

BTC AND BTCO₂ GATE VALVES

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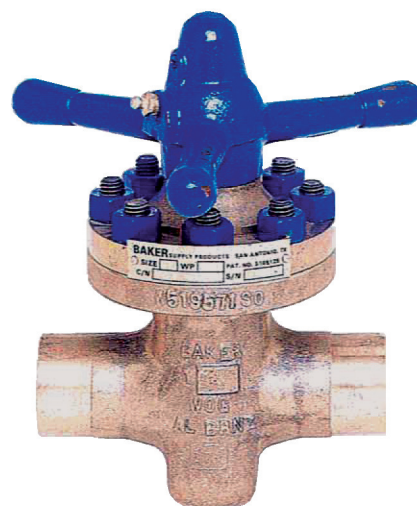
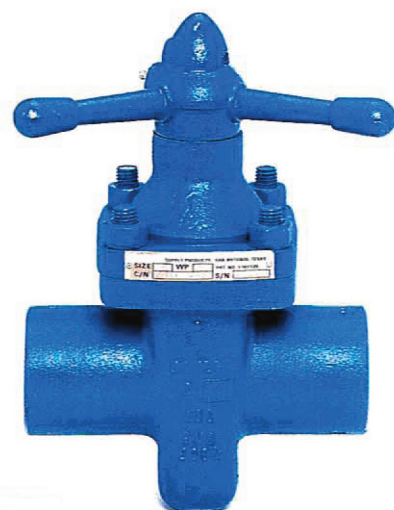
INTRODUCTION

Forum BTC Gate Valves are through-conduit, unrestricted flow valves designed for waterflood and gas injection operations in corrosive/erosive environments typically associated with enhanced oil recovery, as well as standard production flow line applications.

DESIGN FEATURES:

- Full-floating transmitting “T” nut between the stem and gate provides two degrees of freedom. This permits a positive seal between the gate and seat even with gas pressures as low as 50 psi.
- The abbreviated gate design enables a reduction in total weight for easier handling and superior economics.
- Through conduit I.D.
- Totally field serviceable while inline.
- Minimal number of turns is required to open and close the valve.

1"	3 ½ turns
2"	4 ½ turns
2 ½"	5 turns
3"	5 ½ turns
4"	6 ½ turns / 10 Rising stem design
6"	8 ½ turns / 32 Rising stem design



GENERAL INFORMATION

General Application

- Water, oil, and gas lines
- Wellheads
- CO₂ gas injection
- Waterflood injection
- Sour gas and crude oil
- Up to 3705 psi and 400°F with Viton seals
- Up to 3705 psi and 225°F with Nitrile seals
- Secondary recovery projects

Standard Trim

- ASTM A-216-WCB Carbon Steel on 400/600
- ASTM A-487-2Q Steel Body and Bonnet on 900/1500
- ASTM A-351 Stainless Steel Gate and UNS S31600 Stainless Steel Stem
- 90 Durometer A Peroxide Cured Nitrile Seat and Seals

Sizes

- Class 600 1", 2", 3", 4", 6", 8"x 6"
- Class 900 1", 2", 2 1/2", 3", 4", 6"
- Class 1500 1", 2", 2 1/2", 3", 4", 6"

Material Traceability*

- NACE Compliance
- Charpy Requirements

*Certification provided upon request at an additional charge.

Connections

- Screwed End
- Raised Face (RF) or Ring Type Joint (RTJ), Flanged End

Testing and Pressure Ratings

Class	Working Pressure	Test Pressure
600	1480 psi	2225 psi
900	2220 psi	3350 psi
1500	3705 psi	5575 psi

***BTC GATE VALVES ARE
TESTED WITH WATER***

***BTCO₂ GATE VALVES ARE
TESTED WITH NITROGEN***

ASSEMBLY WEIGHTS

Full Port Class 600										Regular Port Class 600
Pressure Rating Size	ANSI Class 600 (1480 psi WP and 2225 psi Test)									
	1"	2"	3"	4"	1"	2"	3"	4"	6"	8" x 6"
SCREWED END Base Part No. Weight, lbs.	N / A	93701 30	93703 61	93704 102	N / A	93711 30	93713 61	93714 102	N / A	N / A
FLANGED END (RF) & (RTJ) Base Part No. Weight, lbs.	93709 24	93701 46	93703 93	N / A 170	93719 24	93711 46	93713 93	93714 170	93716 390	939168724 480

Full Port Class 900 and 1500												
Pressure Rating Size	ANSI Class 900 (2220 psi WP and 3350 psi Test)						ANSI Class 1500 (3705 psi WP and 5575 psi Test)					
	1"	2"	2 1/2"	3"	4"	6"	1"	2"	2 1/2"	3"	4"	6"
SCREWED END Base Part No. Weight, lbs.	93729 16	93721 38	93722 74	93723 87	93724 148	N / A	93739 16	93731 38	93732 74	93733 87	93734 148	N / A
FLANGED END (RF) & (RTJ) Base Part No. Weight, lbs.	93729 34	93721 80	93722 141	93723 150	93794 233	93796 509	93739 34	93731 80	93732 141	93733 184	93784 279	93786 509

PRODUCT NUMBER SCHEME

BASE MATERIAL NUMBER 1st to 3rd Digits		SIZE 5th Digit		GATE, STEM SEAL & SPECIAL ASSEMBLY 7th Digit		BODY MATERIAL 9th Digit	
BTC - 937 BTCO ₂ - 938 BTC - 939 (937, 938 Full Port) (939 Regular Port)		1" - 9 2 1/2" - 2 4" - 4 <i>*6"x4"- 5 (1500 only)</i>	2" - 1 3" - 3 6" - 6 <i>*8"x6"- 6 (600 only)</i>	7th Digit 7 H		**Aluminum Bronze 4 316SS 5 Alloy Steel 6	
XXX X		X X		X		X X	
WORKING PRESSURE 4th Digit		END CONNECTION 6th Digit		SEAT MATERIAL 8th Digit 90 DPC			
Class 400 0 Class 600 1 Class 900 2 Class 1500 3		Screwed LP-0, NUE-1, EUE-2, Flanged: RTJ-7, RF-8		90 DPC Teflon®/PEEK			
				NBR Z T	Viton® N V	HSN J —	

