

Gate, Globe & Check Valve
Forged Steel, Bolted / Welded Bonnet
Socket weld ends



Type GTF



Type GLF



Type PCF

1/2" - 2" (15-50)

Class 800, 1500, 2500, 4500

Design Accordance with API 602 & ASME B 16.34

Applications

- General Industry, power stations, process engineering
- For water, steam, gas, oil and other non-aggressive media
- Further applications on request

Operating data

- Pressure range upto 776 Bar / 11250 PSI
- Temperature range up to +593°C/1100°F
- Minimum temperature 0°C (less than 0°C on request)
- Pressure temperature rating as per ASME B 16.34, Standard class

Materials

- ASTM A 105 from 0°C to 425°C
- ASTM A 182 316L from 0°C to 450°C
- ASTM A 182 F22 from 0°C to 593°C
- ASTM A 182 F91 from 0°C to 593°C

Design

- As per API 602 # 800 & # 1500 Valves
- As per ASME B 16.34 # 2500 & # 4500 Valves
- Bolted Bonnet Construction for # 800 Valves
- Welded Bonnet Construction for # 1500, # 2500 & # 4500 Valves
- Hard faced Seats (13% Cr / Stellite)
- Encapsulated gasket for #800 Valves
- The Valves meet the safety requirement of the Pressure Equipment Directive 97/23/EC(PED) of annex I for fluids of the groups 1 and 2.

Variants on request

- Locking arrangement
- Flanged Ends to # 150/300/600
- Threaded / Butt Weld connections
- Position indicator

Remarks :

(Type Series Booklet References)

SICCA 900-3600 GTC	: 7241.2/06-16
SICCA 900-2500 GLC	: 7242.2/06-16
SICCA 900-3600 SCC	: 7243.2/06-16
SICCA 150-600 GTC	: 7244.2/06-16
SICCA 150-600 GLC	: 7245.2/06-16
SICCA 150-600 SCC	: 7246.2/06-16
Operating instructions no.	: 0500.80/07 - 18 G3

On all enquiries / orders please specify :

- | | |
|--------------------------|--------------------------------------|
| 1. Type | 8. Material of construction |
| 2. ASME pressure class | 9. Flow medium |
| 3. Size | 10. Flow rate Min. / Max. |
| 4. Design pressure | 11. Type of end connection |
| 5. Operating pressure | 12. Variants |
| 6. Operating temperature | 13. Type Series Booklet no. |
| 7. Differential pressure | 14. Valve data sheet (if applicable) |

When ordering spares, Indicate Serial number of Valve.

Pressure Temperature Chart

MATERIAL : A 105 Standard Class
NOTE : Permissible, but not recommended for prolonged usage above about 800°F

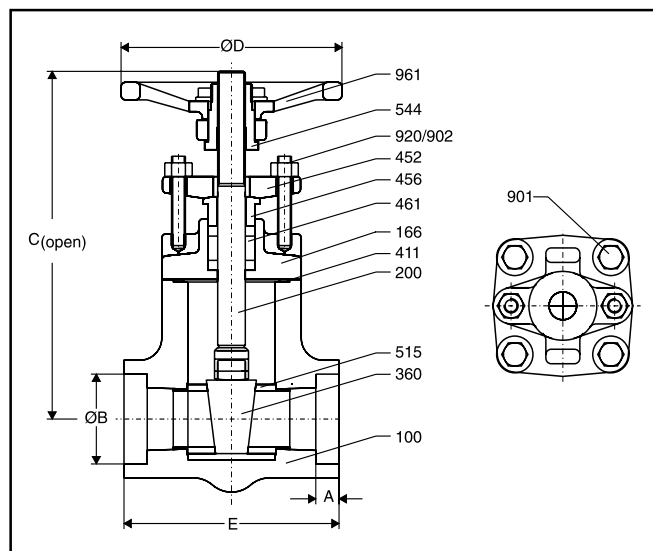
Temperature		Pressure class													
		# 150		# 300		# 600		# 800*		# 1500		# 2500		# 4500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	285	20.0	740	52.0	1480	104.1	1975	138.9	3705	260.5	6170	433.8	11108.4	781.0
200	93.3	260	18.3	680	47.8	1360	95.6	1810	127.3	3395	238.7	5655	397.6	10138.1	712.8
300	148.9	230	16.2	655	46.1	1310	92.1	1745	122.7	3270	229.9	5450	383.2	9806.0	689.4
400	204.4	200	14.1	635	44.6	1265	88.9	1690	118.8	3170	222.9	5280	371.2	9529.0	670.0
500	260.0	170	12.0	605	42.5	1205	84.7	1610	113.2	3015	212.0	5025	353.3	9124.3	641.5
600	315.6	140	9.8	570	40.1	1135	79.8	1515	106.5	2840	199.7	4730	332.6	8422.3	592.1
650	343.3	125	8.8	550	38.7	1100	77.3	1465	103.0	2745	193.0	4575	321.7	8172.9	574.6
700	371.1	110	7.7	530	37.3	1060	74.5	1415	99.5	2665	187.4	4425	311.1	7911.8	556.3
750	398.9	95	6.7	505	35.5	1015	71.4	1350	94.9	2535	178.2	4230	297.4	7553.6	531.1
800	426.7	80	5.6	410	28.8	825	58.0	1100	77.3	2055	144.5	3430	241.2	6258.4	440.0
850	454.4	65	4.6	320	22.5	640	45.0	850	59.8	1595	112.1	2655	186.7	5005.3	351.9
900	482.2	50	3.5	230	16.2	460	32.3	615	43.2	1150	80.9	1915	134.6	3792.7	266.7
950	510.0	35	2.5	135	9.5	275	19.3	365	25.7	685	48.2	1145	80.5	2557.0	179.8
1000	537.8	20	1.4	85	6.0	170	12.0	225	15.8	430	30.2	715	50.3	1285.0	90.3

MATERIAL : A 182 F22 Standard Class
NOTE : Use normalised and tempered material only

Temperature		Pressure class													
		# 150		# 300		# 600		# 800*		# 1500		# 2500		# 4500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	290	20.4	750	52.7	1500	105.5	2000	140.6	3750	263.7	6250	439.4	11250.6	791.0
200	93.3	260	18.3	750	52.7	1500	105.5	2000	140.6	3750	263.7	6250	439.4	11211.4	788.2
300	148.9	230	16.2	730	51.3	1455	102.3	1940	136.4	3640	255.9	6070	426.8	10918.4	767.6
400	204.4	200	14.1	705	49.6	1410	99.1	1880	132.2	3530	248.2	5880	413.4	10584.9	744.2
500	260.0	170	12.0	665	46.8	1330	93.5	1775	124.8	3325	233.8	5540	389.5	10077.2	708.5
600	315.6	140	9.8	605	42.5	1210	85.1	1615	113.5	3025	212.7	5040	354.3	8986.5	631.8
650	343.3	125	8.8	590	41.5	1175	82.6	1570	110.4	2940	206.7	4905	344.9	8750.1	615.2
700	371.1	110	7.7	570	40.1	1135	79.8	1515	106.5	2840	199.7	4730	332.6	8438.3	593.3
750	398.9	95	6.7	530	37.3	1065	74.9	1420	99.8	2660	187.0	4430	311.5	7955.3	559.3
800	426.7	80	5.6	510	35.9	1015	71.4	1355	95.3	2540	178.6	4230	297.4	7610.1	535.0
850	454.4	65	4.6	485	34.1	975	68.5	1300	91.4	2435	171.2	4060	285.4	7353.4	517.0
900	482.2	50	3.5	450	31.6	900	63.3	1200	84.4	2245	157.8	3745	263.3	6886.4	484.2
950	510.0	35	2.5	385	27.1	755	53.1	1025	72.1	1930	135.7	3220	226.4	6135.1	431.3
1000	537.8	20	1.4	265	18.6	535	37.6	710	49.9	1335	93.9	2230	156.8	4011.7	282.1
1050	565.6	20	1.4	175	12.3	350	24.6	465	32.7	875	61.5	1455	102.3	2290.1	161.0
1100	593.3	20	1.4	110	7.7	220	15.5	295	20.7	550	38.7	915	64.3	1498.2	105.3
1150	621.1	20	1.4	70	4.9	135	9.5	180	12.7	345	24.3	570	40.1	-	-
1200	648.9	15	1.1	40	2.8	80	5.6	110	7.7	205	14.4	345	24.3	-	-

* Pressure/Temperature Class Values as per API 602

800 GATE VALVE



A. DESIGN / TEST SPECIFICATION

TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	212	2975	WATER
BACK SEAT	155	2175	
SEAT LEAK	4 TO 7	58 TO 100	AIR
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN & PR. TEMP. RATING			API 602
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

SS316L - SHELL : 169 Kg/cm² / 2400 PSI
BACK SEAT : 125 Kg/cm² / 1775 PSI

B. DIMENSIONS

SIZE		E		ØB		C (open)		ØD		A	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	2.9	73	0.9	21.8	5.0	140	3.7	96	0.4	9.5
3/4	20	3.2	82	1.1	27.2	5.4	155	3.7	96	0.5	12.5
1	25	3.5	90	1.3	33.9	5.9	170	4.1	103	0.5	12.5
1½	40	5.0	127	1.9	48.8	8.1	240	5.0	127	0.5	12.5
2	50	5.8	148	2.4	61.2	9.5	285	5.8	150	0.6	16.0

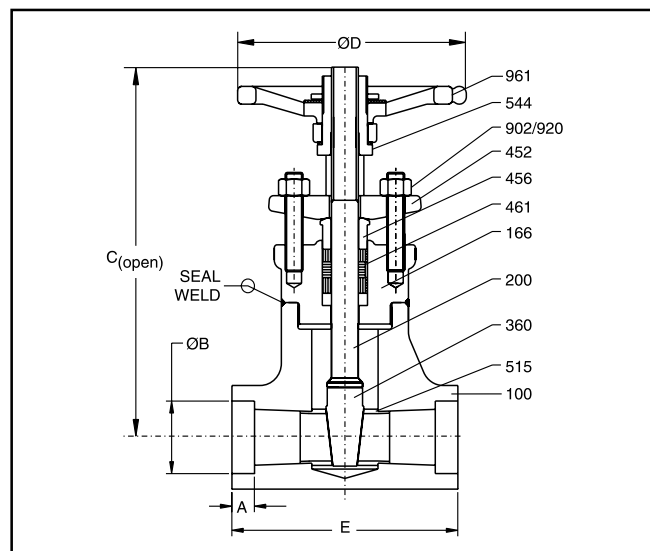
C. MATERIAL

PART NO.	PART NAME	MATERIALS AS PER ASTM		MOC LF2
100	BODY	A 105	A 182-F316L	LF2
166	BONNET	A 105	A 182-F316L	LF2
200	STEM	A 479-410-2	A 276-316L	A 276-304
360	WEDGE	A 217-CA15 / A 217-CA15+ST6 ¹⁾	A 351-CF3M	A 351-CF8
411	GASKET	SS304 + GRPH	SS 316 + GRPH	SS304 + GRPH
452	GLAND FLANGE	A 105	A 182-F316L	A 105
456	GLAND BUSH	A 276-410	A 276-316L	A 276-304
461	GLAND PACKING	GRAPHITE	GRAPHITE	GRAPHITE
515	SEAT RING	A 276-410(H) ²⁾ / A 276-410+ST6	A 276-316L	A 276-304+ST6
544	STEM NUT	A 582-416	A 582-416	A 582-416
901	HEX BOLT	A 193-B7	A 193-B8M	A 193-B8M
902	STUD	A 193-B6	A 193-B8M	A 193-B8M
920	HEX NUT	A 194-2H	A 194-B8	A 194-B8
961	HAND WHEEL	CARBON STEEL		

1) A 217-CA15+ST6 for trim 5 only

2) A 276-410(H) for trim 1 only

1500 GATE VALVE



A. DESIGN / TEST SPECIFICATION

TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	396	5625	WATER
BACK SEAT	291	4125	
SEAT LEAK	4 TO 7	58 TO 100	AIR
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN			API 602
PRESSURE TEMPERATURE RATINGS			ASME B16.34
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

