



YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

Designed for intermittent blow-off service in boiler systems with pressures up to 3206 psig (221 barg).



FEATURES

- Designed according to ASME Section 1, ASME B31.1, ASME B16.34.
- For boiler systems up to 3206 psig (221 barg).
- Rugged construction to withstand high pressure and high velocities.
- Excellent resistance to cleaning acids and wear caused by precipitated solids.

Seatless Valves

- No Seat
 - will not score or plug with dirt
 - will not leak
- Live-loaded packing
 - will not leak after packing
- Slow opening
 - will not rapidly drain boiler drum

Unit Tandem Valves

- Combination of Hardseat and/or Seatless valves in a single body
 - eliminates pipe joints
 - reduces potential leaks
 - fits into a confined space

Hardseat Valves

- Stellite seat faces
 - resists wear
 - provides long service life

GENERAL APPLICATION

Blow-off service in boiler systems to remove dirt, sediment and scale as well as maintain boiler level surge.

TECHNICAL DATA

Size range: NPS 1, 1¼, 1½, 2, 2½
(DN 25, 32, 40, 50, 65)
Pressure Rating: Up to 3206 psig (221 barg)
Connection: Flanged, Socketweld, Buttweld
Materials: Cast Iron, Carbon Steel

YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

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GENERAL DESCRIPTION

Basic requirements for the design and use of blow-off valves are established by the ASME Power Boiler Code, Section I. The general form of a valve, the materials of its construction, allowable boiler pressures, and the installation of the valve are all determined by the code. Yarway blow-off valves are designed in conformance with all code requirements (ASME Section I, ASME B31.1, ASME B16.34).

Because the primary purpose of a blow-off valve is removal of dirt, sediment and scale, the boiler code requires that valves which have dams or pockets in which sediment can accumulate cannot be used in blow-off service. This means that ordinary globe valves cannot be used as blow-off valves.

Yarway valves are especially designed for the punishment of blow-off service in boiler systems with pressures up to 3206 psig (221 barg).

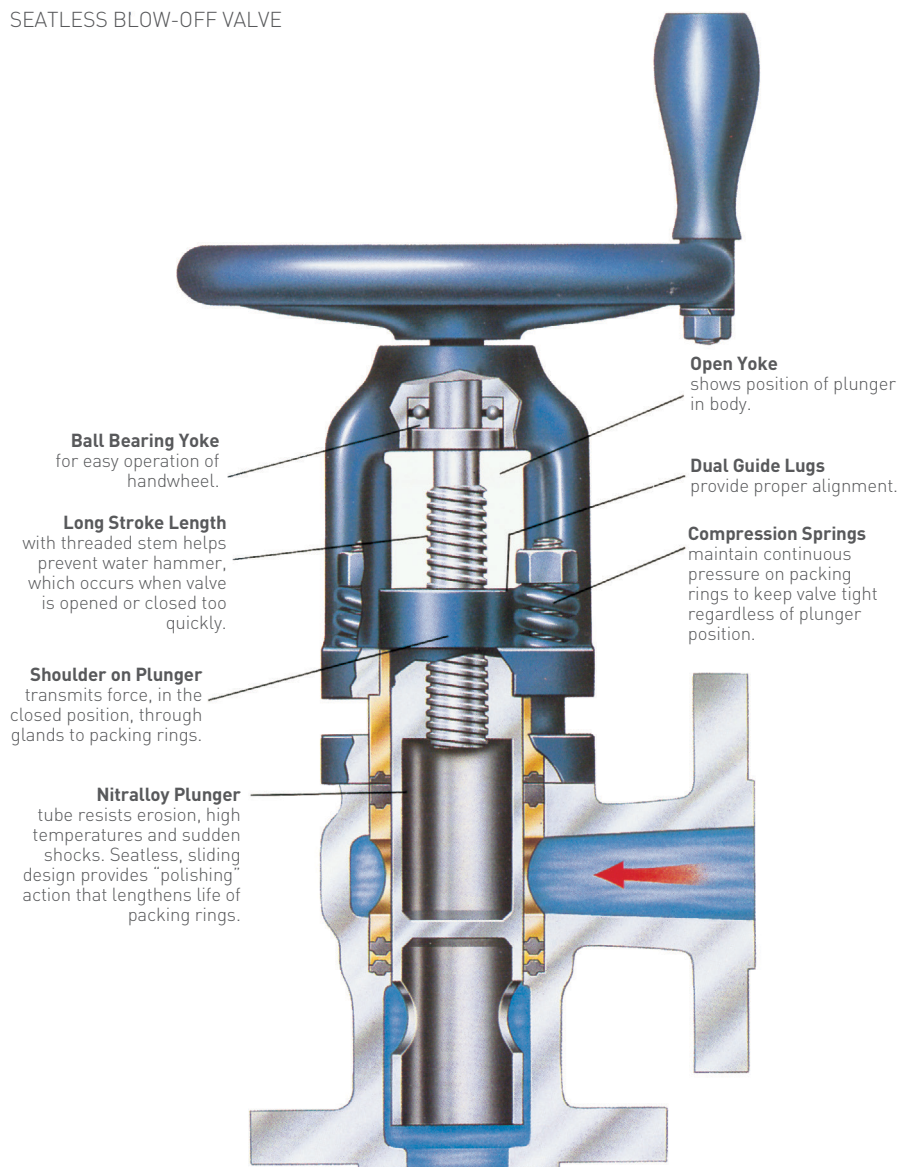
The rugged construction of these valves can successfully withstand the combination of problems inherent in the service - a service in which high pressures result in high velocities which can cause wire drawing and cavitation of metal surfaces.

The valves must also withstand the corrosive environment created by acid cleaning of boilers and potential wear problems caused by precipitated solids.

The valves are also helpful in maintaining boiler level surge within desirable limits during quick startup of high pressure systems.

Two broad categories of Yarway blow-off valves are available; those that operate on a sliding principle and those that operate on a seat-and-disc principle.

SEATLESS BLOW-OFF VALVE



YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

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SEATLESS VALVES FOR PRESSURES TO 935 PSI (64.5 BAR)- CLASS 250 TO 600

The Seatless blow-off valve is a sliding plunger type, opened and closed by means of a handwheel and non-rising stem, and sealed against leakage by packing rings above and below the ports.

This valve is provided with heavy coil compression springs under the yoke nuts. Designed to help prevent leaking when the valve is open, yoke nuts are screwed down evenly and tightly, placing compression on the springs and the packing rings.

Ample flow area is provided in the hollow plunger; absence of projections or pockets prevents accumulation of scale and sediment that can impede flow and shorten the life of the valve. Annular space in the body permits pressure to surround the plunger, making the valve a fully balanced unit easy to operate at high pressures.

For complete protection of the packing, the valve has a long-stroke plunger so that the packing is never exposed to the mainstream flow. The gland and plunger have double inlet ports to balance flow pressures.

This valve is available in angle or straightway styles, cast iron or steel construction and flanged ends.

Operation

When the valve is open (plunger raised), discharge occurs through double ports in the lower gland and plunger. The slotted plunger head slides on guides in the valve yoke, preventing rotation of the plunger.

A stop screw keeps the lower gland in alignment. The yoke permits visual indication of the position of the plunger within the valve body.

Upon closing, the shoulder on the plunger exerts a thrust force compressing the packing rings above and below the port in the body. A final hard turn of the handwheel gives additional compression of the packing around the plunger, ensuring drop tight shutoff.

End Connections

Flange dimensions per ASME B 16.5

Actuation

Manual handwheel only.



YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

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Standard Options

Acid wash trim:

1. Standard upper gland is replaced with nickel plated steel upper gland.
2. Standard lower gland is replaced with nickel resist lower gland.
3. Standard plunger is replaced with nickel plated nitralloy plunger.

Stop screw with lubrication fitting.

Caution plate for tandem sets.

Special flanges only when dimensions are within standard flange maximum metal conditions.

How to Specify

To specify Seatless valves for nominal pressures to 935 psi (64.5 bar), use figure number shown.

Describe as long stroke, balanced sliding plunger type Seatless valve.

