

# **ViWtrol<sup>®</sup>**

## **BALL VALVES**

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## **TRUNNION MOUNTED**

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## **SERIES DT3**



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## Custom Engineered and Off-the-Shelf Solutions

**VINTROL IS YOUR VALVE SOLUTIONS SPECIALIST, WE OFFER A SINGLE SOURCE FOR MODIFICATIONS AND SERVICES AS FOLLOWS:**

### Stem & Pup Extensions:

- Complete Fabricated Stem Extensions for Buried Service Applications
- High Head and Gear Mount Extensions with Fully Extended Lube Lines
- Welded and Threaded Lube Fitting Construction Available
- Pup Extensions

### Automation:

- Complete Automated Valve Packages with a variety of options available for Instrumentation & Controls

### Coatings & Overlays:

- 304, 316, 317 Stainless Steel, Inconel, Hastelloy and Monel
- Coal-Tar Set Epoxy
- E-Coat Ceramics
- Enduro-Bond
- HVOF
- Xylan
- Z-Pex

## Worldwide Support



ViNtrol's global reach is extended further as a division of a multinational company. ViNtrol's vast network of locations offer delivery enhancement and unequalled customer service.

ViNtrol offers a complete line of three piece forged trunnion mounted ball valves. More than 20 Standard Design features, available with a variety of Metals, Seats, and Seals. RF, RTJ & Buttweld end connections. Standard Fire Safe and NACE certified. Actuation options fitted with gear operators, pneumatic, hydraulic or electric actuation. Proven design for your application requirements.

## Size Range:

2" Through 36"

ANSI Pressure Class 150 Through 2500\*

Reduced & Full Ports available\*

## Standard Features:\*

- 3-Piece Forged (LF2)
- Anti-static construction
- API 6D Monogram
- API 6FA Fire Test Certified
- API 607 Fire Test Certified
- ASME B16.34
- ASME Sec VIII Div.1
- Bi-directional Sealing Capacity
- Blowout Proof Stem
- CE/PED\* 2014/68/EU Module H CE0496
- CRN 0C07712
- Double Block and Bleed
- Internal Travel Stops
- ISO 5211 Top Works
- ISO 15848-1 Fugitive Emission Certified\*
- MSS-SP-25 (Marking/Tagging)
- MSS-SP-44 (Flanges)
- MSS-SP-6 (Flange Finish)
- NACE MR0175\*
- Seat Injection Fittings with buried check valve
- Self-Relieving Seat Design
- SIL3 Safety Integrity Level (capable)



\*Consult factory

ViNtrol World Class products are manufactured in state-of-the-art facilities that uphold the highest regard for safety, conformance and certification standards. ViNtrol maintains the ISO 9001 Certification and licenses operating under API 6D/Q1.

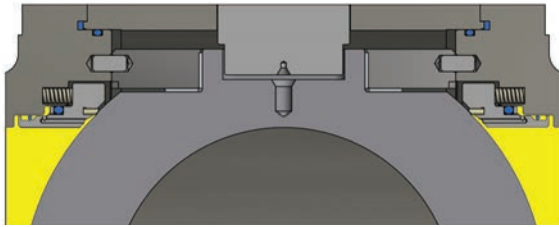
Designed to meet or exceed the following standards:

- API 598
- API 607 (Fire Test Certified)
- API 6D (Certificate No. 6D-1826)
- API 6FA (Fire Test Certified)
- API Q1 (Registration No. Q1-3655)
- API QR (Registration No. 4024)
- ASME B16.10
- ASME B16.25
- ASME B16.34
- EN 12266-1
- ISO 10497
- ISO 15848-1 (Fugitive Emission Certified)
- ISO 5211 Top Works
- ISO 9001:2015
- MSS-SP 45, 53, 54, 55, 59, 93, 94
- NACE MR0175
- SIL3 Safety Integrity Level

## Seat Design: Double Piston Effect (DPE x DPE)

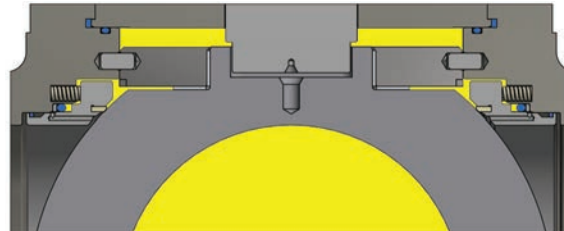
### PRESSURE UPSTREAM/DOWNSTREAM

UPSTREAM SEAT: DPE      DOWNSTREAM SEAT: DPE



### PRESSURE IN BODY CAVITY

UPSTREAM SEAT: DPE      DOWNSTREAM SEAT: DPE

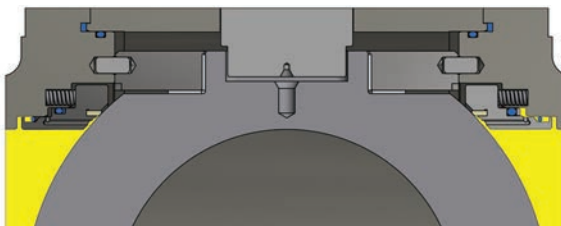


DPE seats are designed to be pushed against the ball in both directions, whether pressure comes from body cavity or from upstream/downstream side. Because the DPE seats cannot perform cavity relief, the use of a pressure relief valve (PRV) or upstream thermal bypass connections is recommended.

## Seat Design: Single Piston Effect x Double Piston Effect (SPE x DPE) Combined

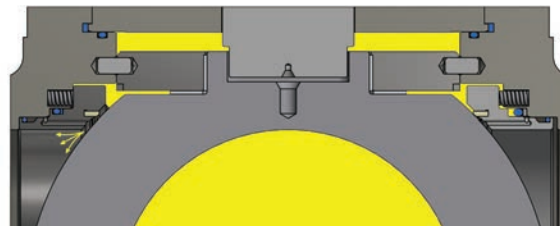
### PRESSURE UPSTREAM/DOWNSTREAM

UPSTREAM SEAT: SPE      DOWNSTREAM SEAT: DPE



### PRESSURE IN BODY CAVITY

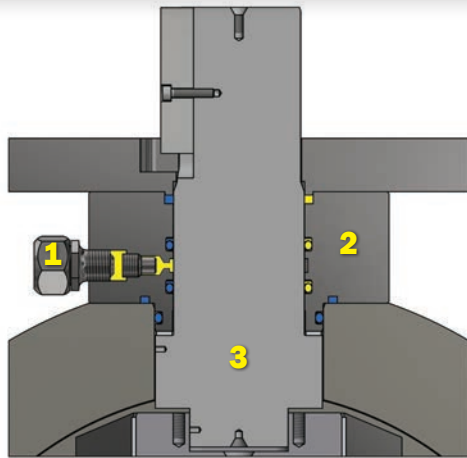
UPSTREAM SEAT: SPE      DOWNSTREAM SEAT: DPE



Upstream SPE seat ensures thermal self-relieving capability, while downstream DPE seat provides the double barrier in case of upstream seat damage. This configuration involves a preferred direction of installation with SPE seat facing upstream. SPE x DPE configurations, cavity relief always takes place through SPE seat. DPE seat gives double isolation to the Pig Launchers/Receivers, allowing automatic relief of body cavity at the same time in case of pressure buildup as a safety feature to keep the open end of the trap safe from pressure releasing from the valve and into the loading and receiving area.

Typical application: Blind Flange Futures, Emergency Shut Down, Pig Launchers/Receivers.

\*Consult factory



**STEM FEATURES**

**Injection Fittings (1)**

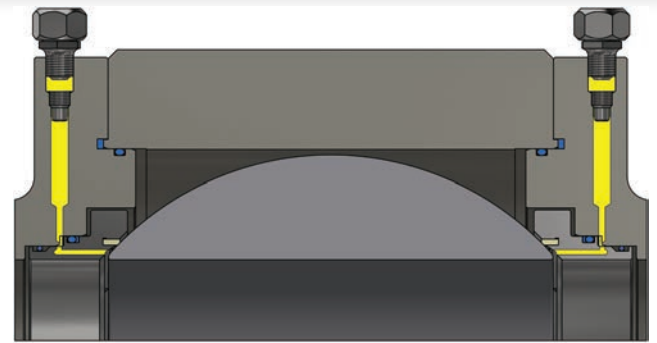
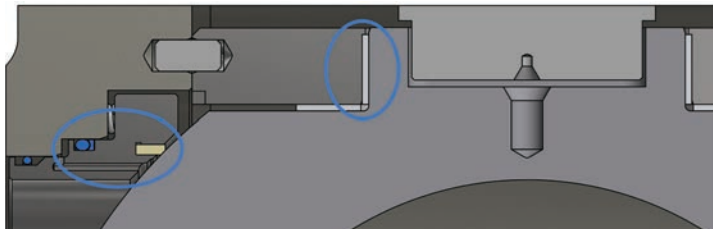
Valves in all sizes and pressure classes come with sealant injection fittings in the stem housing that can be used in cases of emergencies, stem leakage, and O-ring damage.