B. DIMENSIONS

SIZE		E		ØB		C (open)		ØD		A	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	2.9	73	0.9	21.8	6.1	170	3.7	96	0.4	9.5
3/4	20	3.7	94	1.1	27.2	6.5	190	3.7	96	0.5	12.5
1	25	4.8	122	1.3	33.9	7.5	210	5.0	127	0.5	12.5
1½	40	6.3	160	1.9	48.8	10.1	290	5.8	150	0.5	12.5
2	50	7.0	178	2.4	61.2	10.7	315	5.8	150	0.6	16.0

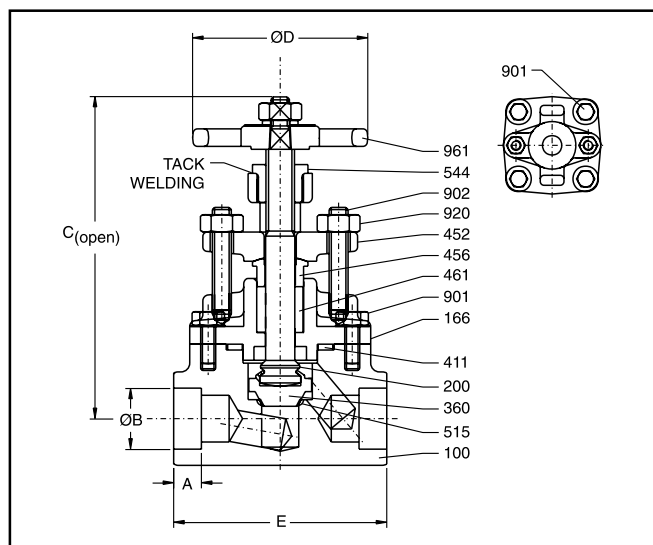
C. MATERIAL

PART NO.	PART NAME	MATERIALS AS PER ASTM		MOC LF2
100	BODY	A 105	A 182-22	LF2
166	BONNET	A 105	A 182-22	LF2
200	STEM	A 479-410-2	A 479-410-2	A 276-304
360	WEDGE	A 217-CA15 / A 217-CA15+ST6 ¹⁾	A 217-CA15 / A 217-CA15+ST6 ¹⁾	A 351-CF8
452	GLAND FLANGE	A 105	A 105	A 105
456	GLAND BUSH	A 276-410	A 276-316L	A 276-304
461	GLAND PACKING	GRAPHITE	GRAPHITE	GRAPHITE
515	SEAT RING	A 276-410(H) ²⁾ / A 276-410+ST6	A 276-410+ST6	A 276-304+ST6
544	STEM NUT	A 582-416	A 582-416	A 582-416
902	STUD	A 193-B8M Cl. 2	A 193-B8M Cl. 2	A 193-B8M
920	HEX NUT	A 194-2H	A 194-2H	A 194-B8
961	HAND WHEEL	CARBON STEEL		

1) A 217-CA15+ST6 for trim 5 only

2) A 276-410(H) for trim 1 only

800 GLOBE VALVE



A. DESIGN / TEST SPECIFICATIONS

TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	212	2975	WATER
BACK SEAT	155	2175	
SEAT LEAK	155	2175	
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN & PR. TEMP. RATING			API 602
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

SS316L - SHELL : 169 Kg/cm² / 2400 PSI
SEAT / BACK SEAT : 125 Kg/cm² / 1775 PSI

B. DIMENSIONS

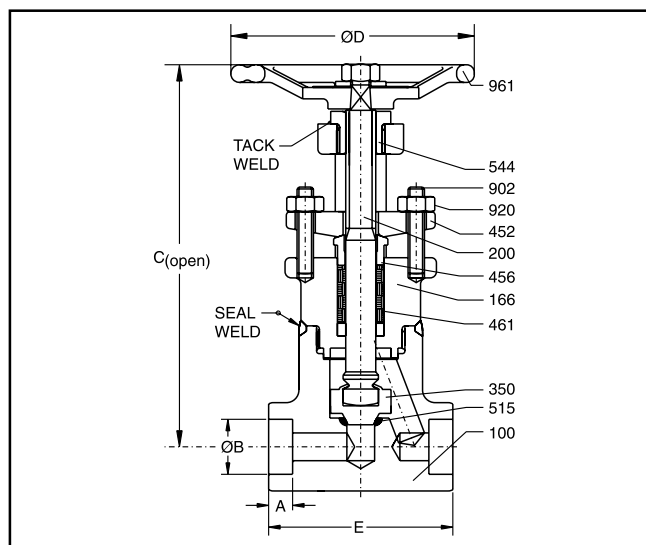
SIZE		E		ØB		C(open)		ØD		A	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	2.9	73	0.9	21.8	4.7	125	3.0	75	0.4	9.5
3/4	20	3.2	82	1.1	27.2	5.2	142	3.0	75	0.5	12.5
1	25	4.3	108	1.3	33.9	5.8	180	4.7	120	0.5	12.5
1½	40	6.0	152	1.9	48.8	8.0	220	5.7	144	0.5	12.5
2	50	5.8	148	2.4	61.2	10.4	285	5.7	144	0.6	16.0

C. MATERIAL

PART NO.	PART NAME	MATERIALS AS PER ASTM		MOC LF2
100	BODY	A 105	A 182-F316L	LF2
166	BONNET	A 105	A 182-F316L	LF2
200	STEM	A 479-410-2	A 276-316L	A 276-304
360	DISC	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-316L	A 276-304
411	GASKET	SS304 + GRPH	SS 316 + GRPH	SS304 + GRPH
452	GLAND FLANGE	A 105	A 182-F316L	A 105
456	GLAND BUSH	A 276-410	A 276-316L	A 276-304
461	GLAND PACKING	GRAPHITE	GRAPHITE	GRAPHITE
515	SEAT	ST6 (INTEGRAL)	INTEGRAL	ST6 (INTEGRAL)
544	STEM NUT	A 582-416	A 582-416	A 582-416
901	HEX BOLT	A 193-B7	A 193-B8M	A 193-B8M
902	STUD	A 193-B6	A 193-B8M	A 193-B8M
920	HEX NUT	A 194-2H	A 194-B8	A 194-B8
961	HAND WHEEL	CARBON STEEL		

1) A 276-304+ST6 for trim 5 only

1500 GLOBE VALVE



A. DESIGN / TEST SPECIFICATIONS

TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	396	5625	WATER
BACK SEAT	291	4125	
SEAT LEAK	291	4125	
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN			API 602
PPRESSURE TEMPERATURE RATINGS			ASME B16.34
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

B. DIMENSIONS

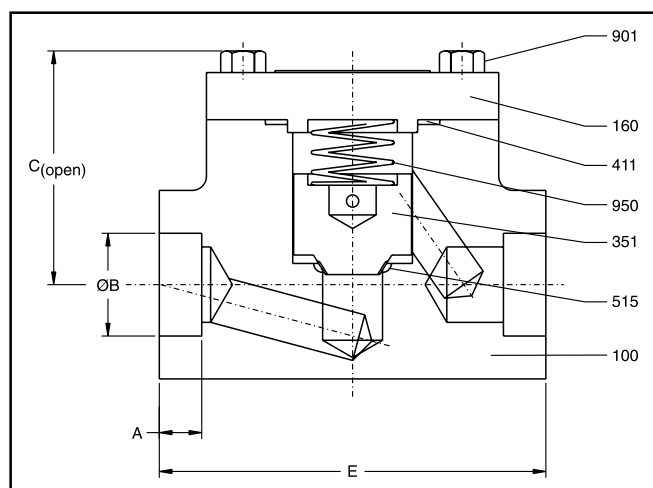
SIZE		E		ØB		C(open)		ØD		A	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	2.9	73	0.9	21.8	6.7	180	5.0	127	0.4	9.5
3/4	20	3.7	94	1.1	27.2	8.7	230	7.3	145	0.5	12.5
1	25	4.8	122	1.3	33.9	9.3	250	7.3	145	0.5	12.5
1½	40	6.3	160	1.9	48.8	11.6	315	8.0	203	0.5	12.5
2	50	7.0	178	2.4	61.2	12.2	335	8.0	203	0.6	16.0

C. MATERIAL

PART NO.	PART NAME	MATERIALS AS PER ASTM		MOC LF2
100	BODY	A 105	A 182-F22	LF2
166	BONNET	A 105	A 182-F22	LF2
200	STEM	A 479-410-2	A 479-410-2	A 276-304
350	DISC	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-304
452	GLAND FLANGE	A 105	A 105	A 105
456	GLAND BUSH	A 276-410	A 276-410	A 276-304
461	GLAND PACKING	GRAPHITE	GRAPHITE	GRAPHITE
515	SEAT	ST6 (INTEGRAL)	ST6 (INTEGRAL)	ST6 (INTEGRAL)
544	STEM NUT	A 582-416	A 582-416	A 582-416
902	STUD	A 193-B8M Cl. 2	A 193-B8M Cl. 2	A 193-B8M
920	HEX NUT	A 194-2H	A 194-2H	A 194-B8
961	HAND WHEEL	CARBON STEEL		

1) A 276-304+ST6 for trim 5 only

800 CHECK VALVE



A. DESIGN / TEST SPECIFICATIONS

TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	212	2975	WATER
SEAT LEAK	155	2175	
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN & PR. TEMP. RATING			API 602
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

SS316L - SHELL : 169 Kg/cm² / 2400 PSI
SEAT : 125 Kg/cm² / 1775 PSI

B. DIMENSIONS

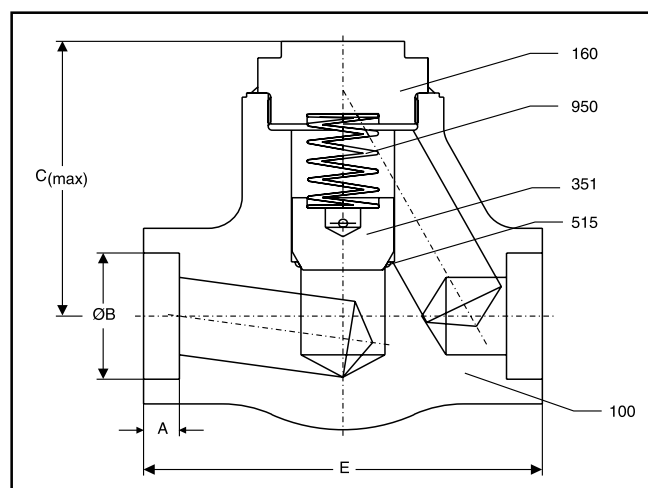
SIZE		E		ØB		C(open)		A	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	2.9	73	0.9	21.8	2.0	50	0.4	9.5
3/4	20	3.2	82	1.1	27.2	2.4	60	0.5	12.5
1	25	4.3	108	1.3	33.9	2.6	65	0.5	12.5
1½	40	6.0	152	1.9	48.8	3.5	90	0.5	12.5
2	50	5.8	148	2.4	61.2	4.9	125	0.6	16.0

C. MATERIAL

PART NO.	PART NAME	MATERIALS AS PER ASTM		MOC LF2
100	BODY	A 105	A 182-316L	LF2
160	COVER	A 105	A 182-316L	LF2
351	DISC	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-316L	A 276-304
411	GASKET	SS 304 + GRPH	SS 316 + GRPH	SS 304 + GRPH
515	SEAT	ST6 (INTEGRAL)	INTEGRAL	ST6 (INTEGRAL)
901	HEX BOLT	A 193-B7	A 193-B8M Cl. 2	A 193-B8M
950	SPRING	A 313-SS 302	SS 304	A 313-SS 302

1) A 276-304+ST6 for trim 5 only

1500 CHECK VALVE



A. DESIGN / TEST SPECIFICATIONS

TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	396	5625	WATER
SEAT LEAK	291	4125	
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN			API 602
PRESSURE TEMPERATURE RATINGS			ASME B16.34
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

