



YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

In-line repairable high pressure globe valve designed to provide maximum service life with minimum maintenance



GENERAL APPLICATION

These valves have become the established stop valve in all modern high pressure power plants.

TECHNICAL DATA

Size range: NPS 1/2 to 3 / DN 15 to 80
Pressure class: 1700, 2700 and 4500 psi / 117, 186 and 310 bar
Temperature range: 1022 to 1039°F / 550 to 559°C
Materials: ASME SA182 Gr. F22
ASME SA182 Gr. F91
ASME SA105

FEATURES

- Fastest in-line repair - Repairable in-line more easily and at less cost than other similar valve. Stem, disc, and packing can be quickly removed through the yoke, and the seat fully exposed for "like new" restoration.
- High dependability - One-piece forged body without pressure welds, seal welds, pressure-containing threads or gaskets, body/bonnet joints, or any of their related problems.
- Greater durability - Solid Stellite® disc and seat ring all but eliminates cracking. Extra thickness of the seat ring also provides enough material to renew the seating surface over and over again.
- High flow capacity - Generous port sizes and disc retraction well beyond that required for optimum flow. These features help to minimize flow velocities, and therefore, decrease the erosive forces, which shorten the life of the seat and disc.
- Available off-the-shelf - An in-depth stocking program makes Welbond® valves available to you directly off-the-shelf (socketweld ends standard to NPS 2 1/2 / DN 65).
- Convertible feature - The complete pre-machining of each valve body means one of the backseat designs can be converted to the other, simply by reassembly with alternate backseat bushing.

APPLICABLE CODES AND STANDARDS

NPS 1/2 to 2 1/2 / DN 15 to 65 ASME B16.34 Ltd. Class 1700 and 2700.
NPS 1/2 and 2 / DN 15 and 50 ASME B16.34 Ltd. Class 4500.
NPS 3 / DN 80 ASME B16.34 Std. Class 1700 and 2700.
End connections per ASME B16.11 for socketwelding ends, and per ASME B16.25 for butt welding ends.

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Accessible internals - Stem, disc and packing assembly easily removed through the yoke. Repair and repack in minutes in line.

Stainless steel stem - Has rugged ACME threads.

Handwheels - With impactors available for NPS 1½ / DN 45 and larger valves.

One-piece body forging - Includes stuffing box; eliminates body welds and pressure-containing threads.

Captive gland bolts - Allow quick release of packing gland without removal of gland nuts. "Ears" on gland prevent slipping. Optional API gland available.

Packing - Flexible graphite.

Retractable disc - Permits stem assembly to be fully withdrawn from flow area; offers higher C_v characteristics, smoother flow pattern.

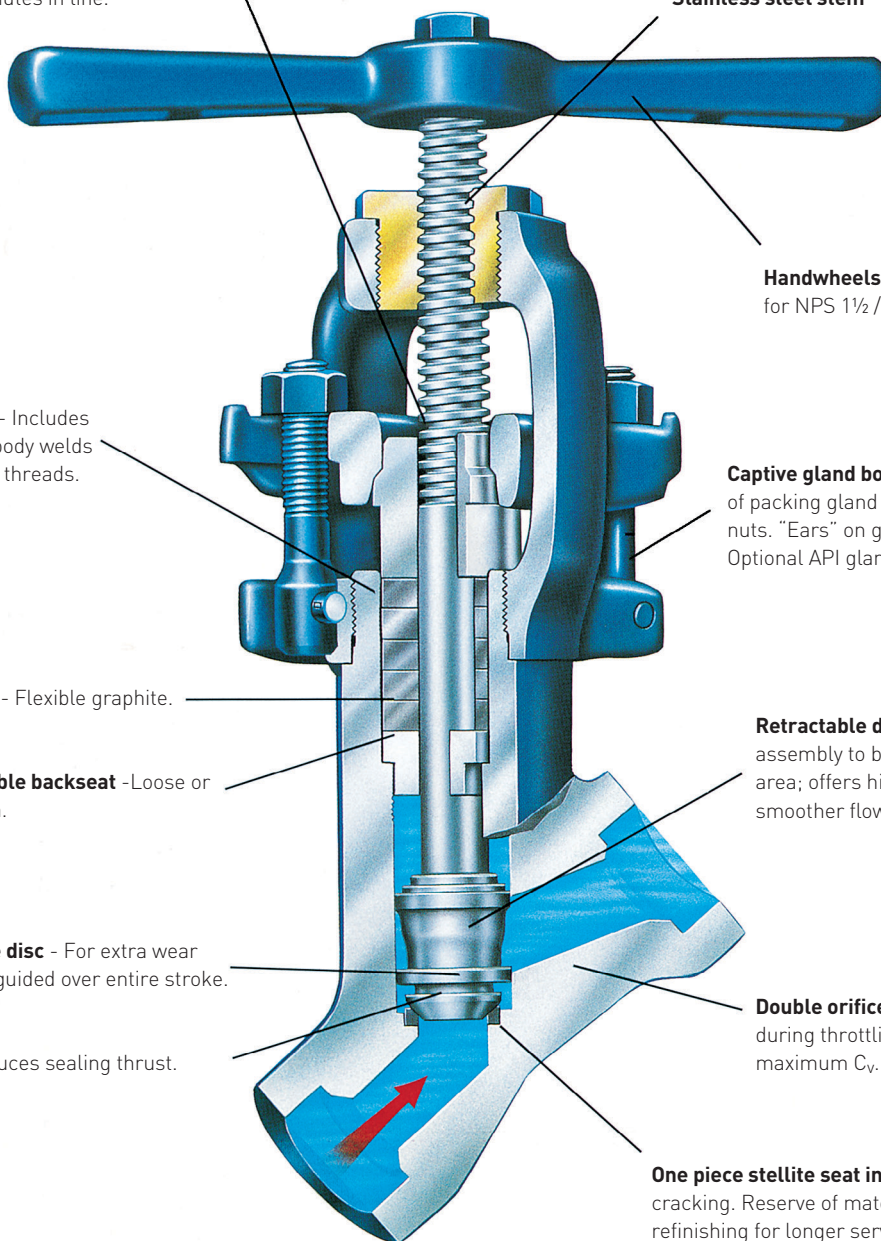
Removable backseat - Loose or thread in.