**Triple Sealing (2)**

A triple sealing arrangement in the stem area prevents leakage to atmosphere. It includes double sealing with O-rings and graphite seal at the top of the stem housing. The valves are tested and certified to ISO 15848-1 fugitive emissions.

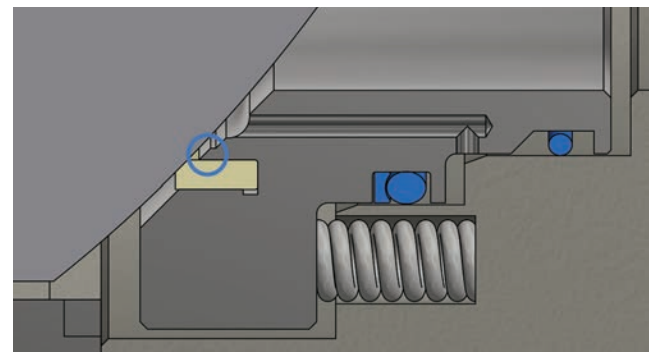
**Blowout Proof (3)**

The blowout proof stem design enables positive stem retention ensuring safety at all pressures.



**SEAT SEALANT INJECTION SYSTEM**

All valves in every size and class have a sealant injection system for the seats that includes an additional internal check valve for extra security. Sealant injection can be used if the ball seal has been damaged or in emergency cases.

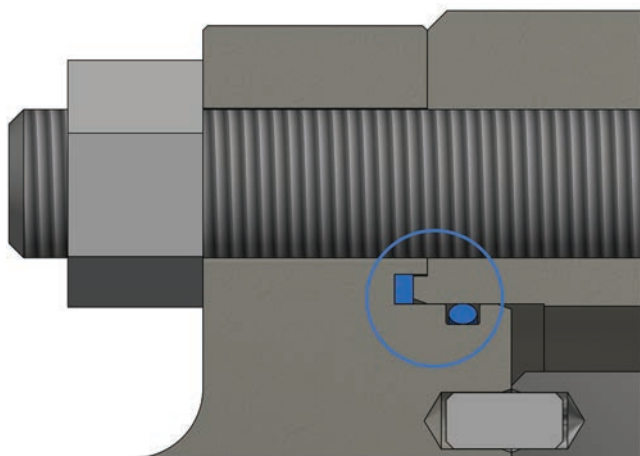


**FIRE SAFE DESIGN** (Blue circle)

Secondary Metal-Metal sealing accomplishes Fire Safe requirements, and passes API 607 and API 6FA fire test certification.

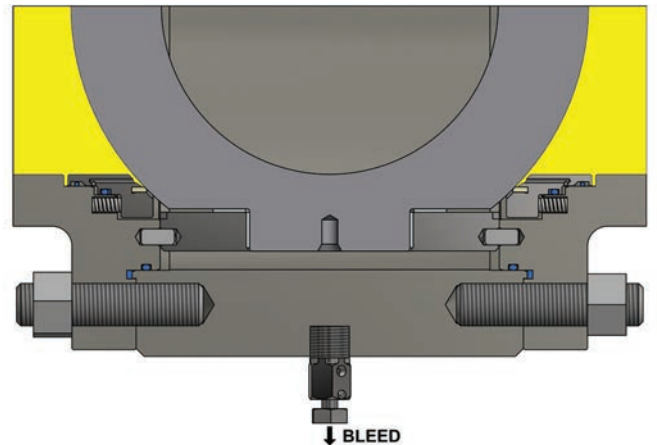
**CONSISTENTLY LOW TORQUES** (Blue circles)

The geometry of the seat ring creates a low surface area ratio between the O-ring seal and seat insert seal. This produces low torques without sacrificing bubble tight shutoff, even at low pressures. The use of high quality DU® bearings fit precisely in trunnion plates or in the ball provides reliability and consistency in these low torques.



**DOUBLE BODY SEALING** (Blue circle)

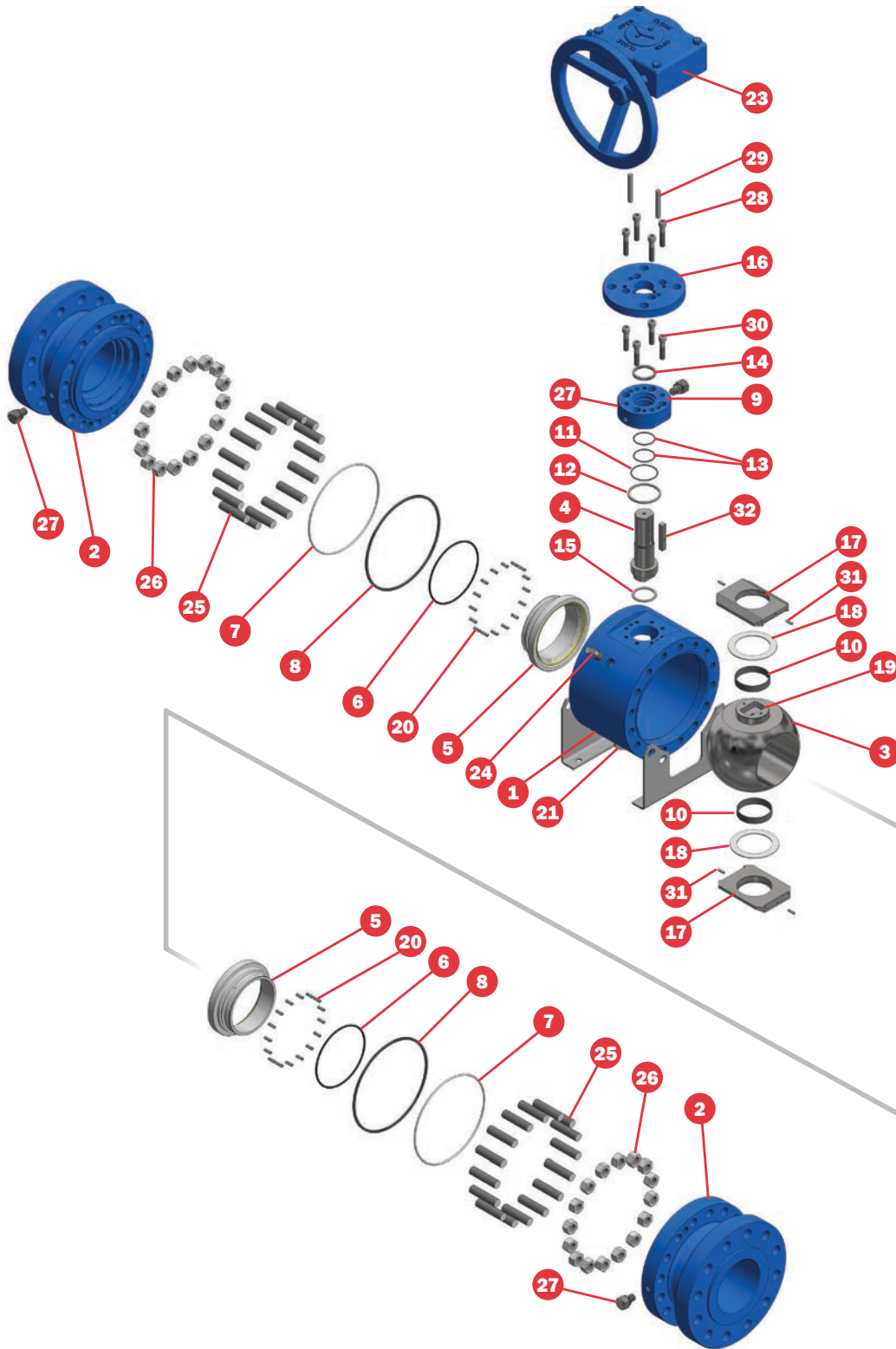
Double seal combination of O-ring and graphite ensure perfect body joint sealing. ViNtrol valves are ISO 15848-1 fugitive emissions tested and certified. Valves are suitable for both above and underground installations.