B. DIMENSIONS

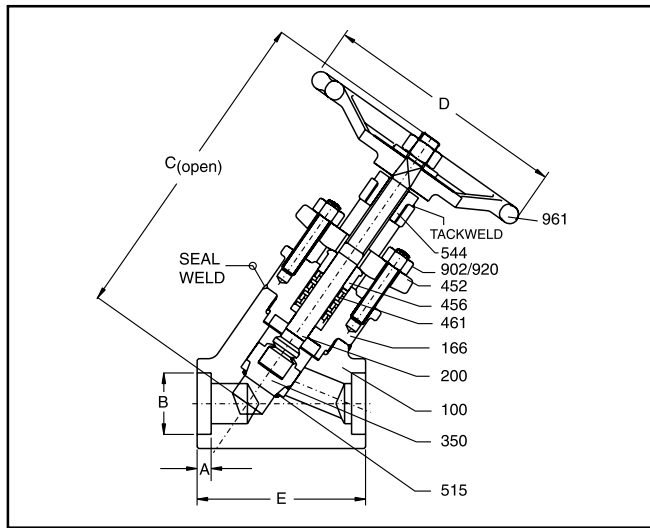
SIZE		E		ØB		C		A	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	2.9	73	0.9	21.8	2.6	65	0.4	9.5
3/4	20	3.7	94	1.1	27.2	3.1	80	0.5	12.5
1	25	4.8	122	1.3	33.9	3.7	95	0.5	12.5
1½	40	6.3	160	1.9	48.8	4.7	120	0.5	12.5
2	50	7.0	178	2.4	61.2	5.5	140	0.6	16.0

C. MATERIAL

PART NO.	PART NAME	MATERIALS AS PER ASTM		MOC LF2
100	BODY	A 105	A 182-F22	LF2
160	COVER	A 105	A 182-F22	LF2
351	DISC	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-304
515	SEAT	ST6 (INTEGRAL)	ST6 (INTEGRAL)	ST6 (INTEGRAL)
950	SPRING	A 313-SS 302	A 313-SS 302	A 313-SS 302

1) A 276-304+ST6 for trim 5 only

2500 Y - GLOBE



A. DESIGN / TEST SPECIFICATIONS

TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	660	9375	WATER
BACK SEAT	484	6875	
SEAT LEAK	484	6875	
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN & PR. TEMP. RATING			ASME B16.34
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

B. DIMENSIONS

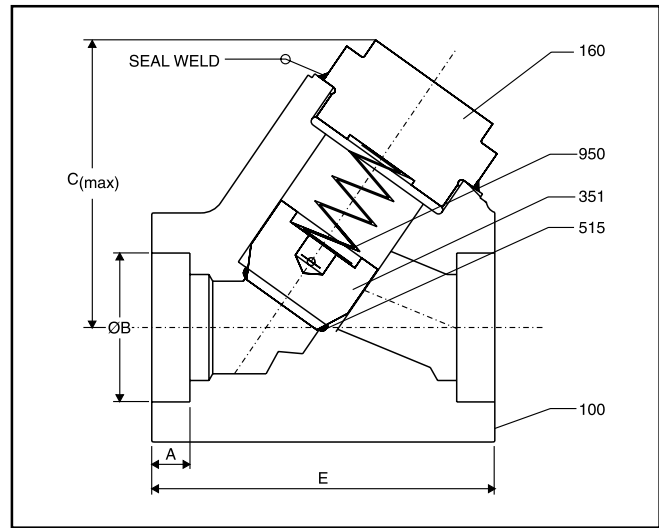
SIZE		E		ØB		C(open)		ØD		A	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	3.3	85	0.9	21.8	7.3	186	5.0	127	0.4	9.5
3/4	20	3.9	98	1.1	27.2	8.7	220	7.3	145	0.5	12.5
1	25	4.1	104	1.3	33.9	9.5	240	7.3	145	0.5	12.5
1½	40	5.7	144	1.9	48.8	11.8	300	8.0	203	0.5	12.5
2	50	5.7	144	2.4	61.2	15.0	380	10.0	255	0.6	16.0

C. MATERIAL

PART NO.	PART NAME	MATERIALS AS PER ASTM		
100	BODY	A 105	A 182-F22	A 182 GR F91
166	BONNET	A 105	A 182-F22	A 182 GR F91
200	STEM	A 479-410-2	A 479-410-2	A 479-XM19
350	DISC	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-304+ST6 ¹⁾
452	GLAND FLANGE	A 105	A 105	A 182 GR F22
456	GLAND BUSH	A 276-410	A 276-410	A 276-410
461	GLAND PACKING	GRAPHITE	GRAPHITE	GRAPHITE
515	SEAT	ST6 (INTEGRAL)	ST6 (INTEGRAL)	ST6 (INTEGRAL)
544	STEM NUT	A 582-416	A 582-416	A 582-416
902	STUD	A 193-B8M Cl. 2	A 193-B8M Cl. 2	A 193-B8M Cl. 2
920	HEX NUT	A 194-2H	A 194-2H	A 194-4/7
961	HAND WHEEL	Carbon Steel		

1) A 276-304+ST6 for trim 5 only

2500 Y - CHECK



A. DESIGN / TEST SPECIFICATIONS

TEST (API 598)	(Kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	660	9375	WATER
SEAT LEAK	484	6875	
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN & PR. TEMP. RATING			ASME B16.34
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

B. DIMENSIONS

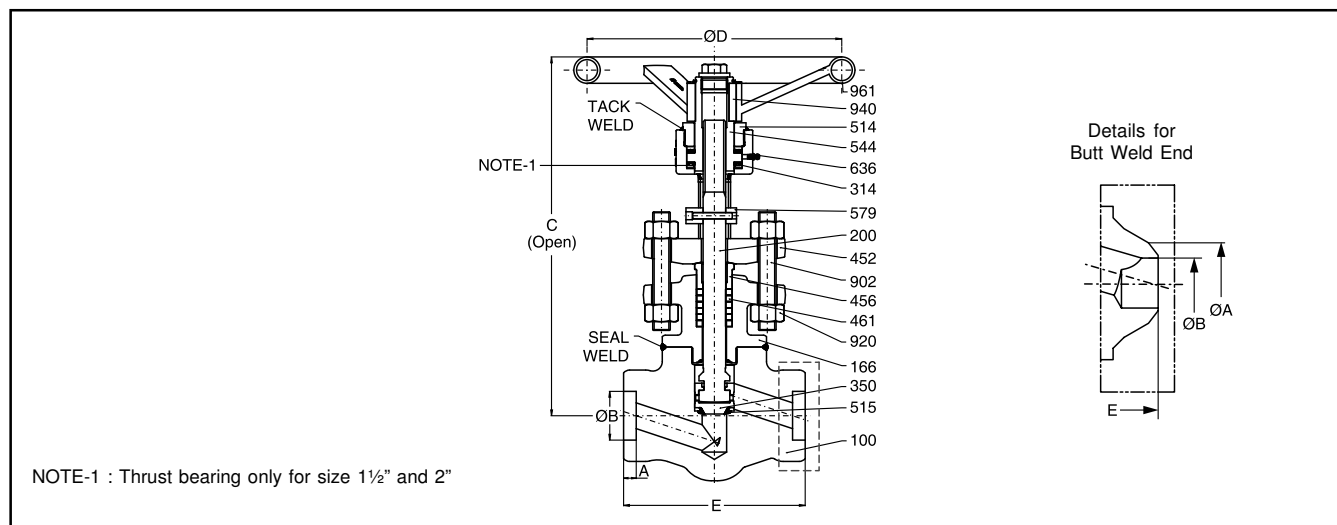
SIZE		E		ØB		C(max)		A	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	3.4	85	0.9	21.8	3.0	80	0.4	9.5
3/4	20	3.9	98	1.1	27.2	3.0	80	0.5	12.5
1	25	4.1	104	1.3	33.9	3.5	90	0.5	12.5
1½	40	5.7	144	1.9	48.8	4.7	120	0.5	12.5
2	50	5.7	144	2.4	61.2	5.0	130	0.6	16.0

C. MATERIAL

PART NO.	PART NAME	MATERIALS AS PER ASTM		
100	BODY	A 105	A 182-F22	A 182 GR F91
160	COVER	A 105	A 182-F22	A 182 GR F91
351	DISC	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-410 (H) / A 276-304+ST6 ¹⁾	A 276-304+ST6 ¹⁾
515	SEAT	ST6 (INTEGRAL)	ST6 (INTEGRAL)	ST6 (INTEGRAL)
950	SPRING	A 313-SS 302	A 313-SS 302	A 313-SS 302

1) A 276-304+ST6 for trim 5 only

4500 GLOBE VALVE



A. DESIGN / TEST SPECIFICATIONS

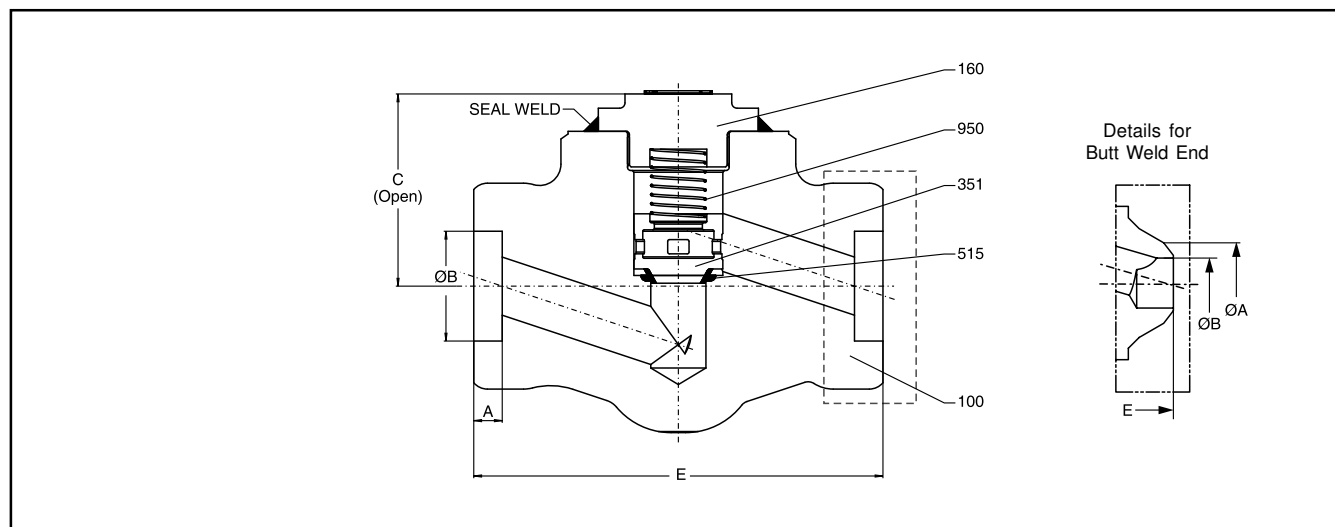
TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	1189	16900	WATER
BACK SEAT	872	12400	
SEAT LEAK	872	12400	
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN & PR. TEMP. RATING			ASME B16.34
BUTT WELL END DIMENSION			API 602
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

B. DIMENSIONS

SIZE		E		ØB (SWE)		ØB (BWE)		C (open)		ØD		A		ØA	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	5.5	140	0.8	21.7	0.3-0.5	8-13	14.8	377	10	254	0.4	10.0	0.8	21.3
3/4	20	5.5	140	1.1	27.1	0.3-0.5	8-13	14.8	377	10	254	0.5	13.0	1.1	26.7
1	25	6.6	170	1.3	33.8	0.4-0.7	9-17	16.7	425	12	305	0.5	13.0	1.3	33.4
1½	40	7.8	200	1.9	48.7	0.6-1.0	14-26	17.4	444	14	356	0.5	13.0	1.9	48.3
2	50	9.0	230	2.4	61.7	0.7-1.2	15.5-31	17.9	455	14	356	0.6	16.0	2.4	60.3