One-piece stellite disc - For extra wear resistance. Body-guided over entire stroke.

Double orifice - Dissipates erosive forces during throttling. Full-ported design for maximum C_v .

Disc design - Reduces sealing thrust.

One piece stellite seat insert - Eliminates thermal cracking. Reserve of material permits repeated refinishing for longer service life.



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WELBOND® HIGH PRESSURE GLOBE VALVE

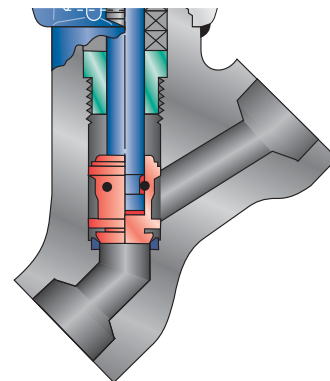
The Yarway Welbond® valve has become an established stop valve for general line service in modern high pressure power plants. The latest design of the valve combines the proven features of its predecessor with advantages made possible by advancements in metallurgy and fluid flow research. No other valve on the market offers this outstanding combination of features. It offers industry a value-engineered product with minimum maintenance and maximum service life resulting from its in-line reparability feature. The one-piece body eliminates all pressure welds, threads, and their related problems. The extra thickness of the Stellite seat ring eliminates seat cracking and provides for repeated renewal of the seating surface with Yarway's reseating tool. The disc is a Stellite investment casting. The design provides a secondary orifice during opening and closing so that erosive forces are dissipated through the disc-body orifice rather than the disc-seat orifice, which must be protected for drop-tight sealing. The body design allows the disc-stem assembly to retract completely into the body, thus assuring smooth flow and a high C_v characteristic. The design of the disc reduces sealing torque for easy operation, both manually and with a powered actuator.

LOOSE BACKSEAT

This design offers the greatest accessibility, thus is the easiest to maintain, especially when complete removal of the stem packing is desired. Because the stuffing box bushing is not fastened to the body, the entire stem, disc, and packing assembly can be jacked out of the body by simply turning the handwheel counterclockwise after releasing the gland. No special tools or picks are required to extract the packing. In operation, full opening of the valve exerts an upward force on the stuffing box bushing, thus compressing the stem packing from below – a maintenance feature frequently used to prevent stem leakage until shutdown can be scheduled. Loose backseat models are available in sizes shown on page 8 for Classes 1700, 2700 and 4500. Corresponding figure numbers are indicated. The appropriate figures should be specified when ordering.

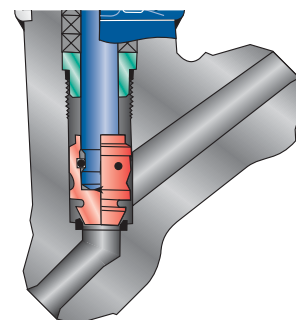
THREADED-IN BACKSEAT

This design offers accessibility after removal of the threaded stuffing box bushing by means of a special 'backseat removal tool'. It requires no seal weld removal for maintenance. A special packing removal tool, available from Emerson, can be used to remove old packing quickly, from fixed backseat valves. Threaded-in backseat models are available in all sizes shown on page 8 for Classes 1700, 2700 and 4500. Corresponding figure numbers are indicated. When ordering the threaded-in backseat design, use suffix "B."



LOOSE BACKSEAT

CLASS 1700 (1700 psi / 117 bar) – F5617
CLASS 2700 (2700 psi / 186 bar) – F5627
CLASS 4500 (4500 psi / 310 bar) – F5645



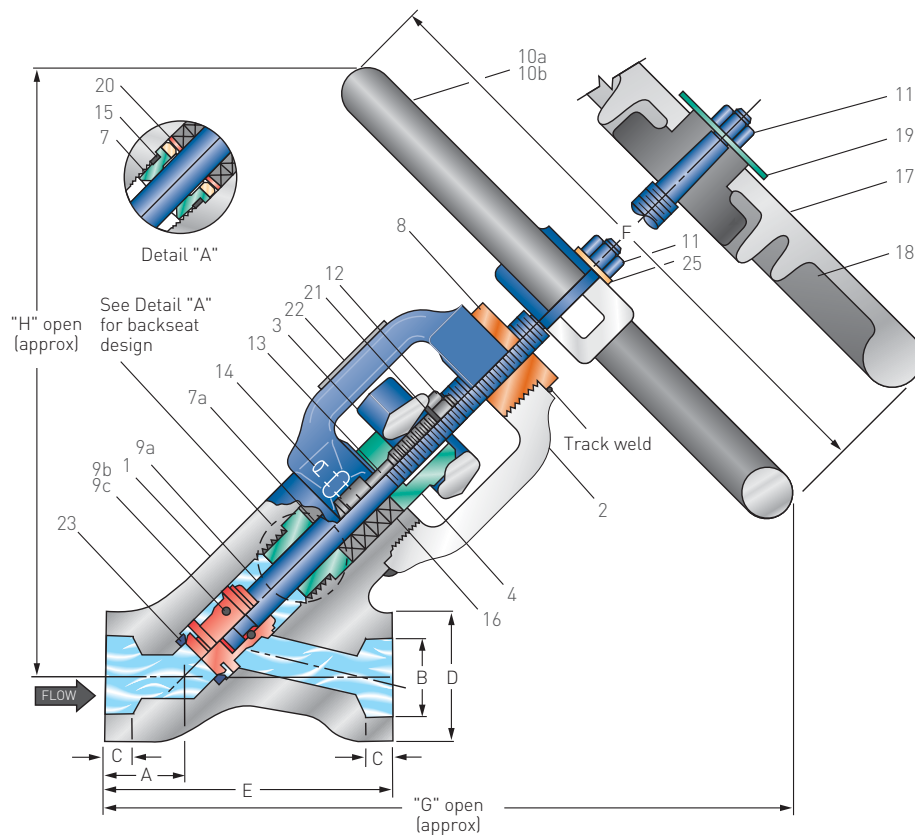
THREADED-IN BACKSEAT

CLASS 1700 (1700 psi / 117 bar) – F5617B
CLASS 2700 (2700 psi / 186 bar) – F5627B
CLASS 4500 (4500 psi / 310 bar) – F5645B