Digit	Code 10th Digit Description	Digit	Code 11th Digit Description	Digit	Code 12th Digit Description
6	Q.A and Testing to API 6D only (Same requirements as "D" certified)	1	PSL 1 Requirements	B	I.R.C. - Independent Design Review Certificate
A	Statement of Compliance Hydrostatic Test Report	2	PSL 2 Requirements	N	NACE MR0175 Documentation
B	Statement of Compliance Mill Certs Hydrostatic Test Report	4	PSL 2 Requirements - with PSL 1 Test	S	I.R.C. and NACE MR0175 Documentation
C	Statement of Compliance Mill Certs Hydrostatic Test Report Charpy Impacts-Pressure Containing Part	5	PSL 1 Requirements - M.P.I.	T	3rd Party Inspection
D	Statement of Compliance Mill Certs Hydrostatic Test Report Charpy Impacts-Pressure Containing Part Hydrostatic Test Chart	6	PSL 1 Requirements - DYE Penetrant	U	3rd Party Inspection and I.R.C.
		7	Standard Testing - PSL 1 Requirments - MPI & Dye Penetrant	V	3rd Party Inspection and NACE
		D	Standard Testing - Dye Penetrant per QAP 207	W	3rd Party Inspection/I.R.C./NACE MR0175 Documentation
		M	Standard Testing - Magnetic Particle Inspection (MPI) per QAP 206	X	Special
		P	Standard Testing - Dye Penetrant per QAP 207 & MPI per QAP 206		
		R	Standard Testing - Radiograph per QAP 212		
		T	Standard Testing - PSL 2 Requirments - MPI, Dye Penetrant & Hardness		

** The Valves do not conform to ANSI 16.34 material requirements. The AB Gate Valves will conform to NACE MR0175-02, Table 2: Non-ferrous materials are acceptable for direct exposure to sour environments, aluminum base alloys. BTC Gate Valves are in compliance with ANSI 16.5 Flange dimensions, ANSI 16.34 testing criteria, and ANSI 16.10 Face-to-Face and End-to-End dimensions.

* Regular Port Valves

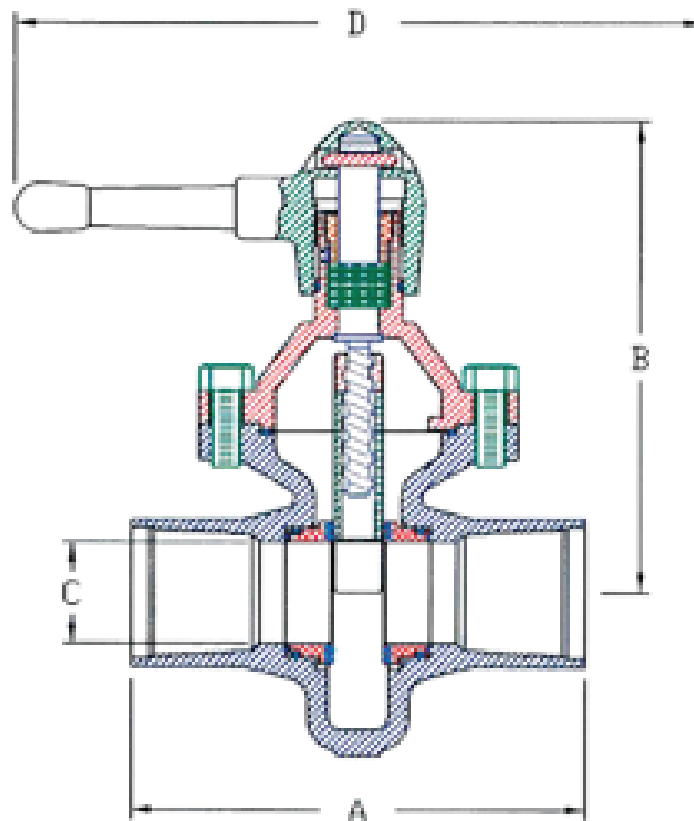
DIMENSIONS AND PRESSURE RATINGS

CLASS 600

Pressure Rating		Class 600 (1480 psi WP - 2225 psi Test)					
Size		1"	2"	3"	4"	6"	8"x6"
A	Screwed End	N / A	8 7/8	10 1/4	11 7/8	N / A	N / A
	Flanged -RF	8 1/2	11 1/2	14	17	22	26
	Flanged-RTJ	8 1/2	11 5/8	14 1/8	17 1/8	22 1/8	26 1/8
B	Open	7 7/16	10	12 1/8	13 7/8	19 1/4	19 1/4
C	Seat Bore	1 1/16	2 1/16	3 1/8	4 1/16	6 1/8	6 1/8
D	Handle Clearance	9 1/2	11	12 5/8	14 1/4	20	20
F	Flange Diameter	4 7/8	6 1/2	8 1/4	10 3/4	14	16 1/2
	Flange Bolt (Qty)	(4)	(8)	(8)	(8)	(12)	(12)
	Flange Bolt (Size)	5/8	5/8	3/4	7/8	1	1 1/8
	Ring No. RTJ	R16	R23	R31	R37	R45	R49