C. MATERIAL

PART NO.	PART NAME	A105 TRIM 5	A 182-F22 TRIM 5	A 182-F91 TRIM 5
100	BODY	A 105	F22	F91
166	BONNET	A 105	F22	F91
200	STEM	A 479-410-2	A 479-410-2	A 479-XM19
314	THRUST BRG.	STEEL	STEEL	STEEL
350	DISC	CF8 + ST6	CF8 + ST6	CF8 + ST6
452	GLAND FLANGE	A 105	A 105	F22
456	GLAND BUSH	A 276-410	A 276-410	A 276-410
461	GLAND PACKING	GRAPHITE	GRAPHITE	GRAPHITE
514	THREADED RING	IS:2073-C40	IS:2073-C40	IS:2073-C40
515	SEAT	ST6 (INTEGRAL)	ST6 (INTEGRAL)	ST6 (INTEGRAL)
544	STEM NUT	A 582-416	A 582-416	A 582-416
562	GROOVED PIN	A 276-410	A 276-410	A 276-410
579	STOP	IS:2002-2	IS:2002-2	IS:2002-2
902	STUD	A 193-B8M Cl.2	A 193-B8M Cl.2	A 193-B8M Cl.2
920	HEX. NUT	A 194-2H	A 194-2H	A 194-2H
940	KEY	IS:2073-C40	IS:2073-C40	IS:2073-C40
961	HAND WHEEL	FABRICATED STEEL		

4500 CHECK VALVE

A. DESIGN / TEST SPECIFICATIONS

TEST (API 598)	(kg/cm ²)	(PSI)	TESTING MEDIUM
SHELL	1189	16900	WATER
SEAT LEAK	872	12400	
DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN & PR. TEMP. RATING			ASME B16.34
BUTT WELL END DIMENSION			API 602
SOCKET WELD END DIMENSIONS			ASME B16.11
END TO END AS PER MANUFACTURER'S STANDARD			

B. DIMENSIONS

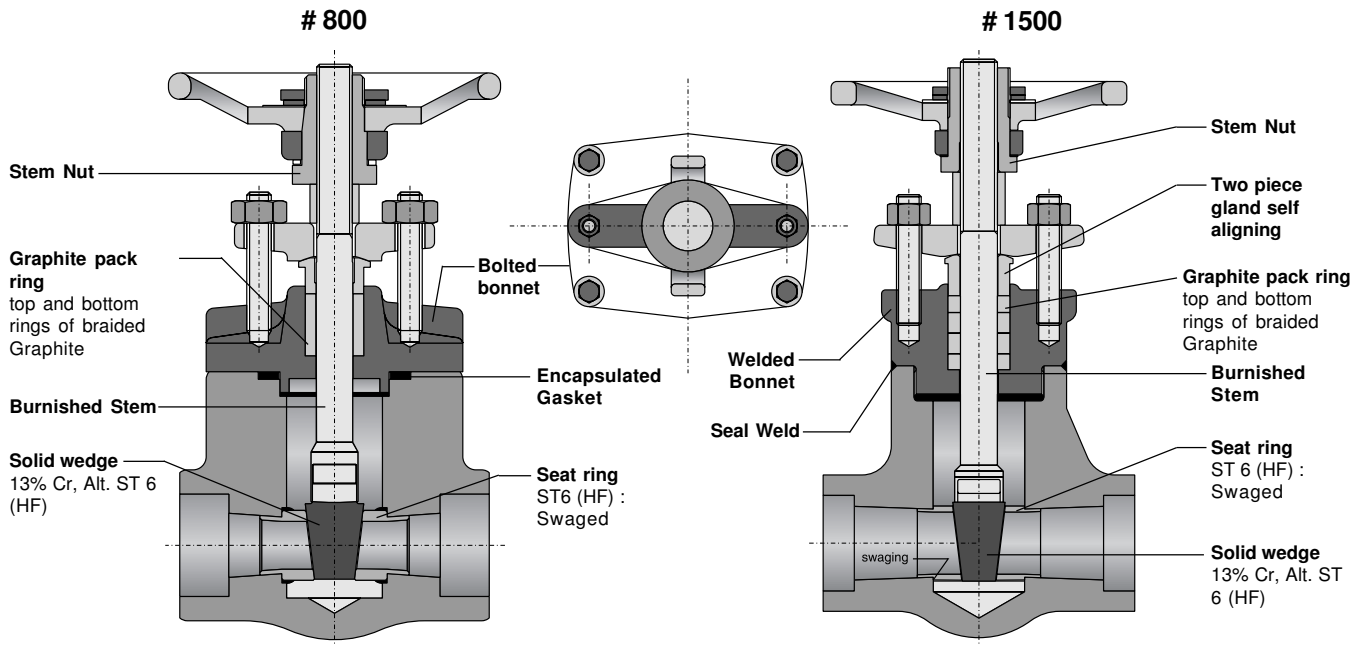
SIZE		E		ØB (SWE)		ØB (BWE)		C (open)		A		ØA	
INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1/2	15	5.5	140	0.8	21.7	0.3-0.5	8-13	3.1	78.6	0.4	10.0	0.8	21.3
3/4	20	5.5	140	1.1	27.1	0.3-0.5	8-13	3.1	78.6	0.5	13.0	1.1	26.7
1	25	6.6	170	1.3	33.8	0.4-0.7	9-17	3.6	93.44	0.5	13.0	1.3	33.4
1½	40	7.8	200	1.9	48.7	0.6-1.0	14-26	4.1	105.6	0.5	13.0	1.9	48.3
2	50	9.0	230	2.4	61.7	0.7-1.2	15.5-31	4.2	108	0.6	16.0	2.4	60.3

C. MATERIAL

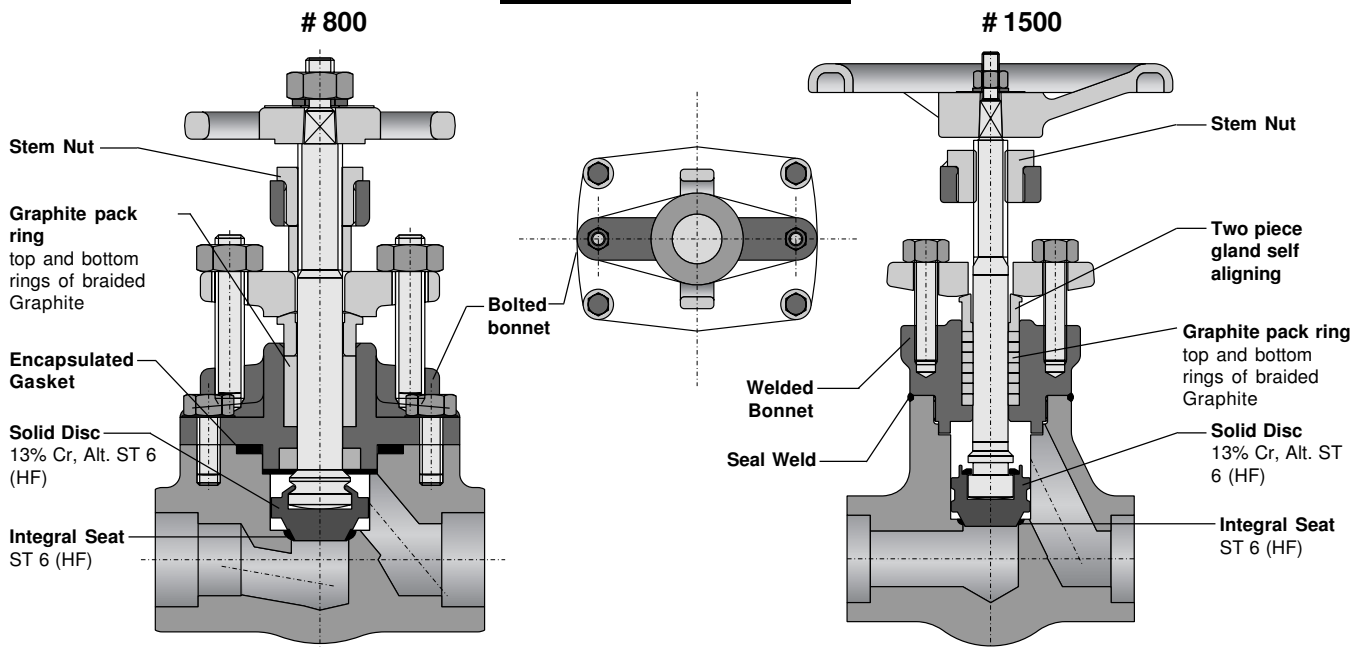
PART NO.	PART NAME	A105 TRIM 5	A 182-F22 TRIM 5	A 182-F91 TRIM 5
100	BODY	A 105	F22	F91
160	COVER	A 105	F22	F91
351	DISC	CF8 + ST6	CF8 + ST6	CF8 + ST6
515	SEAT	ST6 (INTEGRAL)	ST6 (INTEGRAL)	ST6 (INTEGRAL)
950	SPRING	A 313-SS 302	A 313-SS 302	A 313-SS 302