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

MODEL 5600 WELBOND GLOBE VALVE – SOCKETWELD ENDS



PARTS LIST - F22

No.	Part	Material
1	Body	ASME SA 182 Gr. F22
2	Yoke	ASME SA 182 Gr. F22
3	Gland	AISI 4140
4	Split gland bushing	AISI 1018
7 ⁷	Backseat bushing (Threaded-in back seat design)	ASME SA 182 Gr. F6A CL. 2
7a ⁷	Stuffing box bushing (loose back seat design)	AISI 410
8	Yoke bushing	ASTM B21 Alloy No. 694
9a	Stem	ASTM A582 Type 416
9b	Disc	AMS 5385 (Stellite 21)
9c	Disc pin	AMS 5796 (Stellite 25)
10a	Handwheel ¹	ASTM A47 Gr. 32510
10b	"T" handle ²	ASTM A47 Gr. 32510
11	Locknut	Carbon steel
12	Hex nut	ASME SA 194 Gr. 2H
13	Swing bolt	ASME SA 193 Gr. B7
14	Pin	AISI 6150 OR 8740
15 ⁷	Gasket	ASME SB 127
16 ⁷	Packing	Flexible graphite
17	Impact handwheel ³	ASTM A47 Gr. 32510
18	T-Bar ⁴	4140 Annealed
19	Washer ⁴	Carbon steel
20 ⁷	Packing support ring (Threaded-in back seat design)	AISI 430
21	Washer	Carbon steel
22	Name plate	AISI 302
23	Seat ⁶	AMS 5387 (Stellite 6)
25	Washer ⁸	Carbon steel

MATERIALS OF CONSTRUCTION

The following items are material changes for carbon steel and alloy steel. All other items remain the same.

Items 1 and 2 (body and yoke):

- Carbon steel ASME A105 body with ASME SA182 Gr. F22 yoke.
- Alloy steel ASME SA182 Gr. F91 body with ASME SA182 Gr. F22 yoke Item 9a (stem disc assembly):
- Alloy steel ASME SA182 Gr. F91

Stem ASTM A638 Grade 660

Item 13 (swing bolt):

- Alloy steel ASME SA Gr. F91
- Swing bolt ASTM A479 Type XM-19

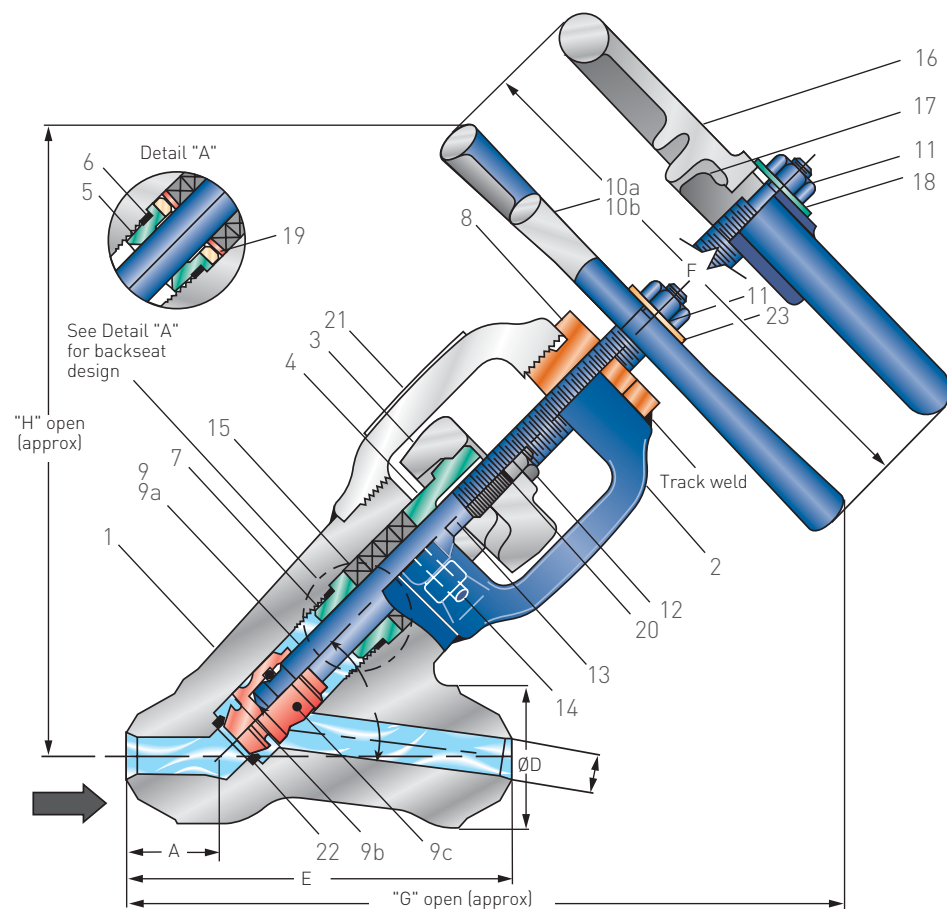
NOTES

1. Handwheel furnished on NPS 1½ and 2 / DN 40 and 50.
2. "T" handle furnished on NPS ½, ¾ and 1 / DN 15, 20 and 50 sizes.
3. Impact handwheel furnished on NPS 2½ / DN 65 size; optional on NPS 1½ and 2 / DN 40 and 50 sizes.
4. For use with impact handwheel only (Item 17).
5. Valves are suitable for acid washing.
6. Seat is vacuum brazed to body – not replaceable.
7. Recommended spare parts.
8. Used on valve sizes NPS ½ to 2 / DN 15 to 50 only.