ORDERING GUIDE

Available Configurations (Select One)

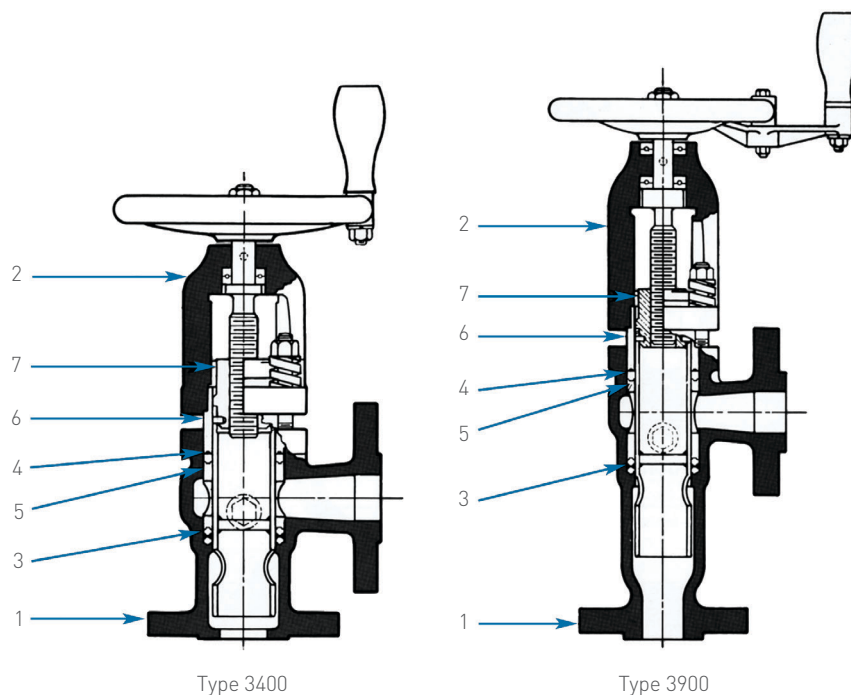
- Type 3482-R - Angled CL250 RF
- Type 3484-R - Straightway CL250 RF
- Type 3486-R - Angled CL300 RF
- Type 3488-R - Straightway CL300 RF
- Type 3910-R - Angled CL600 RF
- Type 3912-R - Straightway CL600 RF

Size

- NPS 1 (DN 25) for CL250 RF and CL300 RF only
- NPS 1¼ (DN 32) for CL250 RF and CL300 RF only
- NPS 1½ (DN 40)
- NPS 2 (DN 50)
- NPS 2½ (DN 65)

Option

- Acid Wash Trim for NPS 1½, 2 and 2½ (DN 40, 50 and 65) CL300 RF and CL600 RF only



SEATLESS VALVES FOR PRESSURES TO 935 PSI (64.5 BAR) - CLASS 250 TO 600

MATERIALS OF CONSTRUCTION (PRESSURE CONTAINING ENVELOPE)

Valve type	Class	1 body	2 yoke	3 and 4 packing rings	5 and 6 glands	7 plunger
3400	250	Cast iron	Cast iron	Graphite,	Hard brass	Nitralloy
		ASTM A126 Class B	ASTM A395 60-40-18	SS filled PTFE, Brass or SS support ring ⁽¹⁾	B135 Alloy 3	Grade H
3400	300	Cast steel	Cast steel	Graphite,	Hard brass	Nitralloy
		ASME SA216 Grade WCB	ASME SA216 Grade WCB	SS filled PTFE, Brass or SS support ring ⁽¹⁾	B135 Alloy 3	Grade H
3900	600	Cast steel	Cast steel	Graphite,	Low	Nitralloy
		ASME SA216 Grade WCB	ASME SA216 Grade WCB	SS filled PTFE, SS support ring	Carbon steel	Grade H

NOTE:

1. 316 SS for acid wash trim.

YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

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SEATLESS VALVES FOR PRESSURES TO 935 PSI (64.5 BAR) - CLASS 250 TO 600

FIGURE 3482-R AND 3486-R

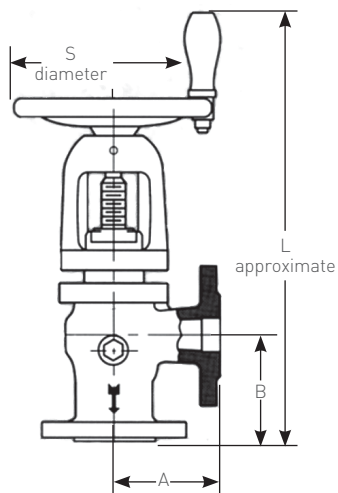


FIGURE 3484-R AND 3488-R

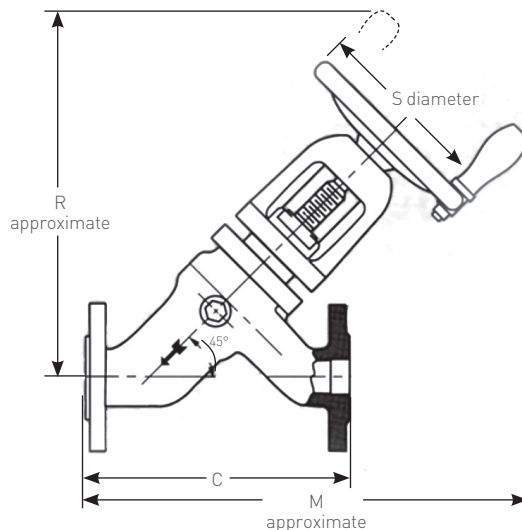


FIGURE 3910-R

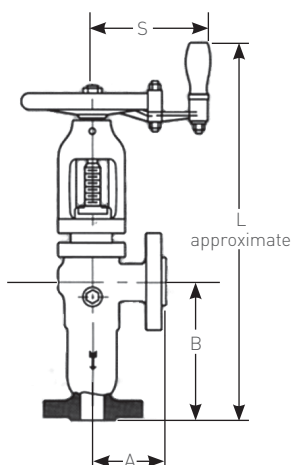
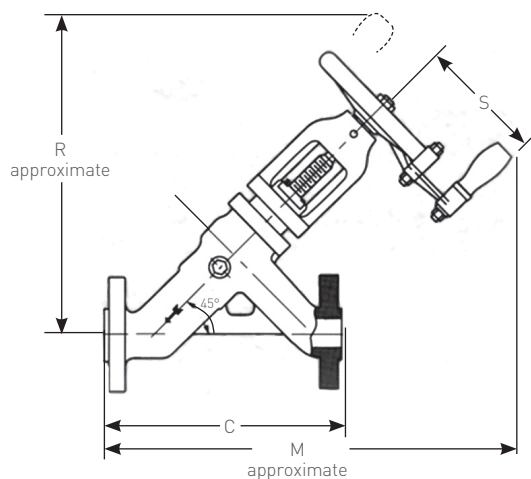


FIGURE 3912-R



DIMENSIONS AND WEIGHTS

Pressure rating class	Blow-off (maximum), psi (bar)	Figure number		Size, NPS (DN)	Dimensions, in. (mm)								Weight, lb. (kg)
		Angle	Straight-way		A	B	C	L	M	R	S	C _v	
250	200 (13.8)	3482-R	3484-R	1 [25]	4 [102]	6 [152]	10 1/4 [260]	18 1/4 [464]	17 1/4 [438]	14 13/16 [376]	8 3/8 [213]	24	30 [13.6]
250	200 (13.8)	3482-R	3484-R	1 1/2 [32]	4 [102]	4 [102]	10 [254]	18 1/4 [464]	17 1/4 [438]	14 13/16 [376]	8 3/8 [213]	24	32 [14.5]
250	200 (13.8)	3482-R	3484-R	1 1/2 [40]	4 1/2 [114]	4 1/2 [114]	11 [279]	18 1/4 [464]	18 1/2 [470]	16 [406]	8 3/8 [213]	30	38 [17.2]
250	200 (13.8)	3482-R	3484-R	2 [50]	5 [127]	5 [127]	12 [305]	19 3/8 [492]	19 7/8 [505]	17 [432]	9 3/8 [238]	58	55 [24.9]
250	200 (13.8)	3482-R	3484-R	2 1/2 [65]	5 3/4 [146]	5 3/4 [146]	13 1/2 [343]	21 7/8 [556]	22 1/8 [562]	19 1/2 [495]	11 [279]	73	85 [38.6]
300	490 (33.8)	3486-R	3488-R	1 [25]	3 15/16 [100]	5 5/8 [143]	9 7/8 [251]	17 3/4 [451]	16 7/8 [429]	14 13/16 [376]	8 3/8 [213]	27	38 [17.2]
300	490 (33.8)	3486-R	3488-R	1 1/2 [32]	4 [102]	4 [102]	10 [254]	18 1/4 [464]	17 1/4 [438]	14 13/16 [376]	8 3/8 [213]	27	40 [18.1]
300	490 (33.8)	3486-R	3488-R	1 1/2 [40]	4 7/16 [113]	4 7/16 [102]	11 [279]	18 1/16 [459]	18 1/2 [470]	15 7/8 [403]	8 3/8 [213]	30	45 [20.4]
300	490 (33.8)	3486-R	3488-R	2 [50]	5 [127]	5 1/4 [133]	12 [305]	19 1/16 [497]	19 15/16 [506]	17 3/8 [441]	9 3/8 [238]	58	65 [29.4]
300	490 (33.8)	3486-R	3488-R	2 1/2 [65]	5 3/4 [146]	6 [152]	13 1/2 [343]	22 1/8 [562]	22 1/8 [562]	19 1/2 [495]	11 [279]	79	90 [40.8]
600	935 (64.5)	3910-R	3912-R	1 1/2 [40]	4 1/2 [114]	8 1/4 [210]	13 [330]	22 7/8 [581]	22 1/2 [571]	19 3/8 [498]	8 3/8 [213]	30	53 [24.0]
600	935 (64.5)	3910-R	3912-R	2 [50]	5 1/4 [133]	9 1/4 [235]	15 [381]	25 1/4 [641]	22 5/16 [567]	22 5/16 [567]	9 3/8 [238]	59	75 [34.0]
600	935 (64.5)	3910-R	3912-R	2 1/2 [65]	5 3/4 [146]	9 1/2 [241]	17 [432]	27 3/4 [705]	28 1/2 [724]	25 3/8 [644]	11 [279]	79	105 [47.6]

YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

HARDSEAT VALVES FOR PRESSURES TO 2455 PSI (169 BAR) - CLASS 600 AND 1500

The Hardseat valve has a seat and disc design with flow entering under the seat. It is opened and closed by means of a handwheel and threaded rising stem. The stuffing box bushing and threaded yoke bushing provide a simple, sturdy guide for the stem. This valve has been designed with thick Stellite facings on the disc and seat to provide the hard wearing, anti-galling surfaces characteristic of Stellite.

