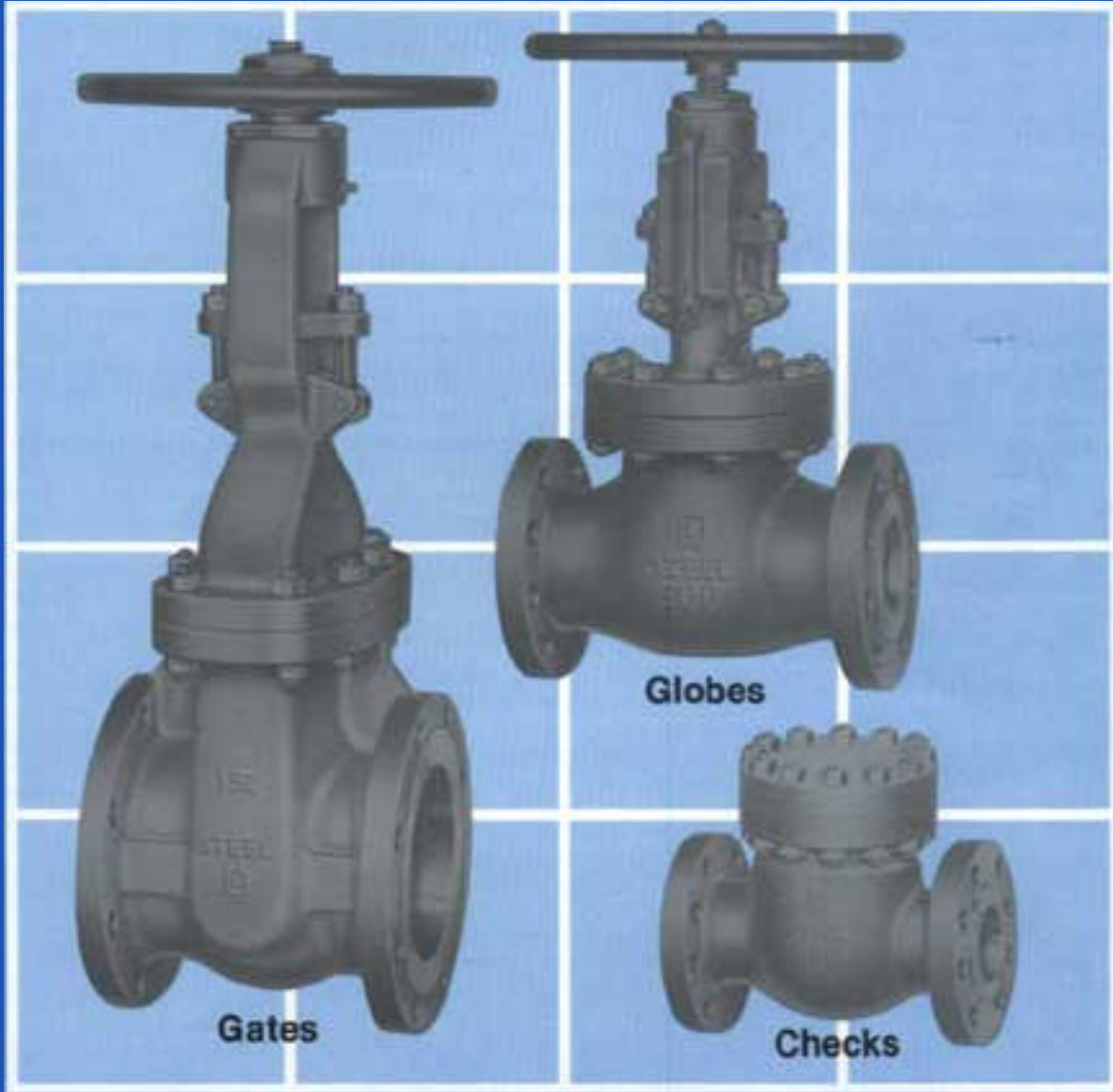


STEEL VALVES



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ENERGOVALVES**

THE ONE *Great* NAME IN VALVES®





CAST STEEL VALVES



Lunkenheimer Quality Cast Steel Gate, Globe and Check Valves are

LUNKENHEIMER-DESIGNED / ENGINEERED IN THE USA

ENERGOINVEST MANUFACTURED

LUNKENHEIMER-PROVEN QUALITY

They are produced using modern machinery and the latest tooling advances in an up-to-date manufacturing facility to provide users with the highest quality flow control products at competitive prices.

All cast components, especially the body and the bonnet, have heavy sections which assure strength, durability, and dependable service and safety over a wide range of service conditions. Steel alloys for bodies and bonnets are carefully selected for good casting quality, structural stability, mechanical strength and safe weldability. Castings are poured under rigid and critical metallurgical and laboratory supervision. They are heat treated, thoroughly cleaned by sand-blasting, and carefully inspected to insure freedom from defects. All castings for these valves meet appropriate ASTM Specifications.

Trim materials have been selected for their high resistance to corrosion, erosion, freedom from galling, and have the required mechanical properties at the various pressure/temperature ratings. A choice of other trims are available for special applications.

Gate Valves are manufactured in accordance with API Std.600, ANSI B16.5, B16.10, B16.25, B16.34 and tested to API Std.598.

Globe Valves are manufactured in accordance with ANSI B16.5, B16.10, B16.25, B16.34 and tested in accordance with ANSI B16.34 and MSS SP61.

Swing Check Valves are manufactured in accordance with ANSI B16.5, B16.10, B16.25, B16.34 and tested in accordance with ANSI B16.34 and MSS SP61.

Order your Lunkenheimer Cast Steel Valves from your Lunkenheimer-Energoverves Stocking Distributor. For the name of your nearest distributor call (713) 939-1327 or write Lunkenheimer-Energoverves, Inc., 9300 Baythorne Drive, Houston, TX 77041.

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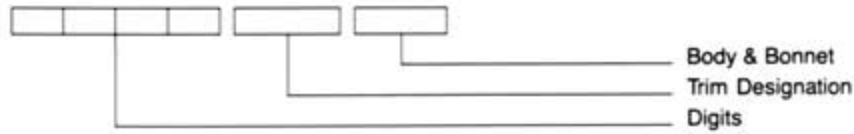
FOR STANDARD VALVES

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EXPLANATION OF VALVE FIGURE NUMBERS



First Two Digits – ANSI Pressure Class:

- ANSI Pressure Class 150# --- 15
- ANSI Pressure Class 300# --- 30
- ANSI Pressure Class 600# --- 60

Third Digit:

- 0 --- Solid Wedge Gate Valve
- 1 --- Flex – Wedge Gate Valve
- 2 --- Threaded Wedge – Non Rising Stem
- 3 --- Globe Valve Spherical Type Disc
- 4 --- Globe Valve Plug Type Disc
- 5 --- Globe Angle Valve Spherical Type Disc
- 6 --- Globe Angle Valve Plug Type Disc
- 7 --- Swing Check Valve

Fourth Digit – Type of End Connection:

- 2 --- Flanged End Raised Face
- 3 --- Butt Welding End
- 4 --- Ring Joint End

Trim Designation:

Trim	Stem	Disc Face	Seat Faces
C (13)	CR 13	CR 13	CR 13
None (Universal Trim)	CR 13	CR 13	HF
A (316)	18-8-CR NI	18-8-CR NI	HF
B (Bronze)	BRZ	BRZ	HF
M (Monel)	NI CU	NI CU	NI CU
U (Hardfaced)	CR 13	HF	HF

Body & Bonnet Materials:

- None ---- A216 GR WCB
- 578 ---- A217 GR WC6
- 580 ---- A217 GR WC9
- 579 ---- A217 GR C5
- 582 ---- A352 GR LCB

CLASS 150 GATE VALVES

FIG. 1512/1513

DESCRIPTION

Cast carbon steel gate valves 150 pound pressure class with bolted bonnet, outside screw and yoke, FLEX-WEDGE and seal welded seat rings manufactured in accordance with API 600.

APPLICATION

These gate valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process installations, in operating conditions up to 800°F (427°C), in accordance with Table No. 1. Data included in this Table meet the pressure-temperature ratings of ANSI B16.34.

TECHNICAL DATA

The basic dimensions of the gate valves are in accordance with Table No. 4. Face to face dimensions of the gate valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with 0.062" (1.5mm) raised faces, in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The wedges are of the single wedge flexible type providing greater sealing capability and lower torque requirements. Operation is performed by a non-rising hand wheel; the closing direction is to the right. Upon request, gate valves are made with enclosed bevel gearing. For remote control, these valves can be equipped with electric or air motor operating units.

The wedges have accurate guide slots, assuring true alignment and providing full guidance during operation.

The seat rings are seal welded in the body and are made of carbon steel with hard faced seat surfaces. The seat faces on the wedges are made by welding on 13 CR Stainless Steel.

The gate valves are provided with a backseat bushing in the bonnet, enabling the replacement of the stem packing when the valve is in the wide open position.



PRESSURE-TEMPERATURE RATINGS			
Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	285	19,6
200	93	260	17,9
300	149	230	15,9
400	204	200	13,8
500	260	170	11,7
600	316	140	9,6
650	343	125	8,6
700	371	110	7,6
750	399	95	6,6
800	427	80	5,5

Asbestos free packing or flexible graphite as per request.

The gate valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

Cast on the gate valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, and material designation, all in accordance with MSS SP-25.

TESTS

The gate valves are hydrostatically and pneumatically tested in accordance with Table No. 2, meeting the requirements of API 598.