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

MODEL 5600 WELBOND GLOBE VALVE - BUTTWELDED ENDS



PARTS LIST - F22

No.	Part	Material
1	Body	ASME SA 182 Gr. F22
2	Yoke	ASME SA 182 Gr. F22
3	Gland	AISI 4140
4	Split gland bushing	AISI 1018
5 ⁷	Backseat bushing	ASME SA 182 Gr. F6A CL. 2
6 ⁷	Gasket	ASME SB 127
7	Stuffing box bushing	AISI 410
8	Yoke bushing	ASTM B21 Alloy No. 694
9a	Stem	ASTM A582 Type 416
9b	Disc	AMS 5385 [Stellite 21]
9c	Disc pin	AMS 5796 [Stellite 25]
10a	Handwheel ¹	ASTM A47 Gr. 32510
10b	"T" handle ²	ASTM A47 Gr. 32510
11	Locknut	Carbon steel
12	Hex nut	ASME SA 194 Gr. 2H
13	Swing bolt	ASME SA 193 Gr. B7
14	Pin	AISI 6150 OR 8740
15 ⁷	Packing	Flexible graphite
16	Impact handwheel ³	ASTM A47 Gr. 32510
17	T-Bar ⁴	AISI 4140
18	Washer ⁴	Carbon steel
19	Packing support ring	AISI 430
20	Washer	Carbon steel
21	Name plate	AISI 302
22	Seat ⁶	AMS 5387 [Stellite 6]
23	Washer ⁸	Carbon steel

MATERIALS OF CONSTRUCTION

The following items are material changes for carbon steel and alloy steel. All other items remain the same.

Items 1 and 2 (body and yoke):

- Carbon steel ASME A105 body with ASME SA182 Gr. F22 yoke.
- Alloy steel ASME SA182 Gr. F91 body with ASME SA182 Gr. F22 yoke

Item 9a (stem disc assembly):

- Alloy steel ASME SA182 Gr. F91
Stem ASTM A638 Grade 660

Item 13 (swing bolt):

- Alloy steel ASME SA Gr. F91
Swing bolt ASTM A479 Type XM-19

NOTES

1. Handwheel furnished on NPS 1½ and 2 / DN 40 and 50.
2. "T" handle furnished on NPS ½, ¾ and 1 / DN 15, 20 and 25 sizes.
3. Impact handwheel furnished on NPS 2½ / DN 65 size; optional on NPS 1½ and 2 / DN 40 and 50 sizes.
4. For use with impact handwheel only (Item 17).
5. Valves are suitable for acid washing.
6. Seat is vacuum brazed to body - not replaceable.
7. Recommended spare parts.
8. Used on valve sizes NPS ½ to 2 / DN 15 to 50 only.

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

DIMENSIONS (Inch) CLASS 1700 (1700 psi AT 1022°F) - F5617 & F5617B

Valve size											Max. stem	Weight	
NPS	A	B	C	D	D*	E	E*	F	G	H	rise (Inch)	(lbs)	C _v
1/2	1 ⁵ / ₁₆	0.855	3/8	1 ¹³ / ₁₆	-	4 ³ / ₈	-	8	10 ¹⁵ / ₁₆	9 ⁵ / ₈	5/8	10	6
3/4	1 ⁵ / ₁₆	1.065	1/2	1 ¹³ / ₁₆	-	4 ³ / ₈	-	8	10 ¹⁵ / ₁₆	9 ⁵ / ₈	5/8	10	6
1	1 ¹³ / ₃₂	1.330	1/2	2 ³ / ₈	2 ⁵ / ₁₆	5	5 ¹ / ₄	8	11 ¹ / ₈	10	3/4	15	10
1 1/2	1 ²³ / ₃₂	1.915	1/2	3	2 ⁷ / ₈	6 ¹ / ₄	6 ¹ / ₄	12	17 ³ / ₁₆	16 ⁵ / ₁₆	1 ³ / ₈	36	38
2	2	2.406	5/8	3 ⁵ / ₈	3 ¹³ / ₃₂	7 ¹ / ₄	8	14	17 ⁷ / ₁₆	16 ¹ / ₁₆	1 1/2	50	60
2 1/2	2 ³ / ₈	2.906	5/8	4 ¹³ / ₁₆	-	9 ⁵ / ₈	-	14	21 ¹ / ₂	20 ⁷ / ₁₆	2	105	80
3	3 ¹ / ₂	Buttweld end only				9 ⁵ / ₈	-	14	21 ¹ / ₂	20 ⁷ / ₁₆	2	105	70

DIMENSIONS (mm) CLASS 1700 (117 bar AT 550°C) - F5617 & F5617B

Valve size											Max. stem	Weight	
DN	A	B	C	D	D*	E	E*	F	G	H	rise (mm)	(kgs)	C _v
15	33.3	21.7	9.5	46.0	-	111	-	203	278	244	15.9	4.5	2.72
20	33.3	27.1	12.7	46.0	-	111	-	203	278	244	15.9	4.5	2.72
25	35.7	33.8	12.7	60.3	58.7	127	146	203	283	254	19.1	6.8	4.54
40	43.7	48.6	12.7	76.2	73.0	159	159	305	437	414	34.9	16.3	17.2
50	50.8	61.1	15.9	92.1	86.5	184	203	356	443	408	38.1	22.7	27.2
65	60.3	73.8	15.9	122	-	244	-	356	546	519	50.8	47.6	36.3
80	88.9	Buttweld end only				244	-	356	546	519	50.8	47.6	31.8

DIMENSIONS (Inch) CLASS 2700 (2700 psi AT 1028°F) - F5627 & F5627B

Valve size											Max. stem	Weight	
NPS	A	B	C	D	D*	E	E*	F	G	H	rise (Inch)	(lbs)	C _v
1/2	1 ¹³ / ₃₂	0.855	3/8	2 ³ / ₈	1 ³ / ₄	5	5 ¹ / ₄	8	10 ¹⁵ / ₁₆	9 ⁹ / ₁₆	5/8	15	6
3/4	1 ¹³ / ₃₂	1.065	1/2	2 ³ / ₈	2	5	5 ¹ / ₄	8	10 ¹⁵ / ₁₆	9 ⁹ / ₁₆	5/8	15	6
1	1 ¹³ / ₃₂	1.330	1/2	2 ³ / ₈	2 ⁵ / ₁₆	5	5 ¹ / ₄	8	11 ¹ / ₈	9 ¹³ / ₁₆	3/4	15	12
1 1/2	2	1.915	1/2	3 ⁵ / ₈	3 ⁵ / ₈	7 ¹ / ₄	8	12	17 ¹ / ₈	15 ¹ / ₄	1 ¹ / ₁₆	52	34
2	2 ³ / ₈	2.406	5/8	4 ¹³ / ₁₆	-	9 ⁵ / ₈	-	14	21 ³ / ₈	19 ¹ / ₁₆	1 ³ / ₄	98	65
2 1/2	2 ³ / ₈	2.906	5/8	4 ¹³ / ₁₆	-	9 ⁵ / ₈	-	14	21 ¹ / ₂	19 ¹ / ₈	2	105	90
3	2 ³ / ₈	Buttweld end only				9 ⁵ / ₈	-	14	21 ¹ / ₂	19 ¹ / ₈	2	105	75