**DOUBLE BLOCK AND BLEED**

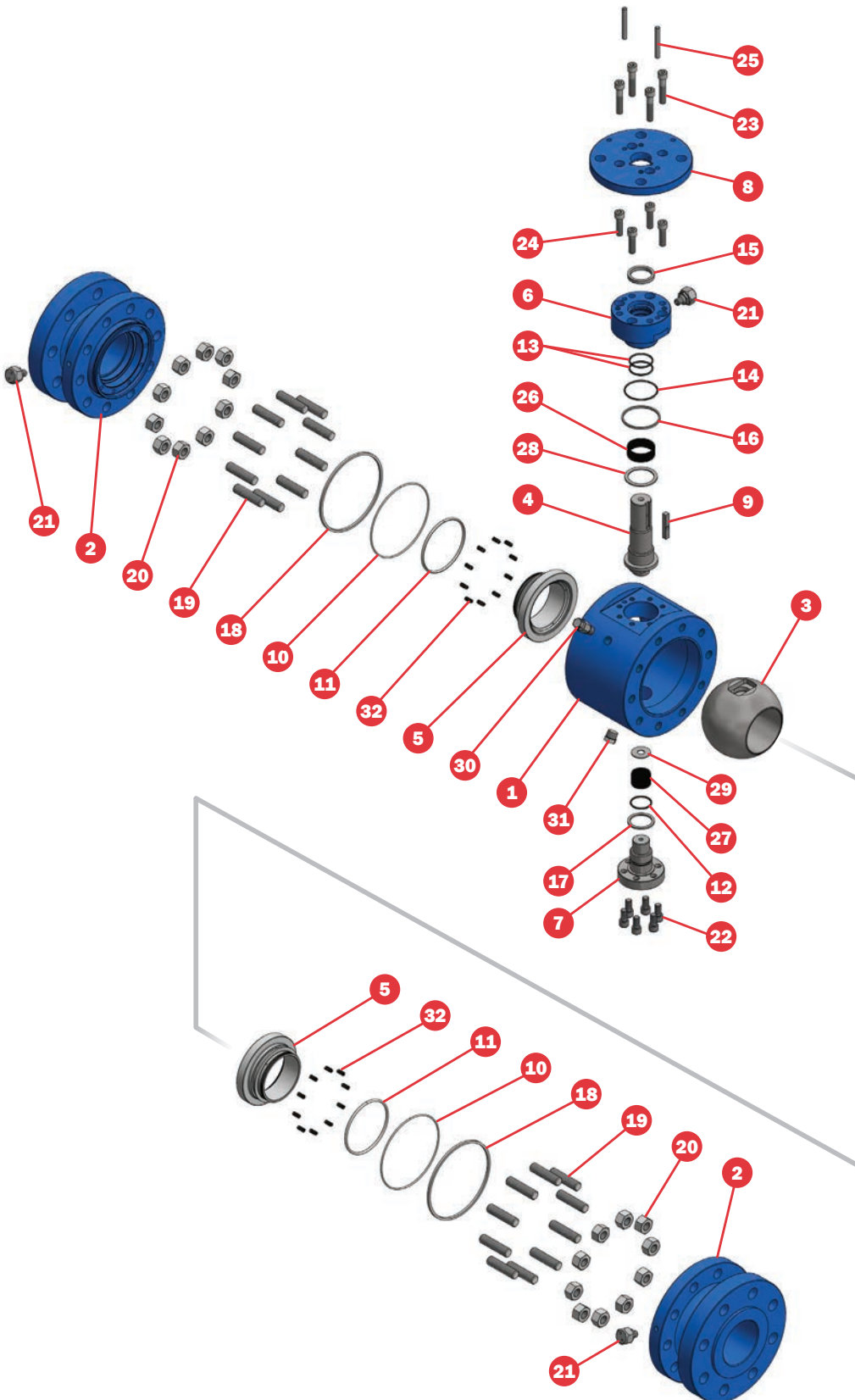
Spring loaded seats maintain contact with the ball and provide tight shut off, even at low pressure differential. Independent sealing of upstream and downstream sides facilitates draining of the fluid from the body cavity, and thus the double block and bleed operation. ALT: With the ball in the fully open position to verify seat integrity, both seats hold their respective pressures independently of the body cavity pressure. The double block and bleed feature makes it possible to flush the valve under pressure, verifying that the seats are sealing properly.

All Classes 6" 300 and above

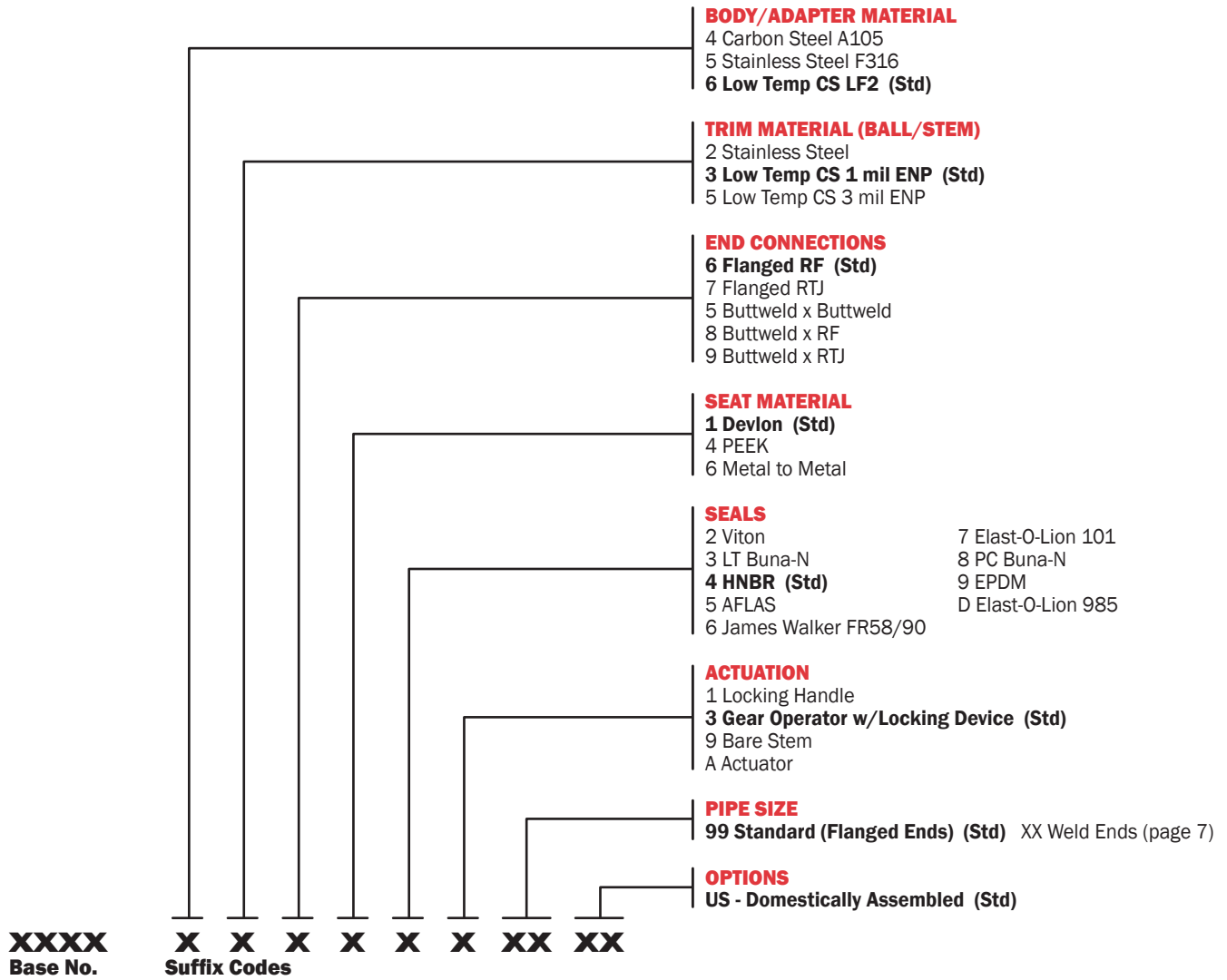


ITEM NO.	PART DESCRIPTION
01	BODY
02	BODY ADAPTER
03	BALL
04	STEM
05	SEAT + INSERT
06	O RING (SEAT)
07	O RING (BODY ADAPTER)
08	GASKET (BODY)
09	STEM HOUSING
10	BUSH BEARING
11	O RING (STEM HOUSING)
12	GASKET (STEM HOUSING)
13	O RING (STEM)
14	GASKET (STEM)
15	STEM THRUST WASHER
16	ISO MOUNTING FLANGE
17	TRUNNION PLATE
18	TRUNNION THRUST WASHER
19	ANTI-STATIC SPRINGS
20	SEAT SPRINGS
21	DRAIN PLUG
22	HANDLE (NOT SHOWN)
23	GEAR BOX
24	BLEED VALVE
25	STUD
26	NUT, BODY ADAPTER
27	INJECTION FITTING
28	BOLT, ISO MTG. FLANGE
29	DOWEL PIN
30	BOLT (STEM HOUSING)
31	ALIGNMENT PIN
32	STEM KEY

All Classes 2" - 4" and 6" 150



ITEM NO.	PART DESCRIPTION
01	BODY
02	BODY ADAPTER
03	BALL
04	STEM
05	SEAT + INSERT
06	STEM HOUSING
07	TRUNNION
08	ISO MOUNTING PLATE
09	STEM KEY
10	O-RING (BODY ADAPTER)
11	O-RING (SEAT)
12	O-RING (LOWER TRUNNION)
13	O-RING (STEM)
14	O-RING (STEM HOUSING)
15	GASKET (STEM)
16	GASKET (STEM HOUSING)
17	GASKET (LOWER TRUNNION)
18	GASKET (BODY ADAPTER)
19	STUD (BODY ADAPTER)
20	NUT (BODY ADAPTER)
21	INJECTION FITTING
22	BOLT (LOWER TRUNNION)
23	BOLT (ISO MOUNTING FLANGE)
24	BOLT (STEM HOUSING)
25	DOWEL PIN
26	BUSH BEARING (STEM)
27	BUSH BEARING (LOWER TRUNNION)
28	STEM THRUST WASHER
29	LOWER TRUNNION WASHER
30	BLEED VALVE
31	DRAIN PLUG
32	SEAT SPRINGS



