees C., 7 bar after 24 hours.

5.The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required the gland may be taken up on by first loosening the handle nut. Adjustment of the gland should be no more than one quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

MAINTENANCE

A repair kit containing two seats, two body seals, one thrust washer and stem packing is available for rebuilding each size and style valve.
Be sure to specify size, style, seat and seal materials when ordineing. Optional components are also available (ball, stem, handle, etc.).
Refer to illustration on last page for part identification and assembly.

REBUILDING

WARNING - Ball Valves Can Trap Fluids in Ball Cavity When Closed

If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps are taken for safe removal and disassembly:

-Relieve the line pressure.
-Place the valve in half-open position and flush the line to remove any hazardous material from valve.
-All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.

CAUTION: Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

1.Stem flats should be in line with valve body before valve is removed from line.

2.Remove body bolts and disassemble from line, allowing sufficient pipe end clearance for center section removal.

3.Remove body end seals from pipe ends.

4.With stem flats rotated perpendicular to valve body, remove seats and ball.

5.If it is necessary to replace stem packing, remove handle nut, spring washer, handle and gland. Lower stem into body cavity, Remove stem packing and thrust washer.

6.Clean an d inspect all components to be sure they are free from foreign matter and pit marks, paying particular attention to areas that must maintain a seal (the surface against which the seats are installed, finished diameter on stem, ball, stem hole). These areas must be free from scratches and pitting.

7.Light marring from the action of the ball against the seats is normal and will not affect the operation of the valve.

8.Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.

9.Slide new thrust washer over stem and insert sasembly through ball cavity and fully up into stem hole recess.

10.Assemble new stem packing and screw the gland. Adjust stem packing to feel firm. **DO NOT over-tighten.**

11.Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.

12.Replace ball into cavity with stem flats in perpendicular position, making sure that portholes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.

13.Insert new seats into body and body end seals on pipe ends.

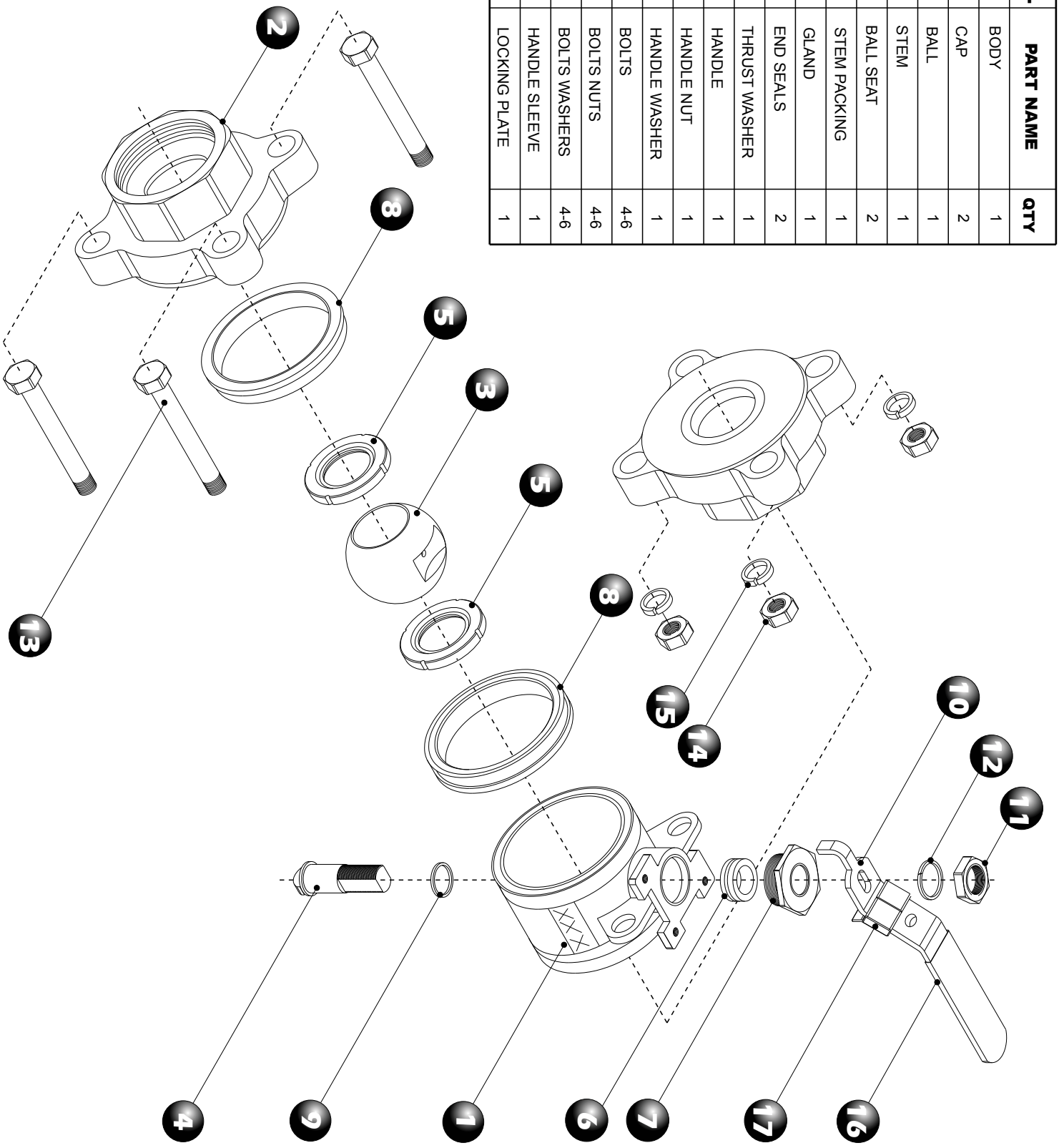
14.Replace center section back into line, allowing sufficient clearance to avoid pipe end sealing surface damage.

15.Assemble body bolts and nuts to valve.

16.Reinstall into service following the installation procedure.

17.If practical, check leak tightness before reinstalling valve inline.

NO.	PART NAME	QTY
1	BODY	1
2	CAP	2
3	BALL	1
4	STEM	1
5	BALL SEAT	2
6	STEM PACKING	1
7	GLAND	1
8	END SEALS	2
9	THRUST WASHER	1
10	HANDLE	1
11	HANDLE NUT	1
12	HANDLE WASHER	1
13	BOLTS	4-6
14	BOLTS NUTS	4-6
15	BOLTS WASHERS	4-6
16	HANDLE SLEEVE	1
17	LOCKING PLATE	1



1/2" ~ 8" 150#/300# FLANGED BALL VALVE

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

INSTALLATION

1.TCI flanged ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.

2.Install valve into pipeline and secure all flange bolts evenly.

3.After installation, cycle valve several times before putting into service.

RECOMMENDED FLANGE BOLT TORQUES

BOLT SIZE	RECOMMENDED BOLT TORQUE
M12 (1/2")	100 ~105 N-M
M16 (5/8")	205 ~ 215 N-M
M20 (3/4")	295 ~ 305 N-M
M24 (7/8")	500 ~ 515 N-M
M26 (1")	780 ~ 800 N-M

4.Valves can't be used on unstable gases.

5.Max. working pressure: TC-0802A/150#:275 psi (18.98 bar), TC-0802A/300#:720 psi (49.68 bar),

6.Max. working temperature is 200℃(392℉).

OPERATION

1.A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, cross line the valve is closed. Also, the stopper indicates the direction of the ball port.

2.Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temperature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

3.Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, **DO NOT** forces the valve in either direction; disassemble and clean before resuming service.

4.Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary depending on the media, pressure and length of time between cycles.