DIMENSIONS (mm) CLASS 2700 (186 bar AT 553°C) - F5627 & F5627B

Valve size											Max. stem	Weight	
DN	A	B	C	D	D*	E	E*	F	G	H	rise (mm)	(kgs)	C _v
15	35.7	21.7	9.53	60.3	44.5	127	146	203	278	243	15.9	6.8	2.72
20	35.7	27.1	12.7	60.3	50.8	127	146	203	278	243	15.9	6.8	2.72
25	35.7	33.8	12.7	60.3	58.7	127	146	203	283	249	19.1	6.8	5.44
40	50.8	48.6	12.7	92.1	92.1	184	203	305	435	387	33.3	23.6	15.4
50	60.3	61.1	15.9	122	-	244	-	356	543	484	44.5	44.5	29.5
65	60.3	73.8	15.9	122	-	244	-	356	546	486	50.8	47.6	40.8
80	60.3	Buttweld end only				244	-	356	546	486	50.8	47.6	34.0

DIMENSIONS (Inch) CLASS 4500 (4500 psi AT 1039°F) - F5645 & F5645B

Valve size											Max. stem	Weight	
NPS	A	B	C	D	E	F	G	H	rise (Inch)	(lbs)	C _v		
1/2	2	0.855	3/8	3 ⁵ / ₈	7 ¹ / ₄	8	14 ⁵ / ₈	12 ¹ / ₁₆	1 ⁵ / ₁₆	43	2		
3/4	2	1.065	1/2	3 ⁵ / ₈	7 ¹ / ₄	8	14 ⁵ / ₈	12 ¹ / ₁₆	1 ⁵ / ₁₆	43	5		
1	2	1.330	1/2	3 ⁵ / ₈	7 ¹ / ₄	8	14 ⁵ / ₈	12 ¹ / ₁₆	1 ⁵ / ₁₆	43	6		
1 1/2	2 ³ / ₈	1.915	1/2	4 ¹³ / ₁₆	9 ⁵ / ₈	12	19 ³ / ₄	17 ³ / ₈	1 ¹ / ₄	105	18		
2	2 ³ / ₈	Buttweld end only				9 ⁵ / ₈	12	19 ³ / ₄	17 ³ / ₈	1 ¹ / ₄	105	17	

DIMENSIONS (mm) CLASS 4500 (186 bar AT 553°C) - F5645 & F5645B

Valve size											Max. stem	Weight	
DN	A	B	C	D	E	F	G	H	rise (mm)	(kgs)	C _v		
15	50.8	21.7	9.53	92.1	184	203	371	322	23.8	19.5	0.91		
20	50.8	27.1	12.7	92.1	184	203	371	322	23.8	19.5	2.27		
25	50.8	33.8	12.7	92.1	184	203	371	322	23.8	19.5	2.72		
40	60.3	48.6	12.7	122	244	305	502	441	31.8	47.6	8.16		
50	60.3	Buttweld end only				244	305	502	441	31.8	47.6	7.71	

NOTE

* Dimensional changes with preheat and postweld heat treat requirement

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

PRESSURE AND TEMPERATURE RATINGS - BUTTWELD ENDS (NPS 3 / DN 80 ONLY)

Service temperature °F °C		Maximum allowable working pressure											
		Class 1700						Class 2700					
		ASME 182 Grade F22		ASME 182 Grade F91		ASME SA105 ⁽¹⁾		ASME 182 Grade F22		ASME 182 Grade F91		ASME SA105 ⁽¹⁾	
psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar
100	38	4250	293	4250	293	4195	289	6750	465	6750	465	6660	459
150	66	4250	293	4250	293	4020	277	6750	465	6750	465	6385	440
200	93	4250	293	4250	293	3845	265	6750	465	6750	465	6105	421
250	121	4185	289	4185	289	3775	260	6650	459	6650	459	5995	413
300	149	4125	284	4125	284	3705	255	6555	452	6555	452	5885	406
350	177	4060	280	4060	280	3645	251	6450	445	6450	445	5790	399
400	204	4000	276	4000	276	3590	248	6350	438	6350	438	5700	393
450	232	3880	268	3880	268	3505	242	6165	425	6165	425	5560	383
500	260	3765	260	3765	260	3415	235	5980	412	5980	412	5425	374
550	288	3595	248	3595	248	3315	229	5710	394	5710	394	5265	363
600	316	3425	236	3425	236	3215	222	5440	375	5440	375	5105	352
650	343	3330	230	3330	230	3110	214	5295	365	5295	365	4940	341
700	371	3215	222	3215	222	3005	207	5105	352	5105	352	4775	329
750	399	3010	208	3010	208	2880	199	4780	330	4780	330	4595	317
800	427	3875	267	2875	198	2330	161	4565	315	4565	315	3700	255
850	454	2760	190	2760	190	1805	124	4385	302	4385	302	2865	198
900	482	2545	175	2545	175	1300	89.6	4045	279	4045	279	2065	142
950	510	2185	151	2185	151	775	53.4	3475	240	3475	240	1235	85.2
1000	538	1530	105	2060	142	485	33.4	2495	172	3270	225	770	53.1
1050	566	990	68.3	2040	141	-	-	1570	108	3240	223	-	-
1100	593	620	42.7	1710	118	-	-	985	67.9	2715	187	-	-
1150	621	390	26.9	1260	86.9	-	-	615	42.4	2000	138	-	-
1200	649	230	15.9	815	56.2	-	-	370	25.5	1295	89.3	-	-

NOTES

1. Permissible, but not recommended for prolonged use above 800°F / 427°C
2. Permissible, but not recommended for prolonged use above 1100°F / 593°C
3. Valves are rated in accordance with American National Standard ASME B16.34

