

Bray has developed Seating/Unseating Torque Charts for three Classes of Service for its valves rated for full pressure and the same valves with a reduced disc diameter rated for 50 PSI. The three Service Classes are:

- Class A - Non-Corrosive Lubricating Service
- Class B - General Service
- Class C - Severe Service

The guidelines for determining which Class should be used for determining a valve's seating/unseating torque are given below. Each valve application should comply with all five Class characteristics in order to be qualified for that Class.

Characteristics of Application	Class A	Class B	Class C
Media Type	Lubricating hydrocarbons; aqueous processes and water (See Note 1)	Water: aqueous processes; all other aqueous liquids including salt water; lubricating gasses	Dry, non-lubricating such as air, dry gas, cement, pneumatic conveying mediums
Corrosion by Media	Insignificant if any	No major corrosion or deposits from media	Can incur significant corrosion such as Ductile Iron disc in water
Chemical Reactions of Media with Seat	Insignificant if any	Only minor or insignificant in nature	Reactions causing swelling and hardness occur
Media Temperature	45° to 160°F	Within seat temperature limits, not near limits	Near or at seat temperature limits
Frequency of Valve Cycling	Once weekly or more frequently	Minimum once every 3-6 weeks, or more frequently	Infrequent, sometimes not cycled for long periods

Note 1: For aqueous processes and water, Class A torques may be used only if a Nylon-coated disc will be selected and all other Class A characteristics apply. Otherwise, Class B torques should be used.

Note 2: All the material trims of the Series 20, 21, 30, 31, and 34 may be classified into Class A, B, or C except Series 20/21 valves with a teflon seat, teflon disc stem, or rubber molded disc stem. These trims must always use Class C Seating/Unseating Torque Values unless they are used only in a throttling application.

Note 3: If a valve is used strictly in a throttling application, that is, it is never put in the closed position but throttled between 20° and 80°, then Class A torques may be used provided you have checked to see that dynamic torques from Technical Bulletin 2002 do not exceed the Class A torque values.

Note 4: As a final comment, it should be stated that with the exception of dry, non-lubricating medias, one is usually safe electing to use Class B torques for sizing actuators for all other valve service applications.

Valve Size (In)	Delta P (psi)														
	Class A					Class B					Class C				
	0	50	100	150	175	0	50	100	150	175	0	50	100	150	175
1	54	59	65	70	73	59	65	71	77	80	74	82	89	97	100
1 ½	81	86	91	97	100	89	95	100	106	110	111	119	125	133	137
2	109	114	119	123	128	120	125	130	135	140	151	157	163	169	175
2 ½	169	178	187	196	200	185	195	205	215	220	231	244	257	369	275
3	220	236	250	264	273	245	260	275	290	297	306	325	344	363	375
4	341	364	387	410	423	375	400	425	450	462	468	500	532	563	582
5	510	560	610	660	687	560	615	670	725	755	700	769	838	907	944
6	632	712	792	872	912	695	783	871	953	1003	870	980	1090	1200	1255
8	1182	1341	1500	1660	1741	1300	1475	1650	1825	1915	1625	1844	2063	2282	2394
10	1764	2018	2272	2526	2653	1960	2240	2520	2800	2940	2450	2800	3150	3500	3675
12	2701	3110	3519	3928	4132	2970	3420	3870	4320	4545	3712	4275	4838	5400	5682
14	3818	4500	5182	5864	-	4200	4950	5700	6450	-	5251	6188	7125	8063	-
16	4638	5819	7000	8182	-	5100	6400	7700	9000	-	6375	8000	9625	11250	-
18	5265	7065	8865	10665	-	5850	7850	9850	11850	-	7315	9815	12315	14185	-
20	7000	9364	11728	14091	-	7700	10300	12900	15500	-	9625	12875	16125	19375	-

To use torque chart, note the following:

- Applicable for Bray valves, Series 20, 21, 30 and 31
- Review Technical Bulletin 1001, Page 1 for explanation of classes
- Seating/Unseating Torque values above include bearing torques for stated differential pressure. Torque values are based on full-rated valve. Refer to Technical Bulletin 1001, Page 3 for torque values of reduced disc diameter 50-PSI rated valves.
- Dynamic Torque values are not considered. See Technical Bulletin 1002 for evaluation of Dynamic Torque values vs. Seating/Unseating Torque values.
- Do not apply a safety factor to above torque values when determining actuator output torque requirement.
- For 3-way assemblies where one valve is opening and another is closing, multiply torque by a 1.5 factor.

Valve Size (In)	Delta P (psi)					
	Class A		Class B		Class C	
	0	50	0	50	0	50
1	54	59	59	64	74	82
1 ½	81	86	89	95	111	119
2	109	114	120	125	151	157
2 ½	169	178	185	195	231	244
3	220	236	245	260	306	325
4	225	248	252	267	316	348
5	324	374	355	410	444	513
6	344	488	427	537	525	672
8	735	894	808	983	1011	1230
10	1204	1358	1213	1493	1517	1867
12	1665	2074	1830	2280	2287	2850
14	2318	3000	2550	3300	3189	4126
16	2699	3880	2967	4267	3709	5334
18	2970	4788	3267	5267	4084	6584
20	3356	6243	4267	6867	5334	8584

To use torque chart, note the following:

- Applicable for Bray valves, Series 20, 21, 30 and 31.
- Review Technical Bulletin 1001, Page 1 for explanation of classes.
- Seating/Unseating Torque values above include friction bearing torques for stated differential pressure. Note that Bray does not offer 1"-3" valves with reduced disc diameters; therefore, the torque for a 50 PSI differential pressure is identical to that of the full-rated valve. All Seating/Unseating Torques for 4"-20" are approximately 67% of the torque values given in the full-rated torque chart for a 50 PSI differential pressure.
- Dynamic Torque values are not considered. See Technical Bulletin 1002 for evaluation of Dynamic Torque values vs. Seating/Unseating Torque values.
- Do not apply a safety factor to above torque values when determining actuator output torque requirement.
- For 3-way assemblies where one valve is opening and another is closing, multiply torque by a 1.5 factor.