N / A - Not Available

Screwed End

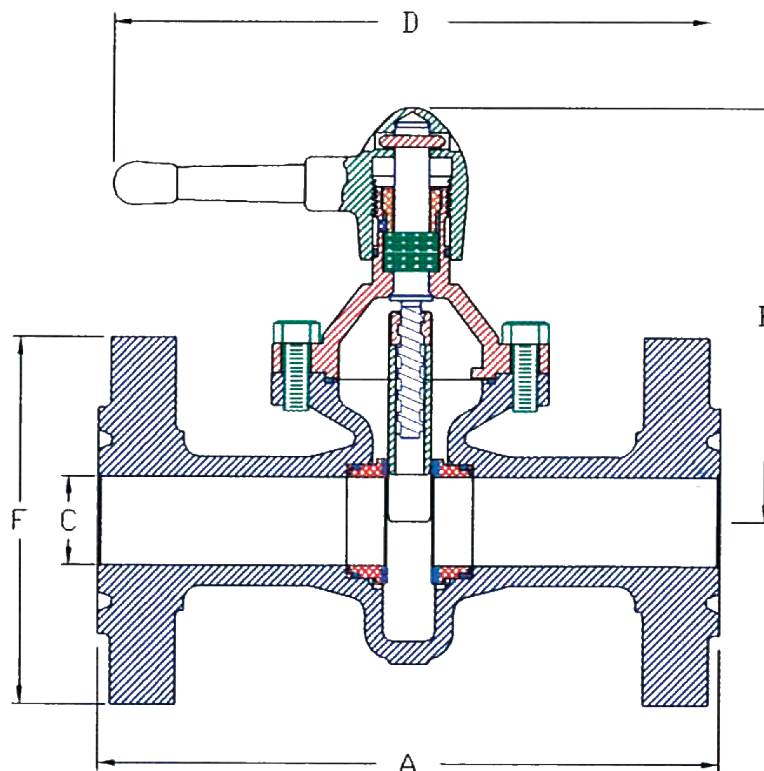


DIMENSIONS AND PRESSURE RATINGS CLASS 900 AND 1500

Pressure Rating	Class 900 (2220 psi WP - 3350 psi Test)					Class 1500 (3705 psi WP - 5575 psi Test)					
Size	1"	2"	2 1/2"	4"	6"	1"	2"	2 1/2"	3"	4"	6"
A Screwed End	6 3/4	9 1/4	10	13	N / A	6 3/4	9 1/4	10	11	13	N / A
Flanged -RF	10	14 1/2	16 1/2	18	24	10	14 1/2	16 1/2	18 1/8	21 1/2	27 3/4
Flanged-RTJ	10	14 5/8	16 5/8	18 1/8	24 1/8	10	14 5/8	16 5/8	18 5/8	21 5/8	28
B Open	7 9/16	9 5/8	12 7/8	16 1/8	21	7 9/16	9 5/8	12 7/8	13 3/4	16 1/8	21
C Seat Bore	1 1/16	2 1/16	2 9/16	4 1/16	6 1/8	1 1/16	2 1/16	2 9/16	3 1/8	4 1/16	6 1/8
D Handle Clearance	9 1/2	14	16	18	20	9 1/2	14	16	16	18	20
F Flange Diameter	5 7/8	8 1/2	9 5/8	11 1/2	15	5 7/8	8 1/2	9 5/8	10 1/2	12 1/4	15 1/2
Flange Bolt (Qty)	(4)	(8)	(8)	(8)	(12)	(4)	(8)	(8)	(8)	(8)	(12)
Flange Bolt (Size)	7/8	7/8	1	1 1/8	1 1/8	7/8	7/8	1	1 1/8	1 1/4	1 3/8
Ring No. RTJ	R16	R24	R27	R37	R45	R16	R24	R27	R35	R39	R46

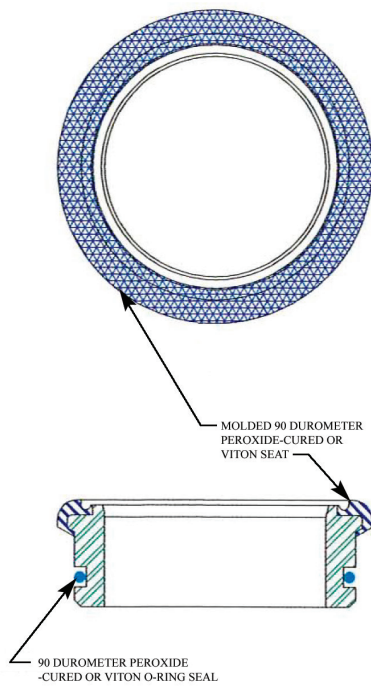
N / A - Not Available

Screwed End

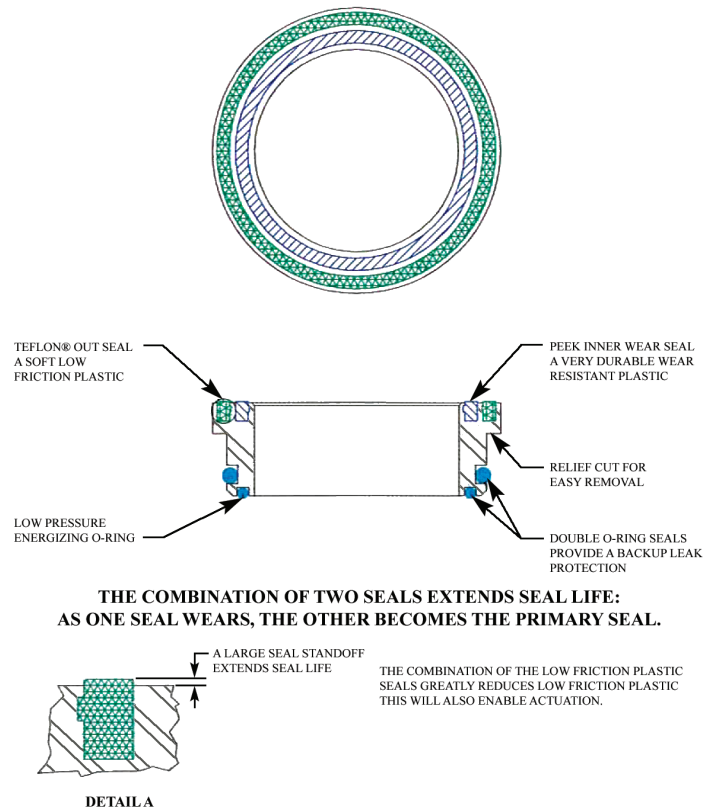


SEAT ILLUSTRATIONS

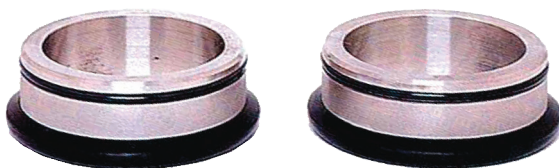
Single Seal Seats



Dual Seal Seats



Single Seal Seats

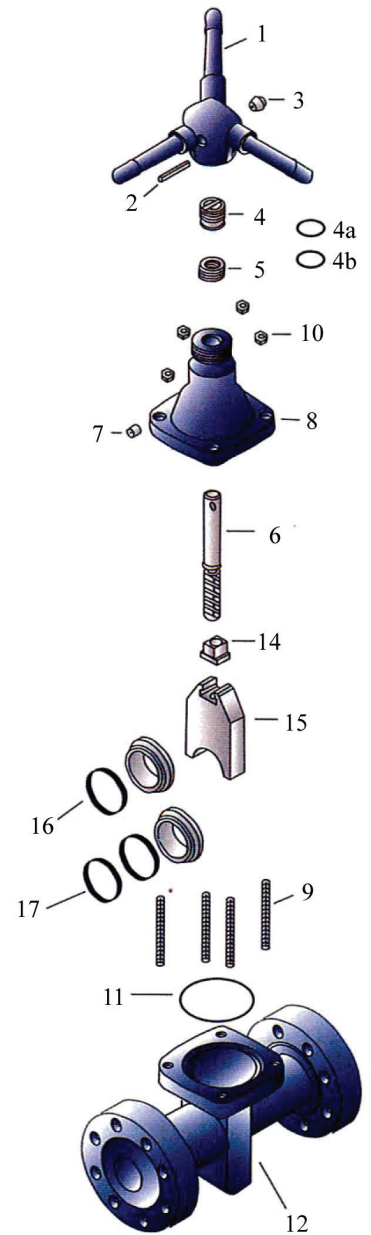


Dual Seal Seats



PARTS AND WEIGHTS CLASS 600 (1480 PSI WP-2225 PSI TEST)