5616-63614399US as an example.  
Its description is "Series DT3 TMBV 12" FP CL600 RF LTCS LF2 Body-Adapters, LTCS LF2 + 1 mil ENP Trim, Devlon Seats, HNBR Seals, Locking Gear Operator

Size/Class	2"FP	3"RP	3"FP	4"RP	4"FP	6"RP	6"FP	8"RP	8"FP	10"RP	10"FP	12"RP	12"FP
150	5103	5105	5106	5107	5108	5109	5110	5111	5112	5113	5114	5115	5116
300	5303	5305	5306	5307	5308	5309	5310	5311	5312	5313	5314	5315	5316
600	5603	5605	5606	5607	5608	5609	5610	5611	5612	5613	5614	5615	5616
900	5903	5905	5906	5907	5908	5909	5910	5911	5912	5913	5914	5915	5916
1500	5703	5705	5706	5707	5708	5709	5710	5711	5712	5713	5714	5715	5716

Size/Class	14"RP	14"FP	16"RP	16"FP	18"RP	18"FP	20"RP	20"FP	24"RP	24"FP	30"RP	30"FP	36"FP
150	5117	5118	5119	5120	5121	5122	5123	5124	5125	5126	5127	5128	5130
300	5317	5318	5319	5320	5321	5322	5323	5324	5325	5326	5327	5328	5330
600	5617	5618	5619	5620	5621	5622	5623	5624	5625	5626	5627	5628	5630
900	5917	5918	5919	5920	5921	5922	5923	5924	5925	5926	5927	-	-
1500	5717	-	-	-	-	-	-	-	-	-	-	-	-

## Butt Weld End Pipe Codes for Series DT3

### CALCULATING PIPE WALL THICKNESS

To find the "Pipe Wall Thickness" for butt-weld valves, subtract the Inside Diameter from the "Pipe Outside Diameter" for the appropriate size, see chart below. Then divide the outcome by two (2).

### EXAMPLE

For a 4" valve with an 3.826 Inside Diameter:

Outside Diameter Taken from Chart at Below: 4.500

Inside Diameter Given by Customer: 3.826

$$\frac{4.500 - 3.826}{2} = .337$$

Once you have determined the "Pipe Wall Thickness", find that number in the chart to right (Inches column). The two-digit number to the left (Code column) should then be used in the "Pipe Wall Thickness" digits of the valve Assembly Part Number. In this example that would be 30.

### PIPE OUTSIDE DIAMETER (O.D.)

Pipe Size (in.)	Outside Dia. (in.)
2	2.375
3	3.500
4	4.500
6	6.625
8	8.625
10	10.750
12	12.750
14	14.000
16	16.000
18	18.000
20	20.000
24	24.000

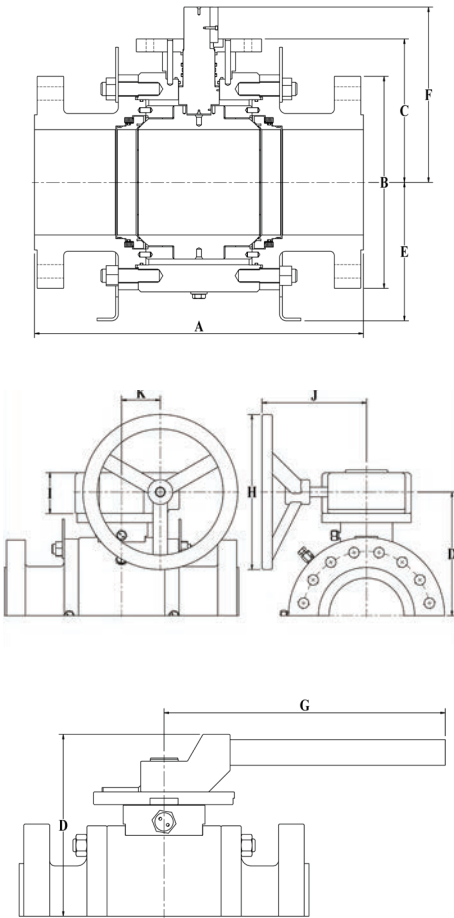
CODE	INCHES	CODE	INCHES	CODE	INCHES	CODE	INCHES
01	.065	23	.281	45	.625	67	1.281
02	.083	24	.300	46	.656	68	1.312
03	.109	25	.307	47	.674	69	1.375
04	.120	26	.312	48	.687	70	1.406
05	.134	27	.318	49	.718	71	1.437
06	.145	28	.322	50	.750	72	1.500
07	.148	29	.330	51	.812	73	1.531
08	.154	30	.337	52	.843	74	1.562
09	.156	31	.343	53	.864	75	1.593
10	.165	32	.365	54	.875	76	1.625
11	.180	33	.375	55	.906	77	1.750
12	.200	34	.400	56	.937	78	1.781
13	.203	35	.406	57	.968	79	1.812
14	.216	36	.432	58	1.000	80	1.875
15	.218	37	.436	59	1.031	81	1.937
16	.226	38	.438	60	1.062	82	1.968
17	.237	39	.500	61	1.093	83	2.000
18	.250	40	.531	62	1.125	84	2.062
19	.258	41	.552	63	1.156	85	2.343
20	.276	42	.562	64	1.187	-	-
21	.277	43	.593	65	1.218	-	-
22	.280	44	.600	66	1.250	-	-

CONSULT FACTORY FOR OTHER WALL THICKNESS

EXAMPLE 1 6" FP CL600 Sch. 40 Weld End (.280 wt.) = 5610-63514122US

EXAMPLE 2 4" FP CL300 Sch. 80 Weld End (.337 wt.) = 5308-63514130US

**Dimensional Data ANSI 150** DIMENSIONS IN INCHES



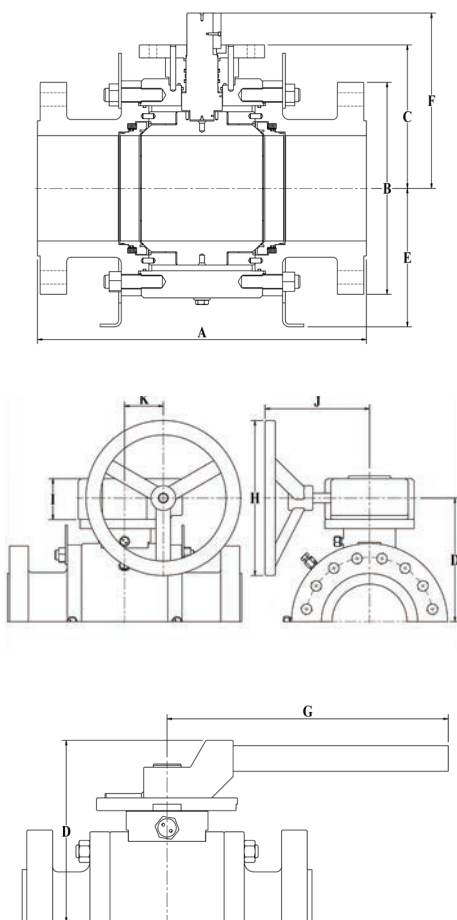
SIZE	A-RF	A-RTJ	ØB	C	D	E	F	G	ØH	I	J	K	Approx Weights (lb)		
													Bare Stem	Lever	Operator Gear
2	7	7.5	6	5.93	8.93	4.06	7.36	11	-	-	-	-	51	4	-
3x2	8	8.5	7.5	5.93	8.93	4.06	7.36	11	-	-	-	-	35	4	-
3	8	8.5	7.5	6.66	9.66	4.83	8.09	23	-	-	-	-	81	5.5	-
4x3	9	9.5	9	6.66	9.66	4.83	8.09	23	-	-	-	-	80	5.5	-
4	9	9.5	9	7.02	11.52	5.07	9.28	34.63	-	-	-	-	118	14.1	-
6x4	15.5	16	11	7.02	11.52	5.07	9.28	34.63	-	-	-	-	235.4	14.1	-
6	15.5	16	11	8.56	10.25	6.93	10.55	-	16	3.94	11.4	2.75	306	-	55
8x6	18	18.5	13.58	8.56	10.25	6.93	10.55	-	16	3.94	11.4	2.75	389.4	-	55
8	18	18.5	13.58	10.58	12.6	10.3	13.33	-	18	4.31	10.2	3.54	633	-	119
10x8	21	21.5	16	10.58	12.6	10.3	13.33	-	18	4.31	10.2	3.54	645	-	119
10	21	21.5	16	12.34	14.62	12.64	14.98	-	20	4.57	17.25	5.5	897	-	198
12x10	24	24.5	19	12.34	14.62	12.64	14.98	-	20	4.57	17.25	5.5	880	-	198
12	24	24.5	19	14.05	16.36	14.4	16.69	-	20	4.57	17.25	5.5	1393	-	198
14x12	27	27.5	21	14.05	16.36	14.4	16.69	-	20	4.57	17.25	5.5	1137	-	198
14	27	27.5	21	14.88	17.74	16.73	19.44	-	26	5.71	18.7	5	2237	-	251
16x12	30	30.5	23.5	14.05	16.36	14.4	16.69	-	20	4.57	17.25	5.5	1672	-	198
16x14	30	30.5	23.5	14.88	17.74	16.73	19.44	-	26	5.71	18.7	5	1888	-	251
16	30	30.5	23.5	16.43	19.3	19.75	20.73	-	26	5.71	18.7	5	2773	-	251
18	34	34.5	25	18.54	21.08	19.8	23.51	-	24	5.08	18.9	4.96	3421	-	251
20x16	36	36.5	27.56	16.43	19.3	19.75	20.73	-	26	5.71	18.7	5	3421	-	251
20	36	36.5	27.56	20.83	27.5	21.73	25.22	-	24	7.1	20.1	9	4956	-	484
24x20	42	42.5	32.09	20.83	27.5	21.73	25.22	-	24	7.1	20.1	9	3923	-	484
24	42	42.5	32.09	24.45	28.45	27.08	29.41	-	30	8.03	26.3	8.07	7435	-	651
30x24	51	-	38.75	24.25	28.45	27.08	29.41	-	30	8.03	26.3	8.07	4538	-	651
30	51	-	38.75	31.24	35.75	29.79	37.3	-	32	9.02	27.5	9.09	5370	-	***
36x30	60	-	46	31.24	35.75	29.79	37.3	-	32	9.02	27.5	9.09	6713	-	***
36	60	-	46	35.57	***	32.71	41.63	-	***	***	***	***	8950	-	***