The following data will act as a guide regarding break-away torques:

Item No.:TC-0802A & TC-5000/5100 150#

VALVE SIZE	MAXIMUM BREAK-AWAY TORQUE
DN15 (1/2")	6.0 N-M
DN20 (3/4")	8.0 N-M
DN25 (1")	10.0 N-M
DN32 (1-1/4")	12.5 N-M
DN40 (1-1/2")	24.0 N-M
DN50 (2")	30.0 N-M
DN65 (2-1/2")	45.0 N-M
DN80 (3")	79.0 N-M
DN100 (4")	110.0 N-M
DN125 (5")	150.0 N-M
DN150 (6")	220.0 N-M
DN200 (8")	500.0 N-M

Item No.:TC-0802A 300#

VALVE SIZE	MAXIMUM BREAK-AWAY TORQUE
DN15 (1/2")	6.0 N-M
DN20 (3/4")	8.0 N-M
DN25 (1")	10.0 N-M
DN32 (1-1/4")	12.5 N-M
DN40 (1-1/2")	24.0 N-M
DN50 (2")	30.0 N-M
DN65 (2-1/2")	45.0 N-M
DN80 (3")	79.0 N-M
DN100 (4")	110.0 N-M
DN125 (5")	150.0 N-M
DN150 (6")	220.0 N-M
DN200 (8")	500.0 N-M

The above figures were obtained at 25 degrees C., 7 bar after 24 hours.

The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required the gland bolts may be fastened. Adjustment of the gland bolts should be no more than one-quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

MAINTENANCE

A repair kit containing two seats, two body seals, one thrust washer and stem packing is available for rebuilding each size and style valve.

Be sure to specify size, style, seat and seal materials when ordering. Optional components are also available (ball, stem, handle, etc.).

Refer to illustration on last page for part identification and assembly.

REBUILDING

WARNING- Ball Valves Can Trap Fluids in Ball Cavity When Closed

If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps are taken for safe removal and disassembly:

-Relieve the line pressure.
-Place the valve in half-open position and flush the line to remove any hazardous material from valve.
-All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.

CAUTION: Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

1. Before removing valve from line, rotate ball into the open position.
2. Remove valve from pipeline. Place valve on a clean surface and secure by clamping or bolting.
3. Unscrew the nuts and set aside. Take body and cap apart.
4. Remove body end seal, cap seat and bolts.
5. Rotate ball into the closed position. Remove ball and body seat.
6. If it is necessary to replace stem packing, remove snap ring, handle, stopper, gland bolts and gland. Lower stem into body cavity. Remove stem packing and thrust washer.
7. Clean and inspect all components to be sure they are free from foreign matter and pit marks, paying particular attention to areas that must maintain a seal (the surface against which the seats and body end seal are installed, finished diameter on stem, ball, stem hole). These areas must be free from scratches and pitting.
8. Light marring from the action of the ball against the seats is normal and will not affect the operation.
9. Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.

10.Slide new thrust washer over stem and insert assembly through ball cavity and fully up into stem hole recess.

11.Assemble new stem packing and screw the gland. Adjust stem packing to feel firm.
DO NOT over-tighten.

12.Install stopper and snap ring.

13.Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.

14.Assemble new seat into body end and install ball into cavity, making sure that portholes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.

15.Insert body end seal on seal surface of body cavity. Install second seat into cap cavity.

16.Screw bolts onto the body. Assemble cap and secure with nuts to the following recommended torque.

Item No.:TC-0802A 150#

BOLT SIZE	RECOMMENDED BOLT TORQUE
5/16" Dia. (1/2" ~3/4")	27 - 33 N-M
3/8" Dia. (1" ~1 1/4")	40 - 46 N-M
1/2" Dia. (1 1/2" ~4")	100 - 105 N-M
5/8" Dia. (5" ~8")	205 - 215 N-M

Item No.:TC-5000/5100 150#

BOLT SIZE	RECOMMENDED BOLT TORQUE
5/16" Dia. (1/2" ~3/4")	27 - 33 N-M
3/8" Dia. (1" ~1 1/4")	40 - 46 N-M
1/2" Dia. (1 1/2" ~2 1/2")	100 - 105 N-M
5/8" Dia. (3" ~6")	205 - 215 N-M

Item No.:TC-5000/5100 300#

BOLT SIZE	RECOMMENDED BOLT TORQUE
3/8" Dia. (1/2" ~1 1/4")	40 - 46 N-M
1/2" Dia. (1 1/2" ~3")	100 - 105 N-M
5/8" Dia. (4" ~5")	205 - 215 N-M
3/4" Dia. (6")	295 - 305 N-M
7/8" Dia. (8")	500 - 515 N-M

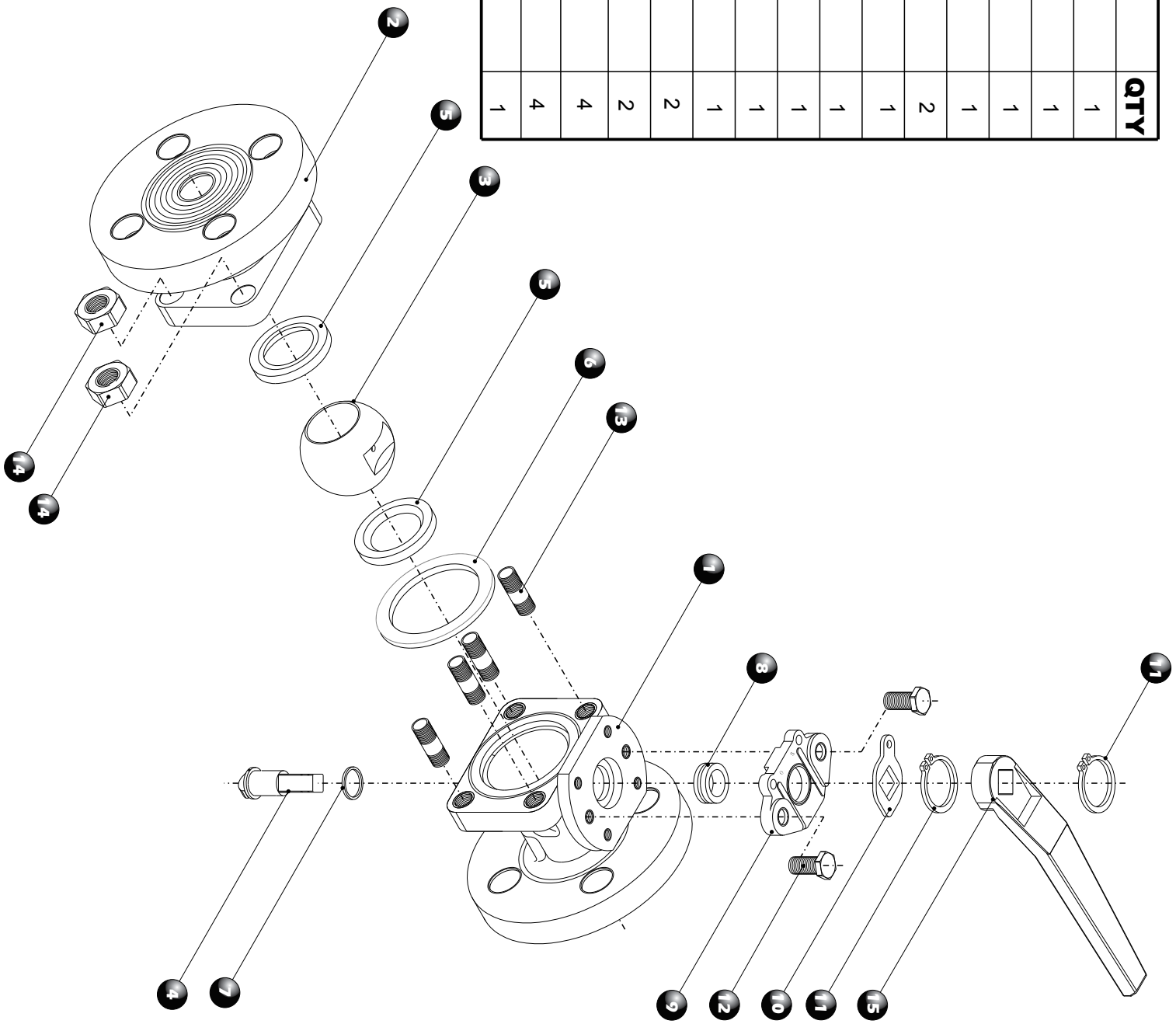
17.Assemble handle and snap ring.