Index	Description			1"	2"	3"
1	Handle	Ductile Iron		051913200 3 lb	051892700 3 lb	051992800 3 lb
2	Roll Pin	Steel		WWL108180 0.1 lb	WWL11D150 0.1 lb	WWL11D150 0.1 lb
3	Lube Fitting	Steel		WWW00C000 0.1 lb	WWW00C000 0.1 lb	WWW00C000 0.1 lb
4	Retainer Nut	Steel		N/A	051979510 0.1 lb	051994120 0.1 lb
4a	Back-Up Ring	Teflon®		WWD115T10	N/A	N/A
4b	Stem Seal	90D PC Nitrile		WWB115P40 0.1 lb	N/A 052138105	N/A 052138115
5	Stem Seal Assembly Chevron "V" Packing (5 Ring)			N/A	051982402 0.1 lb	051981502 0.1 lb
6	Stem	316SS		051913328 0.5 lb	051927328 1 lb	051958128 1.2 lb
7	Set Screw			N/A	WWG60808F 0.2 lb	WWG60808F 0.2 lb
8	Bonnet Material	Steel Al/Brnz 316SS	2 6 8	0519524X0 3 lb 3 lb 3 lb	0519933X0 6 lb 6 lb 6 lb	0519936X0 11 lb 11 lb 11 lb
9	Body Stud	Steel		WWHS1HASA (4 required) 0.1 lb	WWHS1M2HA (4 required) 0.1 lb	WWHS1S3HA (4 required) 0.5 lb
10	Body Stud Nut	Steel		WWJ11H12B (4 required) 0.1 lb	WWJA1M400 (4 required) 0.2 lb	WWJA1S400 (4 required) 0.5 lb
11	Bonnet Seal	90D PC Nitrile 90D Viton	p40 v40	WWB143XXX 0.1 lb 0.1 lb	WWB240XXX 0.1 lb 0.1 lb	WWB251XXX 0.1 lb 0.1 lb
12	Body Connection	Screwed	LP EUE NUE	NA N/A N/A	0519411X0 14 lb 0519412x0 14 lb 0519413X0 14 lb	051967220 33 lb N/A N/A
		Flanged	RTJ RF	0519522x0 14 lb 0519523x0 14 lb	0519313X0 31 lb 0519314X0 31 lb	0519557X0 69 lb 0519558x0 69 lb
	Material	Steel Al/Brnz 316SS	2 6 8			
14	'T' Nut	316SS		W519344F0 0.1 lb	W519244F0 0.1 lb	W519355F0 0.1 lb
15	Gate	316SS		051934508 1 lb	051926108 3 lb	051950508 7 lb
16	Seat Repair Kit Assembly: Includes 2 Seats & 2 Seals					
	Assembly	HSN 90D PC Nitrile 90D Viton		051959100 1 lb 051998300 1 lb WWB026XXX 0.1 lb	051926488 051930700 1 lb 051931700 1 lb WWB229XXX 0.1 lb	051950888 051952600 4 lb 051952700 4 lb WB239XXX 0.1 lb
16a	Seat Seal	90D PC Nitrile 90D Viton	P40 V40			
17	Dual Seal Seat Repair Kit Assembly: Includes 2 Seat, 2 Inner & 2 Outer Seals					
	Assembly	HSN 90D PC Nitrile		N/A	051984504 051984502 1 lb 051984501 1 lb	051984602 4 lb 051984601 4 lb
17a	Inner Seat Seal	90D Viton		N/A		
17b	Outer Seat Seal	90D PC Nitrile 90D Viton 90D PC Nitrile 90D Viton	P40 V40 P40 V40	N/A N/A	WWB138XXX 0.1 lb WWB229XXX 0.1 lb	WWB152XXX 0.1 lb WWB239XXX 0.1 lb



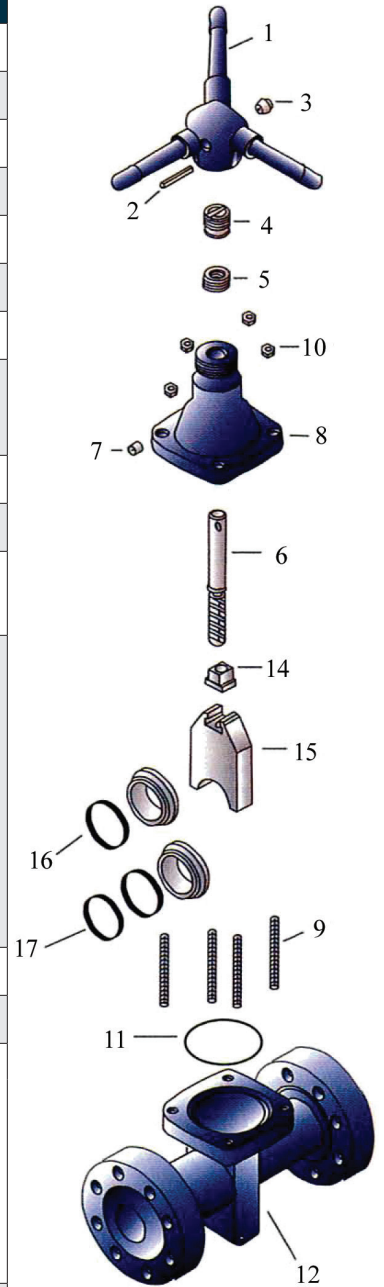
N/A - Not Available

PARTS AND WEIGHTS

CLASS 600 (1480 PSI WP-2225 PSI TEST)