NOTE: Other flange facings and finishes in accordance with ANSI B 16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

TEST PRESSURES					
Hydrostatic				Pneumatic	
Shell		Seat		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)	(psig)	(bar-gage)
450	31,0	325	21,7	80	5,5

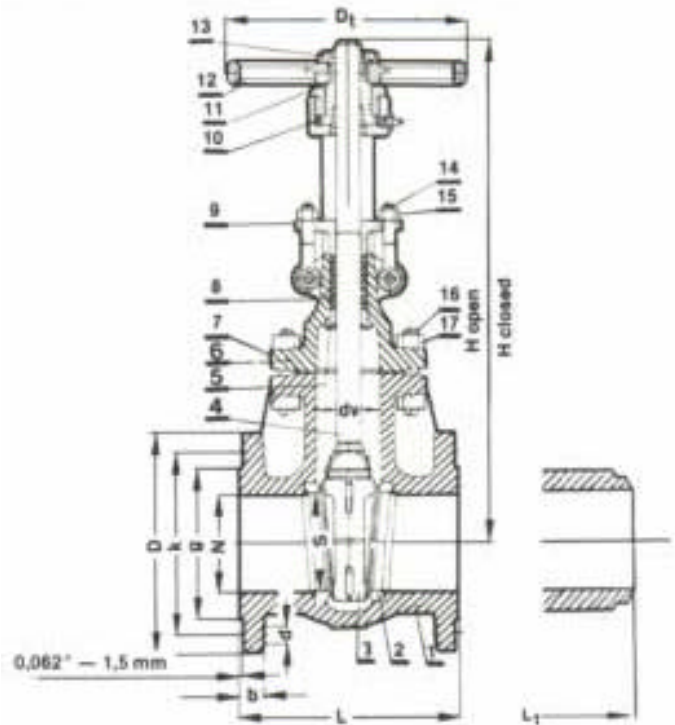


WITH UNIVERSAL TRIM

PARTS AND MATERIALS

Table 3

Key	Part	Material Specification
1	Body	ASTM A216 Gr. WCB
2	Seat Ring	ASTM A108 Gr. 1018-1020 w/Cr-Co-W Facing
3	Wedge	ASTM A216 Gr. WCB w/13 Cr Facing
4	Stem	ASTM A582 Type 410
5	Backseat	
	Bushing	ASTM A276 Type 410
6	Gasket	Soft Iron, Corrugated
7	Bonnet	ASTM A216 Gr. WCB
8	Packing	Asbestos - Free
9	Gland	ASTM A216 Gr. WCB
10	Yoke Nut	ASTM A439 Type D2
11	Yoke Nut Retaining Nut	ASTM A536 Gr. 65-4512
	Yoke Cap 10" and larger	ASTM A216 Gr. WCB
12	Handwheel	ASTM A47 Gr. 32510
13	Handwheel Nut	ASTM A47 Gr. 32510
14	Gland Eyebolt	Steel, Mild Carbon
15	Gland Eyebolt Nut	ASTM A307 Gr. B
16	Body-Bonnet Stud Bolt	ASTM A193 Gr. B7
17	Body Bonnet Stud Bolt Nut	ASTM A194 Gr. 2H



GENERAL DIMENSIONS

Table 4

Valve Size	Port		Line flange					Face to Face L (mm)	L ₁ (mm)	Height			Line flange bolts		Turns to open	Hand-wheel Dia. Dt (mm)	Weight Approx (lbs.) (kg)
	Dia.	Dia.	Dia.	Thick-ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.			H Open	H Closed	Stem Dia.	No.	Size			
	N (in.) (mm)	S (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)			(in.) (mm)	(in.) (mm)	dv (in.) (mm)		(in.) (mm)			
2	2.00 50,8	2.00 50,8	6.00 152,4	0.62 15,7	4.75 120,7	0.75 19,1	3.62 91,9	7.00 177,8	8.50 215,9	16.35 415,3	13.60 345,4	3/4 19,1	4 15,9	5/8 15,9	11,00	8.00 203,2	50 22,7
2 1/2	2.25 63,5	2.25 63,5	7.00 177,8	0.69 17,5	5.50 139,7	.75 19,1	4.12 104,6	7.50 190,5	9.50 241,3	16.70 449,6	14.55 369,6	3/4 19,1	4 15,9	5/8 15,9	12,60	8.00 203,2	62 25,1
3	3.00 76,2	3.00 76,2	7.50 190,5	0.75 19,1	6.00 152,4	0.75 19,1	5.00 127,0	8.00 203,2	8.12 206,3	20.10 510,5	16.55 420,4	7/8 22,2	4 15,9	5/8 15,9	12,40	9.00 228,6	84 38,1
4	4.00 101,6	4.00 101,6	9.00 228,6	0.94 23,9	7.50 190,5	0.75 19,1	6.19 157,2	9.00 228,6	12.00 304,8	25.60 650,2	20.65 524,5	1 25,4	8 15,9	5/8 15,9	14,80	10.00 254,0	128 58,1
6	6.00 152,4	6.25 158,8	11.00 279,4	1.00 25,4	9.50 241,3	0.88 22,4	8.50 215,9	10.50 266,7	15.87 403,2	33.85 859,8	26.95 684,5	1 1/4 31,8	8 19,1	3/4 19,1	13,60	14.00 355,6	205 93,0
8	8.00 203,2	8.00 203,2	13.50 342,9	1.12 28,4	11.75 298,5	0.88 22,4	10.62 269,7	11.50 292,1	16.50 419,1	41.75 1060,5	33.45 849,6	1 3/8 34,9	8 19,1	3/4 19,1	16,50	16.00 406,4	354 160,6
10	10.00 254,0	10.00 254,0	16.00 406,4	1.19 30,2	14.25 361,9	1.00 25,4	12.75 323,9	13.00 330,2	18.00 457,2	51.55 1309,4	40.15 1019,8	1 1/2 38,1	12 22,2	7/8 22,2	22,80	18.00 457,2	540 244,9
12	12.00 304,8	12.00 304,8	19.00 482,6	1.25 31,8	17.00 431,8	1.00 25,4	15.00 381,0	14.00 355,6	19.75 501,6	59.85 1520,2	46.45 1179,8	1 5/8 41,3	12 22,2	7/8 22,2	26,80	20.00 508,0	767 347,9

CLASS 150 GATE VALVES

FIG. 1512

DESCRIPTION

Cast carbon steel gate valves 150 pound pressure class with bolted bonnet, outside screw and yoke, FLEX-WEDGE and seal welded seat rings manufactured in accordance with API 600.

APPLICATION

These gate valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process installations, in operating conditions up to 800°F (427°C), in accordance with Table No. 1. Data included in this table meet the pressure-temperature ratings of ANSI B16.34.

TECHNICAL DATA

The basic dimensions of the gate valves are in accordance with Table No. 4. Face to face dimensions of the gate valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with 0.062" (1.5 mm) raised faces, in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The wedges are of the single wedge flexible type providing greater sealing capability and lower torque requirements. Operation is performed by a non-rising hand wheel; the closing direction is to the right. Upon request, gate valves are made with enclosed bevel gearing. For remote control, these valves can be equipped with electric or air motor operating units.

The wedges have accurate guide slots, assuring true alignment and providing full guidance during operation.

The seat rings are seal welded in the body and are made of carbon steel with hard faced seat surfaces. The seat faces on the wedges are made by welding on 13 CR Stainless Steel.

The gate valves are provided with a backseat bushing in the bonnet, enabling the replacement of the stem packing when the valve is in the wide open position.



PRESSURE-TEMPERATURE RATINGS			
Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	285	19,6
200	93	260	17,9
300	149	230	15,9
400	204	200	13,8
500	260	170	11,7
600	316	140	9,6
650	343	125	8,6
700	371	110	7,6
750	399	95	6,6
800	427	80	5,5

Asbestos free packing or flexible graphite as per request.

The gate valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

Cast on the gate valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, and material designation, all in accordance with MSS SP-25.

TESTS

The gate valves are hydrostatically and pneumatically tested in accordance with Table No. 2, meeting the requirements of API 598.

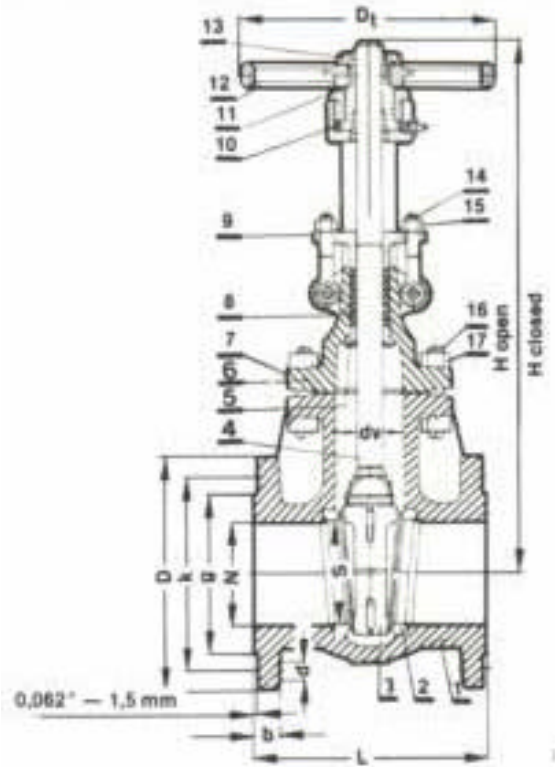
NOTE: Other flange facings and finishes in accordance with ANSI B16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

TEST PRESSURES					
Hydrostatic				Pneumatic	
Shell		Seat		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)	(psig)	(bar-gage)
450	31,0	325	21,7	80	5,5



WITH UNIVERSAL TRIM

PARTS AND MATERIALS			Table 3
Key	Part	Material Specification	
1	Body	ASTM A216 Gr. WCB	
2	Seat Ring	ASTM A108 Gr. 1018-1020 w/Cr-Co-W Facing	
3	Wedge	ASTM A216 Gr. WCB w/13 Cr Facing	
4	Stem	ASTM A582 Type 410	
5	Backseat Bushing	ASTM A276 Type 410	
6	Gasket	Soft Iron, Corrugated	
7	Bonnet	ASTM A216 Gr. WCB	
8	Packing	Asbestos - Free	
9	Gland	ASTM A216 Gr. WCB	
10	Yoke Nut	ASTM A439 Type D2	
11	Yoke Nut Retaining Nut Yoke Cap 10" and larger	ASTM A536 Gr. 65-4512	
12	Handwheel	ASTM A47 Gr. 32510	
13	Handwheel Nut	ASTM A47 Gr. 32510	
14	Gland Eyebolt	Steel, Mild Carbon	
15	Gland Eyebolt Nut	ASTM A307 Gr. B	
16	Body-Bonnet Stud Bolt	ASTM A193 Gr. B7	
17	Body Bonnet Stud Bolt Nut	ASTM A194 Gr. 2H	