Operation

Hardseat valves are available in angle or straightway styles, socketweld or flanged end connections with manual or electric motor actuation. Usual installation of this valve allows the flow to enter below the seat. As the valve is opened, the lip on the end of the disc restricts the flow until the beveled edge or seating surface of the disc is well away from the seat. This minimizes wiredrawing and protects the sealing faces. The valve should be opened rapidly and fully to help increase the life of the internal parts.

Tandem Usage

Any two Yarway Hardseat valves may be used in tandem for pressures to 2455 psi (169 bar). The valve nearest the boiler is used as the blowing valve (opened last and closed first) and the valve farthest from the boiler is the sealing valve (opened first and closed last). For pressures to 935 psi (64.5 bar), Hardseat valves may be used in tandem with Seatless 3900 Series valves.

How to Specify

For single valves, describe as seat and disc type Hardseat valve. Use size and figure number shown.

For tandem valves (pressures to 2455 psi (169 bar)), describe as: blow-off valves shall consist of one angle and one straightway (or two angle or two straightway) seat and disc type Hardseat valves, installed in tandem arrangement, to conform with requirements of ASME Boiler Code and suitable for basic pressure rating of _____ psi.

ORDERING GUIDE

Available Configurations (Select One)

- Type 6909-C - Angled CL600 SWE
- Type 6911-C - Straightway CL600 SWE
- Type 6910-C - Angled CL600 RF
- Type 6912-C - Straightway CL600 RF
- Type 6929-C - Angled CL1500 SWE
- Type 6931-C - Straightway CL1500 SWE

Size

- NPS 1½ (DN 40)
- NPS 2 (DN 50)
- NPS 2½ (DN 65)

Actuation (Select One)

- Manual - Handwheel
- Mounting Plate
 - FA10
 - F10
 - FA14
 - F14
- Bettis™ XTE3000 Electric Actuator

Bettis Model Options (If applicable)

- Bettis XTE 010/90
- Bettis XTE 020/180
- Bettis XTE 030/360

Bettis Standards Options (If applicable)

- FM Approval
- ATEX

Bettis Power Options (If applicable)

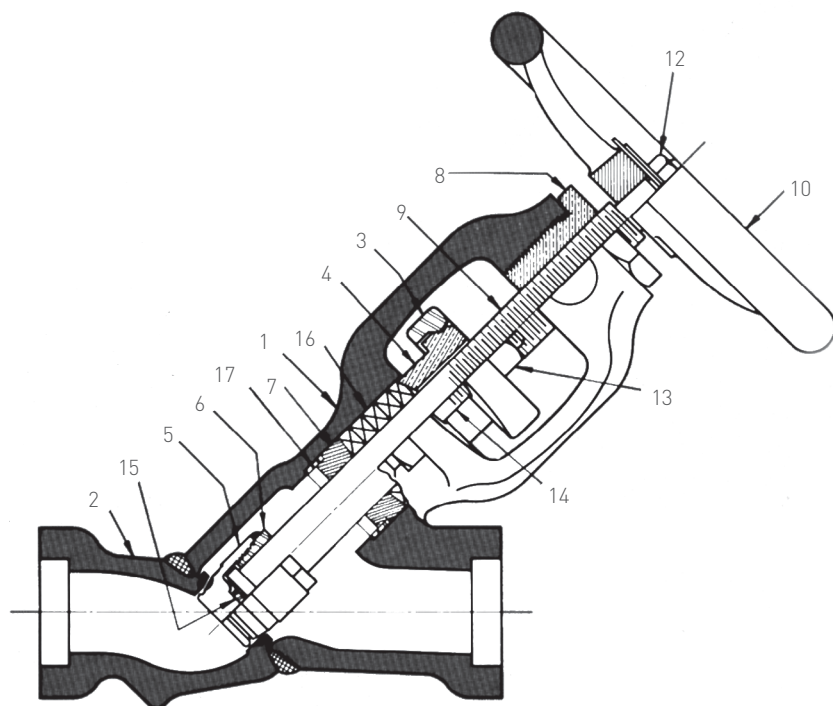
- 480V/3Ph/60Hz
- 440V/3Ph/60Hz
- 415V/3Ph/50Hz
- 380V/3Ph/50Hz
- 240V/3Ph/50Hz



YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

HARDSEAT VALVES FOR PRESSURES TO 2455 PSI (169 BAR) - CLASS 600 AND 1500



MATERIALS OF CONSTRUCTION

Item	Part	Figures 6909, 6911, 6912, 6929-C, 6931-C		Figures 6929, 6931	
		Material	Specifications	Material	Specifications
1	Body	Steel	ASME SA-216 WCB	Steel	ASME SA-105 ⁽¹⁾
2	Nozzle with integral seat	Steel with integral stellited face		Steel with integral stellited face	ASME SA-105 ⁽¹⁾
3	Gland	Steel	ASME SA-216 WCB ⁽²⁾	Steel	ASME SA-105 ⁽¹⁾
4	Split gland bushing	Naval brass ⁽²⁾	----	Stainless steel	AISI 416
5	Disc	Steel with stellited seating face	ASME SA-182 Grade F11	Steel with stellited seating face	ASME SA-182 Grade F11
6	Disc nut	Stainless steel	AISI 410 ⁽²⁾	Stainless steel	AISI 410 ⁽²⁾
7	Stuffing box bushing	Nickel alloy	Ni-Resist No. 1	Nickel alloy	Ni-Resist No. 1
8	Yoke bushing	Naval brass		Silicon brass	B-371 Alloy 694
9	Stem	Stainless steel	ASTM A-582 Type 416	Stainless steel	ASTM A-582 Type 416
10	Handwheel	Cast iron	ASTM A-47 Gr. 32510	Cast iron	ASTM A-47 Gr. 32510
12	Hex nut	Steel	ASME SA-194 Gr. 2H	Steel	ASME SA-194 Gr. 2H
13	Hex nut	Steel	ASME SA-194 Gr. 2H	Steel	ASME SA-194 Gr. 2H
14	Bolt	Steel	ASME SA-193 Gr. B7	Steel	ASME SA-193 Gr. B7
15	Disc insert	Stainless steel (heat treated)	AISI 410	Stainless steel (heat treated)	AISI 410
16	Packing	Flexible graphite	----	Flexible graphite	----
17	Sleeve insert ⁽³⁾	Steel	----	Steel	----

NOTES:

1. NPS 1½ (DN 40) for Figures 6929 and 6931 only. NPS 2 and 2½ (DN 40 and 50) for Figures 6929-C and 6931-C body and nozzle are cast ASME SA216 WCB ["C" in Figure Number designates cast material]; gland ASME SA217 WCB.
2. NPS 1½ (DN 40) valve gland material is ASME SA181 Gr. II; split gland bushing and disc nut material is AISI 416.
3. NPS 2 and 2½ (DN 40 and 50) valve only.

YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

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HARDSEAT VALVES FOR PRESSURES TO 2455 PSI (169 BAR) - CLASS 600 AND 1500