18.Cycle valve open and close to ensure smooth operation.

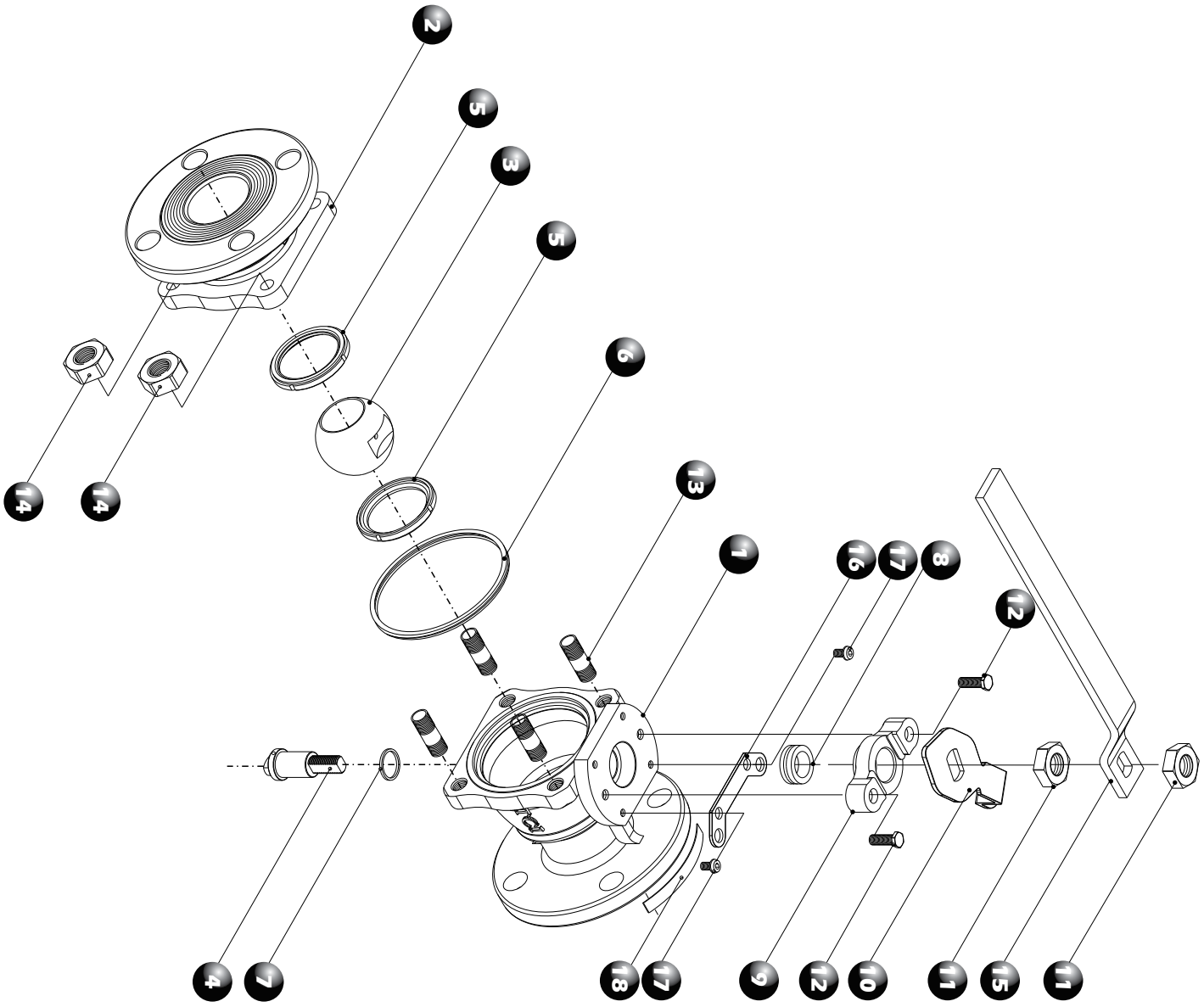
19.Reinstall into service following the installation procedure.

20.If practical, check leak tightness before reinstalling valve inline.

NO.	PART NAME	QTY
1	BODY	1
2	CAP	1
3	BALL	1
4	STEM	1
5	SEAT	2
6	GASKET	1
7	THRUST WASHER	1
8	PACKING	1
9	GLAND	1
10	STOPPER	1
11	SNAP RING	2
12	GLAND BOLT	2
13	BOLT	4
14	NUT	4
15	HANDLE	1



NO.	PART NAME	QTY
1	BODY	1
2	CAP	1
3	BALL	1
4	STEM	1
5	SEAT	2
6	GASKET	1
7	THRUST WASHER	1
8	PACKING	1
9	GLAND	1
10	STOPPER	1
11	HANDLE NUT	2
12	GLAND BOLT	2
13	STUD BOLT	4
14	SET NUT	4
15	HANDLE	1
16	LOCKING PLATE	1
17	SET BOLT	2
18	NAME PLATE	1



THREE PIECE BALL VALVE, 1000 WOG & 1500/2000 WOG

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

INSTALLATION

1.TCI three piece ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.

2.After installation, cycle valve several times before putting into service.

3.Valves can't be used on unstable gases.

4.Max. working pressure : TC-3000:1000 psi (69bar),

TC-4000:1/2"~1" is 2000 psi(138 bar) 1 1/4"~2" is 1500 psi(103.5 bar)

5.Max. working temperature is 200℃(392℉).

Caution for Brazing, Soldering, or Welding

1.If valve is to be brazed, soldered, or welded, the seats and body seals must be removed before installation in the following manner:

(a) Rotate valve ball into open position.

(b) Remove four body bolts.

(c) Rotate valve ball back to closed position and remove seats and ball.

(d) Remove body seals from pipe ends.

(e) Place ball, seats, and body seals in a clean suitable container during installation.

(f) Reassemble pipe ends to body.

2.When brazing, follow standard brazing procedures minimizing a direct flame on the valve body (center section).

3.When welding, it may be desirable to wrap a damp towel around the center section.

4.After brazing or welding allow the valve to cool. Reassemble the seats, seals, and ball with the valve.

5.Carefully tighten the body bolts diagonally across from each other before securing to the following recommended torque:

VALVE SIZE	RECOMMENDED BOLT TORQUE
DN8~DN10 (1/4"~3/8")	6 - 8 N-M
DN15~DN25 (1/2"~1")	11 - 14 N-M
DN32~DN50 (1-1/4"~2")	16 - 19 N-M
DN65 (2-1/2")	40 - 45 N-M
DN80~DN100 (3"~4")	74 - 80 N-M

6.After installation, cycle valve several times before putting into service.

OPERATION

1.A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, cross line the valve is closed. Also, the stem flats indicate the direction of the ball port.

2.Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temperature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

3.Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, **DO NOT** forces the valve in either direction; disassemble and clean before resuming service.

4.Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary de pending on the media, pressure and length of time between cycles.