GENERAL DIMENSIONS																	Table 4
Valve Size	Port		Line flange					Face to Face L (in.) (mm)	Height			Line flange bolts		Turns to open	Hand-wheel Dia. Dt (in.) (mm)	Weight Approx (lbs.) (kg)	
	Dia.	Dia.	Dia.	Thick-ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.		H Open	H Closed	Stem Dia.	No.	Size				
	N (in.) (mm)	S (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)		(in.) (mm)	(in.) (mm)	(in.) (mm)	(in.) (mm)	(in.) (mm)				
14	13.25	13.25	21.00	1.38	18.75	1.12	16.25	15.00	69.30	55.10	1 3/4	12	1	28,30	24.00	1140	
	336,6	336,6	533,4	35,1	476,3	28,4	412,8	381,0	1760,2	1399,5	44,5		25,4				609,6
16	15.25	15.37	23.50	1.44	21.25	1.12	18.50	16.00	78.35	61.40	1 3/4	16	1	33,90	24.00	1320	
	387,4	390,4	596,9	36,6	539,8	28,4	469,9	406,4	1990,1	1559,6	44,5		25,4				609,6
18	17.25	17.34	25.00	1.56	22.75	1.25	21.00	17.00	81.90	63.00	1 7/8	16	1 1/8	66,10	27.00	1810	
	438,2	440,5	635,0	39,6	577,9	31,8	533,4	431,8	2080,3	1600,2	47,6		28,6				685,8
20	19.25	19.37	27.50	1.69	25.00	1.25	23.00	18.00	94.50	73.60	2	20	1 1/8	73,00	30.00	2995	
	489,0	492,1	698,5	42,9	635,0	31,8	584,2	457,2	2400,3	1869,4	50,8		28,6				762,0
24	23.25	23.37	32.00	1.88	29.50	1.38	27.25	20.00	105.30	80.70	2 1/4	20	1 1/4	73,80	30.00	3210	
	590,6	593,7	812,8	47,8	749,3	35,1	692,2	508,0	2674,6	2049,8	57,2		31,8				762,0
30	As Per Request																

FIG. 3012/3013

DESCRIPTION

Cast carbon steel gate valves 300 pound pressure class with bolted bonnet, outside screw and yoke, FLEX-WEDGE and seal welded seat rings manufactured in accordance with API 600.

APPLICATION

These gate valves are used in pipelines and in facilities of water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process installations, in operating conditions up to 800°F (427°C), in accordance with Table No. 1. Data included in this table meet the pressure-temperature ratings of ANSI B16.34.

TECHNICAL DATA

The basic dimensions of the gate valves are in accordance with Table No. 4. Face to face dimensions of the gate valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with 0.062" (1.5mm) raised faces, in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The wedges are of the single wedge flexible type providing greater sealing capability and lower torque requirements. Operation is performed by a non-rising hand wheel; the closing direction is to the right. Upon request, gate valves are made with enclosed bevel gearing. For remote control, these valves can be equipped with electric or air motor operating units.

The wedges have accurate guide slots, assuring true alignment and providing full guidance during operation.

The seat rings are seal welded in the body and are made of carbon steel with hard faced seat surfaces. The seat faces on the wedges are made by welding on 13 CR Stainless Steel.

The gate valves are provided with a backseat bushing in the bonnet, enabling the replacement of the stem packing when the valve is in the wide open position.



PRESSURE-TEMPERATURE RATINGS Table 1			
Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	740	51,0
200	93	675	46,5
300	149	655	45,2
400	204	635	43,8
500	260	600	41,4
600	316	550	37,9
650	343	535	36,9
700	371	535	36,9
750	399	505	34,8
800	427	410	28,3

Asbestos free packing or flexible graphite as per request.

The gate valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

Cast on the gate valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, and material designation all in accordance with MSS SP-25.

TESTS

The gate valves are hydrostatically and pneumatically tested in accordance with Table No. 2, meeting the requirements of API 598.

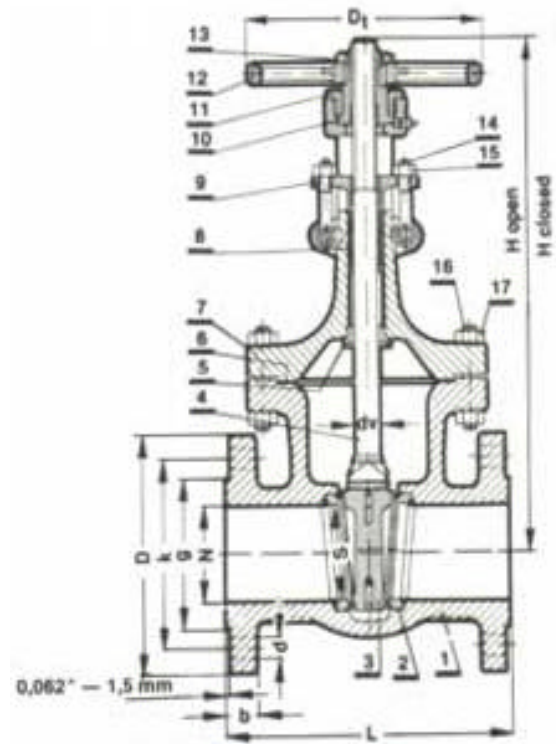
NOTE: Other flange facings and finishes in accordance with ANSI B16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

TEST PRESSURES Table 2					
Hydrostatic				Pneumatic	
Shell		Seat		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)	(psig)	(bar-gage)
1125	77,5	825	56,2	80	5,5



WITH UNIVERSAL TRIM

PARTS AND MATERIALS		Table 3
Key	Part	Material Specification
1	Body	ASTM A216 Gr. WCB
2	Seat Ring	ASTM A108 Gr. 1018-1020 w/Cr-Co-W Facing
3	Wedge	ASTM A216 Gr. WCB w/13 Cr Facing
4	Stem	ASTM A582 Type 410
5	Backseat Bushing	ASTM A276 Type 410
6	Gasket	Soft Iron, Corrugated
7	Bonnet	ASTM A216 Gr. WCB
8	Packing	Asbestos - Free
9	Gland	ASTM A216 Gr. WCB
10	Yoke Nut	ASTM A439 Type D2
11	Yoke Nut Retaining Nut Yoke Cap 10" and larger	ASTM A536 Gr. 65-45-12 ASTM A216 Gr. WCB
12	Handwheel	ASTM A47 Gr. 32510
13	Handwheel Nut	ASTM A47 Gr. 32510
14	Gland Eyebolt	Steel, Mild Carbon
15	Gland Eyebolt Nut	ASTM A307 Gr. B
16	Body-Bonnet Stud Bolt	ASTM A193 Gr. B7
17	Body-Bonnet Stud Bolt Nut	ASTM A194 Gr. 2H



GENERAL DIMENSIONS																	Table 4
Valve Size	Port		Line flange					Face to Face L (in.) (mm)	Height			Line flange bolts		Turns to open	Hand-wheel Dia. Dt (in.) (mm)	Weight Approx (lbs.) (kg)	
	Dia.	Dia.	Dia.	Thick-ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.		H Open	H Closed	Stem Dia.	No.	Size				
	N (in.) (mm)	S (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)		(in.) (mm)	(in.) (mm)	dv (in.) (mm)	(in.) (mm)	(in.) (mm)				
2	2.00 50,8	2.00 50,8	6.50 165,1	0.88 22,4	5.00 127,0	0.75 19,1	3.62 91,9	8.50 215,9	18.50 469,9	16.00 406,4	3/4 19,1	8	5/8 15,9	10,00	8.00 203,2	60 29,9	
2½	2.50 63,5	2.62 66,5	7.50 190,5	1.00 25,4	5.88 149,4	.88 22,4	4.12 104,6	9.50 241,3	19.90 505,5	16.85 428,0	3/4 19,1	8	3/4 19,1	12,2	8.00 203,2	86 39,0	
3	3.00 76,2	3.00 76,2	8.25 209,6	1.12 28,4	6.62 168,1	0.88 22,4	5.00 127,0	11.12 282,4	22.65 575,3	19.10 485,1	7/8 22,2	8	3/4 19,1	12,40	9.00 228,6	122 55,3	
4	4.00 101,6	4.00 101,6	10.00 254,0	1.25 31,8	7.88 200,2	0.88 22,4	6.19 157,2	12.00 304,8	27.75 704,9	22.85 580,5	1 25,4	8	3/4 19,1	14,70	10.00 254,0	202 91,6	
6	6.00 152,4	6.25 158,8	12.50 317,5	1.44 36,6	10.62 269,7	0.88 22,4	8.50 215,9	15.88 403,3	36.20 919,5	29.50 749,3	1 1/4 31,8	12	3/4 19,1	13,40	14.00 355,6	344 156,0	
8	8.00 203,2	8.00 203,2	15.00 381,0	1.62 41,1	13.00 330,2	1.00 25,4	10.62 269,7	16.50 419,1	45.25 1149,4	36.20 919,5	1 3/8 34,9	12	7/8 22,2	18,10	16.00 406,4	590 267,6	
10	10.00 254,0	10.00 254,0	17.50 444,5	1.88 47,8	15.25 387,4	1.12 28,4	12.75 323,9	18.00 457,2	54.30 1379,2	43.30 1099,8	1 1/2 38,1	16	1 25,4	22,00	18.00 457,2	966 438,2	
12	12.00 304,8	12.00 304,8	20.50 520,7	2.00 50,8	17.75 450,9	1.25 31,8	15.00 381,0	19.75 501,7	63.40 1610,4	50.00 1270,0	1 5/8 41,3	16	1 1/8 28,6	26,80	20.00 508,0	1295 587,4	
14 & 16	As Per Request																

FIG. 6012/6013

DESCRIPTION

Cast carbon steel gate valves 600 pound pressure class with bolted bonnet, outside screw and yoke, FLEX-WEDGE and seal welded seat rings manufactured in accordance with API 600.

APPLICATION

These gate valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process installations, in operating conditions upto 800°F (427°C), in accordance with Table No. 1. Data included in this table meet the pressure-temperature ratings of ANSI B16.34.

