



INSTALLATION & MAINTENANCE MANUAL
SERIES 22 TWO-PIECE BALL VALVE

1. USE:

1.1 Life of valve can be maximized if the valve is used within the rated range, in accordance with pressure, temperature, and corrosion data.

2. MANUAL OPERATION:

- 2.1 To open or close the valve, turn the handle ¼ turn (90 degrees).
 - A. Valve in Open Position – the handle is in parallel (in-line) with the valve or pipeline.
 - B. Valve in Closed Position – the handle is perpendicular (crossed) with the valve or pipeline.

3. DISASSEMBLING & CLEANING THE VALVE:

- 3.1 Ball valves can trap fluids in ball cavity when it is in closed position.
- 3.2 If the valve has been used in hazardous media, it must be decontaminated before disassembly.
 - A. Relieve the line pressure.
 - B. Place valve in half-open position and flush the line to remove any hazardous material from valve.
 - C. All persons involved in the removal and disassembly of the valve should wear the proper protective clothing, such as face shield, glove, apron, etc.

4. REPLACING THE THRUST WASHER, PACKING, AND SEATS

- 4.1 Before replacing the thrust washer and the packing, the pipeline must be de-pressurized.
- 4.2 Take-off the valve from the pipeline.
- 4.3 Place valve in its' fully open position.
- 4.4 Take-off end cap with proper equipment (machine).
- 4.5 Close the valve and remove the seat, body seals and ball.
- 4.6 Remove the valve stem nut, handle, gland nut and remove the valve stem through the body cavity.
- 4.7 Remove the stem trust washer from the stem cavity.
- 4.8 Examine all metallic sealing surfaces such as ball, stem and end cap for damage, if the ball or stem is excessively damaged, ball and stem need to be replaced.

5. RE-ASSEMBLING

Having assured that all critical surfaces and components have been inspected, cleaned and or replaced, re-assemble can be begun.

- 5.1 Place new trust washer on stem and install the stem.
- 5.2 Re-install gland nut and tighten to the torques listed on Table A.
- 5.3 Lightly lubricate seats and body seals using a lubricant.
- 5.4 Re-install end cap.
- 5.5 Re-install handle and secure with **stem nut**.

Table A

Size	Series 22	
	In-lbs	Nm
1/4"	61	7.1
3/8"	61	7.1
1/2"	69	8.2
3/4"	69	8.2
1"	113	13.3
1 1/4"	113	13.3
1 1/2"	148	17.3
2"	148	17.3
2 1/2"	174	20.4
3"	174	20.4

(R-PTFE SEATS)

Valve Size		Break Away Torque		Cv	Kv
Inch	DN	In/Lb	Nm	G. P .M.	m ³ / h
1/4"	8	58	7	8	6.8
3/8"	10	58	7	8	6.8
1/2"	15	58	7	15	12.8
3/4"	20	69	8	34	29.1
1"	25	127	14	56	47.8
1 1/4"	32	161	18	85	72.6
1 1/2"	40	230	26	125	106.8
2"	50	323	36	250	213.7
2 1/2"	65	484	55	320	273.3
3"	80	772	87	580	495.3

30% safety factor included.

Media and Service Factors:

Media Factors	Multiplier
Clean, particle free, non-lubricating (water, alcohol, etc)	1.00
Clean, particle free, non-lubricating (oils, hydraulic fluid, etc)	0.80
Slurries or heavily corroded and contaminated systems	2.00
Gas or saturated steam, clean and wet	1.00
Gas or superheated steam, clean and dry	1.30
Gas, dirty unfiltered e.g. natural gas, Chlorine	1.50

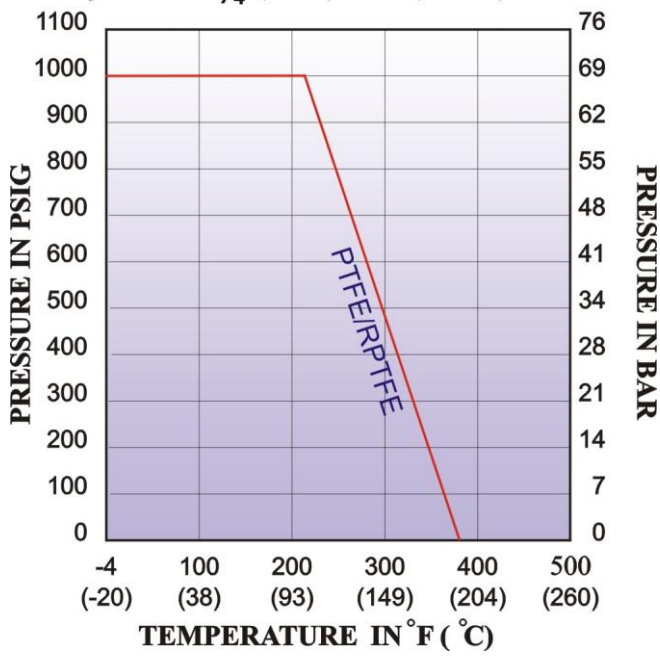
Service Factors	Multiplier
Simple On and Off Operations	1.00
Throttling	1.20
Positioner Control	1.50
Once per day Operations	1.20
Once every two days or a "Plant Critical" Operation	1.50

Torque Determination:

Basic Torque * Media Factor * Service Factor = Sizing Torque

Pressure Vs. Temperature Chart

for Valve 1/4"(DN8) to 3"(DN80)



MATERIALS LIST

NO.	PART NAME	QTY	MATERIAL
1	BODY	1	CF8M
2	END CAP	1	CF8M
3	BALL	1	SS316
4	SEAT	2	PTFE/RTFE
5	JOINT GASKET	1	PTFE
6	STEM SEAL	1	RTFE
7	STEM	1	SS316
8	STEM PACKING	*	PTFE
9	GLAND	1	SS304
10	LOCK SADDLE	1	SS304
11	STEM NUT	2	SS304
12	HANDLE	1	SS304
13	HANDLE SLEEVE	1	VINYL
14	STEM WASHER	1	SS304
15	BELLEVILLE WASHER	2	SS301
16	STOP PIN	1	SS304
17	PIN NUT	1	SS304
18	STEM PACKING	1	25% GLASS FIBER FILLED+PTFE
19	LOCKING DEVICE	1	SS304
20	Antistatic Device	2	SS316
21	WASHER	1	SS304
22	O-RING	1	VITON

* 1/4"~1/2"-1pcs,3/4"~2"-2pcs,2-1/2"~4"-3pcs