CONSULT FACTORY FOR SIZES NOT SHOWN

\*\*\* CONSULT FACTORY FOR DIMENSIONS

**Dimensional Data ANSI 300**

DIMENSIONS IN INCHES



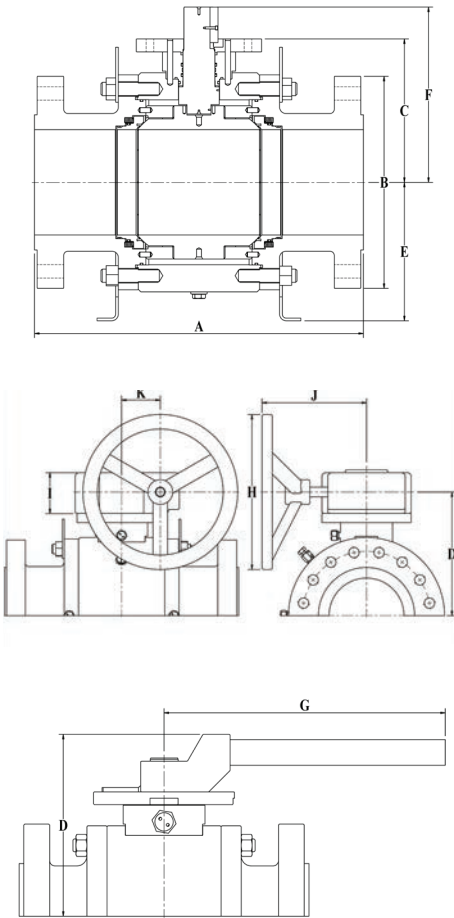
SIZE	A-RF	A-RTJ	ØB	C	D	E	F	G	ØH	I	J	K	Approx Weights (lb)		
													Bare Stem	Lever	Operator Gear
2	8.5	9.13	6.5	6.02	9.82	4.05	7.45	11	-	-	-	-	65	4	-
3 x 2	11.13	11.75	8.25	6.02	9.82	4.05	7.45	11	-	-	-	-	62	4	-
3	11.13	11.75	8.25	6.67	9.93	4.51	8.93	34.63	-	-	-	-	116	14.1	-
4 x 3	12	12.63	10	6.67	9.93	4.51	8.93	34.63	-	-	-	-	172	14.1	-
4	12	12.63	10	7.42	11.92	5.39	9.68	46.63	-	-	-	-	168	16.7	-
6 x 4	15.88	16.5	12.6	7.42	11.92	5.39	9.68	46.63	-	-	-	-	275	16.7	-
6	15.88	16.5	12.6	8.93	11	-	11.64	-	18	4.31	10.2	3.54	398	-	119
8 x 6	19.75	20.38	15	8.93	11	-	11.64	-	18	4.31	10.2	3.54	682	-	119
8	19.75	20.38	15	10.63	12.78	10.5	13.39	-	18	4.31	10.2	3.54	735	-	119
10 x 8	22.38	23	17.5	10.63	12.78	10.5	13.39	-	18	4.31	10.2	3.54	860	-	119
10	22.38	23	17.5	12.58	14.47	12.64	15.22	-	20	4.57	17.25	5.5	1039	-	198
12 x 10	25.5	26.13	20.5	12.58	14.47	12.64	15.22	-	20	4.57	17.25	5.5	1236	-	198
12	25.5	26.13	20.5	14.33	16.62	14.6	16.97	-	20	4.57	17.25	5.5	1668	-	198
14 x 12	30	30.63	23	14.33	16.62	14.6	16.97	-	20	4.57	17.25	5.5	1712	-	198
14	30	30.63	23	15.11	17.96	16.73	19.42	-	26	5.71	18.7	5	2262	-	251
16 x 12	33	33.63	25.6	14.33	16.62	14.6	16.97	-	20	4.57	17.25	5.5	2178	-	198
16 x 14	33	33.63	25.6	15.11	17.97	16.73	19.42	-	26	5.71	18.7	5	2200	-	251
16	33	33.63	25.6	17.15	19.69	17.25	22	-	24	5.08	18.7	5	3142	-	484
18	36	36.63	28	19.85	23.15	19.13	24.63	-	30	6.61	21.7	6.38	3421	-	484
20 x 16	39	39.75	30.5	17.15	19.69	17.25	22	-	24	5.08	18.7	5	3421	-	484
20	39	39.75	30.5	21.38	24.7	22.84	25.7	-	30	6.61	21.7	10.7	5730	-	653
24 x 20	45	45.88	36	21.38	24.7	22.84	25.7	-	30	6.61	21.7	10.7	6158	-	653
24	45	45.88	36	25.04	29.06	27.45	30.02	-	30	8.03	26.3	8.07	9455	-	651
30 x 24	55	56	43	25.04	29.06	27.45	30.02	-	30	8.03	26.3	8.07	9948	-	651
30	55	56	43	31.99	36.5	29.8	38.05	-	32	9.02	27.5	9.09	15852	-	***
36 x 30	68	69.13	50	31.99	36.5	29.8	38.05	-	32	9.02	27.5	9.09	19815	-	***
36	68	69.13	50	36.36	***	33.77	42.42	-	***	***	***	***	23662	-	***