TECHNICAL DATA

The basic dimensions of the gate valves are in accordance with Table No. 4. Face to face dimensions of the gate valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with 0.25" (6.44mm) raised faces, in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6. The wedges are of the single wedge flexible type providing greater sealing capability and lower torque requirements. Operation is performed by a non-rising hand wheel; the closing direction is to the right. Upon request, gate valves are made with enclosed bevel gearing. For remote control, these valves can be equipped with electric or air motor operating units.

The wedges have accurate guide slots, assuring true alignment and providing full guidance during operation.

The seat rings are seal welded in the body and are made of carbon steel with hard faced seat surfaces. The seat faces on the wedges are made by welding on 13 CR Stainless Steel.

The gate valves are provided with a backseat bushing, in the bonnet, enabling the replacement of the stem packing when the valve is in the wide open position.



PRESSURE-TEMPERATURE RATINGS			
Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	1480	102,0
200	93	1350	93,1
300	149	1315	90,7
400	204	1270	87,6
500	260	1200	82,8
600	316	1095	75,5
650	343	1075	74,1
700	371	1065	73,4
750	399	1010	69,6
800	427	825	56,9

Asbestos free packing or flexible graphite as per request.

Valves nominal size 6" and larger are equipped with bearing type yoke nut to facilitate operation at higher pressures.

The gate valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

Cast on the gate valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, and material designation all in accordance with MSS SP-25.

TESTS

The gate valves are hydrostatically and pneumatically tested in accordance with Table No. 2, meeting the requirements of API 598.

NOTE: Other flange facings and finishes in accordance with ANSI B16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

TEST PRESSURES					
Hydrostatic				Pneumatic	
Shell		Seat		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)	(psig)	(bar-gage)
2250	153,4	1650	112,4	80	5,5

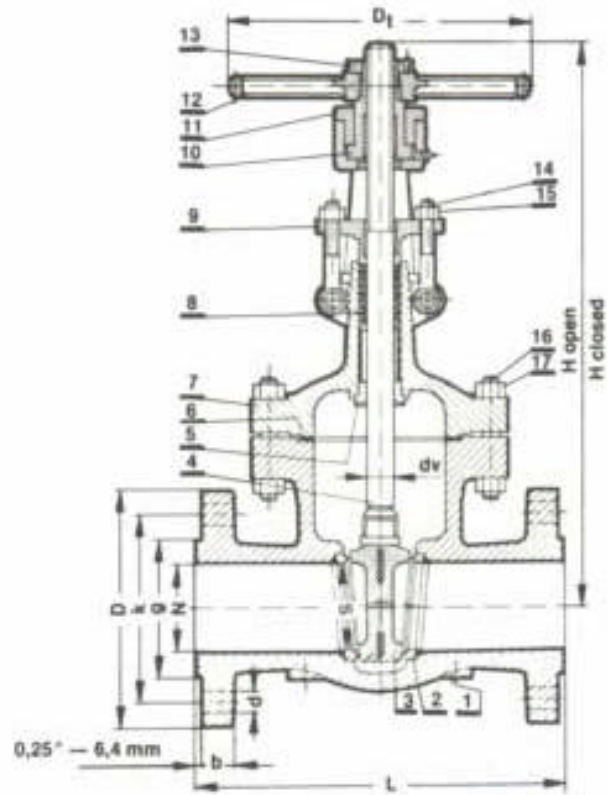


WITH UNIVERSAL TRIM

PARTS AND MATERIALS

Table 3

Key	Part	Material Specification
1	Body	ASTM A216 Gr. WCB
2	Seat Ring	ASTM A108 Gr. 1018-1020 w/Cr-Co-W Facing
3	Wedge	ASTM A216 Gr. WCB w/13Cr Facing
4	Stem	ASTM A582 Type 410
5	Backseat Bushing	ASTM A276 Type 410
6	Gasket	Spiral wound gasket asbestos free
7	Bonnet	ASTM A216 Gr. WCB
8	Packing	Asbestos - Free
9	Gland	ASTM A216 Gr. WCB
10	Yoke Nut	ASTM A439 Type D2
11	Yoke Nut Retaining Nut Yoke Cap 6" and larger	ASTM A536 Gr. 65-45-12 ASTM A216 Gr. WCB
12	Handwheel	ASTM A47 Gr. 32510
13	Handwheel Nut	ASTM A47 Gr. 32510
14	Gland Eyebolt	Steel, Mild Carbon
15	Gland Eyebolt Nut	ASTM A307 Gr. B
16	Body - Bonnet Stud Bolt	ASTM A193 Gr. B7
17	Body - Bonnet Stud Bolt Nut	ASTM A194 Gr. 2H



GENERAL DIMENSIONS

Table 4

Valve Size	Port		Line flange					Face to Face L (in.) (mm)	Height			Line flange bolts		Turns to open	Hand-wheel Dia. Dt (in.) (mm)	Weight Approx (lbs.) (kg)
	Dia.	Dia.	Dia.	Thick-ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.		Open	Closed	Stem Dia.	No.	Size			
	N (in.) (mm)	S (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)		H (in.) (mm)	H (in.) (mm)	dv (in.) (mm)		(in.) (mm)			
2	2.00 50,8	2.00 50,8	6.50 165,1	1.00 25,4	5.00 127,0	0.75 19,1	3.62 91,9	11.50 292,1	20.65 524,5	17.70 449,6	7/8 22,2	8	5/8 15,9	10.3	9.00 228,6	107 48,5
3	3.00 76,2	3.00 76,2	8.25 209,6	1.25 31,8	6.62 168,1	0.88 22,4	5.00 127,0	14.00 355,6	25.20 640,1	21.25 539,8	1 25,4	8	3/4 19,1	11.8	10.00 254,0	175 79,4
4	4.00 101,6	4.00 101,6	10.75 273,1	1.50 38,1	8.50 215,9	1.00 25,4	6.19 157,2	17.00 431,8	31.30 795,0	26.55 674,4	1 1/4 31,8	8	7/8 22,2	9.5	14.00 355,6	308 139,7
6	6.00 152,4	6.00 152,4	14.00 355,6	1.88 47,8	11.50 292,1	1.12 28,4	8.50 215,9	22.00 558,8	42.50 1079,5	35.80 909,3	1 1/2 38,1	12	1 25,4	13.4	18.00 457,2	740 335,7
8	7.87 199,9	8.00 203,2	16.50 419,1	2.19 55,6	13.75 349,3	1.25 31,8	10.62 269,7	26.00 660,4	50.80 1290,3	42.10 1069,3	1 3/4 44,5	12	1 1/8 28,6	17.4	20.00 508,0	1212 549,8

CLASS 150 GLOBE VALVES

FIG. 1532/1533

DESCRIPTION

Cast carbon steel globe valves 150 pound pressure class with bolted bonnet, outside screw and yoke, rising handwheel and seal welded seat ring manufactured in accordance with ANSI B16.34.

APPLICATION

These globe valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process installations, in operating conditions up to 800°F (427°C), according with Table No. 1. Data included in this table meet the pressure-temperature ratings of ANSI B16.34.

TECHNICAL DATA

The basic dimensions of the globe valves are in accordance with Table No. 4. Face to face dimensions of the globe valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with 0.062" (1.5 mm) raised faces, in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The seat faces on the discs are the spherical type. This type effects a tight seal with a minimum amount of pressure upon the disc. Operation is performed by a rising hand wheel; the closing direction is to the right. Upon request, globe valves are made with enclosed bevel gearing. For remote control, these valves can be equipped with electric or air motor operating units.

A long swivel nut coupled with small clearances between the swivel nut and the stem is utilized to guide the disc accurately to its seat.

The seat ring is seal welded to the body and is made of carbon steel with hard faced seat surfaces.

The globe valves are provided with a back-seat bushing in the bonnet, enabling the replacement of the stem packing when the valve is in the wide open position.



PRESSURE-TEMPERATURE RATINGS Table 1			
Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	285	19,6
200	93	260	17,9
300	149	230	15,9
400	204	200	13,8
500	260	170	11,7
600	316	140	9,6
650	343	125	8,6
700	371	110	7,6
750	399	95	6,6
800	427	80	5,5

Asbestos free packing or flexible graphite as per request.

The globe valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

Cast on the globe valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, material designation and an indication of the flow direction, all in accordance with MSS SP-25.

TESTS

The globe valves are hydrostatically and pneumatically tested in accordance with Table No. 2, meeting the requirements of ANSI B16.34 and MSS SP-61.

NOTE: Other flange facings and finishes in accordance with ANSI B16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

TEST PRESSURES Table 2					
Hydrostatic				Pneumatic	
Shell		Seat		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)	(psig)	(bar-gage)
450	31,0	325	21,7	80	5,5

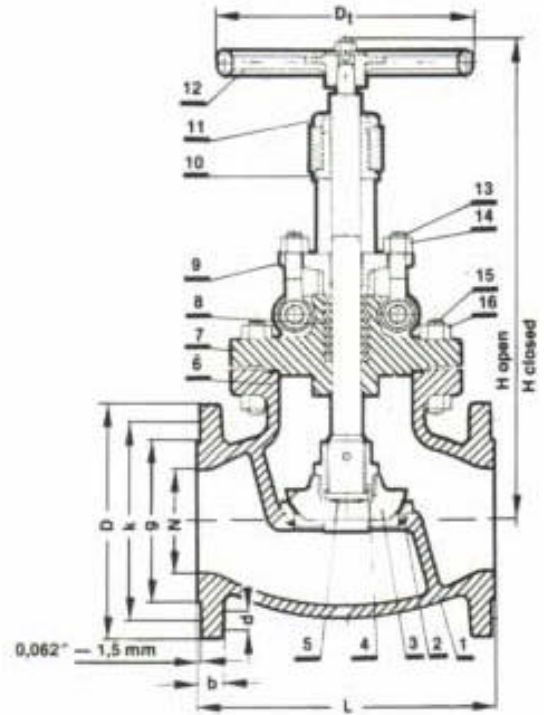


WITH UNIVERSAL TRIM

PARTS AND MATERIALS

Table 3

Key	Part	Material Specification
1	Body	ASTM A216 Gr. WCB
2	Seat Ring	ASTM A108 Gr. 1018-1020 w/Cr-Co-W Facing
3	Disc	ASTM A182 Gr. F6
4	Swivel Nut	ASTM A582 Type 416
5	Stem	ASTM A582 Type 410
6	Gasket	Soft Iron, Corrugated
7	Bonnet	ASTM A216 Gr. WCB
8	Packing	Asbestos – Free
9	Gland	ASTM A216 Gr. WCB
10	Yoke Nut	ASTM A439 Type D2
11	Yoke Nut lock nut	ASTM A47 Gr. 32510
12	Handwheel	ASTM A47 Gr. 32510
13	Gland Eyebolt	Steel, Mild Carbon
14	Gland Eyebolt Nut	ASTM A307 Gr. B
15	Body – Bonnet Stud Bolt	ASTM A193 Gr. B7
16	Body – Bonnet Stud Bolt Nut	ASTM A194 Gr. 2H