The following data will act as a guide regarding break-away torques:

Item No.: TC-3000

VALVE SIZE	MAXIMUM BREAK-AWAY TORQUE
DN15 (1/2")	4.5 N-M
DN20 (3/4")	8.5 N-M
DN25 (1")	11.0 N-M
DN32 (1-1/4")	15.0 N-M
DN40 (1-1/2")	24.0 N-M
DN50 (2")	32.0 N-M
DN65 (2-1/2")	45.0 N-M
DN80 (3")	65.0 N-M
DN100 (4")	100.0 N-M

Item No.: TC-4000

VALVE SIZE	MAXIMUM BREAK-AWAY TORQUE
DN15 (1/2")	5.9 N-M
DN20 (3/4")	8.8 N-M
DN25 (1")	14.7 N-M
DN32 (1-1/4")	19.6 N-M
DN40 (1-1/2")	39.3 N-M
DN50 (2")	49.1 N-M

The above figures were obtained at 25 degrees C., 7 bar after 24 hours.

1.The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required the gland may be taken up on by first loosening the handle nut. Adjustment of the gland should be no more than one quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

MAINTENANCE

A repair kit containing two seats, two body seals, one thrust washer and stem packing is available for rebuilding each size and style valve.

Be sure to specify size, style, seat and seal materials when ordering. Optional components are also available (ball, stem, handle, etc.).

Refer to illustration on last page for part identification and assembly.

REBUILDING

WARNING- Ball Valves Can Trap Fluids in Ball Cavity When Closed

If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps are taken for safe removal and disassembly:

-Relieve the line pressure.

-Place the valve in half-open position and flush the line to remove any hazardous material from valve.

-All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.

CAUTION: Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

1.Before removing valve from line, rotate ball into the open position.

2. Remove body bolts and disassemble from line, allowing sufficient pipe end clearance for center section removal. Remove body end seals from pipe ends.

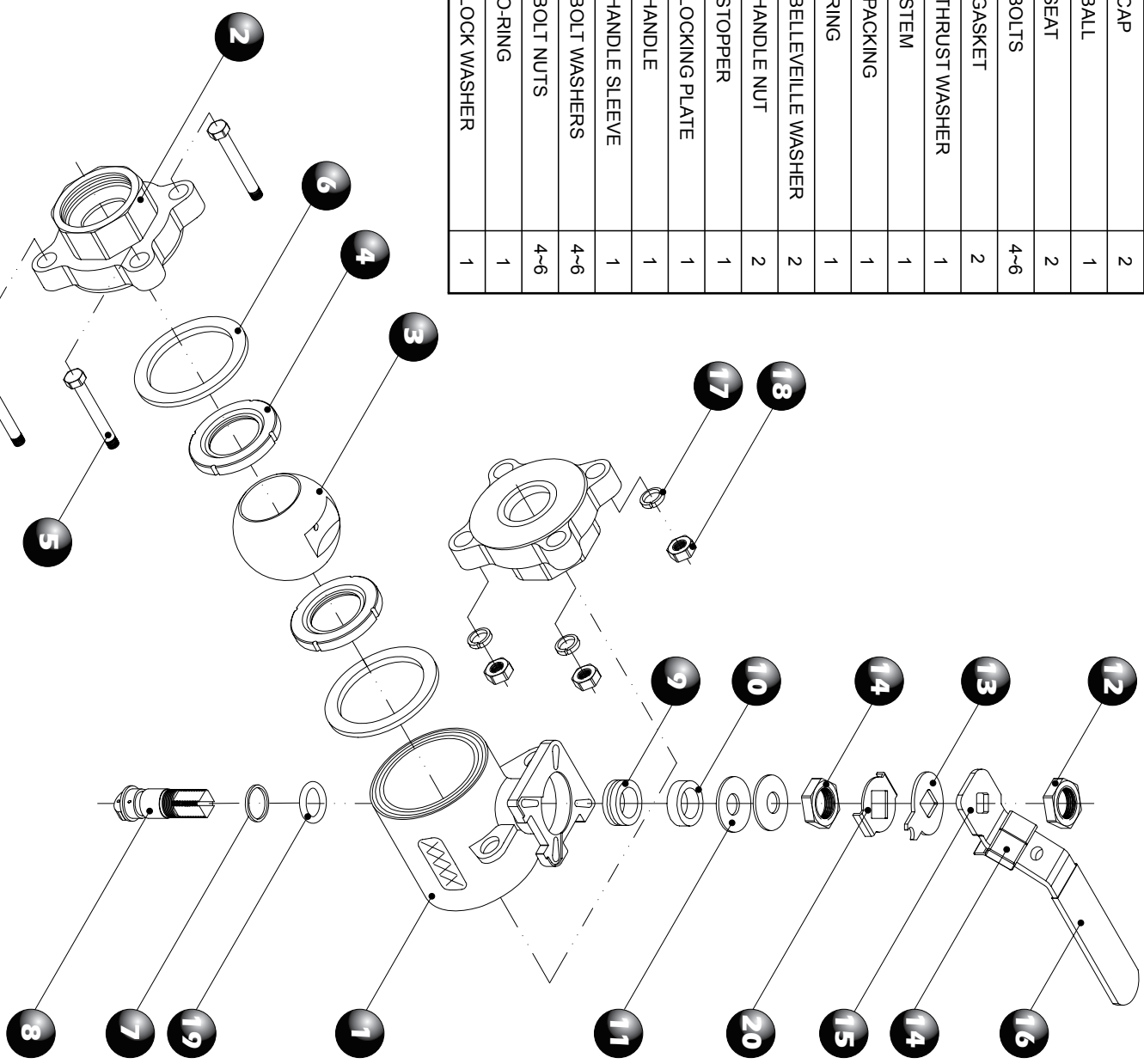
3. Rotate ball into the closed position. Remove seats and ball.

If it is necessary to replace stem packing, remove handle nut, handle, stopper, stem nut, concave