FIGURE 6909-C

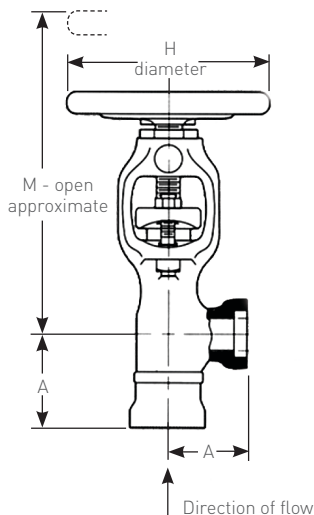


FIGURE 6910-C

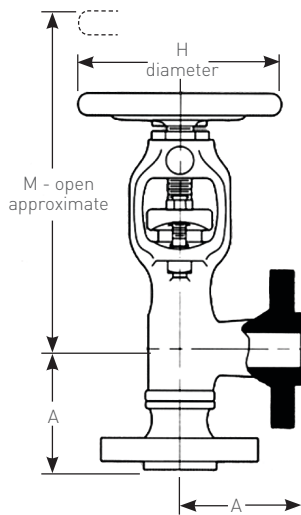


FIGURE 6911-C

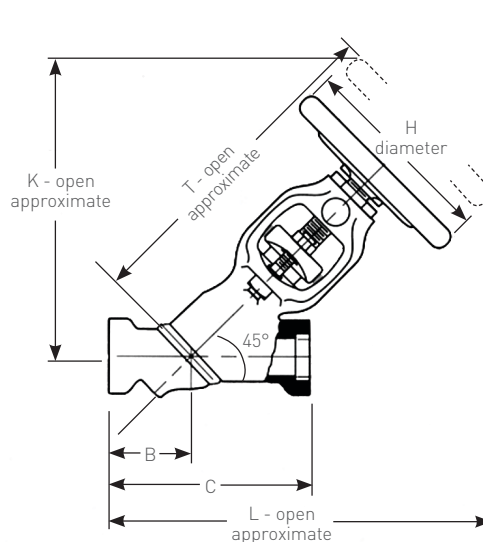


FIGURE 6912-C

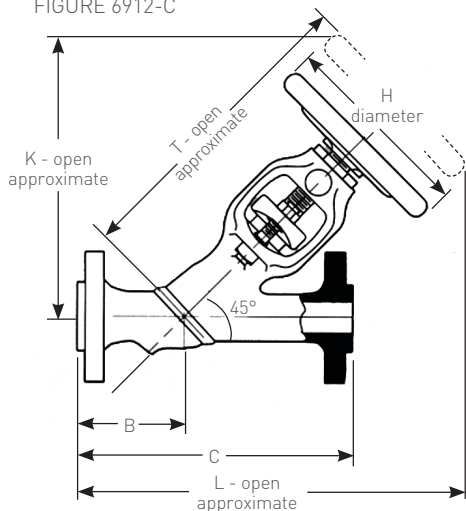


FIGURE 6929 AND 6929-C

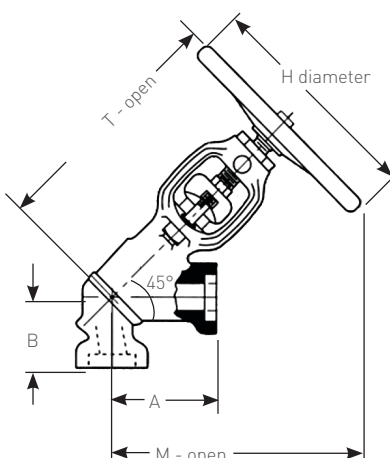
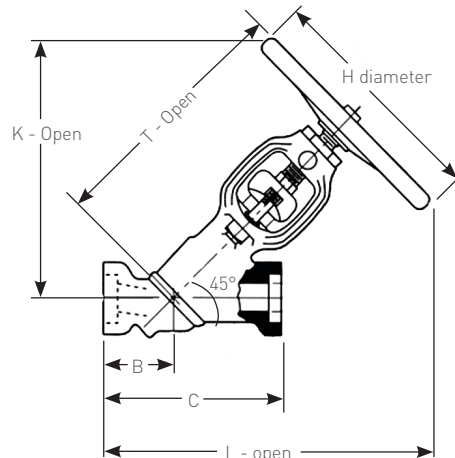


FIGURE 6931 AND 6931-C



DIMENSIONS AND WEIGHTS

Pressure rating class	Blow-off (maximum), psi (bar)	Figure number		Size, NPS (DN)	Dimensions, in. (mm)										Weight, lb. (kg)
		Angle	Straight-way		A	B	C	H	K	L	M	T	C _v		
600	935 (64.5)	6909-C	6911-C	1½ (40)	3¼ (82.5)	3¾ (85.7)	8¼ (210)	11½ (292)	12¾ (327)	16½ (410)	11½ (281)	12¾ (314)	41	25 (11.3)	
600	935 (64.5)	6909-C	6911-C	2 (50)	3¾ (92.1)	3¾ (95.2)	9 (229)	11½ (292)	14¾ (375)	18¾ (467)	13¾ (340)	15 (381)	96	44 (20.0)	
600	935 (64.5)	6909-C	6911-C	2½ (65)	4 (102)	4¾ (111)	10½ (267)	11½ (292)	16¾ (416)	20½ (521)	15½ (394)	17¾ (441)	125	75 (34.0)	
600	935 (64.5)	6910-C	6912-C	1½ (40)	4¾ (121)	4½ (114)	12 (305)	11½ (292)	12¾ (327)	17¼ (438)	11½ (281)	12¾ (314)	41	36 (16.3)	
600	935 (64.5)	6910-C	6912-C	2 (50)	5¼ (146)	5 (127)	14 (356)	11½ (292)	14¾ (375)	19¾ (498)	13¾ (340)	15 (381)	96	55 (24.9)	
600	935 (64.5)	6910-C	6912-C	2½ (65)	6½ (165)	5¾ (149)	16 (406)	11½ (292)	16¾ (416)	21¾ (552)	15½ (394)	17¾ (441)	125	85 (38.6)	
1500	2455 (169)	6929	6931	1½ (40)	5⅞ (141)	3⅞ (87.3)	9 (229)	11½ (292)	16 (406)	19½ (495)	16 (406)	17 (432)	41	33 (15.0)	
1500	2455 (169)	6929-C	6931-C	2 (50)	5¾ (137)	3¾ (98.4)	9¼ (235)	13½ (343)	17⅞ (449)	21⅞ (545)	17⅞ (449)	18¾ (460)	95	60 (27.2)	
1500	2455 (169)	6929-C	6931-C	2½ (65)	5¾ (137)	3¾ (98.4)	9¼ (235)	13½ (343)	17⅞ (449)	21⅞ (545)	17⅞ (449)	18¾ (460)	95	60 (27.2)	

YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

MOTOR OPERATED VALVES

Yarway Hardseat 6900 Series valves are available with Bettis™ XTE3000 electric actuators or with a mounting plate without actuator. The mounting plate will be tack welded to the yoke and be supplied with a 6 spline drive bushing.

HARDSEAT 6900 SERIES VALVES WITH BETTIS XTE3000 SPECIFICATIONS

Actuator Type	Actuator	Hardseat Models	Attributes		
			Actuation	Power/Speed Options	Standard Options
Electric	XTE 010/90	NPS 1½ (DN 40)	S2-30' Open/Close Duty,	480V/3Ph/60Hz/29RPM, 440V/3Ph/60Hz/29RPM,	FM approval or ATEX approval
	XTE 020/180	NPS 2 and 2½ (DN 50 and 65)	Hard-wired control,	415V/3Ph/50Hz/24RPM, 380V/3Ph/50Hz/24RPM	
	XTE 030/360	NPS 2 and 2½ (DN 50 and 65)	Handwheel	or 240V/3Ph/50Hz/24RPM	

HARDSEAT 6900 SERIES VALVES WITH MOUNTING PLATE SPECIFICATIONS

Type	Valve Size, NPS (DN)	Required Torque		Stem Thread	Stem Rise		Turns to Open	Mounting Flange Size
		Ft-lbs	N•m		in.	mm		
6909-C	1½ (40)	45	61	15/16-6 ACME	0.94	24	5.6	F10/FA10
6910-C	2 (50)	95	129	13/16-6 ACME	1.9	48	11.3	F14/FA14
6911-C	2½ (65)	95	129	13/16-6 ACME	2.0	51	12	F14/FA14
6912-C								
6929	1½ (40)	69	94	15/16-6 ACME	1	25	6	F10/FA10
6931								
6929-C	2 (50)	145	197	13/16-6 ACME	1.9	48	11.3	F14/FA14
6931-C	2½ (65)	145	197	13/16-6 ACME	1.9	48	11.3	F14/FA14

YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

UNIT TANDEM VALVES FOR PRESSURES TO 3206 PSI (221 BAR) - CLASS 300 TO 2500

The Yarway Unit Tandem valve features a one-piece steel block which serves as a common body for both blowing and sealing valves. This construction eliminates interconnecting welds or bolts and gaskets where flanged valves are required and makes the Unit Tandem a compact design.

For valves with basic pressure rating to 600 psi (41.4 bar) (medium pressure Unit Tandem), the inlet valve is a Hardseat type and the discharge valve is of the Seatless type. For basic pressure ratings above 600 to 2500 psi (41.4 to 172 bar), both inlet and discharge valves are Hardseat type.

All features of the Yarway single valves are contained in the Unit Tandem design with the additional advantage of a one-piece, heavy duty construction.

These valves are available in right-hand or left-hand body assemblies, carbon steel (ASME SA-105), socketweld or flanged end connections. All Hardseat Unit Tandem valves include acid wash trim.

In Hardseat Seatless Unit Tandem valves, acid wash trim is optional.

The Hardseat valve of any Unit Tandem can be equipped with an electric motor actuator (230/460-volt, three-phase, 60-Hertz).

How to Specify

To specify Unit Tandem valves use size and figure numbers shown. Describe as: valve assembly shall consist of one seat and disc type Hardseat valve and one balanced, sliding plunger type Seatless valve (or two seat and disc Hardseat valves) assembled in tandem arrangement as part of one common body conforming with requirements of ASME Boiler Code and suitable for pressure rating of _____ psi.