Index	Description			4"	6"	8" - 6"
1	Handle	Ductile Iron		051894200 7 lb	051958800 15 lb	051958800 15 lb
2	Roll Pin	Steel		WWL11D200 0.1 lb	WWL11D300 0.1 lb	WWL11D300 0.1 lb
3	Lube Fitting	Steel		WWW00C000 0.1 lb	WWW00C000 0.1 lb	WWW00C000 0.1 lb
4	Retainer Nut	Steel		051994220 0.1 lb	051985820 0.1 lb	051985820 0.1 lb
5	Stem Seal Assembly			052138135 0.1 lb	052138135 0.1 lb	051985602 0.1 lb
6	Stem	316SS		051891528 1.2 lb	051958628 3 lb	051958628 3 lb
7	Set Screw			WWG60808F 0.2 lb	WWG60808F 0.2 lb	WWG60808F 0.2 lb
8	Bonnet Material	Steel Al/Brnz 316SS	2 6 8	0519938X0 18 lb 18 lb 18 lb	0519939X0 54 lb 54 lb 54 lb	051993960 54 lb 54 lb 54 lb
9	Body Stud	Steel		WWHS103SA (4 required) 1 lb	WWHS104SA (4 required) 1 lb	WWHS1D4SA (4 required) 1 lb
10	Body Stud Nut	Steel		WWJA10400 (4 required) 1 lb	WWJA20400 (4 required) 1 lb	WWJA25400 (4 required) 1 lb
11	Bonnet Seal	90D PC Nitrile 90DViton	P40 V40	WWB258XXX 0.1 lb 0.1 lb	WWB446XXX 0.1 lb 0.1 lb	WWB446XXX 0.1 lb 0.1 lb
12	Body Connection	Screwed	LP EUE NUE	0519414X0 58 lb 0519415X0 58 lb 0519416X0 58 lb	N/A N/A N/A	N/A N/A N/A
		Flanged	RTJ RF	0519315X0*** 126 lb 0519316X0*** 125 lb	0519583X0*** 282 lb 0519584X0*** 282 lb	N/A 051964860*** 350 lb
	Material	Steel Al/Brnz 316SS	2 6 8			
14	'T' Nut	316SS		W519321F0 0.1 lb	W519321F0 0.1 lb	W519321F0 0.1 lb
15	Gate	316SS		051932008 11 lb	051933508 23 lb	051933508 23 lb
16	Seat Repair Kit Assembly: Includes 2 Seats, 2 Inner & 2 Outer Seals					
	Assembly	HSN 90D PC Nitrile		051932890 051952900 4 lb	051953200 10 lb	051953200 10 lb
		90D Viton		051986201 4 lb	051953400 10 lb	051953400 10 lb
16a	Seat Seal	90D Nitrile 90D Viton	P40 V40	WWB156XXX 0.1 lb WWB246XXX 0.1 lb	WWB261XXX 0.1 lb	WWB261XXX 0.1 lb
17	Dual Seal Seat Repair Kit Assembly: Includes 2 Seats & 2 Seals					
	Assembly	90D PC Nitrile		051986202 4 lb	051992202 10 lb	051992202 10 lb
		90D Viton		051986201 4 lb	051992201 10 lb	051992201 10 lb
17a	Inner Seat Seal	90D PC Nitrile 90D Viton	P40 V40	WWB156XXX 0.1 lb	WWB259XXX 0.1 lb	WWB259XXX 0.1 lb
17b	Outer Seat Seal	90D PC Nitrile 90D Viton	P40 V40	WWB246XXX 0.1 lb	WWB261XXX 0.1 lb	WWB261XXX 0.1 lb

*** Class 600 only
N / A - Not Available

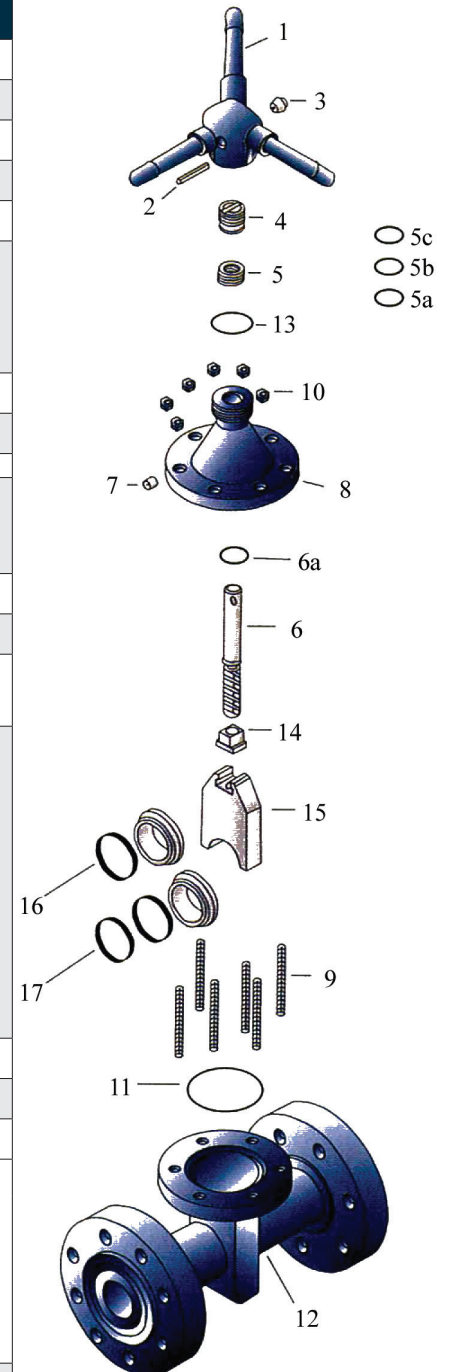


PARTS AND WEIGHTS

CLASS 900 (2220 PSI WP-3350 PSI TEST) & CLASS 1500 (3705 PSI WP-5575 PSI TEST)

Index	Description			1"	2"	2 1/2"
1	Handle	Ductile Iron		051957400 3 lb	051925300 6 lb	051936600 7 lb
2	Roll Pin	Steel		WWL108180 0.1 lb	WWL11D150 0.1 lb	WWL11D150 0.1 lb
3	Lube Fitting	Steel		WWW00C000 0.1 lb	WWW00C000 0.1 lb	WWW00C000 0.1 lb
4	Retainer Nut	Steel		N/A	052138105 0.1 lb	052138125 0.1 lb
5	Stem Seal Assembly			N/A	051982402 0.1 lb	051981502 0.1 lb
5a	Stem Seal, Pressure			051959508 0.1 lb	N/A	N/A
5b	Stem Seal, Grease	90D PC Nitrile		WWB115P40 0.1 lb		
5c	Back-up Ring	Teflon®		WWWD115T10 0.1 lb		
6	Stem	316SS		051954128 0.5 lb	051927328 1 lb	051935328 1.5 lb
6a	Up Stop Ring			051954008 0.1 lb	N/A	N/A
7	Set Screw			N/A	WWG60806F	WWG60806F
8	Bonnet Material	Steel Al/Brnz 316SS	2	0519536X0 4 lb	0519796X0 8 lb	0519842X0 16 lb
			6	4 lb	8 lb	16 lb
			8	4 lb	8 lb	16 lb
9	Body Stud	Steel		WWHS1H1SA (8 Required) 0.1 lb	WWHS1M2HA (6 Required) 0.1 lb	WWHS1S3H (6 Required) 0.5 lb
10	Body Stud Nut	Steel		WWJ11H12B (8 Required) 0.1 lb	WWJA1M400 (6 Required) 0.2 lb	WWJA1S400 (6 Required) 0.5 lb
11	Bonnet Seal	90D PC Nitrile 90D Viton	P40 V40	WWB143XXX 0.1 lb 0.1 lb	WWB240XXX 0.1 lb 0.1 lb	WWB245XXX 0.1 lb 0.1 lb
12	Body Connection	Screwed	LP	0519571X0 8 lb	0519257X0 18 lb	0519418X0 40 lb
			EUE	N/A	0519258X0 18 lb	0519351X0 40 lb
			NUE	N/A	0519417X 18 lb	0519419X0 40 lb
	Flanged	RTJ	RTJ	0519537X0 23 lb	0519276X0 33 lb	0519420X0 107 lb
			RF	0519538X0 23 lb	0519277X0 33 lb	0519421X0 107 lb
			Material	Steel Al/Brnz 316SS		
13	Handle Seal	90D PC Nitrile 90D Viton	P40 V40	WWB219XXX 0.1 lb	WWB222XXX 0.1 lb	WWB224XXX 0.1 lb
14	'T' Nut	316SS		W519344F0 0.1 lb	W519244F0 0.1 lb	W519355F0 0.1 lb
15	Gate	316SS		051934508 0.1 lb	051926108 0.1 lb	051935208 0.1 lb
16	Seat Repair Kit Assembly Includes 2 Seats & 2 Seals					
16a	Seat Seal	HSN 90D PC Nitrile		051964100 1 lb	051930705 051930700 1 lb	051935788 051952500 2 lb
		90D Viton		051998300 1 lb	051917000 1 lb	N/A
17	Dual Seal Seat Repair Kit Assembly Includes 2 Seats, 2 Inner & 2 Outer Seals					
17a	Inner Seat Seal	HSN 90D PC Nitrile		N/A	051988504 051984502 1 lb	051991502 2 lb
		90D Viton		N/A	051931700 1 lb	051991501 2 lb
17b	Outer Seat Seal	90D PC Nitrile 90D Viton	P40 V40	N/A	WWB227P41 0.1 lb	WWB147XXX 0.1 lb
17c		90D PC Nitrile 90D Viton	P40 V40	N/A	WWB229P41 0.1 lb	WWB234XXX 0.1 lb