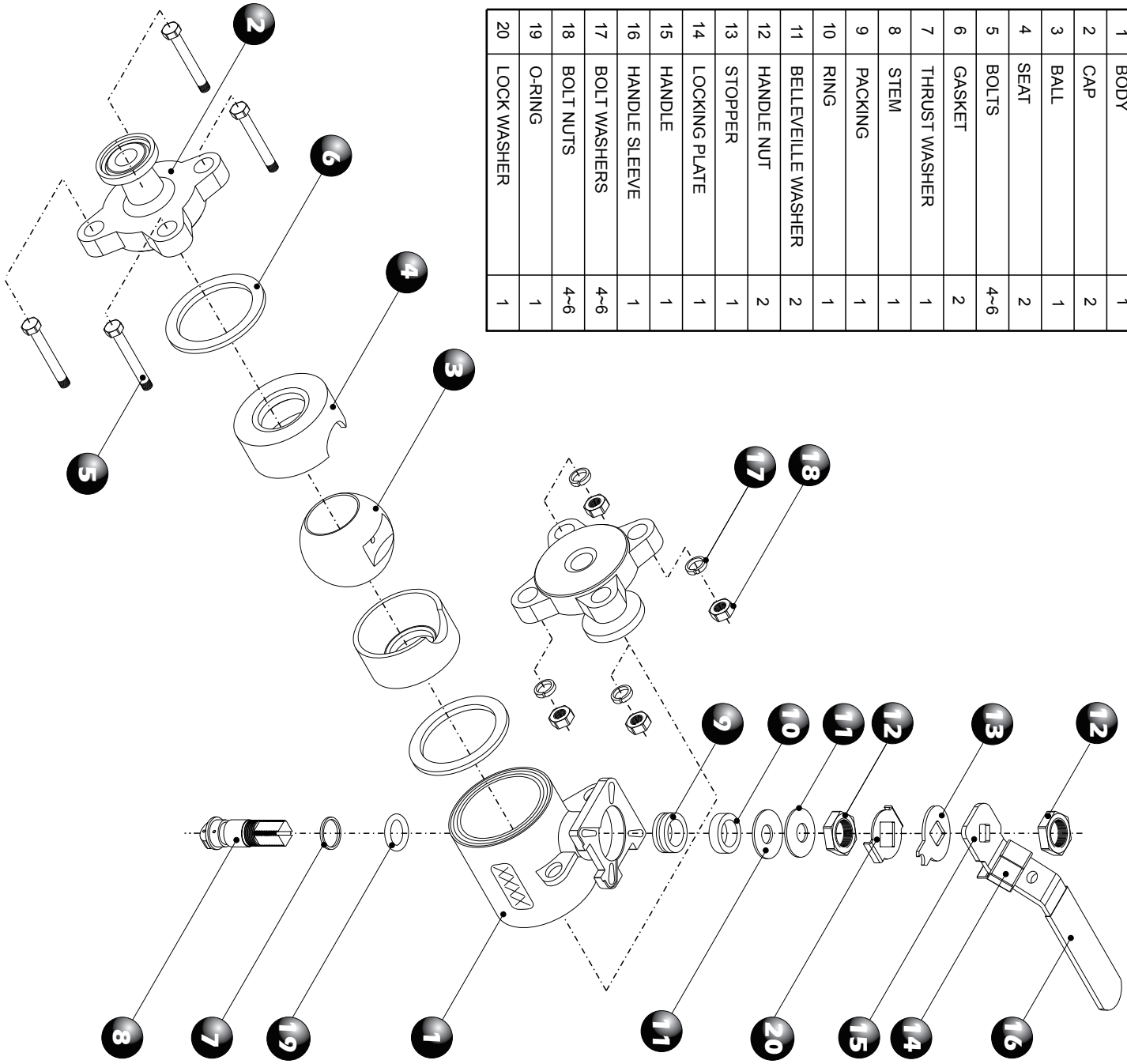
washer and ring. Lower stem into body cavity, Remove stem packing and thrust washer.

1. Clean and inspect all components to be sure they are free from foreign matter and pit marks, paying particular attention to areas that must maintain a seal (the surface against which the seats are installed, finished diameter on stem, ball, stem hole). These areas must be free from scratches and pitting.
2. Light marring from the action of the ball against the seats is normal and will not affect the operation of the valve.
3. Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.
4. Slide new thrust washer over stem and insert assembly through ball cavity and fully up into stem hole recess.
5. Assemble new stem packing, ring, concave washer and screw stem nut. Adjust stem packing to feel firm. **DO NOT over-tighten.**
6. Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.
7. Replace ball into cavity with stem flats in perpendicular position, making sure that portholes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.
8. Insert new seats into body and body end seals on pipe ends.
9. Replace center section back into line, allowing sufficient clearance to avoid pipe end sealing surface damage.
10. Assemble body bolts and nuts to valve. Put stopper, handle and screw handle nut onto stem.
11. Reinstall into service following the installation procedure.
12. If practical, check leak tightness before reinstalling valve inline.

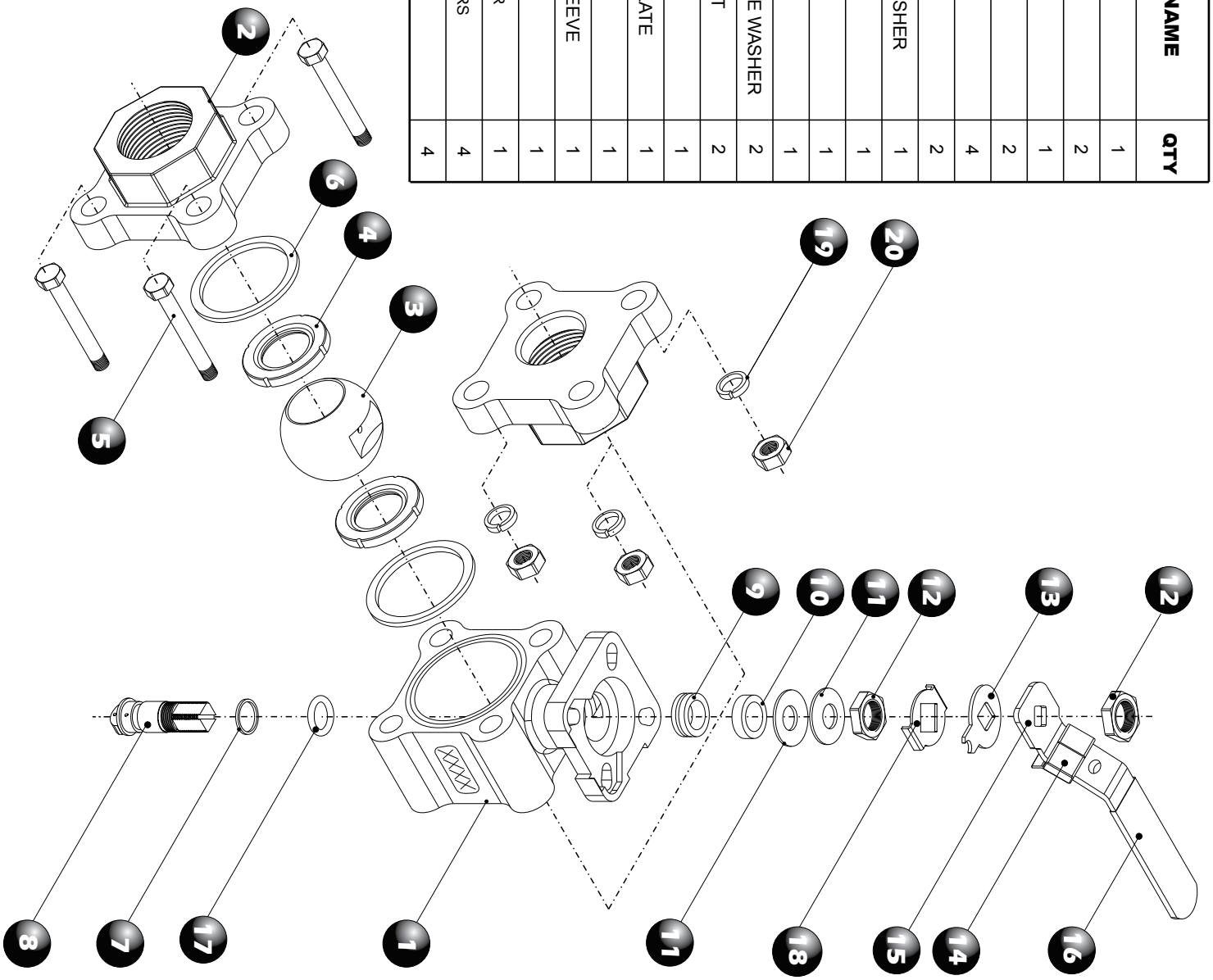
NO.	PART NAME	QTY
1	BODY	1
2	CAP	2
3	BALL	1
4	SEAT	2
5	BOLTS	4~6
6	GASKET	2
7	THRUST WASHER	1
8	STEM	1
9	PACKING	1
10	RING	1
11	BELLEVEILLE WASHER	2
12	HANDLE NUT	2
13	STOPPER	1
14	LOCKING PLATE	1
15	HANDLE	1
16	HANDLE SLEEVE	1
17	BOLT WASHERS	4~6
18	BOLT NUTS	4~6
19	O-RING	1
20	LOCK WASHER	1