PRESSURE AND TEMPERATURE RATINGS - SOCKET WELD AND BUTTWELD ENDS (NPS 2 1/2 / DN 65 AND SMALLER)

Service temperature °F °C		Maximum allowable working pressure															
		Class 1700						Class 2700						Class 4500			
		ASME 182 Grade F22		ASME 182 Grade F91		ASME SA105 ⁽¹⁾		ASME 182 Grade F22		ASME 182 Grade F91		ASME SA105 ⁽¹⁾		ASME 182 Grade F22		ASME 182 Grade F91	
psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar		
100	38	4250	293	4250	293	4250	293	6750	465	6750	465	6750	465	11250	776	11250	776
150	66	4250	293	4250	293	4250	293	6750	465	6750	465	6750	465	11250	776	11250	776
200	93	4250	293	4250	293	4250	293	6750	465	6750	465	6750	465	11250	776	11250	776
250	121	4215	291	4250	293	4222	291	6700	462	6750	465	6750	465	11170	770	11250	776
300	149	4185	289	4250	293	4190	289	6650	459	6750	465	6660	459	11090	765	11250	776
350	177	4155	286	4250	293	4170	288	6600	455	6750	465	6625	457	11000	758	11250	776
400	204	4125	284	4250	293	4150	286	6550	452	6750	465	6590	454	10915	753	11250	776
450	232	4110	283	4250	293	4150	286	6530	450	6750	465	6590	454	10890	751	11250	776
500	260	4100	283	4250	293	4150	286	6515	449	6750	465	6590	454	10865	749	11250	776
550	288	4095	282	4250	293	4150	286	6500	448	6750	465	6590	454	10840	747	11250	776
600	316	4085	282	4250	293	4150	286	6490	447	6750	465	6590	454	10815	746	11250	776
650	343	4055	280	4250	293	4050	279	6440	444	6750	465	6435	444	10735	740	11250	776
700	371	4005	276	4150	286	3915	270	6365	439	6595	455	6220	429	10605	731	10995	758
750	399	4005	276	4130	285	3590	248	6365	439	6555	452	5705	393	10605	731	10930	754
800	427	4005	276	4080	281	2910	201	6365	439	6480	447	4625	319	10605	731	10800	745
850	454	3835	264	4835	333	2260	156	6095	420	6095	420	3586	247	10160	701	10160	701
900	482	3400	234	3400	234	1625	112	5400	372	5400	372	2585	178	9000	621	9000	621
950	510	2740	189	2740	189	995	68.6	4410	304	4410	304	1540	106	7555	521	7555	521
1000	538	2040	141	2570	177	655	45.2	3400	234	4280	295	965	66.5	6210	428	7815	539
1050	566	1335	92.0	2570	177	-	-	2220	153	4280	295	-	-	4060	280	7815	539
1100	593	835	57.6	2305	159	-	-	1395	96.2	3840	265	-	-	2545	175	7005	483
1150	621	525	36.2	1700	117	-	-	870	60.0	2830	195	-	-	1590	110	5180	357
1200	649	310	21.4	1100	75.8	-	-	525	36.2	1830	126	-	-	950	65.5	3345	231

NOTES

1. Permissible, but not recommended for prolonged use above 800°F / 427°C.
2. Permissible, but not recommended for prolonged use above 1100°F / 593°C.
3. Valves are rated in accordance with American National Standard ASME B16.34 Limited Class.

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

STANDARD PREPARATION OF VALVE BUTTWELD ENDS*

PACKING/BACKSEAT REMOVAL TOOL SELECTOR

Valve size	Valve	Pressure	Indent.
NPS DN	fig. no.	Class, ASME	tool no.
1/2 15	5617B	1700	60
	5627B	2700	61
	5645B	4500	66
	5645BR	4500	68
	W5617B	1700	66
3/4 20	W5627B	2700	66
	5617B	1700	60
	5627B	2700	61
	5645B	4500	66
	5645BR	4500	68
1 25	W5617B	1700	66
	W5627B	2700	66
	5617B	1700	40
	5627B	2700	40
	5645B	4500	66
1 1/2 40	5645BR	4500	68
	W5617B	1700	66
	W5627B	2700	66
	5617B	1700	62
	5627B	2700	63
2 50	5645B	4500	67
	W5617B	1700	62
	W5627B	2700	63
	5617B	1700	42
	5627B	2700	64
2 1/2 65	5645B	4500	67
	W5617B	1700	42
	W5627B	2700	64
3 80	5617B	1700	65
	W5627B	2700	65

Nominal pipe size		Pipe schedule	Nominal outside Ø		Inside pipe Ø	
NPS	DN		Inch	mm	Inch	mm
1/2	15	40	0.840	21.3	0.622	15.8
		80			0.546	13.9
		160			0.464	11.8
		XXS			0.252	6.4
		40			0.824	20.9
3/4	20	80	1.050	26.7	0.742	18.8
		160			0.612	15.5
		XXS			0.434	11.0
1	25	40	1.315	33.4	1.049	26.6
		80			0.957	24.3
		160			0.815	20.7
		XXS			0.599	15.2
		40			1.610	40.9
1 1/2	40	80	1.900	48.3	1.500	38.1
		160			1.383	35.1
		XXS			1.100	27.9
2	50	40	2.375	60.3	2.067	52.5
		80			1.939	49.3
		160			1.687	42.8
		XXS			1.503	38.2
		40			2.469	62.7
2 1/2	65	80	2.875	73.0	2.323	59.0
		160			2.125	54.0
		XXS			1.771	45.0
3	80	40	3.500	88.9	3.068	77.9
		80			2.900	73.7
		160			2.624	66.6
		XXS			2.300	58.4

*Conforming to the requirements of ASME B16.25

NOTE

Different standards for butt-welded ends connections, available upon request.