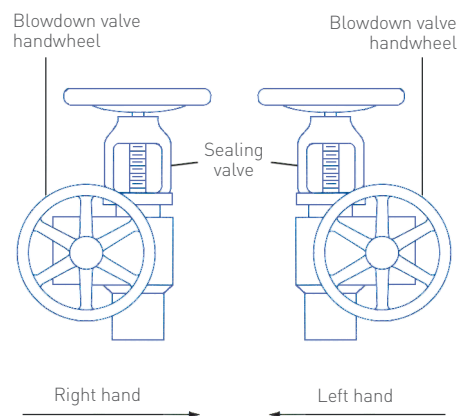
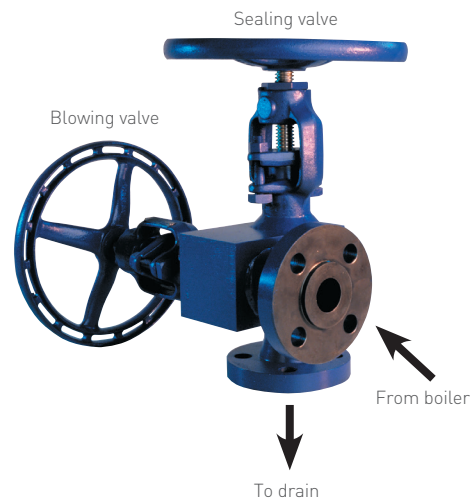
How to "Hand" Unit Tandem Valves

Because the construction and installation of a Unit Tandem valve is inherently "off-center" with respect to the centerline of the boiler outlet, opening and closing of the valve can become difficult if operating space is inadequate on the side of the blowing valve.

Therefore, the practice of "handing" a valve has become part of its specification. This is essentially a statement of planned position for the valve, to the left-hand or right-hand of the centerline of the boiler outlet, by specifying the location of the sealing valve when facing the handwheel of the blowing valve (next to boiler). The drawing shown should help you to "hand" or orient your valves correctly.

Specify location (right or left) of sealing valve when facing handwheel of next-to boiler Hardseat blowing valve.

NPS 1½ (DN 40) 6978-6978 LEFT HAND



YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

MATERIALS OF CONSTRUCTION (SEE PAGES 12 - 15 FOR DRAWING REFERENCES)

Item	Part	Material	Specification
1	Body	Carbon steel - 0.35% max. C (Stellited seat)	ASME SA-105
13	Spring	Steel	SAE 6150
14	Stud	Steel	ASME SA 193 Gr. B7
15	Extension lever	Malleable iron	-
16	Nozzle	Forged steel - 0.35% max. C	ASME SA-105
17	Yoke	Steel	ASME SA-105 ⁽¹⁾
19	Gland	Steel	ASTM A-181 Grade II ⁽¹⁾
20	Disc	Steel (stellited)	ASME SA-182 Grade F11
21	Split gland bushing	Stainless steel	Type 416 ⁽²⁾
22	Disc nut	Stainless steel	Type 410
23	Stuffing box bushing	Nickel alloy	Ni-Resist No. 1
24	Yoke bushing	Bronze	ASTM B-371 Alloy 694 ⁽²⁾
25	Stem	Stainless steel	ASTM A-582 Type 416
26	Bolt	Stainless steel	ASTM A-193-B6 ⁽³⁾
27	Handwheel	Cast iron	ASTM A-48
28	Packing	Flexible graphite (carbon braid end rings)	-
31	Disc insert	Stainless steel (heat treated)	AISI 410

NOTES:

- 600 psi (41.4 bar) and lower rated valve; ASME SA-216 Gr. WCB.
- 600 psi (41.4 bar) and lower rated valve; Naval Brass.
- 600 psi (41.4 bar) and lower rated valve; ASME SA-193 B7.

DIMENSIONS AND WEIGHTS (SEE PAGES 12 - 15 FOR DRAWING REFERENCES)

Pressure rating class	Blow-off (maximum), psi (bar)	Figure no.	Size NPS (DN)	Dimensions, in. (mm)							Stem rise, in. (mm)	C _v	Weight, lb. (kg)	
				A	B	C	G	H	K (closed)	L (closed)				M
300	490 [33.8]	3947-3927 ⁽¹⁾	1 [25]	5 ¹³ / ₁₆ [148]	5 1/2 [140]	3 [76.1]	8 3/8 [213]	1/2 [12.7]	10 3/8 [270]	16 7/16 [418]	8 3/8 [213]	1 5/16 [23.8]	17	50 [22.7]
300	490 [33.8]	3947-3927 ⁽¹⁾	1 1/2 [40]	5 ¹³ / ₁₆ [148]	5 1/2 [140]	3 [76.1]	8 3/8 [213]	1/2 [12.7]	10 3/8 [270]	16 7/16 [418]	8 3/8 [213]	1 5/16 [23.8]	22	65 [29.5]
300	490 [33.8]	3947-3927 ⁽¹⁾	2 [50]	6 3/16 [157]	5 15/16 [151]	3 13/16 [96.8]	9 3/8 [238]	5/8 [15.9]	12 5/16 [313]	18 1/2 [470]	9 3/8 [238]	1 3/4 [30.2]	38	108 [49.0]
300	490 [33.8]	3947-3927 ⁽¹⁾	2 1/2 [65]	7 1/16 [179]	7 1/16 [179]	4 1/8 [105]	11 [279]	5/8 [15.9]	14 11/16 [373]	21 3/4 [552]	11 [279]	1 1/4 [31.8]	47	150 [68.0]
300	490 [33.8]	3948-3928 ⁽¹⁾	1 [25]	4 3/4 [121]	7 1/8 [181]	3 [76.1]	8 3/8 [213]	- - - -	10 3/8 [270]	15 3/8 [391]	8 3/8 [213]	1 5/16 [23.8]	17	55 [24.9]
300	490 [33.8]	3948-3928 ⁽¹⁾	1 1/2 [40]	5 1/2 [140]	5 3/16 [132]	3 [76.1]	8 3/8 [213]	- - - -	10 3/8 [270]	16 1/8 [410]	8 3/8 [213]	1 5/16 [23.8]	25	70 [31.8]
300	490 [33.8]	3948-3928 ⁽¹⁾	2 [50]	5 13/16 [148]	5 1/4 [141]	3 13/16 [96.8]	9 3/8 [238]	- - - -	12 5/16 [313]	18 1/8 [460]	9 3/8 [238]	1 3/4 [30.2]	39	113 [51.3]
300	490 [33.8]	3948-3928 ⁽¹⁾	2 1/2 [65]	6 11/16 [170]	6 11/16 [170]	4 1/8 [105]	11 [279]	- - - -	14 11/16 [373]	21 3/8 [543]	11 [279]	1 1/4 [31.8]	47	163 [73.9]
600	935 [64.5]	6977-6953 ⁽¹⁾	1 [25]	4 7/8 [124]	5 1/2 [140]	2 9/16 [65.1]	8 3/4 [222]	1/2 [12.7]	9 3/8 [238]	14 1/4 [362]	6 [152]	1 5/16 [23.8]	9	50 [22.7]
600	935 [64.5]	6977-6953 ⁽¹⁾	1 1/2 [40]	5 13/16 [148]	7 1/8 [181]	3 [76.1]	7 1/4 [197]	1/2 [12.7]	10 3/8 [270]	16 7/16 [418]	11 1/2 [292]	1 5/16 [23.8]	17	82 [37.2]
600	935 [64.5]	6977-6953 ⁽¹⁾	2 [50]	6 3/16 [157]	8 7/8 [225]	3 13/16 [96.8]	8 1/2 [216]	5/8 [15.9]	12 5/16 [313]	18 1/2 [470]	11 1/2 [292]	1 3/4 [30.2]	39	125 [56.7]
600	935 [64.5]	6977-6953 ⁽¹⁾	2 1/2 [65]	7 1/16 [179]	10 7/8 [276]	4 1/8 [105]	9 5/16 [237]	5/8 [15.9]	14 11/16 [373]	21 3/4 [552]	11 1/2 [292]	1 1/4 [31.8]	75	174 [78.9]
600	935 [64.5]	6978-6954 ⁽¹⁾	1 [25]	4 7/8 [124]	5 1/2 [140]	2 9/16 [65.1]	8 3/4 [222]	- - - -	9 3/8 [238]	14 1/4 [362]	6 [152]	1 5/16 [23.8]	9	50 [22.7]
600	935 [64.5]	6978-6954 ⁽¹⁾	1 1/2 [40]	5 13/16 [148]	7 1/8 [181]	3 [76.1]	7 1/4 [197]	- - - -	10 3/8 [270]	16 7/16 [418]	11 1/2 [292]	1 5/16 [23.8]	17	82 [37.2]
600	935 [64.5]	6978-6954 ⁽¹⁾	2 [50]	6 3/16 [157]	8 7/8 [225]	3 13/16 [96.8]	8 1/2 [216]	- - - -	12 5/16 [313]	18 1/2 [470]	11 1/2 [292]	1 3/4 [30.2]	39	125 [56.7]
600	935 [64.5]	6978-6954 ⁽¹⁾	2 1/2 [65]	7 1/16 [179]	10 7/8 [276]	4 1/8 [105]	9 5/16 [237]	- - - -	14 11/16 [373]	21 3/4 [552]	11 1/2 [292]	1 1/4 [31.8]	75	174 [78.9]
600	935 [64.5]	6977-6977 ⁽²⁾	1 [25]	4 7/8 [124]	5 1/2 [140]	2 9/16 [65.1]	- - - -	1/2 [12.7]	9 3/8 [238]	14 1/4 [362]	6 [152]	1 5/16 [23.8]	9	50 [22.7]
600	935 [64.5]	6977-6977 ⁽²⁾	1 1/2 [40]	5 13/16 [148]	7 1/8 [181]	3 [76.1]	- - - -	1/2 [12.7]	10 3/8 [270]	16 7/16 [418]	11 1/2 [292]	1 5/16 [23.8]	29	82 [37.2]
600	935 [64.5]	6977-6977 ⁽²⁾	2 [50]	6 3/16 [157]	8 7/8 [225]	3 13/16 [96.8]	- - - -	5/8 [15.9]	12 5/16 [313]	18 1/2 [470]	11 1/2 [292]	1 3/4 [30.2]	41	125 [56.7]
600	935 [64.5]	6977-6977 ⁽²⁾	2 1/2 [65]	7 1/16 [179]	10 7/8 [276]	4 1/8 [105]	- - - -	5/8 [15.9]	14 11/16 [373]	21 3/4 [552]	11 1/2 [292]	1 1/4 [31.8]	48	174 [78.9]
600	935 [64.5]	6978-6978 ⁽²⁾	1 [25]	4 7/8 [124]	- - - -	2 9/16 [65.1]	- - - -	- - - -	9 3/8 [238]	14 1/4 [362]	6 [152]	1 5/16 [23.8]	9	75 [34.0]
600	935 [64.5]	6978-6978 ⁽²⁾	1 1/2 [40]	5 13/16 [148]	- - - -	3 [76.1]	- - - -	- - - -	10 3/8 [270]	16 7/16 [418]	11 1/2 [292]	1 5/16 [23.8]	29	112 [50.8]
600	935 [64.5]	6978-6978 ⁽²⁾	2 [50]	6 3/16 [157]	- - - -	3 13/16 [96.8]	- - - -	- - - -	12 5/16 [313]	18 1/2 [470]	11 1/2 [292]	1 3/4 [30.2]	41	230 [104]
600	935 [64.5]	6978-6978 ⁽²⁾	2 1/2 [65]	7 1/16 [179]	- - - -	4 1/8 [105]	- - - -	- - - -	14 11/16 [373]	21 3/4 [552]	11 1/2 [292]	1 1/4 [31.8]	48	240 [109]
1500	2455 [169]	6982-6982 ⁽²⁾	1 [25]	5 9/16 [135]	- - - -	1 5/8 [41.3]	- - - -	- - - -	13 3/8 [346]	18 15/16 [481]	6 [152]	1 [25.4]	9	80 [36.3]
1500	2455 [169]	6982-6982 ⁽²⁾	1 1/2 [40]	5 7/8 [149]	- - - -	2 [50.8]	- - - -	- - - -	16 1/2 [419]	22 3/8 [568]	11 [279]	1 1/16 [27.0]	25	130 [59.0]
1500	2455 [169]	6982-6982 ⁽²⁾	2 [50]	7 3/8 [187]	- - - -	2 11/16 [68.3]	- - - -	- - - -	20 1/16 [522]	27 15/16 [710]	14 1/2 [368]	1 1/4 [31.8]	50	270 [122]
1500	2455 [169]	6982-6982 ⁽²⁾	2 1/2 [65]	8 [203]	- - - -	2 11/16 [68.3]	- - - -	- - - -	20 1/16 [522]	28 3/16 [725]	14 1/2 [368]	1 1/4 [31.8]	50	300 [136]
1500	2455 [169]	6981-6981 ⁽²⁾	1 [25]	4 [102]	- - - -	1 5/8 [41.3]	- - - -	1/2 [12.7]	13 3/8 [346]	17 3/8 [448]	6 [152]	1 [25.4]	9	75 [34.0]
1500	2455 [169]	6981-6981 ⁽²⁾	1 1/2 [40]	5 [127]	- - - -	2 [50.8]	- - - -	1/2 [12.7]	16 1/2 [419]	21 1/2 [546]	11 [279]	1 1/16 [27.0]	26	115 [52.2]
1500	2455 [169]	6981-6981 ⁽²⁾	2 [50]	6 [152]	- - - -	2 11/16 [68.3]	- - - -	5/8 [15.9]	20 1/16 [522]	26 9/16 [675]	14 1/2 [368]	1 1/4 [31.8]	49	238 [108]
1500	2455 [169]	6981-6981 ⁽²⁾	2 1/2 [65]	6 [152]	- - - -	2 11/16 [68.3]	- - - -	5/8 [15.9]	20 1/16 [522]	26 9/16 [675]	14 1/2 [368]	1 1/4 [31.8]	49	238 [108]
2500	3206 [221]	6983-6983 ⁽²⁾	1 [25]	4 [102]	- - - -	1 5/8 [41.3]	- - - -	1/2 [12.7]	13 3/8 [346]	17 3/8 [448]	6 [152]	1 [25.4]	9	75 [34.0]
2500	3206 [221]	6983-6983 ⁽²⁾	1 1/2 [40]	5 [127]	- - - -	2 [50.8]	- - - -	1/2 [12.7]	16 1/2 [419]	21 1/2 [546]	11 [279]	1 1/16 [27.0]	26	115 [52.2]
2500	3206 [221]	6983-6983 ⁽²⁾	2 [50]	6 [152]	- - - -	2 11/16 [68.3]	- - - -	5/8 [15.9]	20 1/16 [522]	26 9/16 [675]	14 1/2 [368]	1 1/4 [31.8]	49	238 [108]
2500	3206 [221]	6983-6983 ⁽²⁾	2 1/2 [65]	6 [152]	- - - -	2 11/16 [68.3]	- - - -	5/8 [15.9]	20 1/16 [522]	26 9/16 [675]	14 1/2 [368]	1 1/4 [31.8]	49	238 [108]