NO.	PART NAME	QTY
1	BODY	1
2	CAP	2
3	BALL	1
4	SEAT	2
5	BOLTS	4~6
6	GASKET	2
7	THRUST WASHER	1
8	STEM	1
9	PACKING	1
10	RING	1
11	BELLEVEILLE WASHER	2
12	HANDLE NUT	2
13	STOPPER	1
14	LOCKING PLATE	1
15	HANDLE	1
16	HANDLE SLEEVE	1
17	BOLT WASHERS	4~6
18	BOLT NUTS	4~6
19	O-RING	1
20	LOCK WASHER	1



NO.	PART NAME	QTY
1	BODY	1
2	CAP	2
3	BALL	1
4	SEAT	2
5	BOLTS	4
6	GASKET	2
7	THRUST WASHER	1
8	STEM	1
9	PACKING	1
10	RING	1
11	BELLEVEILLE WASHER	2
12	HANDLE NUT	2
13	STOPPER	1
14	LOCKING PLATE	1
15	HANDLE	1
16	HANDLE SLEEVE	1
17	O-RING	1
18	LOCK WASHER	1
19	BOLT WASHERS	4
20	BOLT NUTS	4



1"~ 4" 150# ONE PIECE, STANDARD PORT, FLANGED BALL VALVE

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

INSTALLATION

1.TCI flanged ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.

2.Install valve into pipeline and secure all flange bolts evenly. After installation, cycle valve several times before putting into service

RECOMMENDED FLANGE BOLT TORQUES

BOLT SIZE	RECOMMENDED BOLT TORQUE
M12 (1/2")	100 ~105 N-M
M16 (5/8")	205 ~ 215 N-M
M20 (3/4")	295 ~ 305 N-M
M24 (7/8")	500 ~ 515 N-M
M26 (1")	780 ~ 800 N-M

4. Valves can't be used on unstable gases.
5. Max. working pressure is 275 psi (18.98 bar)
6. Max. working temperature is 200°C(392°F).

OPERATION

1.A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, cross line the valve is closed. Also, the stopper indicates the direction of the ball port.

2.Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temperature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

3.Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, **DO NOT** forces the valve in either direction; disassemble and clean before resuming service.

4.Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary depending on the media, pressure and length of time between cycles.

The following data will act as a guide regarding break-away torques:

VALVE SIZE	MAXIMUM BREAK-AWAY TORQUE
DN25 (1")	8.0 N-M
DN40 (1-1/2")	12.5 N-M
DN50 (2")	24.0 N-M
DN65 (2-1/2")	34.0 N-M
DN80 (3")	59.0 N-M
DN100 (4")	79.0 N-M

The above figures were obtained at 25 degrees C., 7 bar after 24 hours.

5.The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required the gland bolts may be fastened. Adjustment of the gland bolts should be no more than one-quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

MAINTENANCE

A repair kit containing two seats, one body seal, thrust washer and stem packing is available for rebuilding each size and style valve.

Be sure to specify size, style, seat and seal materials when ordering. Optional components are also available (ball, stem, handle, etc.).

Refer to illustration on last page for part identification and assembly.

REBUILDING

WARNING- Ball Valves Can Trap Fluids in Ball Cavity When Closed

If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps are taken for safe removal and disassembly:

-Relieve the line pressure.

-Place the valve in half-open position and flush the line to remove any hazardous material from valve.

-All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.

CAUTION: Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

1.Before removing valve from line, rotate ball into the open position.

2.Remove valve from pipeline. Place valve on a clean surface and secure by clamping or bolting.

3.Unscrew cap(end plug) and take apart.

4.Remove body seal and cap seat.

5.Rotate ball into the closed position. Remove ball and body seat.

6.If it is necessary to replace stem packing, remove snap ring, handle, stopper, gland bolts and gland. Lower stem into body cavity. Remove stem packing and thrust washer.

7.Clean and inspect all components to be sure they are free from foreign matter and pit marks, paying particular attention to areas that must maintain a seal (the surface against which the seats and body end seal are installed, finished diameter on stem, ball, stem hole). These areas must be free from scratches and pitting.

8.Light marring from the action of the ball against the seats is normal and will not affect the operation.

9.Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.

10.Slide new thrust washer over stem and insert assembly through ball cavity and fully up into stem hole recess.

11.Assemble new stem packing and screw the gland. Adjust stem packing to feel firm. **DO NOT over-tighten.**

12.Install stopper and snap ring.

13.Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.

14.Assemble new seat into body end and install ball into cavity, making sure that portholes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.

15.Insert body seal on seal surface of body cavity. Install second seat into cap cavity.

16.Screw cap(end plug) into the body and tighten sufficiently to ensure a metal to metal secondary seal. Cap(end plug) may project above surrounding serrated face by up to 0.25mm.

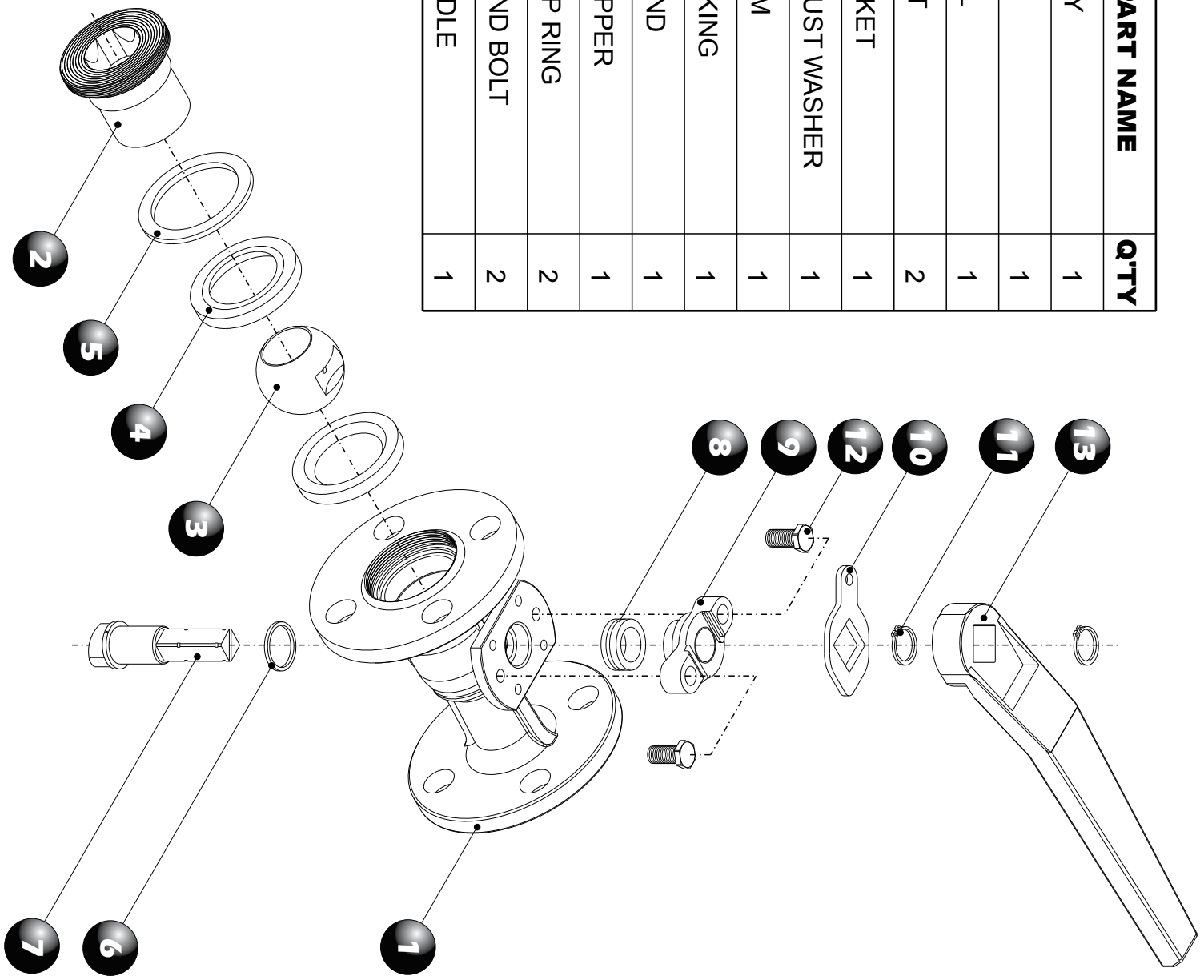
17.Assemble handle and snap ring.