CONSULT FACTORY FOR SIZES NOT SHOWN

\*\*\* CONSULT FACTORY FOR DIMENSIONS

**Dimensional Data ANSI 600**

DIMENSIONS IN INCHES



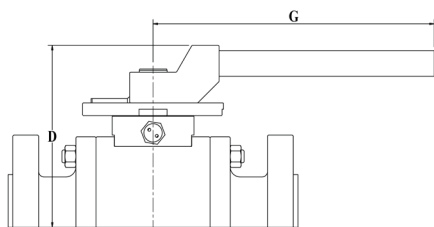
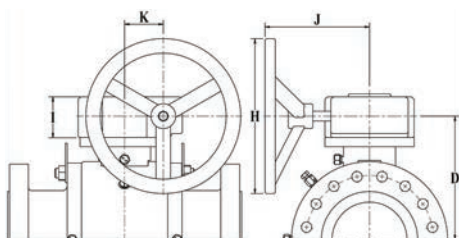
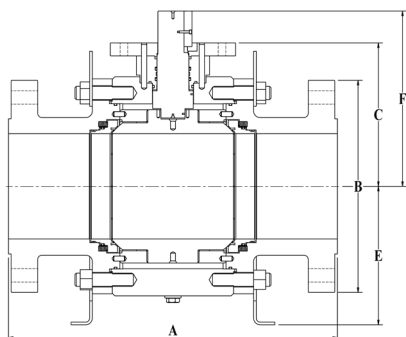
SIZE	A-RF	A-RTJ	B	C	D	E	F	G	H	I	J	K	Approx Weights (lb)		
													Bare Stem	Lever	Operator Gear
2	11.5	11.61	6.5	5.3	8.3	3.8	6.67	17	-	-	-	-	55	5	-
3x2	14	14.13	8.25	5.3	8.3	3.8	6.67	17	-	-	-	-	95	5	-
3	14	14.13	8.25	6.44	10.94	4.52	8.68	34.63	-	-	-	-	169	6.7	-
4x3	17	17.13	10.83	6.44	10.94	4.52	8.68	34.63	-	-	-	-	182	6.7	-
4	17	17.13	10.83	7.3	9.3	5.85	9.3	46.63	16	3.94	11.4	2.75	264	6.7	37
6x4	22	22.13	14	7.3	9.3	5.85	9.3	46.63	16	3.94	11.4	2.75	354	6.7	37
6	22	22.13	14	9.07	11	9.85	11.76	-	18	4.31	10.2	3.54	528	-	119
8x6	26	26.14	16.5	9.07	11	9.85	11.76	-	18	4.31	10.2	3.54	724	-	119
8	26	26.14	16.5	11.51	13.8	11.81	14.15	-	20	4.57	17.25	5.5	1023	-	198
10x8	31	31.14	20	11.51	13.8	11.81	14.15	-	20	4.57	17.25	5.5	1232	-	198
10	31	31.14	20	13.53	16.39	13.06	16.53	-	26	5.71	18.7	5	1320	-	251
12x10	33	33.11	22	13.53	16.39	13.06	16.53	-	26	5.71	18.7	5	1430	-	251
12	33	33.11	22	15.45	18.31	14.82	19.03	-	26	5.71	18.7	5	1833	-	251
14x12	35	35.12	23.82	15.45	18.31	14.82	19.03	-	26	5.71	18.7	5	2015	-	251
14	35	35.12	23.82	17.01	20.3	17.63	19.42	-	30	6.61	21.7	5	3058	-	484
16x12	39	39.13	27	15.45	18.31	14.82	19.03	-	26	5.71	18.7	5	2015	-	-
16x14	39	39.13	27	17.01	20.3	17.63	19.42	-	30	6.61	21.7	5	3120	-	484
16	39	39.13	27	18.92	22.25	18.06	23.46	-	30	6.61	21.7	5	4070	-	484
18	43	43.11	29.25	21.22	25.22	22.27	26.2	-	30	8.03	26.3	8.07	6032	-	484
20x16	47	47.24	32	18.92	22.25	18.06	23.46	-	30	6.61	21.7	5	4880	-	484
20	47	47.24	32	22.7	26.7	22.59	27.7	-	30	8.03	26.3	8.07	7409	-	651
24x20	55	55.39	37	22.7	26.7	22.59	27.7	-	30	8.03	26.3	8.07	7557	-	651
24	55	55.39	37	28.25	33.07	29.86	34.31	-	32	9.02	27.5	9.09	8774	-	651
30x24	65	65.51	44.5	28.25	33.07	29.86	34.31	-	32	9.02	27.5	9.09	11738	-	968
30	65	65.51	44.5	33.6	***	34.43	39.66	-	***	***	***	***	18230	-	968
36x30	82	82.64	51.75	33.6	***	34.43	39.66	-	***	***	***	***	23580	-	-
36	82	82.64	51.75	38.33	***	38.48	44.39	-	***	***	***	***	27685	-	-

CONSULT FACTORY FOR SIZES NOT SHOWN

\*\*\* CONSULT FACTORY FOR DIMENSIONS

**Dimensional Data ANSI 900**

DIMENSIONS IN INCHES



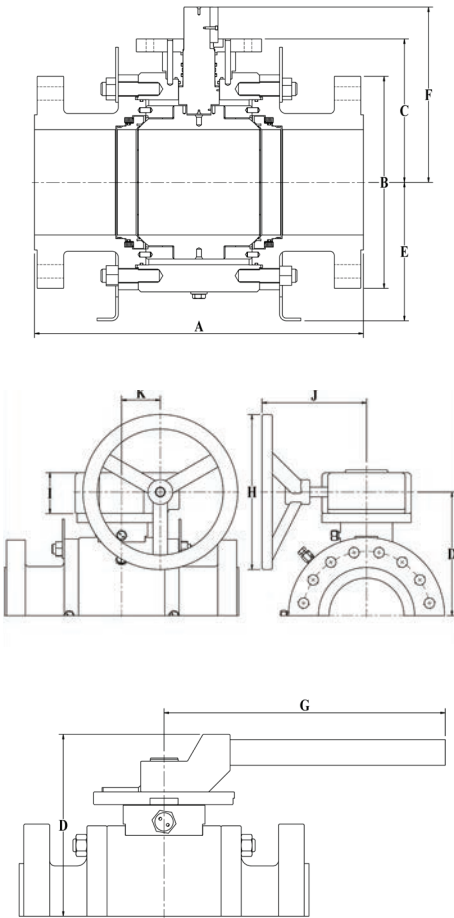
SIZE	A-RF	A-RTJ	ØB	C	D	E	F	G	ØH	I	J	K	Approx Weights (lb)		
													Bare Stem	Lever	Operator Gear
2	14.5	14.63	8.5	7.29	10.29	5.5	8.08	34.63	-	-	-	-	139	5	-
3x2	15	15.13	9.5	7.29	10.29	5.5	8.08	34.63	-	-	-	-	154	5	-
3	15	15.13	9.5	7.5	12.02	5.9	9.63	44.63	-	-	-	-	220	10	-
4x3	18	18.13	11.5	7.5	12.02	5.9	9.63	44.63	-	-	-	--	299	10	-
4	18	18.13	11.5	8.79	10.76	7.2	10.78	44.63	16	3.94	11.4	2.75	330	10	60
6x4	24	24.13	15	8.79	10.76	7.2	10.78	44.63	16	3.94	11.4	2.75	440	10	60
6	24	24.13	15	10.34	12.63	10	12.98	-	20	4.57	17.25	5.5	737	-	198
8x6	29	29.13	18.5	10.34	12.63	10	12.98	-	20	4.57	17.25	5.5	902	-	198
8	29	29.13	18.5	12.83	15.7	12	15.86	-	26	5.71	18.7	5	1034	-	198
10x8	33	33.13	21.5	12.83	15.7	12	15.86	-	26	5.71	18.7	5	2031	-	198
10	33	33.13	21.5	14.18	16.72	14	19.15	-	24	5.08	18.7	5	2196	-	251
12x10	38	38.13	24	14.18	16.72	14	19.15	-	24	5.08	18.7	5	2552	-	251
12	38	38.13	24	16.97	20.06	17.41	21.46	-	24	6.18	20.91	5.79	2959	-	301
14x12	40.5	40.88	25.2	16.97	20.06	17.41	21.46	-	24	6.18	20.91	5.79	3014	-	301
14	40.5	40.88	25.2	19.57	23	18.5	24.1	-	28	6.85	24	6.38	4563	-	484
16x12	44.5	44.88	27.75	16.97	20.06	17.41	21.46	-	24	6.18	20.91	5.79	4563	-	301
16x14	44.5	44.88	27.75	19.57	23	18.5	24.1	-	28	6.85	24	6.38	4971	-	484
16	44.5	44.88	27.75	20.83	25	22.88	25.81	-	30	8	26.27	7.75	6564	-	***
18	48	48.5	31	***	***	***	***	-	***	***	***	***	6773	-	***
20x16	52	52.5	33.75	20.83	25	22.88	25.81	-	30	8	26.27	7.75	6773	-	***
20	52	52.5	33.75	26.12	30.62	25.86	32.18	-	32	9.02	27.4	9.09	9848	-	968
24x20	61	61.75	41	26.12	30.62	25.86	32.18	-	32	9.02	27.4	9.09	12555	-	968
24	61	61.75	41	30.22	34.5	30.28	36.26	-	32	9.02	27.4	9.09	16133	-	968
30x24	74	74.88	48.5	30.22	34.5	30.28	36.26	-	32	9.02	27.4	9.09	20684	-	968