N/A - Not Available



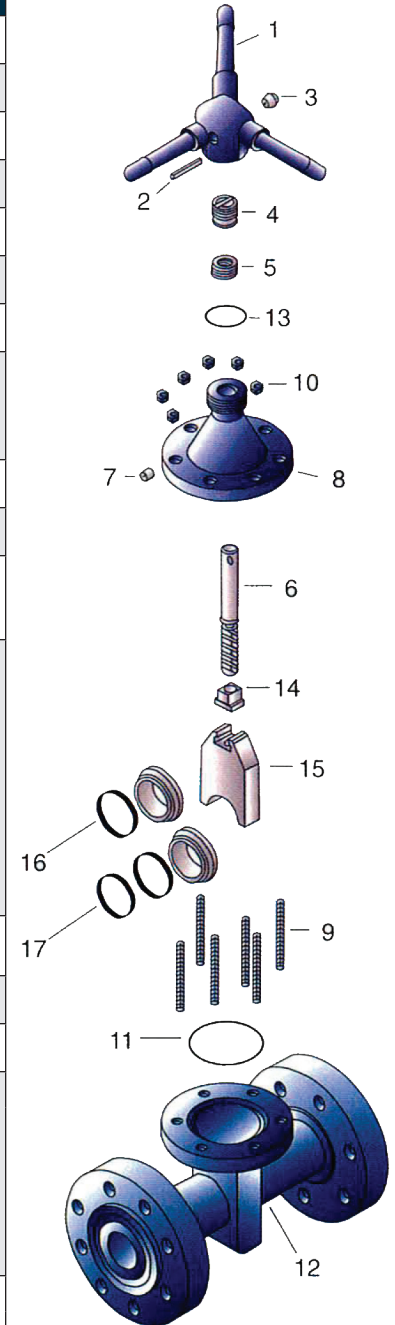
PARTS AND WEIGHTS

CLASS 900 (2220 PSI WP-3350 PSI TEST)

Index	Description			3"	4"	6"
1	Handle	Ductile Iron		051936600 7 lb	051894600 10 lb	051943800 16 lb
2	Roll Pin	Steel		WWL11D150 0.1lb	WWL11D200 0.1lb	WWL11D300 0.1lb
3	Lube Fitting	Steel		WWW00C000 0.1lb	WWW00C000 0.1lb	WWW00C000 0.1lb
4	Retainer Nut	Steel		051981020 0.1lb	051985820 0.1lb	051985820 0.1lb
5	Stem Seal Assembly			052138115 0.1lb	052138135 0.1lb	052138135 0.1lb
6	Stem	316SS		051950628 2 lb	051953528 3 lb	051932928 3 lb
7	Set Screw			WWG60808F 0.2 lb	WWG60808F 0.2 lb	WWG60808F 0.2 lb
8	Bonnet Material	Steel Al/Brnz 316SS	2 6 8	051980960 20 lb 20 lb 20 lb	0519853X0 33 lb 33 lb 33 lb	051992960 72 lb 72 lb 72 lb
9	Body Stud	Steel		WWHS1S3HA (10required) 0.5 lb	WWHS1W3HA (10required) 1 lb	WWHS2H586 (4 required) 1 lb
10	Body Stud Nut	Steel		WWJA1S400 (10required) 0.5 lb	WWJA1W400 (10required) 1 lb	WWJ1H400 (4 required) 1 lb
11	Bonnet Seal	90D PC Nitrile 90D Viton	P40 V40	WWB251XXX 0.1lb 0.1lb	WWB258XXX 0.1lb 0.1lb	WWB446XXX 0.1lb 0.1lb
12	Body Connection	Screwed	LP EUE NUE RTJ RF	N/A N/A N/A 0519491X0 106 lb 0519492X0 106 lb	0519674X0 83 lb N/A N/A 0519514X0 168 lb 0519515X0 168 lb	N/A N/A N/A 0519338X0 380 lb 0519339X0 380 lb
	Material	Steel Al/Brnz 316SS	2 6 8			
13	Handle Seal	90D PC Nitrile 90D Viton	P40 V40	WWB224XXX 0.1lb	WWB226XXX 0.1 lb	WWB230XXX 0.1 lb
14	‘T’ Nut	316SS		W519355F0 0.2 lb	W519321F0 0.6 lb	W519321F0 0.6 lb
15	Gate	316SS		051950508 7lb	051932008 11lb	051933508 23 lb
16	Seat Repair Kit Assembly: Includes 2 Seats & 2 Seals					
	Assembly	HSN 90D PC Nitrile		051952605 051952600 4lb	051952905 051952900 4 lb	051953200 10 lb
		90D Viton		051952800 4lb	051953100 4 lb	051953400 10 lb
16a		90D PC Nitrile 90D Viton	P40 V40	WWB239XXX 0.1lb	WWB246XXX 0.1 lb	WWB261XXX 0.1 lb
17	Dual Seal Seat Repair Kit Assembly: Includes 2 Seats, 2 Inner & 2 Outer Seals					
	Assembly	HSN 90D PC Nitrile		051984602 4lb	051986203 051986202 4lb	051992202 10 lb
		90D Viton		051984601 4lb	051986201 4lb	051992201 10 lb
17a	Inner Seat Seal	90D PC Nitrile 90D Viton	P40 V40	WWB152XXX 0.1lb	WWB156XXX 0.1lb	WWB259XXX 0.1lb
17b	Outer Seat Seal	90D PC Nitrile 90D Viton	P40 V40	WWB239XXX 0.1lb	WWB246XXX 0.1lb	WWB261XXX 0.1lb