18.Cycle valve open and close to ensure smooth operation.

19.Reinstall into service following the installation procedure.

20.If practical, check leak tightness before reinstalling valve inline.

NO	PART NAME	Q'TY
1	BODY	1
2	CAP	1
3	BALL	1
4	SEAT	2
5	GASKET	1
6	THRUST WASHER	1
7	STEM	1
8	PACKING	1
9	GLAND	1
10	STOPPER	1
11	SNAP RING	2
12	GLAND BOLT	2
13	HANDLE	1



1" ~4" 150# FULL PORT BALL VALVE, FLANGED (with ISO 5211 direct mount pad)

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

INSTALLATION

1.TCI flanged ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.

2.Install valve into pipeline and secure all flange bolts evenly.

3.After installation, cycle valve several times before putting into service.

RECOMMENDED FLANGE BOLT TORQUES

BOLT SIZE	RECOMMENDED BOLT TORQUE
M12 (1/2")	100 ~105 N-M
M16 (5/8")	205 ~ 215 N-M

4.Valves can't be used on unstable gases.

5.Max. working pressure: TC-7000 (FS):275 psi (18.98 bar),

6.Max. working temperature is 200℃(392℉).

OPERATION

1.A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, cross line the valve is closed. Also, the stopper indicates the direction of the ball port.

2.Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temperature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

3.Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, **DO NOT** forces the valve in either direction; disassemble and clean before resuming service.

4.Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary depending on the media, pressure and length of time between cycles.

The following data will act as a guide regarding break-away torques:

Item No.:TC-7000 (FS) 150#

VALVE SIZE	MAXIMUM BREAK-AWAY TORQUE
DN25 (1")	10.0 N-M
DN40 (1-1/2")	24.0 N-M
DN50 (2")	30.0 N-M
DN65 (2-1/2")	45.0 N-M
DN80 (3")	79.0 N-M
Dn100 (4")	110.0 N-M

The above figures were obtained at 25 degrees C., 7 bar after 24 hours.
The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required ,the stem nut gland bolts may be fastened. Adjustment of the stem nut should be no more than one-quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

MAINTENANCE

A repair kit containing two seats, one body seal, one thrust washer , one stem packing and o-ring is available for rebuilding each size and style valve.
Be sure to specify size, style, seat and seal materials when ordering. Optional components are also available (ball, stem, handle, etc.).
Refer to illustration on last page for part identification and assembly.

REBUILDING

WARNING- Ball Valves Can Trap Fluids in Ball Cavity When Closed
If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps are taken for safe removal and disassembly:
-Relieve the line pressure.
-Place the valve in half-open position and flush the line to remove any hazardous material from valve.
-All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.

CAUTION: Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

1. Before removing valve from line, rotate ball into the open position.
2. Remove valve from pipeline. Place valve on a clean surface and secure by clamping or bolting.
3. Unscrew the nuts and set aside. Take body and cap apart.
4. Remove body end seal, cap seat and bolts.
5. Rotate ball into the closed position. Remove ball and body seat.
6. If it is necessary to replace stem packing, remove handle nut , handle, stopper, stem nut, and belleveille washer, Lower stem into body cavity. Remove stem packing and thrust washer.
7. Clean and inspect all components to be sure they are free from foreign matter and pit marks, paying particular attention to areas that must maintain a seal (the surface against which the seats and body end seal are installed, finished diameter on stem, ball, stem hole). These areas must be free from scratches and pitting.
8. Light marring from the action of the ball against the seats is normal and will not affect the operation.
9. Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.
10. Slide new thrust washer over stem and insert assembly through ball cavity and fully up into stem hole recess.
11. Assemble new stem packing and put the belleveille washer, screw the stem nut. Adjust stem packing to feel firm. **DO NOT over-tighten.**
12. Install stopper , handle and handle nut .
13. Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.
14. Assemble new seat into body end and install ball into cavity, making sure that portholes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.
15. Insert body end seal on seal surface of body cavity. Install second seat into cap cavity.
16. Screw bolts onto the body. Assemble cap and secure with nuts to the following recommended torque.

Item No.:TC-7000 150#

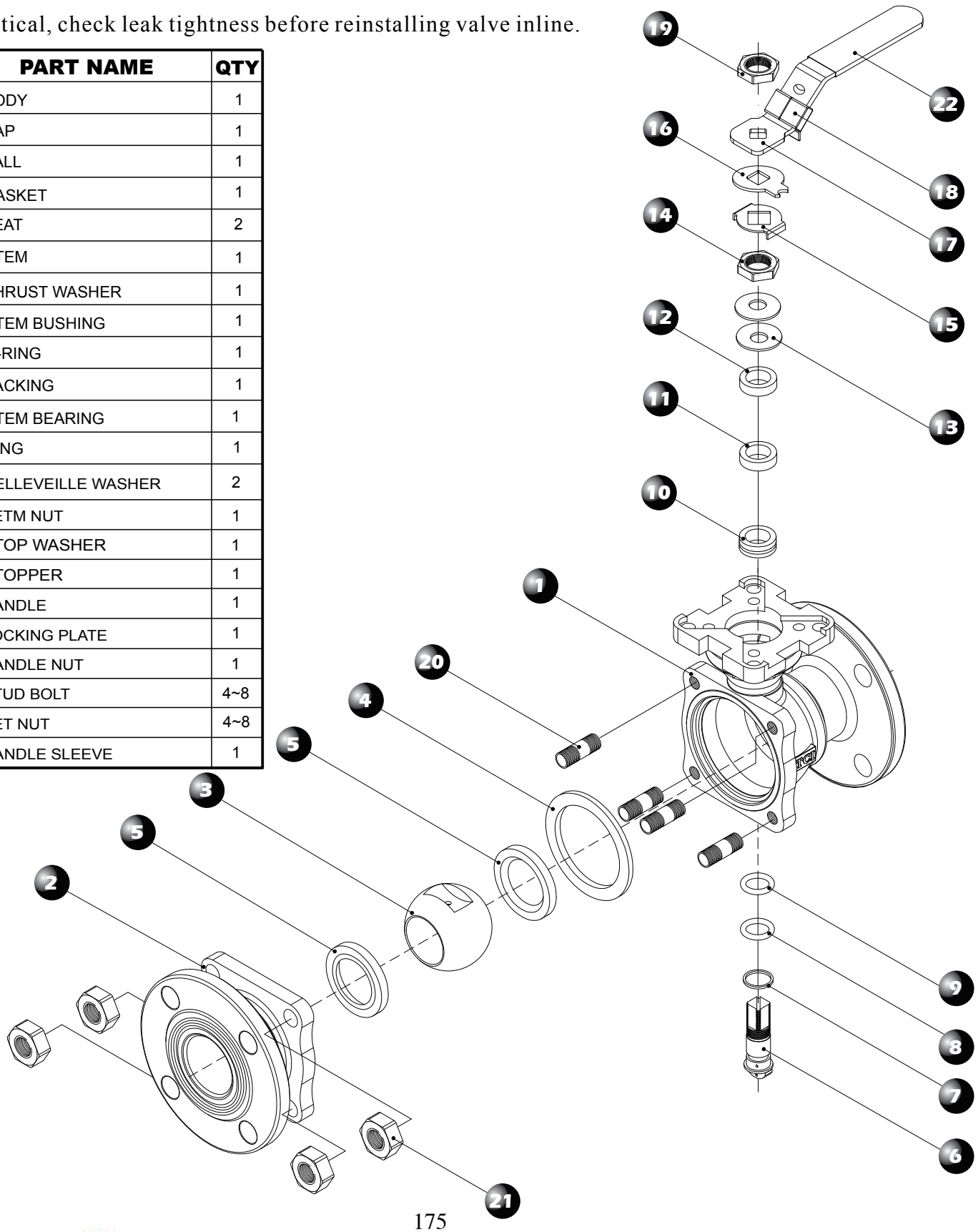
BOLT SIZE	RECOMMENDED BOLT TORQUE
3/8" Dia. (1")	40 – 46 N-M
1/2" Dia. (1 1/2" ~2 1/2")	100 – 105 N-M
5/8" Dia. (3" ~ 4")	205 – 215 N-M