Product features to our Customer's benefit

Gate Valve

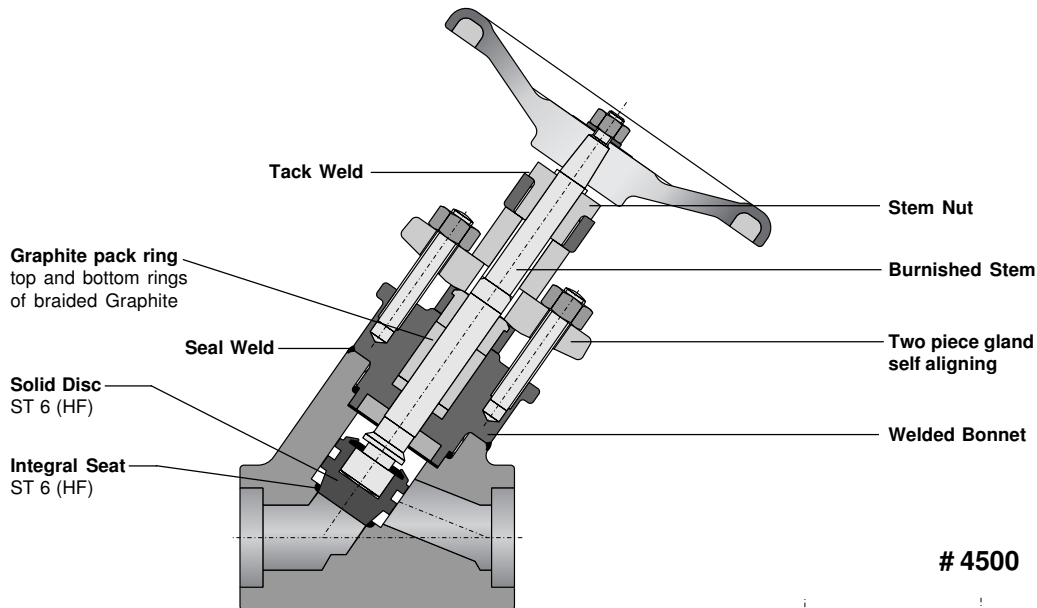


Globe Valve

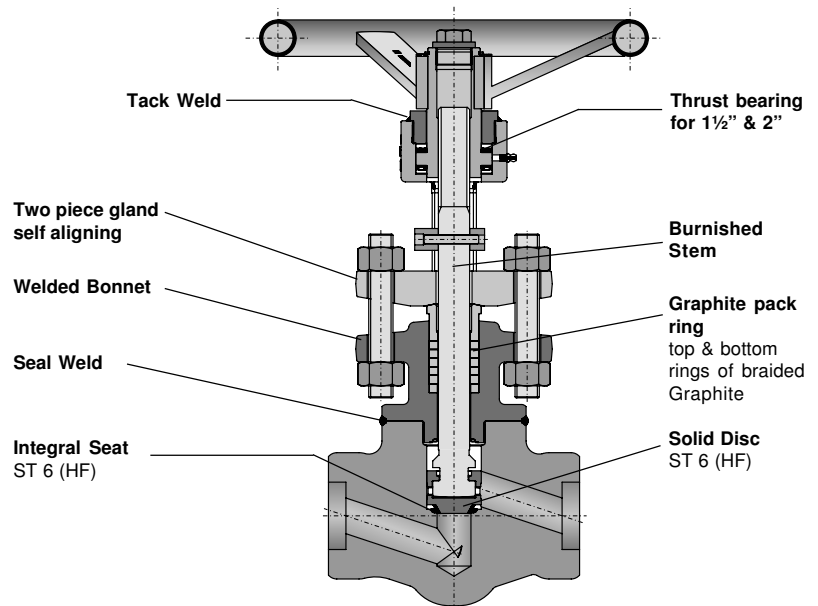


Globe Valve

2500

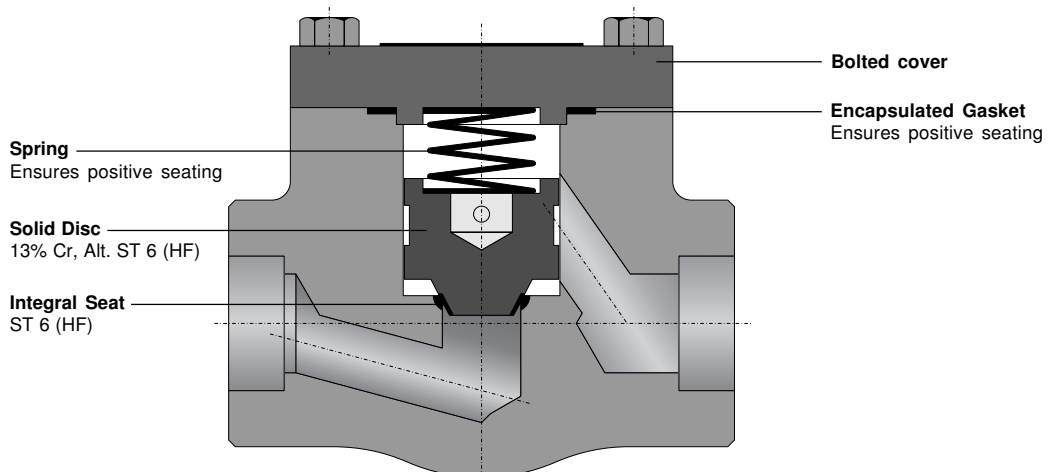


4500



Check Valve

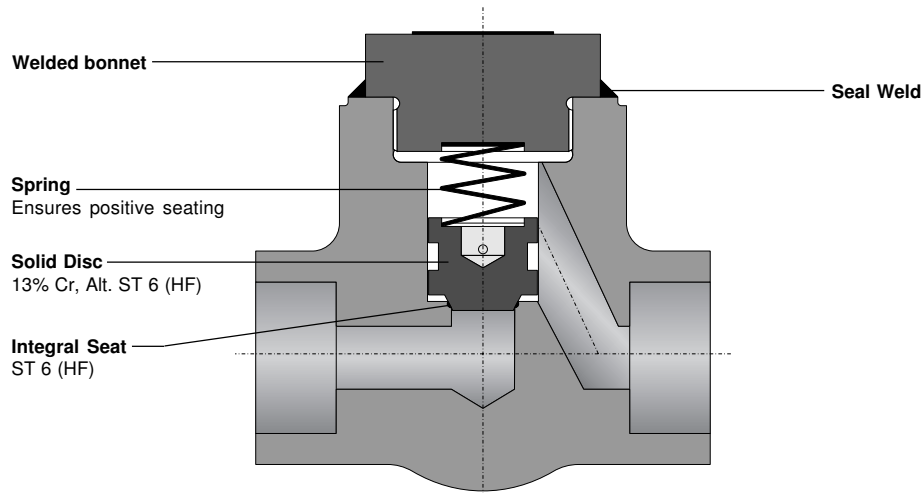
800



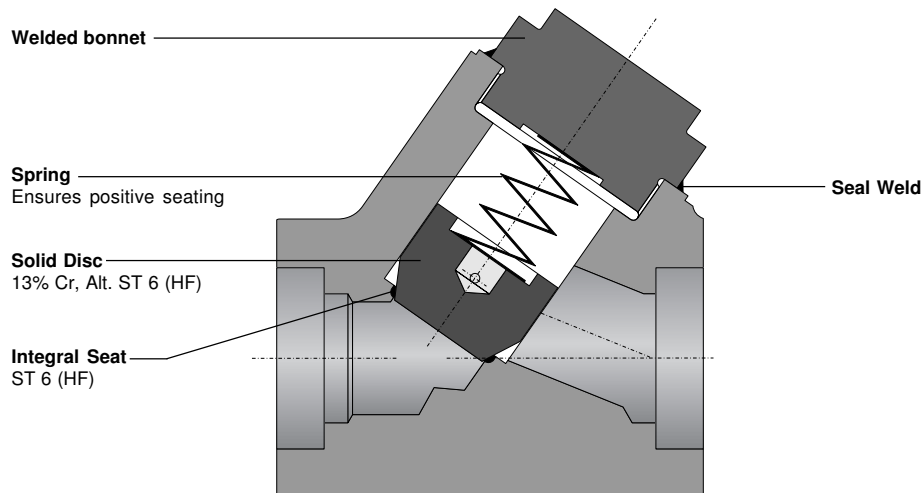
Product features to our Customer's benefit

Check Valve

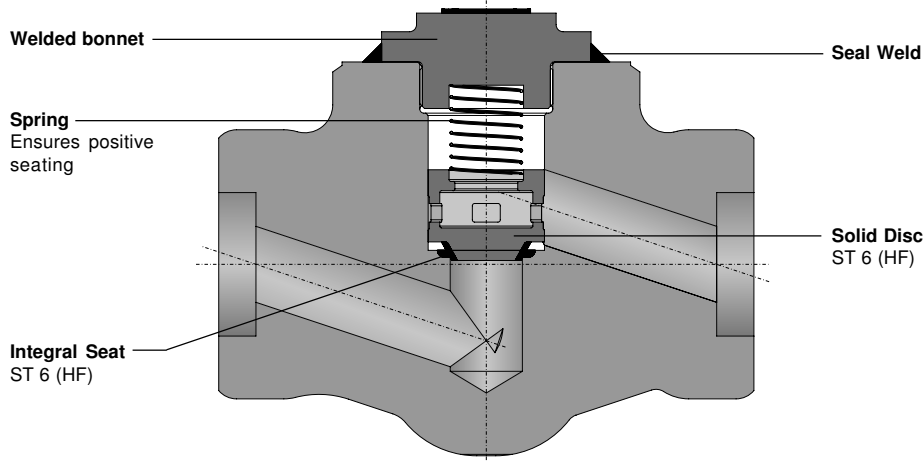
1500



2500



4500

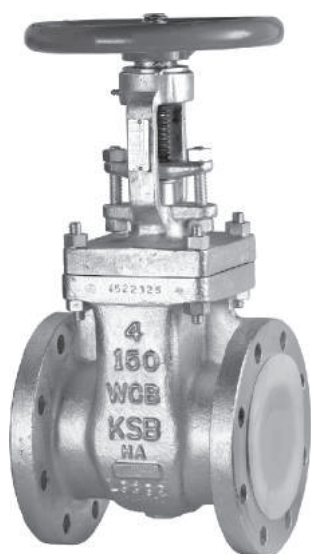




KSB Pumps Limited

151, Mettupalayam Road, NSN Palayam Post, Coimbatore - 641 031, India.
Tel. : +91 422 2468222 Fax : +91 422 2468232 www.ksbindia.co.in

Technical matter. Subject to change without notice.



Type GTC

Gate Valve
Cast Steel, Bolted Bonnet
Flanged / Butt weld ends

2" - 24" (50-600 mm)
Class 150, 300, 600
Design in accordance with API 600

Applications

- Refineries, Power stations, Process & General Industry
- For water, steam, gas, oil and other non-aggressive media
- Further applications on request

Operating data

- Pressure range up to 103.4 bar (1500 psi)
- Temperature range up to +593°C/1100°F
- Minimum temperature is 0°C (less than 0°C on request)
- Pressure-temperature ratings as per ASME B 16.34 Standard class

Materials

- ASTM A 216 WCB from 0°C to 425°C
- ASTM A 217 WC6 from 0°C to 593°C
- ASTM A 351 CF8 from 0°C to 537°C

Design

- As per API 600
- Pressure, Temperature rating as per ASME B 16.34
- Hard faced Seats (13% Cr / Stellite)
- Graphite gaskets and graphite packings with Braided wiping rings
- The Valves meet the safety requirement of the Pressure Equipment Directive 97/23/EC(PED) of annex I for fluids of the groups 1 and 2.

Variants on Request

- Bypass Arrangement
- Gear / Electrical Actuator
- Position indicator
- Locking Arrangement
- Lantern Ring
- Stem Protector
- Other Material of construction

Remarks :

(Type Series Booklet References)

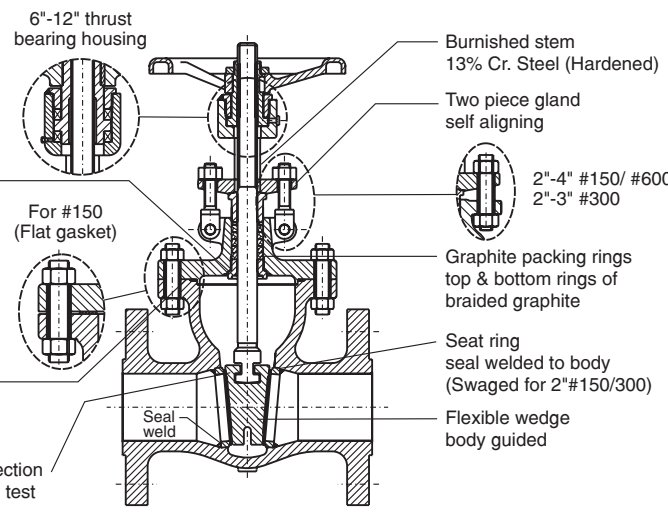
SICCA 800-2500 GTF / GLF / PCF	: 7240.1/01-14
SICCA 900-2500 GTC	: 7241.2/01-14
SICCA 900-2500 GLC	: 7242.2/01-14
SICCA 900-2500 SCC	: 7243.2/01-14
SICCA 150-600 GLC	: 7245.2/01-14
SICCA 150-600 SCC	: 7246.2/01-14
Operating instructions no.	: 0500.80/06-18 G3

On all enquiries/orders please specify :

- | | |
|--------------------------------|--------------------------------------|
| 1. Type | 9. Flow Medium |
| 2. ASME Pressure class | 10. Flow rate Min. / Max. |
| 3. Size | 11. Type of end connection |
| 4. Design pressure/temperature | 12. Pipe Schedule Inlet/ Outlet Dia |
| 5. Operating pressure | 13. Variants |
| 6. Operating temperature | 14. Type Series Booklet no. |
| 7. Differential pressure | 15. Valve data sheet (if applicable) |
| 8. Material of construction | |

When ordering spares, Indicate Serial number of Valve.

Product features to our customer benefit



6"-12" thrust bearing housing

Burnished stem 13% Cr. Steel (Hardened)

Two piece gland self aligning

2"-4" #150/ #600
2"-3" #300

Graphite packing rings top & bottom rings of braided graphite

Seal ring seal welded to body (Swaged for 2"#150/300)

Flexible wedge body guided

Hardened Stainless steel back seat bush

For #150 (Flat gasket)

Encapsulated Gasket

Stem wedge connection meets API 600 pull test requirements

- Valves meet API 600 design requirements
- Body full bore to API 600 ensures streamlined flow hence no pressure drop.
- Body guided wedge ensures positive seating and eliminates side thrust
- Stem wedge connection meets API 600 pull test requirements.
- Harder seats (13% Cr / Stellite) minimises on line erosion (KSB recommends harder seats)
- Differential hardness between seat & wedge maintained to eliminate galling.