NOTES:

- Hardseat-Seatless
- Hardseat-Hardseat

YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

HARDSEAT-SEATLESS UNIT TANDEM VALVES

FIGURE 3947-3927

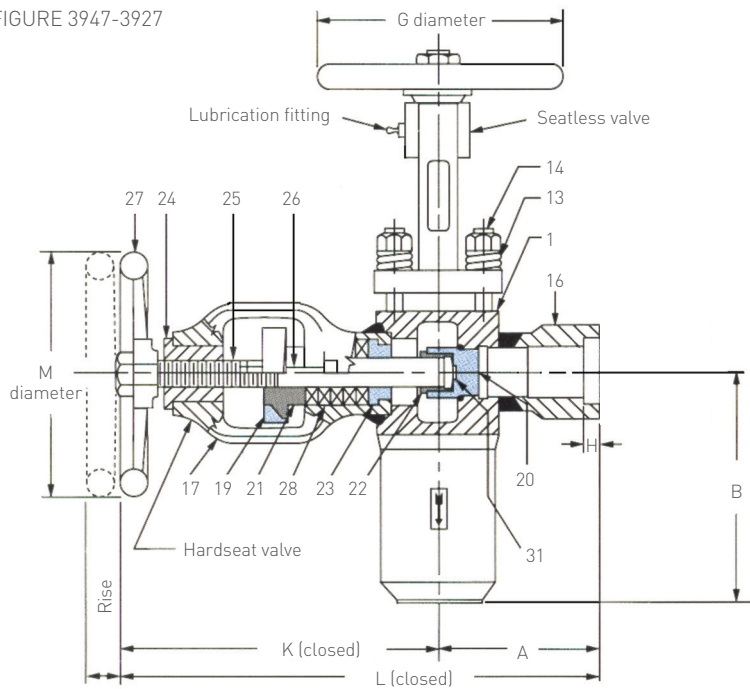
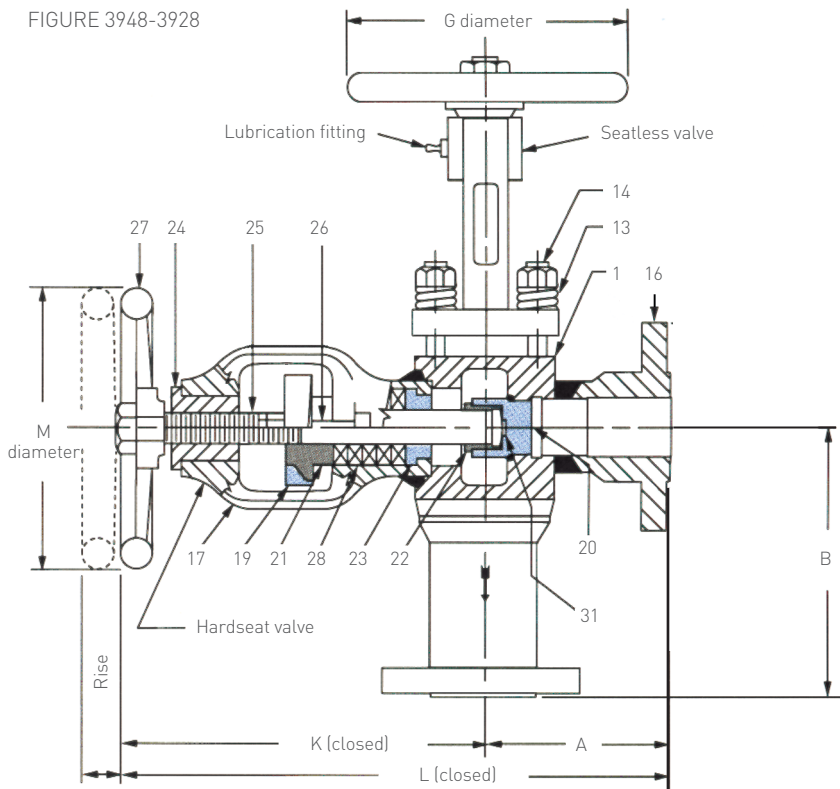