17.Cycle valve open and close to ensure smooth operation.

18.Reinstall into service following the installation procedure.

19.If practical, check leak tightness before reinstalling valve inline.

NO.	PART NAME	QTY
1	BODY	1
2	CAP	1
3	BALL	1
4	GASKET	1
5	SEAT	2
6	STEM	1
7	THRUST WASHER	1
8	STEM BUSHING	1
9	O-RING	1
10	PACKING	1
11	STEM BEARING	1
12	RING	1
13	BELLEVEILLE WASHER	2
14	SETM NUT	1
15	STOP WASHER	1
16	STOPPER	1
17	HANDLE	1
18	LOCKING PLATE	1
19	HANDLE NUT	1
20	STUD BOLT	4~8
21	SET NUT	4~8
22	HANDLE SLEEVE	1



MATERIAL SAFETY DATA SHEET (MSDS)

FOR STAINLESS STEEL BALL VALVE (NON-FIRE SAFE APPROVAL)

PRODUCT IDENTITY：Stainless Steel Ball Valve (Non-Fire Safe approval) MSDS# : 001

SECTION I. IDENTIFICATION OF TH E SUBSTANCE AND OF THE COMPANY

MANUFACTURE'S NAME：Various

DISTRIBUTOR：TA CHEN INTERNATIONAL, INC.

ADDRESS：
LOS ANGELES (USA Headquarter)
5855 Obispo Ave. Long Beach, CA. 90805

Emergency Telphone Number : 404-431-1607

Customer Service：562 -808 - 8000

Toll Free：800 -364 - 8389

Company Contact : Mr. Tony Garmon

CHEMICAL NAME AND SYNONYMS：
Stainless Steel Alloys：Type 304, Type 316 , and
ASTM A351. Teflon and Reinforced Teflon.
Molecularly Enhanced Teflon. Fluoroelastomer.

SECTION II. HAZARDOUS INGREDIENTS

ELEMENT	CAS NO.	% RANGE	OSHA PEL (mg / M^3)	ACGIH TLV (mg / M^3)
Iron	7439-89-6	65-68.5	10 dust	5 dust
Chromium	7440-66-6	17 - 19	0.5	0.5 dust / fume
Nickel	7440-02-0	9 -12.5	2	2
Molybdenum	7439-98-7	0 -2.5	5 respirable dust, 10 total dust	10 dust
Manganese	7439-96-5	1.75-2	1	5
Cobalt	7440-48-4	0.2 -0.75	0.05 dust / fume	0.05 dust / fume
Pure Teflon *				
Reinforced Teflon *				
Molecularly Enhanced Teflon *				
Fluoroelastomer*				

*Food grade plastic material. **MSDS** sheets are available upon request.

SECTION III. PHYSICAL DATA

MELTING POINT： 2400 to 2800°F

Specific gravity：7.5 to 8.5 g/cc

BOILING POINT： Not Applicable

VAPOR PRESSURE：Not Applicable

Stainless Steel is a shiny silver-gray colored metallic solid, it has no odor,
and is not solvable in water.

SECTION IV. FIRE & EXPLOSION HAZARD DATA

FLASH POINT：Not Applicable
Auto-IGNITION TEMPERTURE：Not Applicable

FLAMMABLE LIMITS： LEL N/A UEL N/A
SPECIAL FIRE FIGHTING PROCEDURES：
None when solid.

UNUSUAL FIRE AND EXPLOSION HAZARDS：
Do not use water on molten metal

EXTINGUISHING MEDIA：Water spray or ABC dry chemical

NATIONAL FIRE PROTECTION ASSOCIATION DATA：
Health -1 Flammability -0
Reactivity-0 Special - None

SECTION V. HEALTH HAZARD DATA Stainless Steel Ball Valves

THRESHHOLD LIMIT VALUE： See SECTION II -HAZARDOUS INGREDIENTS

EFFECTS OF OVEREXPOSURE：No adverse health effects when handling intact parts.

Exposure to stainless steel grinding dust and welding fumes may cause siderosis(spots on lungs) and severe respiratory tract irritation due to the effect of chromium, nickel, and other toxic alloy metals.

EMERGENCY AND FIRST AID PROCEDURES：In all cases seek medical assistance.

INHALATION ?Remove person with symptoms to fresh air, thoroughly shower, and change cloths.

INGESTION ?Seek medical assistance.
EYE ?Flush with clean water for thirty minutes.
SKIN ?Wash thoroughly with soap and water.

SECTION VI. REACTIVITY DATA

STABILITY：Stainless Steel metal is stable at room temperature.
INCOMPATABILITY：(Materials to avoid) None known.

HAZARDOUS DECOMPOSITION PRODUCTS：None.

HAZARDOUS POLYMERIZATION：Will not occur.

CONDITIONS TO AVOID： None known.

SECTION VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED：Stainless Steel parts spills should constitute only a trip and fall hazard.

WASTE DISPOSAL METHOD：
Stainless Steel is valuable and may be recycled by foundries and secondary metal smelters.
Avoid melting stainless steel chips covered with metal cutting oil since this will cause fugitive emissions of dense smoke into the air.
Teflon parts may be disposed of in a sanitary land fill or recycled as Teflon plastic filler.

SECTION VIII. SPECIAL PR OTECTION INFORMATION

RESPIRATORY PROTECTION：(Specify Type) Use a NIOSH approved welding respirator when melting, welding or grinding stainless steel.

VENTILATION：Local exhaust ventilation is recommended when melting, welding or grinding stainless steel.

EYE PROTECTION：Wear appropriate eye protection when melting, welding, cutting, or grinding stainless steel.

PROTECTIVE GLOVES：Use proper gloves when welding. Use cut resistant gloves when handling metal chips.

OTHER PROTECTIVE EQUIPMENT：Wear clothing appropriate to the fabrication operation attempted with this product.

SECTION IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING：

Protect stainless steel parts from moisture and iron to avoid discoloration and contamination.

OTHER PRECAUTIONS：Never place wet stainless steel parts into a melting furnace -explosion hazard.

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the date complied. However, no representation, warrantee or guarantee is made to its accuracy, reliability, or completeness.

It is the user's responsibility to satisfy themselves as to the suitability or completeness of such information for their own particular use. We do not accept liability for any loss or damage that may occur from the use of this product either singly or in combination with other substances. This MSDS is equivalent to OSHA Form 20.

MSDS prepared by：Yi -Chun Wang (Mill Manager)