Flow Seal

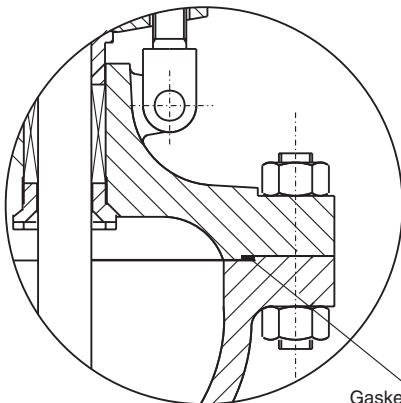
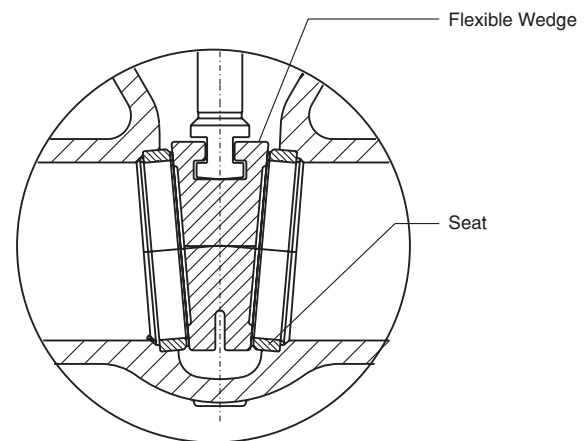
- 13% Cr / Stellite body seats (KSB recommends harder seats)
- Seat rings - seal welded to body
- Lapped seat and wedge faces for leak tightness
- Streamlined flow path hence no pressure drop

Wedge Design

- Flexible wedge ensures perfect seating
- Wedging action ensures leak tightness
- Leak tightness at low and high differential pressure

'T' head stem wedge connection

- Low, centre stem to wedge contact reduces the operating torque

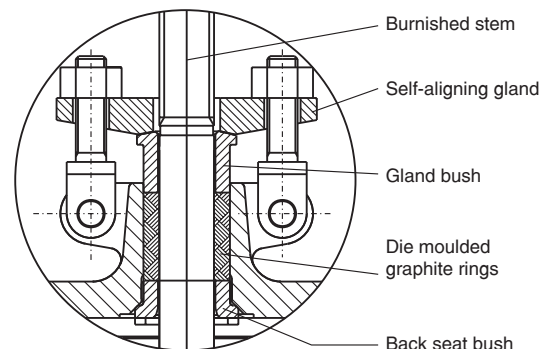


Gasket SS
Spiral wound + Graphite

Body seal

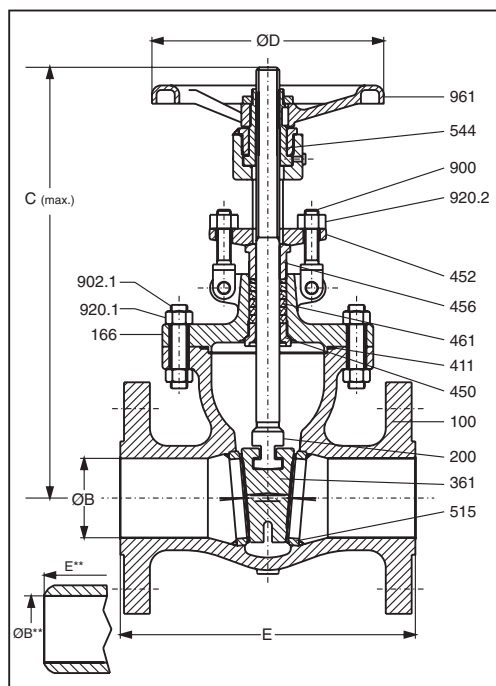
Bolted Bonnet

- Encapsulated Gasket with Controlled Compression ensures leak proof joint and prevents unwinding of SS strips
- #150 valve with oval/rectangular bonnet has flat gasket



Gland Seal

- Die moulded graphite rings ensures effective stem sealing
- Top & bottom rings are braided graphite offer smooth wiping action & prevents Graphite depletion
- Burnished stem and smooth stuffing box surfaces improve gland sealing life
- Two piece self aligning gland arrangement
- Hardened back seat for maximum service life



Design Specifications

General valve design	: API 600
Pressure, temperature rating	: ASME B 16.34
Flanged end design	: ASME B 16.5
Buttweld end design	: ASME B 16.25
End to end dimension /	
Face to face	: ASME B 16.10
Testing standard	: API 598

Dimensions in mm

Class 150

	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
E	177.8	203.2	228.6	266.7	292.1	330.2	355.6	381.0	406.4	431.8	457.2	508.0
ØB	51.0	76.0	102.0	152.0	203.0	254.0	305.0	336.0	387.0	438.0	489.0	591.0
C(max)	370.0	445.0	530.0	720.0	940.0	1170	1400	1665	1910	2050	2275	2680
ØD	203.0	254.0	254.0	356.0	356.0	457.0	508.0	508.0	610.0	700.0	800.0	900.0
E**	215.9	282.5	304.8	403.4	419.1	457.2	501.7	572.0	609.6	660.4	711.2	812.8
ØB**	52.5	78.0	102.0	154.0	203.0	254.5	303.0	333.5	381.0	428.5	478.0	574.5

** For Butt weld end valves schedule 40 for class 150.

Alternate schedule on request.

Class 300

	2"	3"	4"	6"	8"	10"	12"	14"	16"
E	215.9	282.5	304.8	403.4	419.1	457.2	501.7	762.0	838.2
ØB	51.0	76.0	102.0	152.0	203.0	254.0	305.0	337.0	387.0
C(max)	410.0	505.0	625.0	840.0	1035	1245	1430	1740	1935
ØD	203.0	254.0	254.0	356.0	457.0	508.0	508.0	610.0	700.0
E**	215.9	282.5	304.8	403.4	419.1	457.2	501.7	762.0	838.0
ØB**	52.5	78.0	102.0	154.0	203.0	254.5	303.0	333.5	381.0

** For Butt weld end valves schedule 40 for class 300.

Alternate schedule on request.

Class 600

	2"	3"	4"	6"	8"	10"	12"
E	292.1	355.6	431.8	558.8	660.4	787.4	838.2
ØB	51.0	76.0	102.0	152.0	200.0	248.0	298.0
C(max)	435.0	535.0	645.0	895.0	1065	1255	1550
ØD	203.0	254.0	356.0	508.0	508.0	508.0	610.0
E**	292.1	355.6	431.8	558.8	660.4	787.4	838.2
ØB**	49.2	73.5	97.0	146.5	193.5	243.0	289.0

** For Butt weld end valves schedule 80 for class 600. Alternate schedule on request.

Materials

Part No.	Description	Material			
100	Body	A 216-WCB	A 217-WC6	A 351-CF8	A 351-CF8M
166	Bonnet	A 216-WCB	A 217-WC6	A351-CF8	A351-CF8M
200	Stem	A 479-410-1 / A 182-F6A (>12")	A 479-410-1 / A 182-F6A (>12")	A 276-304 / A 182-F304 (>12")	A 276-316 / A 182-F316 (>12")
361	Wedge	A 217-CA15 ²⁾ / A 217-CA15+ST6 ³⁾ A 216-WCB+13% Cr / A 216-WCB+ST6 ³⁾	A 217 GR WC6+13% Cr / A 217-WC6+ST6 ³⁾	A 351-CF8	A 351-CF8M
411 ¹⁾	Gasket	SS 316 + GRPH	SS 316 + GRPH	SS 316 + GRPH	SS 316 + GRPH
450	Back seat	A 276-410 (H)	A 276-410 (H)	A 276-304	A 276-316
452	Gland flange	A 105 / A 216-WCB ⁵⁾	A 105 / A 216-WCB ⁵⁾	A 351-CF8	A 351-CF8M
456	Gland bush	A 276-410	A 276-410	A 276-304	A 276-316
461	Gland packing	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE
515	Seat ring	A 105+13% Cr ⁴⁾ / A 105+ST6	A 182-F11+ST6	A 182-F304	A 182-F316
544	Stem nut	A 439-D2	A 439-D2	A 439-D2	A 439-D2
900	Gland bolt	A 307-B	A 307-B	A 182-F304	A 182-F304
902.1	Stud	A 193-B7	A 193-B16	A 193 B8	A 193 B8M
920.1	Hex. nut	A 194-2H	A 194-4/7	A 194-8	A 194-B8M
920.2	Hex. nut		A 194-2H		
961	Handwheel	SG IRON / CS	SG IRON / CS	SG IRON / CS	SG IRON / CS

1) Flat graphite with SS reinforcement for #150 only. SS Spiral wound gasket for #300 & #600

2) Wedge material is A 217 CA15 Only for Sizes 2"-6" #150; 2"-4" #300; 2"-3"#600

3) Weld deposition on wedge is ST6 for Trim 5 only

4) Seat Ring Material A 105+13% Cr for Trim 1 only

5) Gland Flange Material A 216-WCB for 18" onward only

Testing

Test / Test pressure	#150		#300		#600		Testing medium
	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
Shell	32	450	80	1125	160	2250	Water
Seat / Back Seat	23	325	59	825	117	1650	
Seat	6	85	6	85	6	85	Air

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	285	20.4	740	52.0	1480	104.1
200	93.3	260	18.3	680	47.8	1360	95.6
300	148.9	230	16.2	655	46.1	1310	92.1
400	204.4	200	14.1	635	44.6	1265	88.9
500	260.0	170	12.0	605	42.5	1205	84.7
600	315.6	140	9.8	570	40.1	1135	79.8
650	343.3	125	8.8	550	38.7	1100	77.3
700	371.1	110	7.7	530	37.3	1060	74.5
750	398.9	95	6.7	505	35.5	1015	71.4
800	426.7	80	5.6	410	28.8	825	58.0
850	454.4	65	4.6	320	22.5	640	45.0
900	482.2	50	3.5	230	16.2	460	32.3
950	510.0	35	2.5	135	9.5	275	19.3
1000	537.8	20	1.4	85	6.0	170	12.0

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ⁽¹⁾⁽²⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	290	20.4	750	52.7	1500	105.5
200	93.3	260	18.3	750	52.7	1500	105.5
300	148.9	230	16.2	720	50.6	1445	101.6
400	204.4	200	14.1	695	48.9	1385	97.4
500	260.0	170	12.0	665	46.8	1330	93.5
600	315.6	140	9.8	605	42.5	1210	85.1
650	343.3	125	8.8	590	41.5	1175	82.6
700	371.1	110	7.7	570	40.1	1135	79.8
750	398.9	95	6.7	530	37.3	1065	74.9
800	426.7	80	5.6	510	35.9	1015	71.4
850	454.4	65	4.6	485	34.1	975	68.5
900	482.2	50	3.5	450	31.6	900	63.3
950	510.0	35	2.5	320	22.5	640	45.0
1000	537.8	20	1.4	215	15.1	430	30.2
1050	565.6	20	1.4	145	10.2	290	20.4
1100	593.3	20	1.4	95	6.7	190	13.4
1150	621.1	20	1.4	65	4.6	130	9.1
1200	648.9	15	1.1	40	2.8	80	5.6

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 2.1 Material : A 351 Gr. CF8 ⁽¹⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	275	19.3	720	50.6	1440	101.2
200	93.3	230	16.2	600	42.2	1200	84.4
300	148.9	205	14.4	540	38.0	1075	75.6
400	204.4	190	13.4	495	34.8	995	70.0
500	260.0	170	12.0	465	32.7	930	65.4
600	315.6	140	9.8	440	30.9	885	62.2
650	343.3	125	8.8	430	30.2	865	60.8
700	371.1	110	7.7	420	29.5	845	59.4
750	398.9	95	6.7	415	29.2	825	58.0
800	426.7	80	5.6	405	28.5	810	56.9
850	454.4	65	4.6	395	27.8	790	55.5
900	482.2	50	3.5	390	27.4	780	54.8
950	510.0	35	2.5	380	26.7	765	53.8
1000	537.8	20	1.4	355	25.0	710	49.9
1050	565.6	20	1.4	325	22.8	650	45.7
1100	593.3	20	1.4	255	17.9	515	36.2
1150	621.1	20	1.4	205	14.4	410	28.8
1200	648.9	20	1.4	165	11.6	330	23.2
1250	676.7	20	1.4	135	9.5	265	18.6
1300	704.4	20	1.4	115	8.1	225	15.8
1350	732.2	20	1.4	95	6.7	185	13.0
1400	760.0	20	1.4	75	5.3	150	10.5
1450	787.8	20	1.4	60	4.2	115	8.1
1500	815.6	15	1.1	40	2.8	85	6.0

1) At temperatures over 1000°F, use only when the carbon content is 0.04% or higher.