* Gate to be used for Standard 900 PC Seat with "V" packing trim only

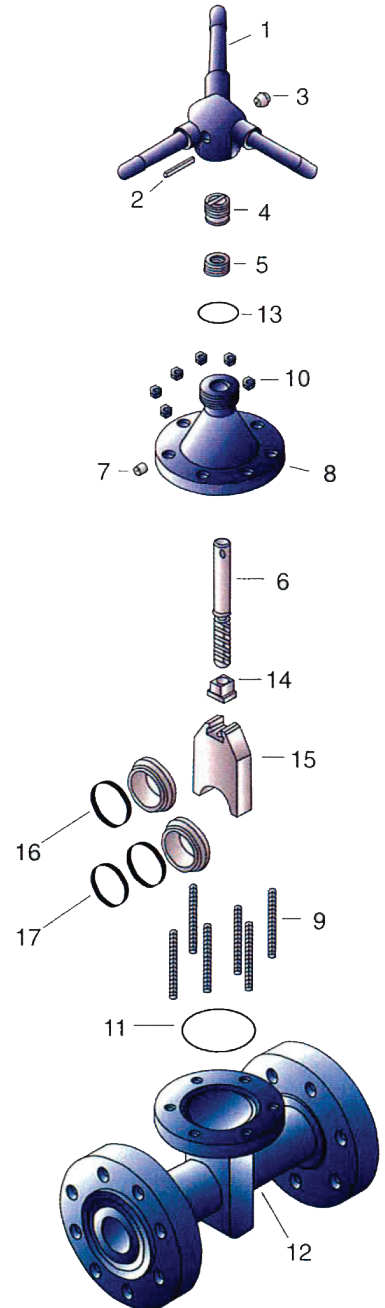
N/A - Not Available



PARTS AND WEIGHTS CLASS 1500 (3705 PSI WP-5575 PSI TEST)

Index	Description			3"	4"	6"
1	Handle	Ductile Iron		051936600 7 lb	051894600 10 lb	051943800 10 lb
2	Roll Pin	Steel		WWL11D150 0.1lb	WWL11D200 0.1lb	WWL11D300 0.1lb
3	Lube Fitting	Steel		WWW00C000 0.1lb	WWW00C000 0.1lb	WWW00C000 0.1lb
4	Retainer Nut	Steel		051981020 0.1lb	051985820 0.1lb	051985820 0.1lb
5	Stem Seal Assembly			052138115 0.1lb	052138135 0.1lb	052138135 0.1lb
6	Stem	316SS		051950628 2 lb	051953528 3 lb	051932928 3 lb
7	Set Screw			WWG60808F 0.2 lb	WWG60808F 0.2 lb	WWG60808F 0.2 lb
8	Bonnet Material	Steel Al/Brnz 316SS	2 6 8	0519809X0 20 lb 20 lb 20 lb	0519853X0 33 lb 33 lb 33 lb	051988660 72 lb 72 lb 72 lb
9	Body Stud	Steel		WWHS1S3HA (10required) 0.5 lb	WWHS1W3HA (10required) 1 lb	WWHS205H6 (10 required) 1 lb
10	Body Stud Nut	Steel		WWJA1S400 (10required) 0.5 lb	WWJA1W400 (10required) 1 lb	WWJ11H400 (4 required) 1 lb
11	Bonnet Seal	90D PC Nitrile 90D Viton	P40 V40	WWB251XXX 0.1lb 0.1lb	WWB258XXX 0.1lb 0.1lb	WWB446XXX 0.1lb N / A
12	Body Connection	Screwed	LP	N/A	0519674X0 83 lb	N/A
			EUE	N/A	N/A	N/A
			NUE	N/A	N/A	N/A
	Flanged		RTJ	0519485X0 141lb	0519512X0 214lb	051987560 380 lb
			RF	0519486X0 141 lb	0519513X0 214 lb	N/A
	Material	Steel Al/Brnz 316SS	2 6 8			
13	Handle Seal	90D PC Nitrile 90D Viton	P40 V40	WWB224XXX 0.1lb	WWB226XXX 0.1 lb	WWB230XXX 0.1 lb
14	'T' Nut	316SS		W519355F0 0.2 lb	W519321F0 0.6 lb	W519321F0 0.6 lb
15	Gate	316SS		051950508 7lb	051932008 11lb 051932009 11 lb	051933508 11 lb
16	Seat Repair Kit Assembly: Includes 2 Seats & 2 Seals					
	Assembly	HSN 90D PC Nitrile		051952605 051952600 4lb	N/A	N/A
		90D Viton		051952800 4lb	N/A	N/A
16a		90D PC Nitrile 90D Viton	P40 V40	WWB239XXX 0.1lb	N/A	N/A
17	Dual Seal Seat Repair Kit Assembly Includes: 2 Seats, 2 Inner & 2 Outer Seals					
	Assembly	HSN 90D PC Nitrile		051984602 4lb	051986202 4lb	051992202 4 lb
		90D Viton		051984601 4lb	051986201 4lb	51992201 4lb
17a	Inner Seat Seal	90D PC Nitrile 90D Viton	P40 V40	WWB152XXX 0.1lb	WWB156XXX 0.1lb	WWB259XXX 0.1lb
17b	Outer Seat Seal	90D PC Nitrile 90D Viton	P40 V40	WWB239XXX 0.1lb	WWB246XXX 0.1lb	WWB261XXX 0.1lb

* Gate to used for Standard 900 PC Seat with "V" packing trim only
N/A - Not Available