GENERAL DIMENSIONS

Table 4

Valve Size	Line flange						Face to Face L (in.) (mm)	Height		Stem Dia. dv (in.) (mm)	Line flange bolts		Turns to open	Hand-wheel Dia. Dt (in.) (mm)	Weight Approx (lbs.) (kg)
	Dia.	Dia.	Thick-ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.		Open	Closed		No.	Size			
	N (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)		H (in.) (mm)	H (in.) (mm)		(in.) (mm)	(in.) (mm)			
2	2.00 50,8	6.00 152,4	0.62 15,7	4.75 120,7	0.75 19,1	3.62 91,9	8.00 203,2	14.00 355,5	12.60 320,0	7/8 22,2	4	5/8 15,9	8.4	8.00 203,2	48 21,8
3	3.00 76,2	7.50 190,5	0.75 19,1	6.00 152,4	0.75 19,1	5.00 127,0	9.50 241,3	16.55 420,4	15.15 384,8	1 25,4	4	5/8 15,9	8.4	9.00 228,6	83 37,6
4	4.00 101,6	9.00 228,6	0.94 23,9	7.50 190,5	0.75 19,1	6.19 157,2	11.50 292,1	20.10 510,5	18.30 464,8	1 1/8 28,6	8	5/8 15,9	10.8	10.00 254,0	120 54,4
6	6.00 152,4	11.00 279,4	1.00 25,4	9.50 241,3	0.88 22,4	8.50 215,9	16.00 406,4	24.20 614,7	21.45 544,8	1 1/4 31,8	8	3/4 19,1	16.5	12.00 304,8	210 95,3

CLASS 300 GLOBE VALVES

FIG. 3032/3033

DESCRIPTION

Cast carbon steel globe valves 300 pound pressure class with bolted bonnet, outside screw and yoke, rising handwheel and seal welded seat ring manufactured in accordance with ANSI B16.34.

APPLICATION

These globe valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process installations, in operating conditions up to 800°F (427°C), in accordance with Table No. 1. Data included in this table meet the pressure-temperature ratings of ANSI B16.34.

TECHNICAL DATA

The basic dimensions of the globe valves are in accordance with Table No. 4. Face to face dimensions of the globe valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with .062" (1.5mm) raised faces, in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The seat faces on the discs are the spherical type. This type effects a tight seal with a minimum amount of pressure upon the disc. Operation is performed by a rising handwheel; the closing direction is to the right. Upon request, globe valves are made with enclosed bevel gearing. For remote control, these valves can be equipped with electric or air motor operating units.

A long swivel nut coupled with small clearances between the swivel nut and the stem is utilized to guide the disc accurately to its seat.

The seat ring is seal welded to the body and is made of carbon steel with hard faced seat surfaces.

The globe valves are provided with a back-seat bushing, enabling the replacement of the stem packing when the valve is in the wide open position.



PRESSURE-TEMPERATURE RATINGS			
Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	740	51,0
200	93	675	46,5
300	149	655	45,2
400	204	635	43,8
500	260	600	41,4
600	316	550	37,9
650	343	535	36,9
700	371	535	36,9
750	399	505	34,8
800	427	410	28,3

Asbestos free packing or flexible graphite as per request.

The globe valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

Cast on the globe valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, material designation and an indication of the flow direction, all in accordance with MSS SP-25.

TESTS

The globe valves are hydrostatically and pneumatically tested in accordance with Table No. 2, meeting the requirements of ANSI B16.34 and MSS SP-61.

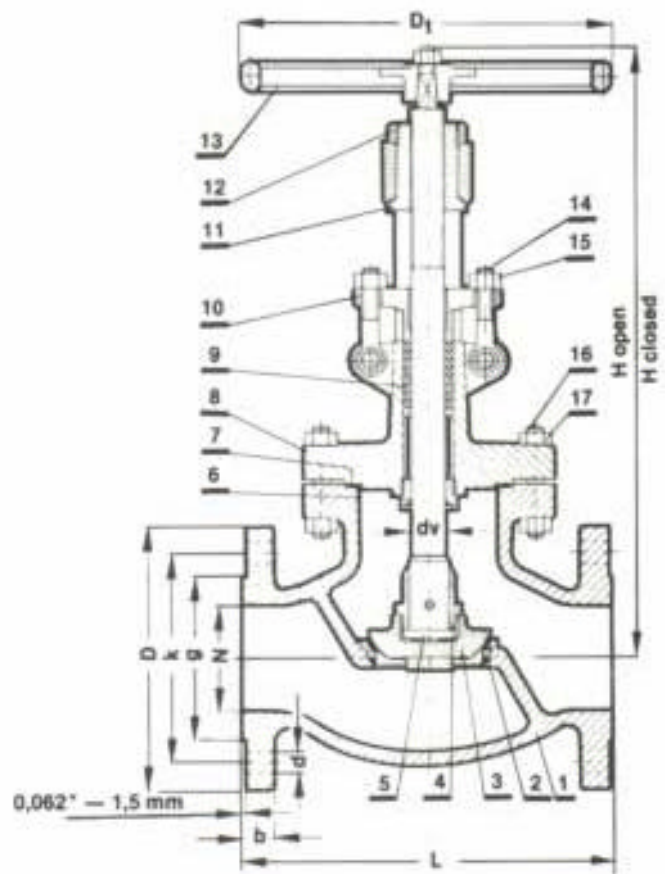
NOTE: Other flange facings and finishes in accordance with ANSI B16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

TEST PRESSURES					
Hydrostatic				Pneumatic	
Shell		Seat		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)	(psig)	(bar-gage)
1125	77,5	825	56,2	80	5,5



WITH UNIVERSAL TRIM

PARTS AND MATERIALS			Table 3
Key	Part	Material Specification	
1	Body	ASTM A216 Gr. WCB	
2	Seat Ring	ASTM A108 Gr. 1018-1020 w/Cr-Co-W Facing	
3	Disc	ASTM A182 Gr. F6	
4	Swivel Nut	ASTM A582 Type 416	
5	Stem	ASTM A582 Type 410	
6	Backseat Bushing	ASTM A276 Type 410	
7	Gasket	Soft Iron, Corrugated	
8	Bonnet	ASTM A216 Gr. WCB	
9	Packing	Asbestos - Free	
10	Gland	ASTM A216 Gr. WCB	
11	Yoke Nut	ASTM A439 Type D2	
12	Yoke Nut Lock Nut	ASTM A47 Gr. 32510	
13	Handwheel	ASTM A47 Gr. 32510	
14	Gland Eyebolt	Steel, Mild Carbon	
15	Gland Eyebolt Nut	ASTM A307 Gr. B	
16	Body-Bonnet Stud Bolt	ASTM A193 Gr. B7	
17	Body-Bonnet Stud Bolt Nut	ASTM A194 Gr. 2H	



GENERAL DIMENSIONS															Table 4
Valve Size	Line flange						Face to Face	Height			Line flange bolts		Turns to open	Hand-wheel Dia.	Weight Approx
	Dia.	Dia.	Thick-ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.		Open	Closed	Stem Dia.	No.	Size			
	N (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)	L (in.) (mm)	H (in.) (mm)	H (in.) (mm)	dv (in.) (mm)		(in.) (mm)	Dt (in.) (mm)	(lbs.) (kg)	
2	2.00 50,8	6.50 165,1	0.88 22,4	5.00 127,0	0.75 19,1	3.62 91,9	10.50 266,7	17.50 444,5	16.55 420,4	7/8 22,2	8	5/8 15,9	5.7	9.00 228,6	70 31,8
3	3.00 76,2	8.25 209,6	1.12 28,4	6.62 168,1	0.88 22,4	5.00 127,0	12.50 317,5	20.10 510,5	18.50 469,9	1 25,4	8	3/4 19,1	9.6	10.00 254,0	124 56,2
4	4.00 101,6	10.00 254,0	1.25 31,8	7.88 200,2	0.88 22,4	6.19 157,2	14.00 355,6	24.80 629,9	22.85 580,4	1 1/4 31,8	8	3/4 19,1	11.7	14.00 355,6	195 88,5
6	6.00 152,4	12.50 317,5	1.44 36,6	10.62 269,7	0.88 22,4	8.50 215,9	17.50 444,5	29.55 750,6	26.95 684,5	1 1/2 38,1	12	3/4 19,1	10.4	18.00 457,2	360 163,3

CLASS 600 GLOBE VALVES

FIG. 6032

DESCRIPTION

Cast carbon steel globe valves 600 pound pressure class with bolted bonnet, outside screw and yoke, rising handwheel and seal welded seat ring manufactured in accordance with ANSI B16.34.

APPLICATION

These globe valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process installations, in operating conditions up to 800°F (427°C), in accordance with Table No. 1. Data included in this table meet the pressure-temperature ratings of ANSI B16.34.

TECHNICAL DATA

The basic dimensions of the globe valves are in accordance with Table No. 4. Face to face dimensions of the globe valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with 0.25" (6.4 mm) raised faces, in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The seat faces on the discs are the spherical type. This type effects a tight seal with a minimum amount of pressure upon the disc. Operation is performed by a rising handwheel; the closing direction is to the right. Upon request, globe valves are made with enclosed bevel gearing. For remote control, these valves can be equipped with electric or air motor operating units.

A long swivel nut coupled with small clearances between the swivel nut and the stem is utilized to guide the disc accurately to its seat.

The seat ring is seal welded to the body and is made of carbon steel with hard faced seat surfaces.

The globe valves are provided with a back-seat bushing, enabling the replacement of the stem packing when the valve is in the wide open position.



Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	1480	102,0
200	93	1350	93,1
300	149	1315	90,7
400	204	1270	87,6
500	260	1200	82,8
600	316	1095	75,5
650	343	1075	74,1
700	371	1065	73,4
750	399	1010	69,6
800	427	825	56,9

Asbestos free packing or flexible graphite as per request.

The globe valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

Cast on the globe valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, material designation and an indication of the flow direction, all in accordance with MSS SP-25.

TESTS

The globe valves are hydrostatically and pneumatically tested in accordance with Table No. 2, meeting the requirements of ANSI B16.34 and MSS SP-61.

NOTE: Other flange facings and finishes in accordance with ANSI B16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

Hydrostatic				Pneumatic	
Shell		Seat		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)	(psig)	(bar-gage)
2250	153,4	1650	112,4	80	5,5

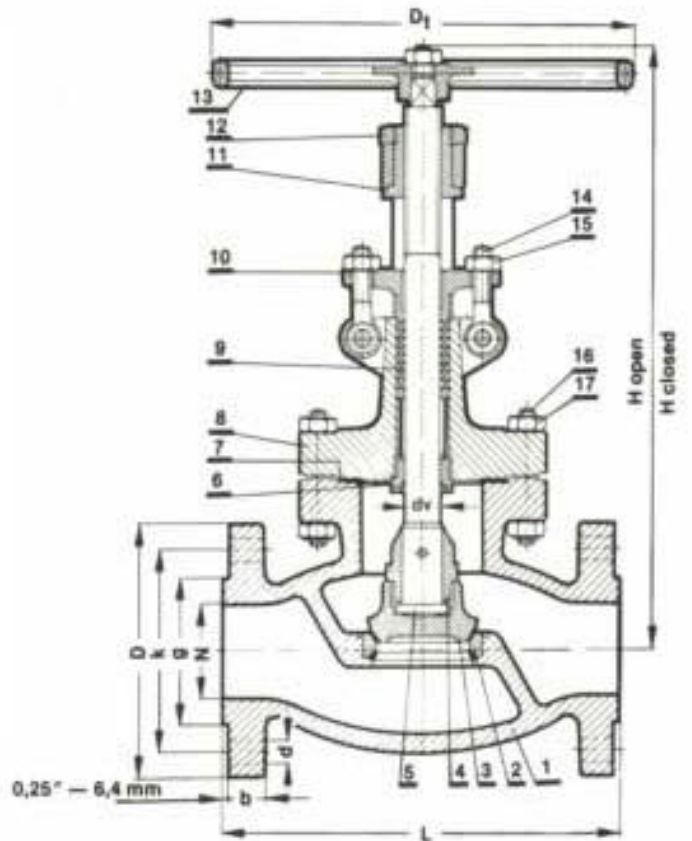


WITH UNIVERSAL TRIM

PARTS AND MATERIALS

Table 3

Key	Part	Material Specification
1	Body	ASTM A216 Gr. WCB
2	Seat Ring	ASTM A108 Gr. 1018-1020 w/Cr-Co-W Facing
3	Disc	ASTM A182 Gr. F6
4	Swivel Nut	ASTM A582 Type 416
5	Stem	ASTM A582 Type 410
6	Backseat Bushing	ASTM A276 Type 410
7	Gasket	Spiral Wound Asbestos Free
8	Bonnet	ASTM A216 Gr. WCB
9	Packing	Asbestos - Free
10	Gland Flange	ASTM A216 Gr. WCB
11	Yoke Nut	ASTM A439 Type D2
12	Yoke Nut Lock Nut	ASTM A47 Gr. 32510
13	Handwheel	ASTM A47 Gr. 32510
14	Gland Eyebolt	Steel, Mild Carbon
15	Gland Eyebolt Nut	ASTM A307 Gr. B
16	Body-Bonnet Stud Bolt	ASTM A193 Gr. B7
17	Body-Bonnet Stud Bolt Nut	ASTM A194 Gr. 2H



GENERAL DIMENSIONS

Table 4

Valve Size	Line flange						Face to Face L (in.) (mm)	Height		Stem Dia. dv (in.) (mm)	Line flange bolts		Turns to open	Hand-wheel Dia. Dt (in.) (mm)	Weight Approx. (lbs.) (kg)
	Dia.	Dia.	Thick-ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.		Open	Closed		No.	Size			
	N (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)		H (in.) (mm)	H (in.) (mm)		(in.) (mm)	(in.) (mm)			
2	2.00 50,8	6.50 165,1	1.00 25,4	5.00 127,0	0.75 19,1	3.62 91,9	11.50 292,1	19.70 500,4	18.30 464,8	1 25,4	8 15,9	5/8	8.4	10.00 254,0	98 44,5
3	3.00 76,2	8.25 209,6	1.25 31,8	6.62 168,1	0.88 22,4	5.00 127,0	14.00 355,6	23.25 590,6	21.65 549,9	1 1/4 31,8	8 19,1	3/4	9.6	14.00 355,6	176 79,8
4	4.00 101,6	10.75 273,1	1.50 38,1	8.50 215,9	1.00 25,4	6.19 157,2	17.00 431,8	27.35 694,7	25.40 645,2	1 1/2 38,1	8 22,2	7/8	7.8	18.00 457,2	295 133,8
6	6.00 152,4	14.00 355,6	1.88 47,8	11.50 292,1	1.12 28,4	8.50 215,9	22.00 558,8	34.45 875,0	31.70 805,2	1 7/8 47,6	12 25,4	1	9.6	24.00 609,6	575 260,8

FIG. 1572-C/1573-C



DESCRIPTION

Cast carbon steel swing check valves 150 pound pressure class manufactured in accordance with ANSI B16.34.

APPLICATION

These swing check valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process plants, in operating conditions up to 800°F (427°C), according to Table No. 1. Data included in this Table meet the pressure-temperature ratings of ANSI B16.34. They function equally well when installed in either horizontal or vertical lines to prevent backward flow. (In vertical lines, the flow direction must be upwards.)

TECHNICAL DATA

The basic dimensions of the swing check valves are in accordance with

Table No. 4. Face to face dimensions of the swing check valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with raised faces 0.062" (1.5mm), in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The seat face in the body and on the disc are made by welding on 13 chrome stainless steel to the basic material of the body and disc.

The swing check valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

PRESSURE-TEMPERATURE RATINGS			
Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	285	19,6
200	93	260	17,9
300	149	230	15,9
400	204	200	13,8
500	260	170	11,7
600	316	140	9,6
650	343	125	8,6
700	371	110	7,6
750	399	95	6,6
800	427	80	5,5

Cast on the swing check valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, material designation, and an indication of the flow direction, all in accordance with MSS SP-25.

TESTS

The swing check valves are hydrostatically tested in accordance with Table No. 2, meeting the requirements of ANSI B16.34 and MSS SP-61.

NOTE: Other flange facings and finishes in accordance with ANSI B16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

TEST PRESSURES			
Hydrostatic			
Shell		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)
450	31,0	325	21,7

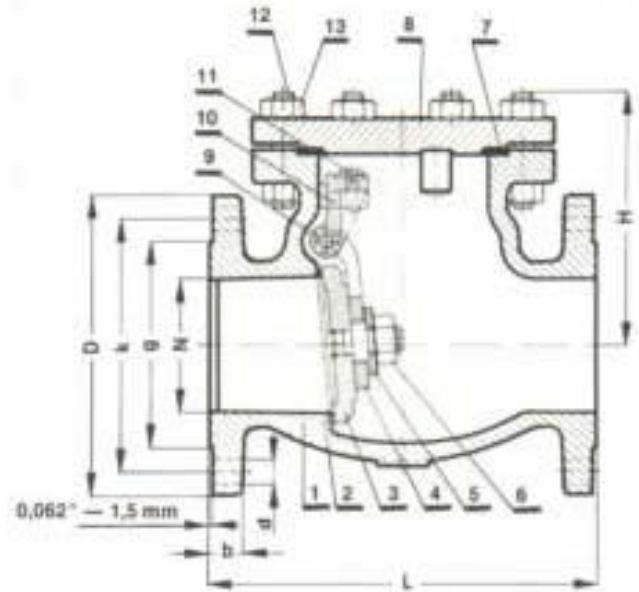


SWING CHECK VALVES

PARTS AND MATERIALS

Table 3

Key	Part	Material Specification
1	Body	ASTM A216 Gr. WCB
2	Seat	13 Cr Facing
3	Disc	ASTM A216 Gr. WCB w/13 Cr Facing
4	Strap	ASTM A217 Gr. CA 15
5	Disc Washer	ASTM A276 Type 420
6	Disc Nut	ASTM A194 Gr. 6
7	Gasket	Soft Iron, Corrugated
8	Cap	ASTM A515 Gr. 70
9	Hinge Pin	ASTM A276 Type 420
10	Strap Holder	ASTM A216 Gr. WCB
11	Cap Screw	ASTM A276 Type 316
12	Cap Stud Bolt	ASTM A193 Gr. B7
13	Cap Stud Bolt Nut	ASTM A194 Gr. 2H



GENERAL DIMENSIONS

Table 4

Valve Size	Line flange						Face to Face L (in.) (mm)	Height H (in.) (mm)	Line flange bolts		Weight Approx (lbs.) (kg)
	Dia.	Dia.	Thick- ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.			No.	Size	
	N (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)				(in.) (mm)	
2	2.00 50,8	6.00 152,4	0.62 15,7	4.75 120,7	0.75 19,1	3.62 91,9	8.00 203,2	5.75 146,1	4	5/8 15,9	38 17,2
3	3.00 76,2	7.50 190,5	0.75 19,1	6.00 152,4	0.75 19,1	5.00 127,0	9.50 241,3	6.55 166,4	4	5/8 15,9	63 28,6
4	4.00 101,6	9.00 228,6	0.94 23,9	7.50 190,5	0.75 19,1	6.19 157,2	11.50 292,1	7.55 191,8	8	5/8 15,9	92 41,7
6	6.00 152,4	11.00 279,4	1.00 25,4	9.50 241,3	0.88 22,4	8.50 215,9	14.00 355,6	9.55 242,6	8	3/4 19,1	162 73,5
8	8.00 203,2	13.50 342,9	1.12 28,4	11.75 298,5	0.88 22,4	10.62 269,7	19.50 495,3	11.40 289,6	8	3/4 19,1	304 137,9
10	10.00 254,0	16.00 406,4	1.19 30,2	14.25 361,9	1.00 25,4	12.75 323,9	24.50 622,3	13.45 341,6	12	7/8 22,2	440 199,6
12	12.00 304,8	19.00 482,6	1.25 31,8	17.00 431,8	1.00 25,4	15.00 381,0	27.50 698,5	15.35 389,9	12	7/8 22,2	640 290,3

FIG. 3072-C/3073-C



DESCRIPTION

Cast carbon steel swing check valves 300 pound pressure class manufactured in accordance with ANSI B16.34.