FIGURE 3948-3928



YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

HARDSEAT-SEATLESS UNIT TANDEM VALVES

FIGURE 6978-6954

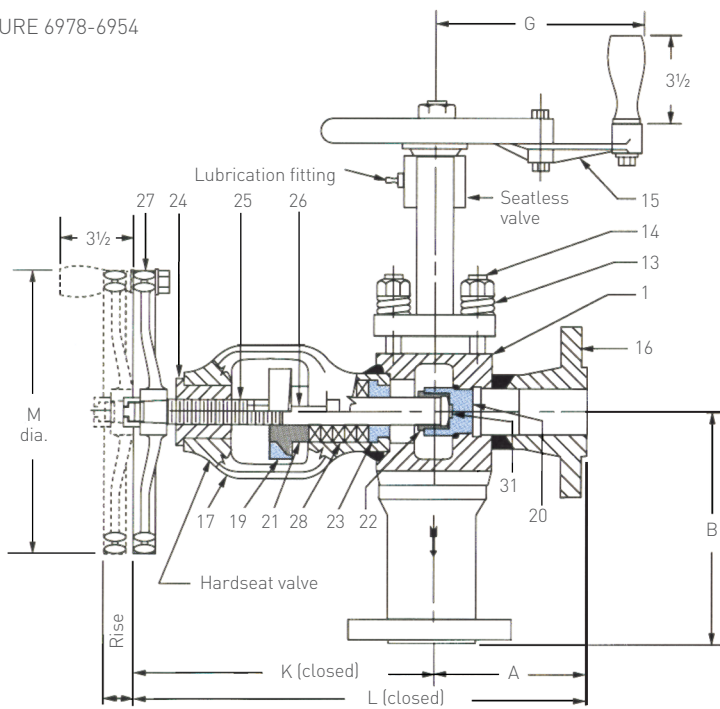
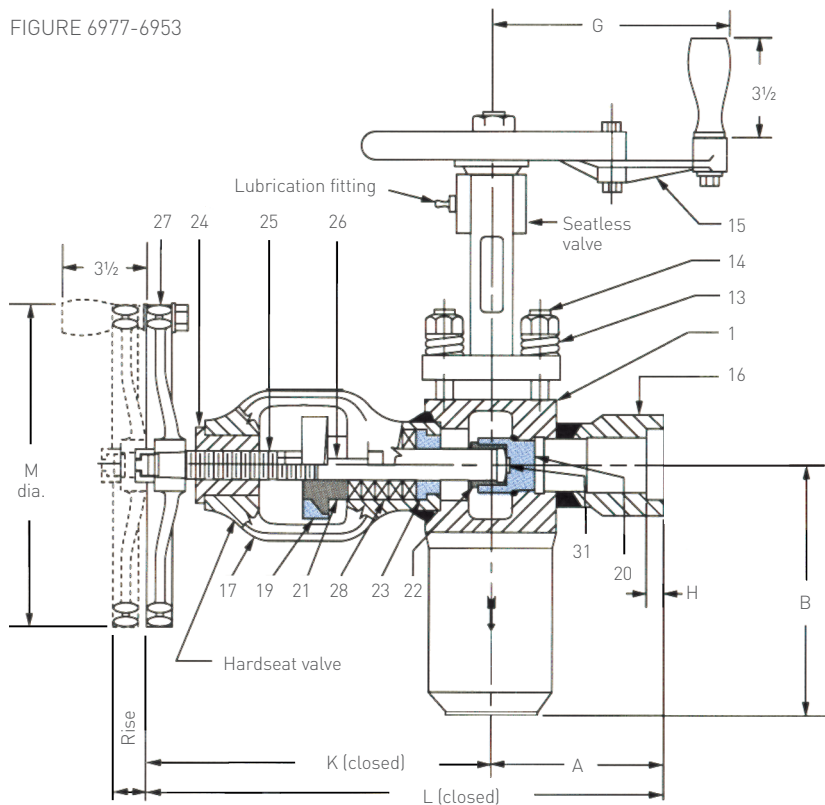


FIGURE 6977-6953



YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

HARDSEAT-HARDSEAT UNIT TANDEM VALVES

FIGURE 6977-6977

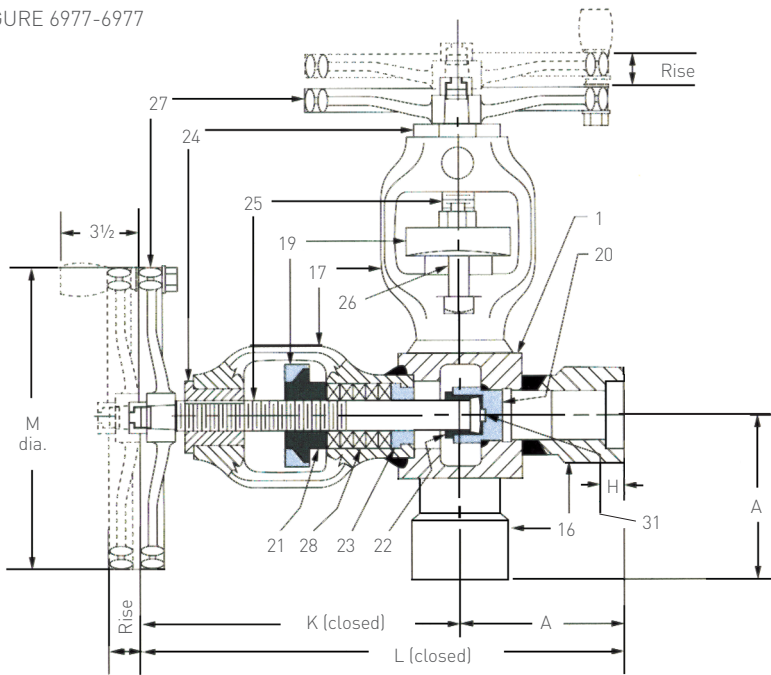
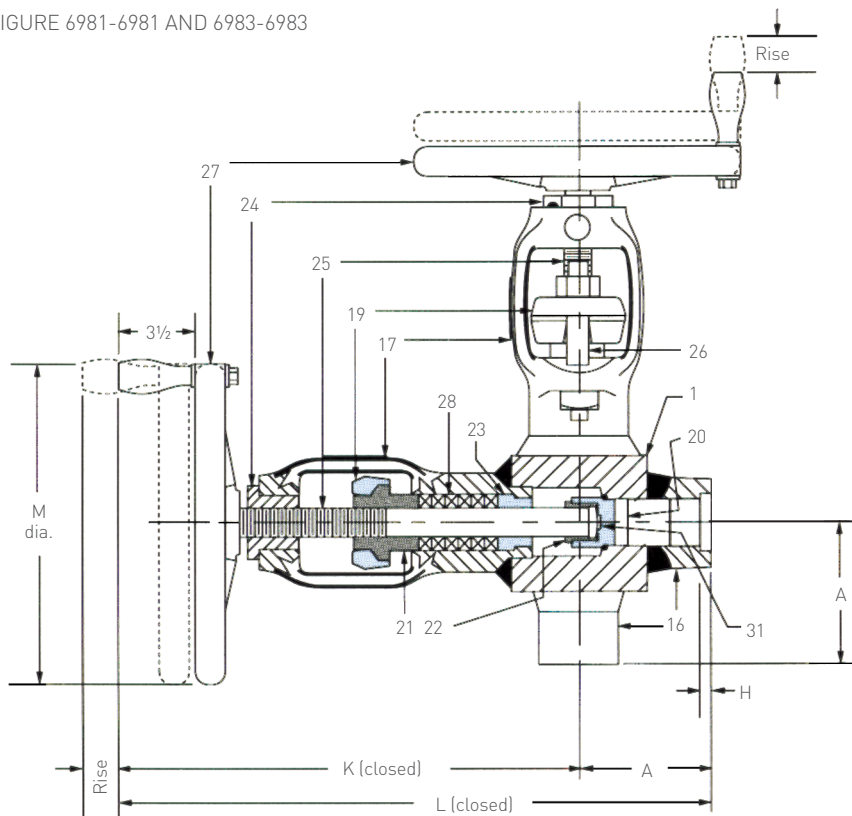