W = Buttweld ends

RESEATING TOOL SELECTOR

Valve fig. no.	Valve size		Tool no.	Cutter no.
	NPS	DN		
5617	1/2, 3/4	15, 20	50	26
	1	25	20	20
	1 1/2	40	52	23
	2	50	22	29
	2 1/2, 3	65, 80	54	28
5627	1/2, 3/4	15, 20	51	26
	1	25	20	20
	1 1/2	40	53	27
	2	50	54	29
5645	2 1/2, 3	65, 80	54	28
	1/2, 3/4	15, 20	55	26
	1	25	55	26
5645R	1 1/2, 2	40, 50	56	21
	1/2, 3/4, 1	15, 20, 25	55	20

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

QUICK RENEWABILITY IN-LINE

Without cutting the valve body out of the line, the stem/disc/packing assembly can be jacked out in minutes for inspection or replacement of the packing rings. With body still in place, the Welbond reseating tool can be mounted through the yoke, for the establishment of wholly new seating surfaces. Normally, the reconditioned and reassembled valve can be back in service in less than an hour without cleaning, welding, radiography, and other operations associated with the maintenance of conventional valves.

The reseating tool comprises a shaft with a removable tungsten carbide cutting head on one end and a handwheel on the other end. These components plus a key for removing the head are supplied as a kit. Complete lists of tools for all valves can be found on these pages. After removing the weld that secures the yoke bushing, the bushing is unscrewed and the stem is backed out. Then the tool is inserted into the valve body and slowly fed into contact with the seat by means of a threaded-feed screw that engages the yoke threads. With the cutting head against the valve seat, a locknut is tightened to prevent too deep a bite into the Stellite seat material. When the wheel turns freely, the locknut is readjusted to permit a new cut. After five or six turns, an entirely new seat has been machined. The tool cuts both inclined portion and throat of seat to give a completely new line-contact seal.

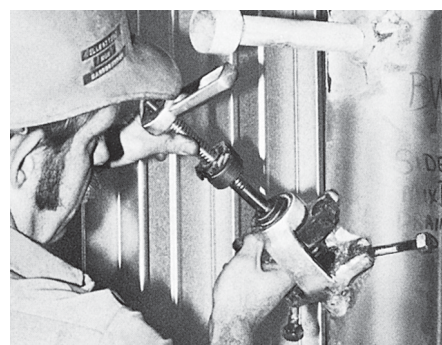
WELDING OF WELBOND VALVES

Since the welding procedure is dependent upon various codes established by users, contractors and government rules, qualification to the specific code involved should be followed during valve installation.

The valve should be full closed during welding. Installation welds made in accordance with ASME Section I and ANSI B31.1 are exempt from post-weld heat treatment as long as the preheat and exemptions of these codes are followed.



Reseating tool is lowered into valve body after removal of yoke bushing and valve stem.



New stem/disc assembly is lowered into valve body after completion of reseating cuts.



After tool locknut has been tightened against yoke face, to prevent too deep a bite into seat material, seat can be reconditioned by means of a series of five or six slow cuts.

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

HOW TO SELECT

As shown in temperature-pressure rating tables, page 9, Yarway Welbond valves cover a wide range of services including pressures up to 11,250 psi / 776 bar and temperatures as high as 1100°F / 593°C. When maximum temperature requirements are known, the proper valve (Classes 1700, 2700, 4500) can be determined from the pressure rating tables on page 9.

For example: Class 4500 forged chromemoly F22 steel Welbond valve, designed for temperatures to 1100°F / 593°C in standard steam service, may be operated at pressures up to 10,160 psi / 701 bar if temperature does not exceed 850°F / 454°C. In other services, maximum pressure may be as high as 11,250 psi / 776 bar at temperatures not exceeding 200°F / 93°C. Check tables on page 9 for other corresponding limits of Classes 1700, 2700 and 4500 forged Welbonds.

APPLICATIONS

The F5600 Welbond has opened up a new dimension in stop valve maintenance and reliability in these typical applications:

- Waterwall drains
- Superheater drains
- Reheater inlet drains
- Economizer drains
- Constant head chamber shut-off
- Water column and gauge drains and shut-off
- Drum vents
- Reheat spray isolation and water and steam sampling.

INSTALLATION REQUIREMENTS

Yarway Welbond valves conform to all requirements of the ASME Boiler Code. Installation in any position gives proper drainage. The materials listed on pages 5 and 7 make these valves fully suitable for acid wash operations. Adjacent piping should be adequately supported in a manner to keep thrust and moment force at a minimum as covered by ASME B31.1 Power Piping, Chapter II, Design.

HOW TO SPECIFY

Select figure number whenever possible. If not permitted to use name and figure number, describe as follows: valve shall be of seat and disc type straightway pattern with forged (specify material grade) steel body having integral Stellite #6 seat.

Body to be one-piece design with no pressure boundary welds or threads and to have socketweld or buttweld ends. Disc to be of self-aligning design. Working parts to be removable through top of yoke.

HOW TO ORDER

May be ordered simply by giving your sales representative the following details:

- Size
- Figure number and material (ASME SA182 F22 furnished unless otherwise specified)
- Basic pressure rating or class
- Service (see list of applications)
- Maximum operating pressure and temperature

LOCKING DEVICES

Welbond valves for shut-off service on water columns, gauges, and remote level indicators are made in NPS 1 and 1½ / DN 25 and 40 sizes with a locking device.

Class 1700 – specify F5617

Class 2700 – specify F5627

Be sure to specify if a lock-closed or lock-open attachment is required. Welbond valves for other services are available with lock-open or lock-closed attachment in all sizes shown on page 6 for Classes 1700, 2700 and 4500.

In ordering, specify which locking device is required.

NUCLEAR CONSTRUCTION

Welbond valves of the threaded-in backseat design, through NPS 2 / DN 50 size, meet all requirements for both "N" and "NPT" approvals for nuclear construction. Seismic analyses and seismic qualification test data are available through NPS 2 / DN 50 sizes.

CHEMICAL PROCESSES

Carbon steel Welbond meets the standards of the Refining Department of the API for use in drilling, refining, chemical and petrochemical applications. The valves perform in H2N2 and liquid NH3 services in various refineries.

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

POWER ACTUATION

Welbond valves can be fitted with electric motor actuators for remote or local automatic push button control. With this addition, valves installed in elevated piping runs, or where an emergency will require rapid, positive, and remote operation, can be quickly controlled. Motor actuated valves are available in the same sizes, materials and pressure classes as manually operated valves. They use standard repair parts, which are interchangeable with manually operated valves of the same size and pressure class.