APPLICATION

These swing check valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process plants, in operating conditions up to 800°F (427°C), according to Table No. 1. Data included in this table meet the pressure-temperature ratings of ANSI B16.34. They function equally well when installed in either horizontal or vertical lines to prevent backward flow. (In vertical lines, the flow direction must be upwards.)

TECHNICAL DATA

The basic dimensions of the swing check valves are in accordance with

Table No. 4. Face to face dimensions of the swing check valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with raised faces 0.062" (1.5mm) in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The seat face in the body and on the disc are made by welding on 13 chrome stainless steel to the basic material of the body and disc.

The swing check valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

PRESSURE-TEMPERATURE RATINGS Table 1			
Temperature		Working Pressure	
(°F)	(°C)	(psi)	(bar)
100	38	740	51,0
200	93	675	46,5
300	149	655	45,2
400	204	635	43,8
500	260	600	41,4
600	316	550	37,9
650	343	535	36,9
700	371	535	36,9
750	399	505	34,8
800	427	410	28,3

Cast on the swing check valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, material designation and an indication of the flow direction, all in accordance with MSS SP-25.

TESTS

The swing check valves are hydrostatically tested in accordance with Table No. 2, meeting the requirements of ANSI B16.34 and MSS SP-61.

NOTE: Other flange facings and finishes in accordance with ANSI B16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B 16.25, unless otherwise specified.

TEST PRESSURES Table 2			
Hydrostatic			
Shell		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)
1125	77,5	825	56,2

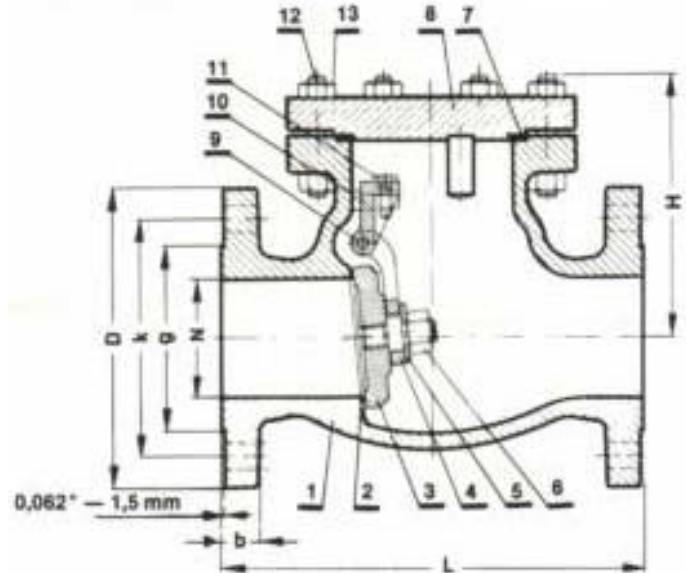


SWING CHECK VALVES

PARTS AND MATERIALS

Table 3

Key	Part	Material Specification
1	Body	ASTM A216 Gr. WCB
2	Seat	13 Cr Facing
3	Disc	ASTM A216 Gr. WCB w/13 Cr Facing
4	Strap	ASTM A217 Gr. CA 15
5	Disc Washer	ASTM A276 Type 420
6	Disc Nut	ASTM A194 Gr. 6
7	Gasket	Soft Iron, Corrugated
8	Cap	ASTM A515 Gr. 70
9	Hinge Pin	ASTM A276 Type 420
10	Strap Holder	ASTM A216 Gr. WCB
11	Cap Screw	ASTM A276 Type 316
12	Cap Stud Bolt	ASTM A193 Gr. B7
13	Cap Stud Bolt Nut	ASTM A194 Gr. 2H



GENERAL DIMENSIONS

Table 4

Valve Size	Line flange						Face to Face L (in.) (mm)	Height H (in.) (mm)	Line flange bolts		Weight Approx. (lbs.) (kg)
	Dia.	Dia.	Thick- ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.			No.	Size	
	N (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)				(in.) (mm)	
2	2.00 50,8	6.50 165,1	0.88 22,4	5.00 127,0	0.75 19,1	3.62 91,9	10.50 266,7	6.20 157,5	8	5/8 15,9	53 24,0
3	3.00 76,2	8.25 209,6	1.12 28,4	6.62 168,1	0.88 22,4	5.00 127,0	12.50 317,5	7.50 190,5	8	3/4 19,1	96 43,5
4	4.00 101,6	10.00 254,0	1.25 31,8	7.88 200,2	0.88 22,4	6.19 157,2	14.00 355,6	8.75 222,3	8	3/4 19,1	137 62,1
6	6.00 152,4	12.50 317,5	1.44 36,6	10.62 269,7	0.88 22,4	8.50 215,9	17.50 444,5	11.40 289,6	12	3/4 19,1	268 121,6
8	8.00 203,2	15.00 381,0	1.62 41,1	13.00 330,2	1.00 25,4	10.62 269,7	21.00 533,4	13.20 335,3	12	7/8 22,2	467 211,8
10	10.00 254,0	17.50 444,5	1.88 47,8	15.25 387,4	1.12 28,4	12.75 323,9	24.50 622,3	14.75 374,7	16	1 25,4	680 308,4

FIG. 6072-C



DESCRIPTION

Cast carbon steel swing check valves 600 pound pressure class manufactured in accordance with ANSI B16.34.

APPLICATION

These swing check valves are used in pipelines and in facilities for water, steam, non-aggressive gases, naphtha, naphtha derivatives and in other power and process plants, in operating conditions up to 800°F (427°C), according to Table No. 1. Data included in this table meet the pressure-temperature ratings of ANSI B16.34. They function equally well when installed in either horizontal or vertical lines to prevent backward flow. (In vertical lines, the flow direction must be upwards.)

TECHNICAL DATA

The basic dimensions of the swing check valves are in accordance with

Table No. 4. Face to face dimensions of the swing check valves are in accordance with ANSI B16.10. The pipe flanges are regularly furnished faced and drilled with raised faces 0.25" (6.4 mm) in accordance with ANSI B16.5 (See Note). The raised faces of the pipe flanges are machined in accordance with MSS SP-6.

The seat face in the body and on the disc are made by welding on 13 chrome stainless steel to the basic material of the body and disc.

The swing check valves are delivered protected against corrosion. The raised faces on the pipe flanges are protected against damage during shipment.

PRESSURE-TEMPERATURE RATINGS Table 1			
Temperature		Working Pressure	
(° F)	(° C)	(psi)	(bar)
100	38	1480	102,0
200	93	1350	93,1
300	149	1315	90,7
400	204	1270	87,6
500	260	1200	82,8
600	316	1095	75,5
650	343	1075	74,1
700	371	1065	73,4
750	399	1010	69,6
800	427	825	56,9

Cast on the swing check valve bodies are the Lunkenheimer Trade Mark, nominal pressure class, nominal size, material designation and an indication of the flow direction, all in accordance with MSS SP-25.

TESTS

The swing check valves are hydrostatically tested in accordance with Table No. 2, meeting the requirements of ANSI B16.34 and MSS SP-61.

NOTE:

Other flange facings and finishes in accordance with ANSI B 16.5 are available on request. Butt weld ends will be furnished in accordance with ANSI B16.25, unless otherwise specified.

TEST PRESSURES Table 2			
Hydrostatic			
Shell		Seat	
(psig)	(bar-gage)	(psig)	(bar-gage)
2250	153,4	1650	112,4

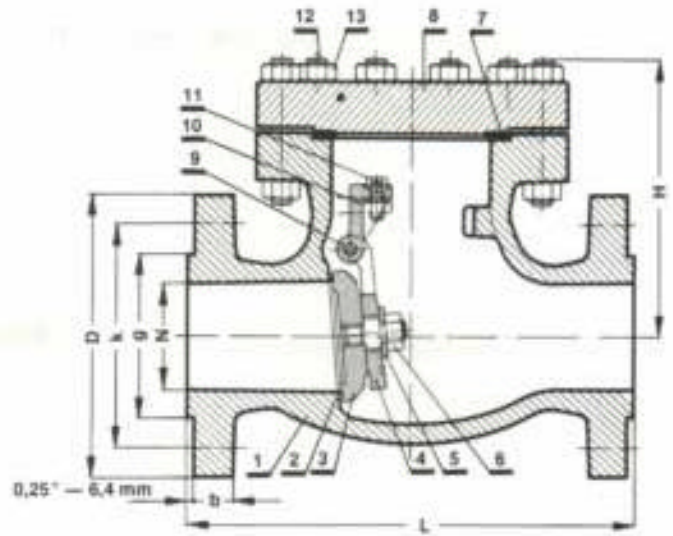


SWING CHECK VALVES

PARTS AND MATERIALS

Table 3

Key	Part	Material Specification
1	Body	ASTM A216 Gr. WCB
2	Seat	13 Cr Facing
3	Disc	ASTM A216 Gr. WCB w/13 Cr Facing
4	Strap	ASTM A217 Gr. CA 15
5	Disc Washer	ASTM A276 Type 420
6	Disc Nut	ASTM A194 Gr. 6
7	Gasket	Spiral Wound Asbestos Free
8	Cap	ASTM A515 Gr. 70
9	Hinge Pin	ASTM A276 Type 420
10	Strap Holder	ASTM A216 Gr. WCB
11	Cap Screw	ASTM A276 Type 316
12	Cap Stud Bolt	ASTM A193 Gr. B7
13	Cap Stud Bolt Nut	ASTM A194 Gr. 2H