CONSULT FACTORY FOR SIZES NOT SHOWN

\*\*\* CONSULT FACTORY FOR DIMENSIONS

**Dimensional Data ANSI 1500**

DIMENSIONS IN INCHES



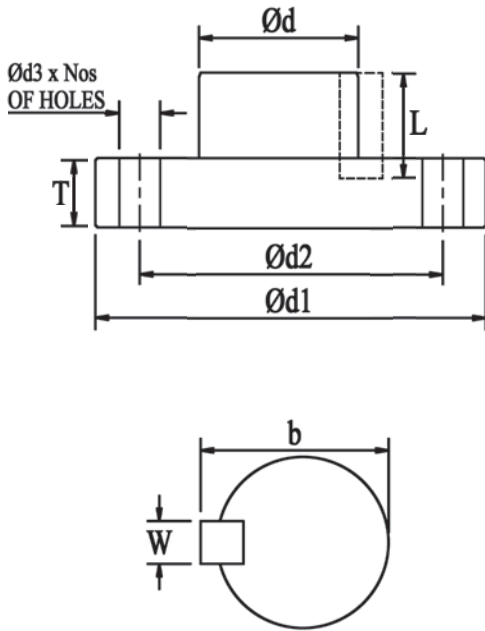
SIZE	A-RF	A-RTJ	B	C	D	E	F	G	H	I	J	K	Approx Weights (lb)		
													Bare Stem	Lever	Operator Gear
2	14.5	14.63	8.5	7.89	10.29	5.51	7.56	44.63	-	-	-	-	158.4	5	-
3 x 2	18.5	18.63	10.5	7.89	10.29	5.51	7.56	44.63	-	-	-	-	198	5	-
3	18.5	18.63	10.5	7.99	9.3	4.6	10.1	44.63	16	3.94	11.4	2.75	242	-	51
4 x 3	21.5	21.63	12.2	7.99	9.3	4.6	10.1	44.63	16	3.94	11.4	2.75	338.8	-	51
4	21.5	21.63	12.2	8.91	11.07	7.34	11.5	-	18	4.31	10.2	3.54	371.8	-	66
6 x 4	27.75	28	15.5	8.91	11.07	7.34	11.5	-	18	4.31	10.2	3.54	638	-	66
6	27.75	28	15.5	13.06	15.92	12.5	16.65	-	26	5.71	18.7	5	1254	-	202
8 x 6	32.75	33.13	19	13.06	15.92	12.5	16.65	-	26	5.71	18.7	5	1375	-	202
8	32.75	33.13	19	14.8	17.66	14.82	18.61	-	26	5.71	18.7	5	2222	-	251
10 x 8	39	39.38	23	14.8	17.66	14.82	18.61	-	26	5.71	18.7	5	2890	-	251
10	39	39.38	23	***	***	***	***	-	***	***	***	***	3505	-	495
12 x 10	44.5	45.13	26.5	***	***	***	***	-	***	***	***	***	3877	-	495
12	44.5	45.13	26.5	***	***	***	***	-	***	***	***	***	5510	-	495
14 x 12	49.5	50.25	29.5	***	***	***	***	-	***	***	***	***	6068	-	495

CONSULT FACTORY FOR SIZES NOT SHOWN

\*\*\* CONSULT FACTORY FOR DIMENSIONS

**Dimensional Data Top Works**

DIMENSIONS IN INCHES



FP	RP	CLASS	D	ISO 5211	D1	D2	D3	T	HOLES	W	b	L
2	3 x 2	150-300	0.87	F10	4.92	4.02	0.47	0.79	4	0.25	0.99	1.77
2	3 x 2	600	0.87	F12	5.9	4.92	0.55	0.79	4	0.25	0.99	1.77
2	3 x 2	900-1500	1.42	F12	6.89	5.51	0.71	0.79	4	0.38	1.61	2.36
3	4 x 3	150	0.87	F10	4.92	4.02	0.47	0.79	4	0.25	0.99	1.77
3	4 x 3	300-600	1.42	F14	6.89	5.51	0.71	0.79	4	0.38	1.6	2.36
3	4 x 3	900	1.65	F16	8.27	6.5	0.87	0.91	4	0.38	1.84	2.36
3	4 x 3	1500	1.65	F16	8.27	6.5	0.87	0.91	4	0.38	1.84	2.36
4	6 x 4	150	1.42	F14	6.89	5.51	0.71	0.79	4	0.38	1.6	2.36
4	6 x 4	300	1.42	F14	6.89	5.51	0.71	0.79	4	0.38	1.6	2.36
4	6 x 4	600	1.65	F16	8.27	6.5	0.87	0.75	4	0.38	1.84	2.36
4	6 x 4	900	1.65	F16	8.27	6.5	0.87	0.91	4	0.38	1.84	2.36
4	6 X 4	1500	1.89	F16	8.27	6.5	0.87	0.91	4	0.5	2.14	3.03
6	8 x 6	150	1.65	F16	8.27	6.5	0.87	0.75	4	0.38	1.84	2.36
6	8 x 6	300-600	1.89	F16	8.27	6.5	0.87	0.91	4	0.5	2.14	3.03
6	8 x 6	900	2.36	F25	11.81	10	0.71	1.16	8	0.63	2.67	3.15
6	8 X 6	1500	2.36	F25	11.81	10	0.71	1.16	8	0.63	2.67	3.15
8	10 x 8	150	1.89	F16	8.27	6.5	0.87	0.91	4	0.5	2.14	3.15
8	10 x 8	300	1.89	F16	8.27	6.5	0.87	0.91	4	0.5	2.14	3.03
8	10 x 8	600	2.36	F25	11.81	10	0.71	1.16	8	0.63	2.67	3.15
8	10 x 8	900	2.83	F25	11.81	10	0.71	1.22	8	0.75	3.21	3.35
8	10 x 8	1500	3.15	F25	11.81	10	0.71	1.5	8	0.75	3.52	4.72
10	12 x 10	150-300	2.36	F25	11.81	10	0.71	1.16	8	0.63	2.67	3.15
10	12 x 10	600	2.83	F25	11.81	10	0.71	1.22	8	0.75	3.21	3.35
10	12 x 10	900	3.15	F25	11.81	10	0.71	1.37	8	0.75	3.52	5.71
12	16 x 12	150-300	2.36	F25	11.81	10	0.71	1.16	8	0.63	2.67	3.15
12	16 x 12	600	2.83	F25	11.81	10	0.71	1.43	8	0.75	3.21	3.35
12	16 x 12	900	3.86	F30	13.78	11.73	0.87	1.18	8	1	4.36	4.92
14	16 x 14	150-300	2.83	F25	11.81	10	0.71	1.1	8	0.75	3.21	5.02
14	16 x 14	600	3.86	F30	13.78	11.73	0.87	1.5	8	1	4.36	4.92
14	16 x 14	900	3.94	F35	16.34	14	1.3	1.5	8	1	4.44	6.5
16	20 x 16	150	2.83	F25	11.81	10	0.71	1.1	8	0.75	3.21	4.72
16	20 x 16	300	3.15	F25	11.81	10	0.71	1.37	8	0.75	3.52	5.71
16	20 x 16	600	3.86	F30	13.78	11.73	0.87	1.62	8	1	4.36	5.31
16	20 x 16	900	4.72	F35	16.34	14.02	1.26	1.77	8	1.25	5.35	5.83
20	24 x 20	150	3.86	F30	13.78	11.73	0.87	1.5	8	1	4.36	4.92
20	24 x 20	300	3.86	F30	13.78	11.73	0.87	1.5	8	1	4.36	4.92
20	24 x 20	600	4.72	F35	16.34	14.02	1.26	1.77	8	1.25	5.35	5.83
20	24 x 20	900	6.3	F40	18.7	15.98	1.5	2.11	8	1.25	7.55	7.2
24	30 x 24	150-300	4.72	F35	16.34	14.02	1.26	1.77	8	1.25	5.35	5.83
24	30 x 24	600	6.3	F40	18.7	15.98	1.5	2.11	8	1.25	7.55	7.2
24	30 x 24	900	6.3	F40	18.7	15.98	1.5	2.11	8	1.5	7.8	7
30	36 x 30	150	6.3	F40	18.7	15.98	1.5	2.11	8	1.5	7.8	7
30	36 x 30	300	6.3	F40	18.7	15.98	1.5	2.11	8	1.5	7.8	7
30	36 x 30	600	6.3	F48	22.05	19.02	1.5	2.11	12	1.5	7.8	7
36	-	150	6.3	F40	18.7	15.98	1.5	2.11	8	1.5	7.8	7
36	-	300	6.3	F48	22.05	19.02	1.5	2.11	12	1.5	7.8	7
36	-	600	6.3	F48	22.05	19.02	1.5	2.11	12	1.5	7.8	7

CONSULT FACTORY FOR SIZES NOT SHOWN

\*\*\* CONSULT FACTORY FOR DIMENSIONS

## CV Flow Coefficients

BORE (INCHES)	CLASSES				
	150	300	600	900	1500
2	420	420	400	330	330
3 X 2	200	200	200	190	180
3	1200	1050	1000	910	810
4 X 3	600	600	600	590	550
4	2200	2100	1850	1800	1700
6 X 4	800	800	790	790	780
6	5150	5100	4600	4380	3800
8 X 6	2150	2150	2150	2150	2150
8	9500	9400	9000	8500	7400
10 X 8	4300	4300	4300	4300	3800
10	15000	15000	14700	14500	11500
12 X 10	7550	7550	7550	8000	9000
12	23000	23000	22500	21100	18000
14 X 12	14000	14000	14000	12800	12800
16 X 12	9100	9100	9100	8900	8900
14	28000	28000	28000	25000	-
16	37200	37200	37200	34500	-
18 X 16	21000	21000	21000	19200	-
20 X 16	15300	15300	15300	13800	-
18	49000	49000	49000	45000	-
20	59000	59000	59000	55200	-
24 X 20	28200	28200	28000	25100	-
24	92000	92000	92000	83800	-
30 X 24	36000	36000	36000	32900	-
30	145000	145000	144000	-	-
36 X 30	164000	164000	164000	-	-
36	210000	210000	210000	-	-

## Data For Calculation of Flow

The coefficient of flow  $C_v$  express the rate of flow in gallons per minute at 60°F water with a pressure drop of 1 psig across the valve. The  $C_v$  coefficients for the various types and sizes, shown in the tables, have been determined from actual flow tests.