Rating for Group 2.2 Material : A 351 Gr. CF8M ⁽¹⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	275	19.3	720	50.6	1440	101.2
200	93.3	235	16.5	620	43.6	1240	87.2
300	148.9	215	15.1	560	39.4	1120	78.7
400	204.4	195	13.7	515	36.2	1025	72.1
500	260.0	170	12.0	480	33.7	955	67.1
600	315.6	140	9.8	450	31.6	900	63.3
650	343.3	125	8.8	440	30.9	885	62.2
700	371.1	110	7.7	435	30.6	870	61.2
750	398.9	95	6.7	425	29.9	855	60.1
800	426.7	80	5.6	420	29.5	845	59.4
850	454.4	65	4.6	420	29.5	835	58.7
900	482.2	50	3.5	415	29.2	830	58.4
950	510.0	35	2.5	385	27.1	775	54.5
1000	537.8	20	1.4	365	25.7	725	51.0
1050	565.6	20	1.4	360	25.3	720	50.6
1100	593.3	20	1.4	305	21.4	610	42.9
1150	621.1	20	1.4	235	16.5	475	33.4
1200	648.9	20	1.4	185	13.0	370	26.0
1250	676.7	20	1.4	145	10.2	295	20.7
1300	704.4	20	1.4	115	8.1	235	16.5
1350	732.2	20	1.4	95	6.7	190	13.4
1400	760.0	20	1.4	75	5.3	150	10.5
1450	787.8	20	1.4	60	4.2	115	8.1
1500	815.6	15	1.1	40	2.8	85	6.0

1) At temperatures over 1000°F, use only when the carbon content is 0.04% or higher.



Type GLC

Globe Valve
Cast Steel, Bolted Bonnet
Flanged / Butt weld ends

2" - 10" (50-250 mm)
Class 150, 300, 600

Design in accordance with BS 1873

Applications

- Refineries, Power stations, Process & General Industry
- For water, steam, gas, oil and other non-aggressive media
- Further applications on request

Operating data

- Pressure range up to 103.4 bar (1500 psi)
- Temperature range up to +593°C/1100°F
- Minimum temperature is 0°C (less than 0°C on request)
- Pressure-temperature ratings as per ASME B 16.34 Standard class

Materials

- ASTM A 216 WCB from 0°C to 425°C
- ASTM A 217 WC6 from 0°C to 593°C
- ASTM A 351 CF8 from 0°C to 537°C

Design

- As per BS 1873
- Pressure, Temperature rating as per ASME B 16.34
- Hard faced Seats (13% Cr / Stellite)
- Graphite gaskets and graphite packings with Braided wiping rings
- The Valves meet the safety requirement of the Pressure Equipment Directive 97/23/EC(PED) of annex I for fluids of the groups 1 and 2.

Variants on Request

- Bypass Arrangement
- Gear / Electrical Actuator
- Position Indicator
- Locking Arrangement
- Lantern Ring
- Stem Protector
- Plug Type Disc
- Other Material of construction

Remarks :

(Type Series Booklet References)

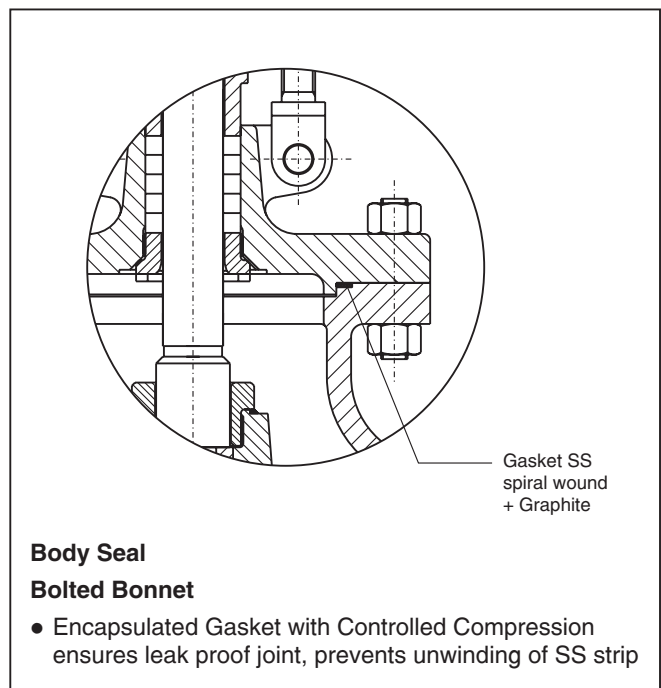
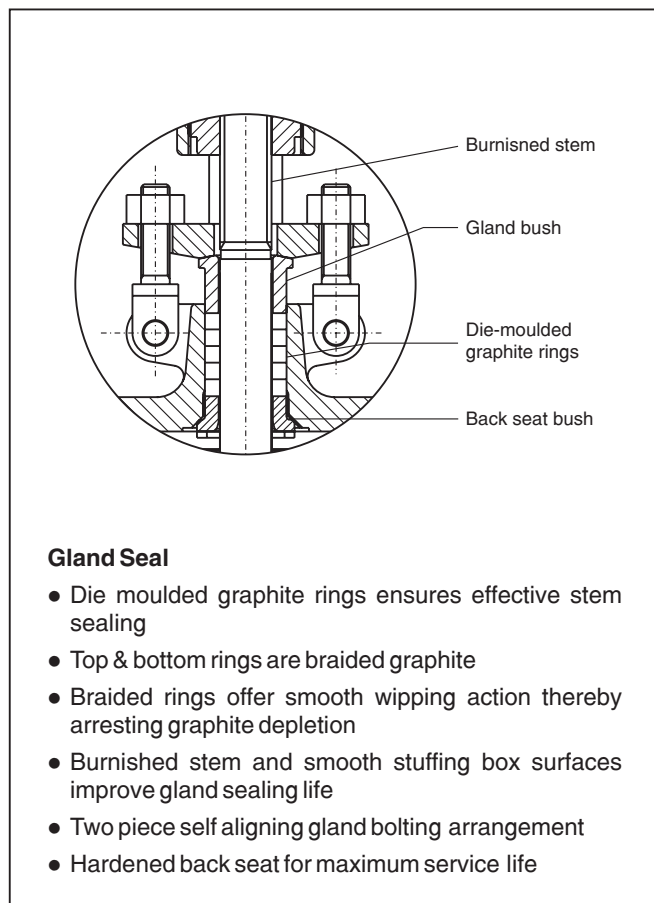
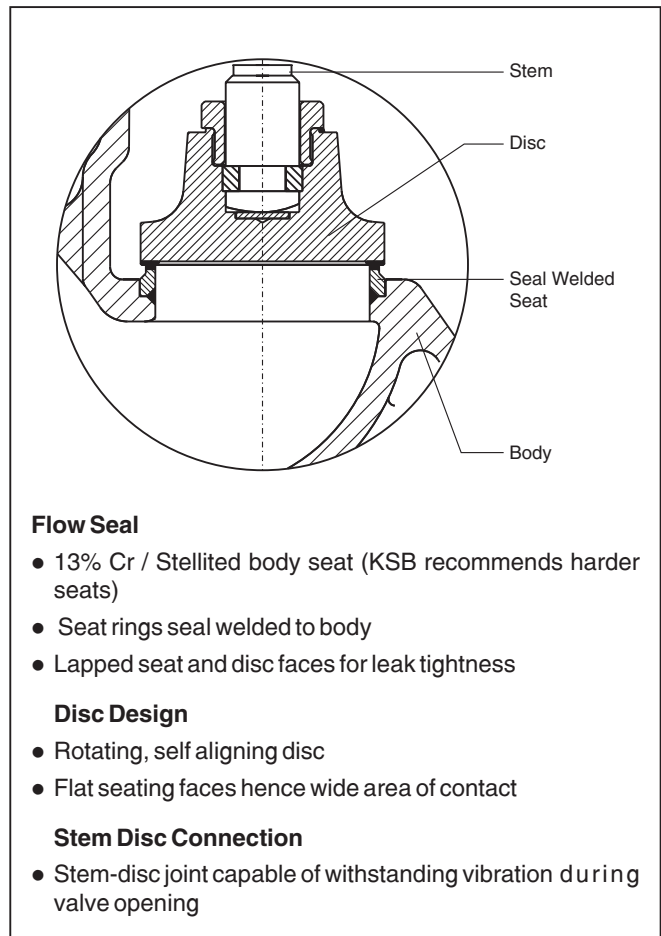
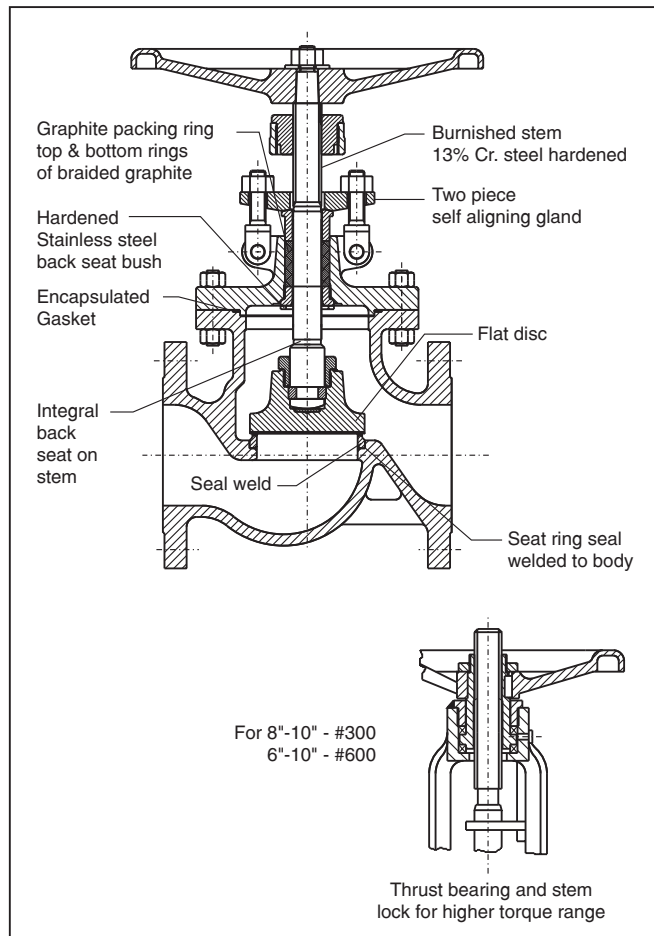
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SICCA 900-2500 GTC	: 7241.2/01-14
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SICCA 900-2500 SCC	: 7243.2/01-14
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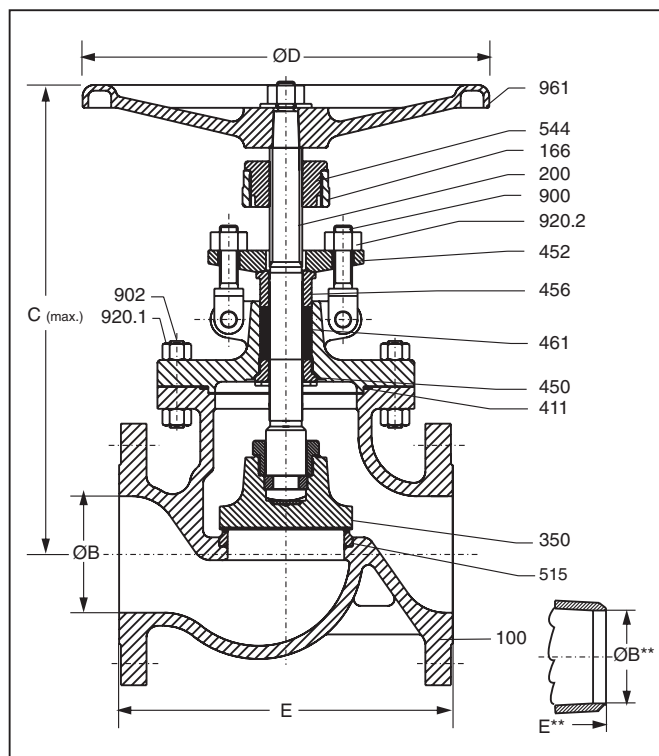
On all enquiries/orders please specify :

- | | |
|--------------------------------|-----------------------------|
| 1. Type | 9. Flow Medium |
| 2. ASME Pressure class | 10. Flow rate Min. / Max. |
| 3. Size | 11. Type of end connection |
| 4. Design pressure/temperature | 12. Pipe Schedule Inlet/ |
| 5. Operating pressure | Outlet Dia |
| 6. Operating temperature | 13. Variants |
| 7. Differential pressure | 14. Type Series Booklet no. |
| 8. Material of construction | 15. Valve data sheet |
| | (if applicable) |

When ordering spares, Indicate Serial number of Valve.