General Dimensions

Table 4

Valve Size	Line flange						Face to Face L (in.) (mm)	Height H (in.) (mm)	Line flange bolts		Weight Approx. (lbs.) (kg)
	Dia.	Dia.	Thick-ness min.	Bolt Circle Dia.	Hole Dia.	Raised Face Dia.			No.	Size	
	N (in.) (mm)	D (in.) (mm)	b (in.) (mm)	k (in.) (mm)	d (in.) (mm)	g (in.) (mm)				(in.) (mm)	
2	2.00 50,8	6.50 165,1	1.00 25,4	5.00 127,0	0.75 19,1	3.62 91,9	11.50 292,1	7.70 195,6	8	5/8 15,9	78 35,4
3	3.00 76,2	8.25 209,6	1.25 31,8	6.62 168,1	0.88 22,4	5.00 127,0	14.00 355,6	9.25 235,0	8	3/4 19,1	145 65,8
4	4.00 101,6	10.75 273,1	1.50 38,1	8.50 215,9	1.00 25,4	6.19 157,2	17.00 431,8	10.65 270,5	8	7/8 22,2	250 113,4
6	6.00 152,4	14.00 355,6	1.88 47,8	11.50 292,1	1.12 28,4	8.50 215,9	22.00 558,8	14.15 359,4	12	1 25,4	581 263,5

PRESSURE-TEMPERATURE RATINGS

Pressure Class		150	300	600
Hydrostatic		450	1125	2250
Shell Test Pressure (PSIG)		325	825	1650
Seat Test Pressure (PSIG)				
Working Temp (Deg F)	Material ASTM Specification Alloy Grade Designation	Maximum Non-Shock ¹¹ Working Pressure (PSIG) Standard Class Valves		
- 20 to 100	WCB	285	740	1480
	WC6	290	750	1500
	WC9	290	750	1500
	C5	290	750	1500
	LCB	265	695	1390
200	CF8M	275	720	1440
	WCB	260	665	1350
	WC6	260	710	1425
	WC9	260	715	1430
	C5	260	750	1500
300	LCB	250	655	1315
	CF8M	240	620	1240
	WCB	230	655	1315
	WC6	230	675	1345
	WC9	230	675	1355
400	C5	230	730	1455
	LCB	230	640	1275
	CF8M	215	560	1120
	WCB	200	635	1270
	WC6	200	660	1315
500	WC9	200	650	1295
	C5	200	705	1410
	LCB	200	620	1235
	CF8M	195	515	1030
	WCB	170	600	1200
600	WC6	170	640	1285
	WC9	170	640	1280
	C5	170	665	1330
	LCB	170	585	1165
	CF8M	170	480	955
650	WCB	140	550	1095
	WC6	140	605	1210
	WC9	140	605	1210
	C5	140	805	1210
	LCB	140	535	1065
700	CF8M	140	450	905
	WCB	125	535	1075
	WC6	125	590	1175
	WC9	125	590	1175
	C5	125	590	1175
750	LCB	125	525	1045
	CF8M	125	445	890
	WCB	110	535	1065
	WC6	110	570	1135
	WC9	110	570	1135
800	C5	110	570	1135
	LCB	110	570	1135
	CF8M	110	430	865
	WCB	95	505	1010
	WC6	95	530	1065
850	WC9	95	530	1065
	C5	95	530	1065
	LCB	95	530	1065
	CF8M	95	425	845
	WCB	80	410	825
900	WC6	80	510	1015
	WC9	80	510	1015
	C5	80	500	995
	LCB	80	415	830
	CF8M	80	415	830
950	WCB ^{3,9}	65	270	535
	WC6	65	485	975
	WC9	65	485	975
	C5	65	440	880
1000	WCB ^{3,9}	50	170	345
	WC6	50	450	900
	WC9	50	450	900
	C5	50	355	705
1000	WCB ^{3,9}	35	105	205
	WC6	35	380	755
	WC9	35	380	755
	C5	35	260	520
1000	WCB ^{3,9}	20	50	105
	WC6	20	225	445
	WC9	20	270	535
	C5	20	190	385

¹ Pressures and temperatures listed are the maximum temperatures and pressures of the contained fluid. The pressures and temperatures listed are based on the shell material only; consideration must also be given to the bolting, trim, gasket, and packaging material. For the pressure-temperature ratings for materials not given in the rating table, and for ratings for special class valves (available on special order), see ANSI B16.34-1981.

² A valve used under the jurisdiction of the ASME Boiler and Pressure Vessel Code, the ANSI Code for Pressure Piping, or Governmental Regulations, is subject to any limitation of that code or regulation. This includes any maximum temperature limitation for a material, or rule governing the use of a material at a low temperature.

³ Materials shall not be used beyond the maximum temperature shown in the rating table.

⁴ Extracted from ANSI B16.34-1981 "Steel Valves" with permission of the publisher, The American Society of Mechanical Engineers, United Engineering Center, 345 East 4th Street, N.Y., N.Y. 10017.

⁵ Consideration should be given to the possibility of graphitization in carbon steel above approximately 800°F. Permissible, but not recommended by ANSI B16.34 for prolonged use above 800°F.

⁶ Lunkenheimer recommends WCB for use to 775°F only.

⁷ Lunkenheimer recommends WC6 for use to 1000°F only.

⁸ Consideration should be given to the possibility of excessive oxidation (scaling) above approximately 1050°F.

⁹ Lunkenheimer recommends WC9 for use to 1050°F only.

¹⁰ Consideration should be given to the possibility of excessive oxidation (scaling) above 1100°F.

¹¹ See page 23 for information on over pressurization caused by shock loading.

* For welded end valves only, ANSI B16.34 flanged end ratings terminate at 1000° F.



GENERAL SPECIFICATIONS

Pressure Rating Designations

The pressure rating designation of Lunkenheimer valves follows the accepted practice of the valve and fittings industry. Steel valves are designated by a pressure rating class number (usually referred to as "Class"). The class number is cast or forged on the valve body. The class number, the non-shock pressure rating at 100°F (designated as "CWP" or "Cold Working Pressure"), and the pressure rating at the maximum allowable temperature for the valve (taking into consideration not only shell material but also trim, gasket, and packing materials) is given on the specification plate for cast steel valves. Intermediate pressure-temperature ratings are given by the latest edition of ANSI B16.34 as limited by any governing codes.

The particular rating for a valve, whether given by a published standard such as ANSI B16.34 for steel valves or by a manufacturer's rating table or graph such as bronze and iron valves, is based on its design and the allowable stresses of its materials at specific temperatures.

When installing valves where shock may be present, allowance should be made for possible over-pressure. Shock may be produced by the sudden arresting of flow in a liquid line, such as would take place when a valve is closed too rapidly (classical water hammer). Shock may also be caused by a slug of liquid in a vapor line being accelerated by the vapor and striking an obstruction in the line, such as a partially closed valve (also sometimes referred to as "water hammer"). When superimposed upon the static pressure already present, this over-pressure may produce a total load great enough to cause damage to pipe, valves, or fittings. If necessary, select valves having a higher rating.

Selection of Pressure Class

The allowable stress for steel decreases as temperature increases.

Therefore, the maximum pressure at which a valve can be used is dependent upon the service temperature. The Pressure-Temperature Rating Table on page 22 lists the maximum allowable non-shock pressure at each temperature for each shell material or each pressure class. Enter the table for the service temperature on the line for shell material and read across to the permissible service pressure for each valve pressure class.


Material Designation

Carbon steel valves have the word "steel" and/or the ASTM material designation cast on the valve body. Alloy steel valves have the ASTM material designation cast on the valve body. Pressure containing parts are stamped with the number of the heat from which they are cast. The specification plate shows the shell material (body, bonnet, and disc), and the trim material (stem, disc facing, and seat facing). This material marking for steel valves conforms with the applicable requirements of MSS-SP-25 and ANSI B16.34.

ASTM A216 Grade WCB

Lunkenheimer ASTM 216 Grade WCB cast carbon steel is suitable for use on many relatively non-corrosive fluids, at temperatures below approximately 800°F, including saturated and super-heated steam; cold or hot water; cold or hot air; and cold or hot non-corrosive oil, gas and other fluids. The 0.30 percent maximum carbon content assures good welding properties. Consideration should be given to the possibility of graphitization above approximately 800°F. It is permissible, but not recommended, by ANSI B16.34 for prolonged usage above approximately 800°F. Lunkenheimer recommends WCB steel for usage to 775°F, and limits usage to 800°F because of graphitization.

Manufacturer and Product Identification

The name "LUNKENHEIMER" or the Trade Mark "  " (Symbol of "Lunkenheimer Quality") is cast on valves which are large enough. The Lunkenheimer name or trademark also appear on a specification plate attached to most products. The size is cast or stamped directly on the valve, and/or stamped on the specification plate. The figure number is stamped on the specification plate.

Inspection and Test

Lunkenheimer products have been synonymous with quality for more than a century. To produce the finest valves in the world, the most modern methods of quality control are used throughout all manufacturing processes – from the acceptance of raw materials to final assembly and testing.

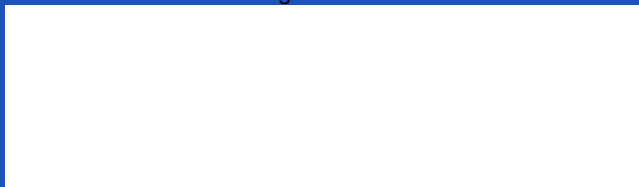
Raw materials are analyzed, tested, and inspected before acceptance for conformity to specifications. Furnace atmospheres, pouring temperatures, sand analysis and all other factors are accurately controlled and continuously checked under the supervision of trained metallurgists. Every casting is inspected for defects.

Uniformity and close tolerances are maintained at the machining level by continuous inspection and gauging of component parts.

Lunkenheimer valves are tested hydrostatically or pneumatically in conformance with the code requirements. Lunkenheimer valves are given a seat test and a shell test well above the rated operating pressures. In the case of Gate Valves, both sides of the valve receive the seat test.

Standard cast steel valves are hydrostatically tested in accordance with ANSI B16.34, MSS-SP-61 and the shell, backseat, and optional hydrostatic high pressure closure test portions of API-598, using the test pressures specified in ANSI B16.34.

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