FIGURE 6981-6981 AND 6983-6983



YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

HARDSEAT-HARDSEAT UNIT TANDEM VALVES

FIGURE 6978-6978

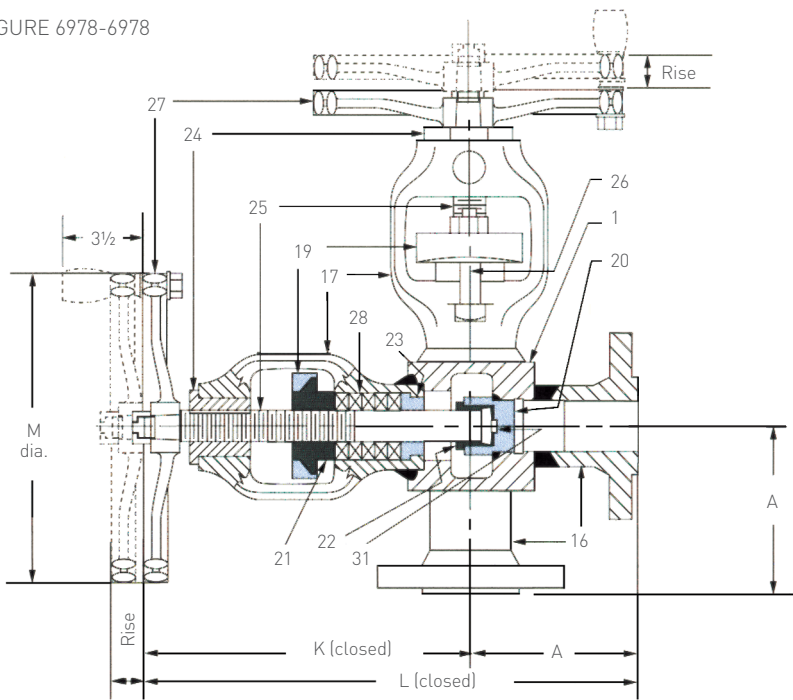
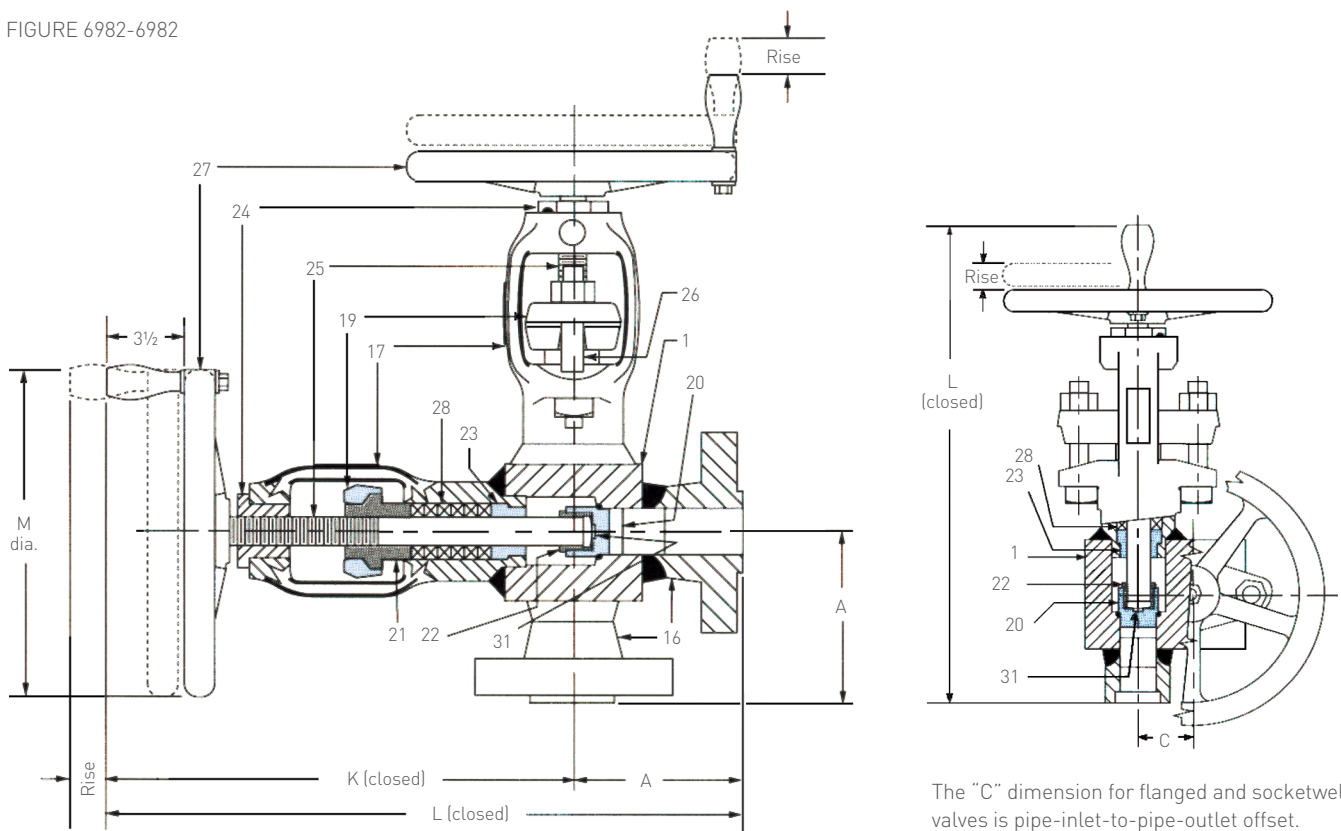


FIGURE 6982-6982



The "C" dimension for flanged and socketweld valves is pipe-inlet-to-pipe-outlet offset.

YARWAY SEATLESS, HARDSEAT AND UNIT TANDEM BLOW-OFF VALVES

DATASHEET

MOTOR OPERATED VALVES

Yarway Unit Tandem valves with a Hardseat/Hardseat construction are available with Bettis XTE3000 electric actuators or with a mounting plate without actuator. The mounting plate will be tack welded to the yoke and be supplied with a 6 spline drive bushing.

UNIT TANDEM VALVES WITH BETTIS XTE3000 SPECIFICATIONS

Actuator Type	Actuator ^{3/4}	Hardseat Models	Attributes		
			Actuation	Power/Speed Options	Standard Options
Electric	XTE 010/30	NPS 1 (DN 25)	S2-30" Open/Close Duty, Hard-wired control, Handwheel	480V/3Ph/60Hz/29RPM, 440V/3Ph/60Hz/29RPM, 415V/3Ph/50Hz/24RPM, 380V/3Ph/50Hz/24RPM or 240V/3Ph/50Hz/24RPM	FM approval or ATEX approval
	XTE 010/90	NPS 1½ (DN 40)			
	XTE 020/180	NPS 2 and 2½ (DN 50 and 65)			
	XTE 030/360	NPS 2 and 2½ (DN 50 and 65)			

UNIT TANDEM VALVES WITH MOUNTING PLATE SPECIFICATIONS

Type	Valve Size, NPS (DN)	Required Torque		Stem Thread	Stem Rise		Turns to Open	Mounting Flange Size	
		Ft-lbs	N•m		in.	mm			
6977-77	1 (25)	24	33	¾-6 ACME	0.94	24	5.6	F10/FA10	
	1½ (40)	45	61	1½-6 ACME	0.94	24	5.6	F10/FA10	
	6978-78	2 (50)	95	129	1¾-6 ACME	1.2	30	11.3	F14/FA14
2½ (65)		95	129	1¾-6 ACME	1.25	32	11.3	F14/FA14	
6981-81	1 (25)	24	33	¾-8 ACME	1	25	8	F10/FA10	
	6982-82	1½ (40)	69	94	1½-6 ACME	1.1	28	6.4	F10/FA10
		2 (50)	145	197	1¾-6 ACME	1.2	30	7.5	F14/FA14
6983-83	2½ (65)	145	197	1¾-6 ACME	1.25	32	7.5	F14/FA14	
	6983-83	1 (25)	36	49	¾-8 ACME	1	25	8	F10/FA10
		1½ (40)	114	155	1½-6 ACME	1.06	27	6.4	F10/FA10
		2 (50)	225	305	1¾-6 ACME	1.25	32	7.5	F14/FA14
	2½ (65)	225	305	1¾-6 ACME	1.25	32	7.5	F14/FA14	

ORDERING GUIDE

Available Configurations (Select One)

Hardseat/Seatless

- Type 3947-3927 CL300 SWE
- Type 3948-3928 CL300 RF
- Type 6977-6953 CL600 SWE
- Type 6978-6954 CL600 RF

Hardseat/Hardseat

- Type 6977-6977 CL600 SWE
- Type 6978-6978 CL600 RF
- Type 6981-6981 CL1500 SWE
- Type 6982-6982 CL1500 RF
- Type 6983-6983 CL2500 SWE

Size

- NPS 1 (DN 25)
- NPS 1½ (DN 40)
- NPS 2 (DN 50)
- NPS 2½ (DN 65)

Orientation

- Left Hand
- Right Hand

Trim Option

- Acid Wash (comes standard on Hardseat)

Actuation (Select One)

- Manual - Handwheel
- Mounting Plate (Hardseat/Hardseat only)
 - FA10
 - F10
 - FA14
 - F14
- Bettis XTE3000 Electric Actuator (Hardseat/Hardseat only)

Bettis Model Options (If applicable)

- Bettis XTE 010/90
- Bettis XTE 020/180
- Bettis XTE 030/360

Bettis Standards Options (If applicable)

- FM Approval
- ATEX

Bettis Power Options (If applicable)

- 480V/3Ph/60Hz
- 440V/3Ph/60Hz
- 415V/3Ph/50Hz
- 380V/3Ph/50Hz
- 240V/3Ph/50Hz

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