Motor actuators include position switches, torque switches, and auxiliary switches for audible or visual signals at the panel board.

Dial indication of stem travel is also available. Valve actuators are designed to provide constant seating thrust. This helps ensure drop-tight closure and automatic compensation for valve wear. A handwheel is provided for emergency operation in the event of power failure.

Pneumatic actuators, in both fail-open and fail-closed models, are also available for remote operation of Welbond valves. Manual handwheels, limit switches, solenoid valves and air filter regulators can be provided.



MOTOR OPERATED VALVE DATA

Valve size		Rating class	Stem thread	Stem rise		Turns to open	Required torque		Recommended actuators					
NPS	DN			inches	mm		Ft-lbs	Nm	Bettis model	Biffi model	Mounting flange size	AUMA model	LIMITORQUE actuator	Mounting flange size
1/2, 3/4	15, 20	1700	1/2-12 ACME	5/8	15.9	7.5	21	28	XTE - 010/30	ICON-010/30	F10/FA10	SA07.6	MX05	F10/FA10
1	25	1700	5/8-8 ACME	3/4	19.1	6	25	34	XTE - 010/90	ICON-010/90	F10/FA10	SA07.6	MX05	F10/FA10
1 1/2	40	1700	3/4-8 ACME	1 3/8	34.9	11	58	79	XTE - 010/90	ICON-010/90	F10/FA10	SA10.2	MX10	F10/FA10
2	50	1700	1 5/16-6 ACME	1 1/2	38.1	9	109	148	XTE - 020/180	ICON-020/180	F14/FA14	SA14.2	MX20	F14/FA14
2 1/2, 3	65, 80	1700	1 1/8-5 ACME	2	50.8	10	199	270	XTE - 030/360	ICON-030/360	F14/FA14	SA14.6	MX20	F14/FA14
1/2, 3/4	15, 20	2700	1/2-12 ACME	5/8	15.9	7.5	21	28	XTE - 010/30	ICON-010/30	F10/FA10	SA07.6	MX05	F10/FA10
1	25	2700	5/8-8 ACME	3/4	19.1	6	36	49	XTE - 010/90	ICON-010/90	F10/FA10	SA07.6	MX05	F10/FA10
1 1/2	40	2700	3/4-8 ACME	1 5/16	33.3	10.5	75	102	XTE - 020/180	ICON-020/180	F14/FA14	SA14.2	MX10	F10/FA10
2	50	2700	1 5/16-6 ACME	1 3/4	44.5	10.5	166	225	XTE - 030/360	ICON-030/360	F14/FA14	SA14.2	MX20	F14/FA14
2 1/2, 3	65, 80	2700	1 1/8-5 ACME	2	50.8	10	305	414	XTE - 030/360	ICON-030/360	F14/FA14	SA14.6	MX40	F14/FA14
1/2, 3/4, 1	15, 20, 25	4500	5/8-8 ACME	1 5/16	23.6	7.5	30	41	XTE - 010/90	ICON-010/90	F10/FA10	SA07.6	MX05	F10/FA10
1 1/2, 2	40, 50	4500	3/4-8 ACME	1 1/4	31.8	10	95	129	XTE - 020/180	ICON-020/180	F14/FA14	SA14.2	MX10	F14/FA14

YARWAY HIGH PRESSURE GLOBE VALVE

WELBOND MODEL 5600

HOW TO CHANGE FROM MANUAL TO MOTOR OPERATED VALVE

A Welbond valve already installed on field can be quickly changed from manual to motor operated by means of an auto-alignment adaptor plate. Adaptor plates are available for all Welbond sizes from NPS 1/2 to 3 / DN 15 to 80. Please refer to your sales representative for further details.

When ordering an auto alignment mounting plate please specify valve size, class value and actuator type and brand.

1. Loosen the gland nuts.
2. Remove the tack weld from the bushing yoke.
3. Unscrew the yoke bushing.
4. Screw the mounting plate kit.
5. Fit the actuator.



AUTO-ALIGNMENT MOTOR ADAPTOR PLATE TO CONVERT A MANUAL VALVE TO A MOTOR OPERATED VALVE

Valve size			
NPS	DN	Class	Mounting flange
1/2 & 3/4	15 & 20	1700	F10/FA10
1/2 & 3/4	15 & 20	2700	F10/FA10
1/2, 3/4 & 1	15, 20 & 25	4500	F10/FA10
1	25	1700/2700	F10/FA10
*1 1/2	40	1700	F10/FA10
*1 1/2	40	2700	F10/FA10
1 1/2 & 2	40 & 50	4500	F10/FA10
2	50	1700	F14/FA14
*2	50	2700	F14/FA14
*2 1/2 & 3	65 & 80	1700/2700	F14/FA14

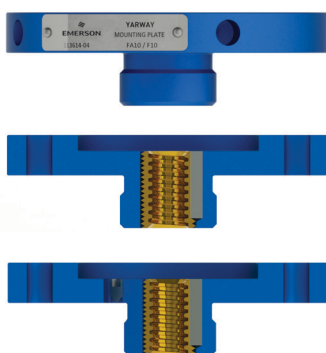
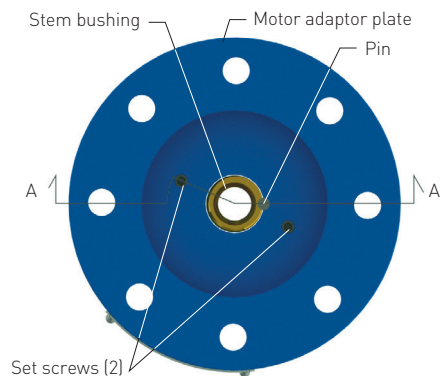


VIEW A - SIDE ANGLE

NOTES

* For Biffi actuators, spacer plate between auto-alignment mounting plate and actuator is required. (spacer plate is included, when Biffi actuator is specified)

- I Drive nut type depends of the brand and size of actuator.
- II Actuators mounting base required:
Biffi - Type A
AUMA - Type 6KT
LIMITORQUE - Type BL (6 Splined)
See actuator's datasheet for technical details.
- III Drive nuts provided separately from mounting plate.



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