**NOTE:**  $K_v$  is the metric equivalent of  $C_v$ .

$$K_v = C_v \times 0.85$$

### FOR LIQUIDS:

$$(1) Q_L = C_v \sqrt{\frac{\Delta P}{G_L}}$$

$$(2) \Delta P = G_L \left( \frac{Q_L}{C_v} \right)^2$$

WHERE:  $Q_L$  = Flow in U.S. Gallons per minute.

$\Delta P$  = (P1-P2) Pressure drop in psi

$G_L$  = Specific gravity of liquid (water = 1 at 60°F)

### FOR GASES:

$$(3) Q_G = 1360 C_v \sqrt{\frac{\Delta P}{G_g T}} \cdot \sqrt{\frac{P_1 + P_2}{G_g T}}$$

$$(4) \Delta P = P_1 - \sqrt{P_1^2 - 2 G_g T \left( \frac{Q_g}{1360 C_v} \right)^2}$$

WHERE:  $Q_g$  = Volumetric flow of gas (SCFH)

$G_g$  = Specific gravity of gas at standard conditions

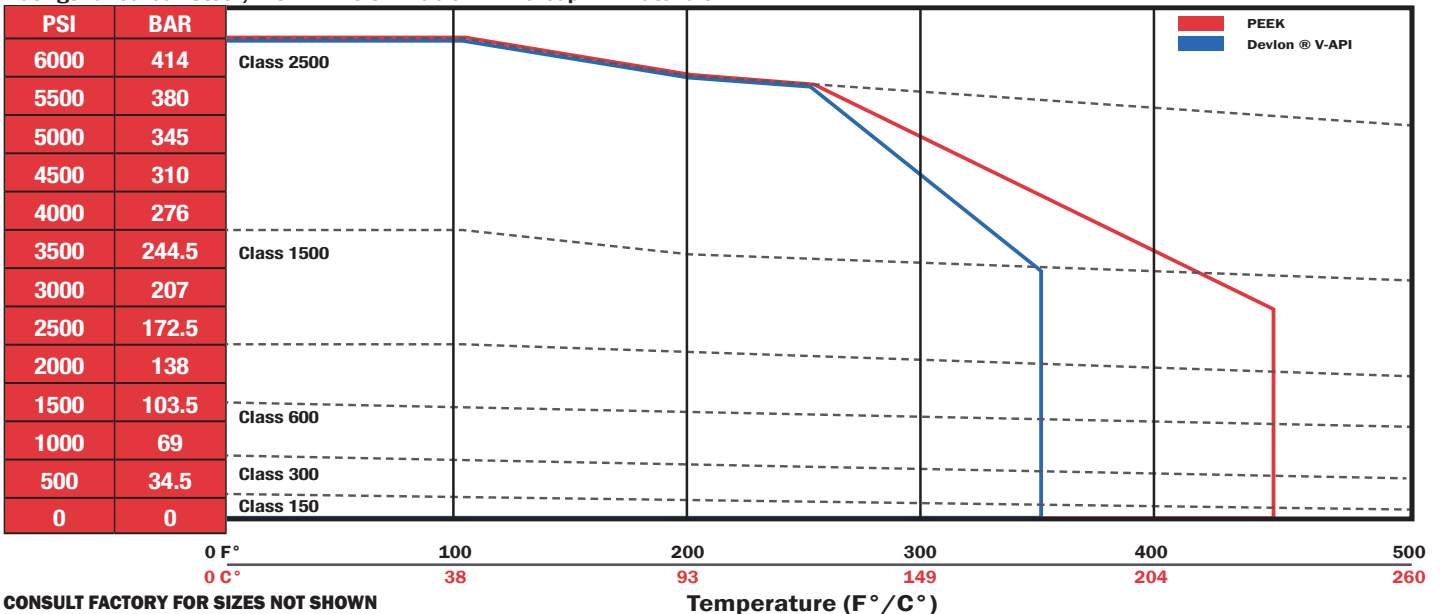
T = Absolute temperature of gas (°F + 460)

**NOTE:** For gas, max.  $\Delta P = 1/2 P_1$ , and min.

$P_2 = 1/2 P_1$ , and  $P_2$  are absolute pressures (psia)

## Seat Material DT3 Pressure/Temperature Ratings

Ratings for Carbon Steel / ASME B16.34 - Table 2-1.1 Group 1.1 Materials



## Torque Data

SIZE NPS (DN)	Torque Type	PRESSURE CLASS									
		CL150		CL300		CL600		CL900		CL1500	
		in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
2" (50)	BTO	468	53	576	65	1172	132	2045	231	3100	350
	ETC	375	42	461	52	938	106	1636	185	2480	280
3" (80)	BTO	794	90	1037	117	1980	224	2987	337	5249	593
	ETC	635	72	829	94	1584	179	2389	270	4199	474
4" (100)	BTO	1412	160	1921	217	3737	422	5193	587	8340	942
	ETC	1129	128	1537	174	2989	338	4154	469	6672	754
6" (150)	BTO	4513	510	4670	528	6445	728	8765	990	25763	2911
	ETC	3610	408	3736	422	5156	583	7012	792	20611	2329
8" (200)	BTO	5268	595	5520	624	13674	1545	16192	1829	26957	3046
	ETC	4214	476	4416	499	10939	1236	12953	1464	21565	2437
10" (250)	BTO	10001	1130	16001	1808	16652	1881	36080	4076	60490	6834
	ETC	8001	904	12801	1446	13322	1505	28864	3261	48392	5468
12" (300)	BTO	12001	1356	16668	1883	23288	2631	53962	6097	78261	8842
	ETC	9600	1085	13334	1507	18630	2105	43169	4877	62608	7074
14" (350)	BTO	21791	2462	28786	3252	44999	5084	76968	8696	-	-
	ETC	17432	1970	23029	2602	35999	4067	61575	6957	-	-
16" (400)	BTO	23511	2656	31406	3548	47176	5330	127831	14443	-	-
	ETC	18809	2125	25125	2839	37741	4264	102265	11554	-	-
18" (450)	BTO	39406	4452	53998	6101	92208	10418	195183	22053	-	-
	ETC	31525	3562	43198	4881	73766	8334	156147	17642	-	-
20" (500)	BTO	50008	5650	58415	6600	94631	10692	204700	23128	-	-
	ETC	40006	4520	46732	5280	75705	8553	163760	18502	-	-
24" (600)	BTO	62150	7022	79541	8987	137579	15544	270165	30525	-	-
	ETC	49720	5618	63632	7190	110063	12435	216132	24420	-	-
30" (750)	BTO	86400	9762	158096	17862	213433	24115	-	-	-	-
	ETC	69120	7810	126476	14290	170746	19292	-	-	-	-
36" (900)	BTO	191146	21597	319331	36080	472691	53407	-	-	-	-
	ETC	152917	17277	255465	28864	378153	42726	-	-	-	-

**BTO = Break to Open Torque (under rated pressure)**

- 1 Torque Values are in Inch Pounds and are for Primary Soft Seated TMBV's with Seat Insert material as Devion V (API)
- 2 Torque Values with PEEK seat insert are 50% higher than the corresponding above mentioned values
- 3 Torque Values are at Ambient temperature, media being clear water

**ETC = End to Close Torque (Re-seating Torque)**

- 4 Use a 1.3 multiplier for dry gas service
- 5 Consult factory for class 2500 details
- 6 For Reduced Bore Valves, take torque values corresponding to the lower size (Ball Bore size) e.g: for 16"x12" Reduced Bore Valve, take torque values corresponding to 12"

**e.g.: for 14" x 10" Reduced Bore Valve, take torque values corresponding to 10"**

- **Ball Valves shall be transported and stored with the ball in the fully open position**
- **Flanged ends and welded ends shall be protected**
- **End protection shall be removed only when the valve is installed in the line**
- **Valves shall be handled using the proper lifting lugs**
- **Valves shall be stored according to ViNtrol storage procedures. Long term storage shall be avoided**
- **For welded-end valves, advise ViNtrol if there will be a post-weld heat treatment (transition pups may be necessary to avoid damages to seals)**
- **Flush and clean the line before operating the valve**
- **Make sure no line testing fluid is left in the line and or the valve body**
- **Avoid leaving the valve body filled with salt water to prevent corrosion**
- **During line testing, valves shall be used for on-off service only. Throttling service (use of the valve with the ball partially open) can damage the seals. Valves should be in full open position**
- **Make sure to take into consideration the actual service conditions when selecting materials for O-rings and seal inserts**
- **Always specify anti-explosive decompression material for valves to be used in high pressure gas service**
- **Make sure the selected actuator has been properly sized (an oversized actuator can be as dangerous as an undersized one)**
- **Advise ViNtrol of cycle frequency to ensure proper sizing of actuator**
- **Do not use the actuator to lift the valve**





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