MATERIAL SPECIFICATIONS

Standard Trim

Item	Value Material	Alloy Steel	Aluminum Bronze	Stainless Steel
Body		ASTM A-487-2Q** ASTM A-216-WCB	ASTM B-148 Alloy 955D	ASTM A-351 GR CF8M
Bonnet		ASTM A-487-2Q** ASTM A-216-WCB	ASTM B-148 Alloy 955D	ASTM A-351 GR CF8M
Stem		UNS S31600 316SS	UNS S31600 316SS	UNS S31600 316SS
Gate		ASTM A-351 316SS	ASTM A-351 316SS	ASTM A-351 316SS
Seat	Insert	316SS	316SS	316SS
	Elastomer	HSN 90 Durometer A Peroxide Cured Nitrile	HSN 90 Durometer A Peroxide Cured Nitrile	HSN 90 Durometer A Peroxide Cured Nitrile

* 600 Only, Not Recommended or Sold for Offshore Use

• 600

** 900/1500

Optional Seat

Item	Value Material	Alloy Steel	Aluminum Bronze	Stainless Steel
Seal for CO ₂ Service	Insert	N/A	316SS	316SS
	Elastomer	N/A	90 Durometer A Peroxide Cured Nitrile Teflon® / Peek	90 Durometer A Peroxide Cured Nitrile Teflon® / Peek
Seal for H ₂ S Service	Insert	316SS	316SS	316SS
	Elastomer	90 Durometer Viton® Teflon® / Peek	90 Durometer Viton® Teflon® / Peek	90 Durometer Viton® Teflon® / Peek

N/A - Not Available

MATERIAL COMPARISON CHART FOR BRINE APPLICATIONS

For purposes of analysis, the BRINE solution is divided into its three major chloride components: Sodium Chloride, Potassium Chloride, and Calcium Chloride, and are listed in order of their usual proportions.

Medium	Material	Percent Concentrate	Corrosion Rate (thousands of an inch/year)	Temperature (Fahrenheit)
Sodium Chloride	Steel	10% 20% 30%	.05" .02" - .05" .02"	50 50 50
	316 Stainless Steel	10% - 30% 20% - 30 %	.02" .02"	50 100-200
	Aluminum Bronze	10% - 30%	.002"	50-200
Potassium Chloride	Steel	10% 30%	.02" .02" - .005"	50 50-100
	316 Stainless Steel	10% - 30%	.02"	50-200
	Aluminum Bronze	10% - 30%	.002"	50-200
Calcium Chloride	Steel	10% - 70% 30%	.02" .05"	50-150 50
	316 Stainless Steel	10% - 80%	.02"	50-100
	Aluminum Bronze	No Data	No Data	No Data

Best Material for:

- Sodium Chloride Aluminum Bronze
- Potassium Chloride Stainless Steel or Aluminum Bronze
- Calcium Chloride Stainless Steel
- The best overall material is either Aluminum Bronze or Stainless Steel depending on the exact concentrations of each chloride

NOTE: All data obtained from testing done by NACE "National Association of Corrosion Engineers"

SEAT SEAL PROPERTIES AND SELECTION

Proprties		Base Elastomer			
		NBR	Viton	Dual Seal Seat Teflon®/Peel*	HSN
Durometer Shore A		90	90	N/A	85
Temperature Range, Fahrenheit	High	+225	+400	+400	+300
	Low	-20	-40	-40	-25
Hydrogen Sulfide, H ₂ S	Hot	Fair	Good	Best	Good
	Cold	Fair	Good	Best	Good
Carbon Dioxide, CO ₂	Wet	Good	Fair	Best	Good
	Dry	Good	Fair	Best	Good
Dilute Acidics		Good	Good	Best	Good
Dilute Caustics		Fair	Good	Best	Good
Sour Oil and Gas		C / E	C / E	C / E	C / E
Salt Water		Good	Good	Best	Good
Oil		Good	Good	Best	Good
Sweet Gas		Best	Good	Best	Good

* - Not a true Elastomer

C / E - Consult Engineering

N / A - Not Available

REPAIR INSTRUCTIONS

Disassembly

Forum BTC and BTCO₂ Gate Valves are designed to be disassembled and reassembled without removing the Body from the line. Inspection and repair may be accomplished in a short period of time to restore the Valve to its full operating efficiency.

- A. Release all existing pressure from the line in which the Valve is located. If the Valve in repair is downstream from another closed Valve under pressure, safety precaution measures should be taken such as tagging or sealing closed Valve in order to prevent opening during repairs.
- B. Fully open the Valve to be repaired. Unbolt the bonnet flange and withdraw the bonnet/gate assembly from the body. Remove the handle. Remove the stem from the bonnet and remove the gate from the stem. Using a screw driver, remove seats from the body.
- C. At this point, consideration should be given to replacement of the seats and/or gate. If it is desired to check other parts, the following instructions apply.
- D. Remove the O-Ring grease seals, set screw “V” packing retainer and “V” packing from the bonnet. Remove the bonnet seal from the body and the O-Ring seals from the seats.
- E. Thoroughly clean all parts and inspect them for wear and damage. It is recommended that all seals be replaced especially if they are worn or cut. Inspect the stem in seal areas for nicks and/or scratches and smooth out with a fine emery cloth, if necessary. Before reassembly, apply a light coat of a clean, general purpose grease to all threads, seals, and seal surfaces.

Reassembly

- A. Shoulder the gate to the stem shoulder.
- B. From the bottom of the bonnet, install the gate/stem assembly to metal-to-metal stop. Rotate gate clockwise to the gate stop in the bonnet.
- C. Holding the gate against counter clockwise rotation, from the top of the bonnet rotate the stem counter clockwise to reseal gate to the stem shoulder.
- D. Install the handle on the bonnet without rotating the stem. Align the handle/stem pin holes and install the roll pin.
- E. Rotate handle counter clockwise to stop.
- F. The dimension from the lowest surface of the bonnet to the bottom of the gate should be 3-1/4 to 3-5/16 for the 2” valve; 4-1/8 to 4-3/16 on the 2-1/2” valve; 5-3/16 to 5-1/4 on the 3 valve; 5-1/16 to 5-1/8 on the 4 valve; and 7-9/16 to 7-5/8 on the 6” valve.
- G. Install seats. Place bonnet assembly on the body while keeping the gate parallel to the seats, and bolt the flanges. The valve is now ready for inline service.

The most frequent damage to this type of valve is thread damage caused by over-tightening of the handle in an attempt to stop a leak. This is a full floating gate/seat design that does not require a wedging force to effect a tight seal. Over-tightening the handle will only strip the stem and handle threads.

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OUR CORE VALUES

No One Gets Hurt

The safety of our employees and customers is our first priority coupled with a healthy respect for the environment.

Integrity

In everything we do, in every interaction, both internally and externally, we strive to operate with the utmost integrity and mutual respect.

Customer Focused

Our products enhance our customer's performance and we listen to their needs and work with them to solve their challenges.

Good Place To Work

We are committed to creating a workplace that fosters innovation, teamwork and pride. Every team member is integral to our success and is treated equally and fairly.

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