Product features to our customer benefit





Design Specifications

General valve design	: BS 1873
Pressure, temperature rating	: ASME B 16.34
Flanged end design	: ASME B 16.5
Buttweld end design	: ASME B 16.25
End to end dimension /	
Face to face	: ASME B 16.10
Testing standard	: API 598

Dimensions in mm

Class 150

	2"	3"	4"	6"	8"	10"
E	203.0	241.0	292.0	406.0	495.0	622.0
ØB	51.0	76.0	102.0	152.0	203.0	254.0
C_(max)	350.0	420.0	480.0	575.0	685.0	870.0
ØD	203.0	254.0	356.0	356.0	457.0	508.0
E**	203.2	241.3	292.1	406.4	495.3	622.3
ØB**	52.5	78.0	102.0	154.0	203.0	254.5

** For Butt weld end valves schedule 40 for class 150.
Alternate schedule on request.

Class 300

	2"	3"	4"	6"	8"	10"
E	266.7	317.5	355.6	444.5	558.8	622.3
ØB	51.0	76.0	102.0	152.0	203.0	254.0
C_(max)	370.0	445.0	520.0	620.0	840.0	910.0
ØD	203.0	254.0	356.0	508.0	508.0	508.0
E**	266.7	317.5	355.6	444.5	558.8	622.3
ØB**	52.5	78.0	102.0	154.0	203.0	254.5

** For Butt weld end valves schedule 40 for class 300.
Alternate schedule on request.

Class 600

	2"	3"	4"	6"	8"	10"
E	292.1	355.6	431.8	558.8	660.4	787.4
ØB	51.0	76.0	102.0	152.0	200.0	248.0
C_(max)	415.0	500.0	570.0	790.0	920.0	1140.0
ØD	254.0	356.0	356.0	508.0	610.0	610.0
E**	292.1	355.6	431.8	558.8	660.4	787.4
ØB**	49.2	73.5	97.0	146.5	193.5	243.0

** For Butt weld end valves schedule 80 for class 600.
Alternate schedule on request.

Materials

Part No.	Description	Material			
100	Body	A 216-WCB	A 217-WC6	A 351-CF8	A 351-CF8M
166	Bonnet	A 216-WCB	A 217-WC6	A 351-CF8	A 351-CF8M
200	Stem	A 479 Type 410-1	A 479 Type 410-1	A 276-304	A 276-316
350	Disc	A 105+13% Cr ¹⁾ / A 105+ST6 ²⁾ A 216 GR WCB+13% Cr / A 216 GR WCB+ST6 ²⁾	A 217 GR WC6+13% Cr / A 217-WC6+ST6 ²⁾	A 182 GR F 304 ⁴⁾ / A 351 GR CF8	A 182 GR F 316 ⁵⁾ / A 351-CF8M
411	Gasket	SS 316 + GRPH	SS 316 + GRPH	SS 316 + GRPH	SS 316 + GRPH
450	Back seat	A 276-410 (H)	A 276-410 (H)	A 276-304	A 276-316
452	Gland flange	A 105	A 105	A 351-CF8	A 351-CF8M
456	Gland bush	A 276-410	A 276-410	A 276-304	A 276-316
461	Gland packing	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE
515	Seat ring	A 105+13% Cr ³⁾ / A 105+ST6	A 183-F11+ST6	A 351-CF8	A 351-CF8M
544	Stem nut	A 439-D2	A 439-D2	A 439-D2	A 439-D2
900	Gland bolt	A 307-B	A 307-B	A 182-F 304	A 182-F 304
902	Stud	A 193-B7	A 193-B16	A 193-B8	A 193-B8M
920.1	Hex. nut	A 194-2H	A 194-4/7	A 194-8	A 194-8M
920.2	Hex. nut		A 194-2H	A 194-8	A 194-8M
961	Handwheel	SG IRON / CS	SG IRON / CS	SG IRON / CS	SG IRON / CS

- 1) Disc material A 105 only for sizes 2"-8" #150/300 & 2"-6" #600
- 2) Weld deposition on disc is ST6 for Trim 5 only
- 3) Seat Ring Material A 105+13% Cr for Trim 1 only
- 4) Disc Material A 182 GR F 304 only for size 2"
- 5) Disc Material A 182 GR F 316 only for size 2"

Testing

Test / Test pressure	#150		#300		#600		Testing medium
	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
Shell	32	450	80	1125	160	2250	Water
Seat / Back Seat	23	325	59	825	117	1650	

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	285	20.4	740	52.0	1480	104.1
200	93.3	260	18.3	680	47.8	1360	95.6
300	148.9	230	16.2	655	46.1	1310	92.1
400	204.4	200	14.1	635	44.6	1265	88.9
500	260.0	170	12.0	605	42.5	1205	84.7
600	315.6	140	9.8	570	40.1	1135	79.8
650	343.3	125	8.8	550	38.7	1100	77.3
700	371.1	110	7.7	530	37.3	1060	74.5
750	398.9	95	6.7	505	35.5	1015	71.4
800	426.7	80	5.6	410	28.8	825	58.0
850	454.4	65	4.6	320	22.5	640	45.0
900	482.2	50	3.5	230	16.2	460	32.3
950	510.0	35	2.5	135	9.5	275	19.3
1000	537.8	20	1.4	85	6.0	170	12.0

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ⁽¹⁾⁽²⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	290	20.4	750	52.7	1500	105.5
200	93.3	260	18.3	750	52.7	1500	105.5
300	148.9	230	16.2	720	50.6	1445	101.6
400	204.4	200	14.1	695	48.9	1385	97.4
500	260.0	170	12.0	665	46.8	1330	93.5
600	315.6	140	9.8	605	42.5	1210	85.1
650	343.3	125	8.8	590	41.5	1175	82.6
700	371.1	110	7.7	570	40.1	1135	79.8
750	398.9	95	6.7	530	37.3	1065	74.9
800	426.7	80	5.6	510	35.9	1015	71.4
850	454.4	65	4.6	485	34.1	975	68.5
900	482.2	50	3.5	450	31.6	900	63.3
950	510.0	35	2.5	320	22.5	640	45.0
1000	537.8	20	1.4	215	15.1	430	30.2
1050	565.6	20	1.4	145	10.2	290	20.4
1100	593.3	20	1.4	95	6.7	190	13.4
1150	621.1	20	1.4	65	4.6	130	9.1
1200	648.9	15	1.1	40	2.8	80	5.6

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 2.1 Material : A 351 Gr. CF8 ⁽¹⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	275	19.3	720	50.6	1440	101.2
200	93.3	230	16.2	600	42.2	1200	84.4
300	148.9	205	14.4	540	38.0	1075	75.6
400	204.4	190	13.4	495	34.8	995	70.0
500	260.0	170	12.0	465	32.7	930	65.4
600	315.6	140	9.8	440	30.9	885	62.2
650	343.3	125	8.8	430	30.2	865	60.8
700	371.1	110	7.7	420	29.5	845	59.4
750	398.9	95	6.7	415	29.2	825	58.0
800	426.7	80	5.6	405	28.5	810	56.9
850	454.4	65	4.6	395	27.8	790	55.5
900	482.2	50	3.5	390	27.4	780	54.8
950	510.0	35	2.5	380	26.7	765	53.8
1000	537.8	20	1.4	355	25.0	710	49.9
1050	565.6	20	1.4	325	22.8	650	45.7
1100	593.3	20	1.4	255	17.9	515	36.2
1150	621.1	20	1.4	205	14.4	410	28.8
1200	648.9	20	1.4	165	11.6	330	23.2
1250	676.7	20	1.4	135	9.5	265	18.6
1300	704.4	20	1.4	115	8.1	225	15.8
1350	732.2	20	1.4	95	6.7	185	13.0
1400	760.0	20	1.4	75	5.3	150	10.5
1450	787.8	20	1.4	60	4.2	115	8.1
1500	815.6	15	1.1	40	2.8	85	6.0

1) At temperatures over 1000°F, use only when the carbon content is 0.04% or higher.

Rating for Group 2.2 Material : A 351 Gr. CF8M ⁽¹⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	275	19.3	720	50.6	1440	101.2
200	93.3	235	16.5	620	43.6	1240	87.2
300	148.9	215	15.1	560	39.4	1120	78.7
400	204.4	195	13.7	515	36.2	1025	72.1
500	260.0	170	12.0	480	33.7	955	67.1
600	315.6	140	9.8	450	31.6	900	63.3
650	343.3	125	8.8	440	30.9	885	62.2
700	371.1	110	7.7	435	30.6	870	61.2
750	398.9	95	6.7	425	29.9	855	60.1
800	426.7	80	5.6	420	29.5	845	59.4
850	454.4	65	4.6	420	29.5	835	58.7
900	482.2	50	3.5	415	29.2	830	58.4
950	510.0	35	2.5	385	27.1	775	54.5
1000	537.8	20	1.4	365	25.7	725	51.0
1050	565.6	20	1.4	360	25.3	720	50.6
1100	593.3	20	1.4	305	21.4	610	42.9
1150	621.1	20	1.4	235	16.5	475	33.4
1200	648.9	20	1.4	185	13.0	370	26.0
1250	676.7	20	1.4	145	10.2	295	20.7
1300	704.4	20	1.4	115	8.1	235	16.5
1350	732.2	20	1.4	95	6.7	190	13.4
1400	760.0	20	1.4	75	5.3	150	10.5
1450	787.8	20	1.4	60	4.2	115	8.1
1500	815.6	15	1.1	40	2.8	85	6.0

1) At temperatures over 1000°F, use only when the carbon content is 0.04% or higher.



Type SCC

**Swing Check Valve
Cast Steel, Bolted Cover
Flanged / Butt weld ends**

**2"-24" (50-600mm)
Class 150, 300, 600**

Design in accordance with BS 1868

Applications

- Refineries, Power stations, Process & General Industry
- For water, steam, gas, oil and other non-aggressive media
- Further applications on request

Operating data

- Pressure range up to 103.4 bar (1480 psi)
- Temperature range up to +593°C/1100°F
- Minimum temperature is 0°C (less than 0°C on request).
- Pressure-temperature ratings as per ASME B 16.34 Standard Class.

Materials

- ASTM A 216 WCB from 0°C to 425°C
- ASTM A 217 WC6 from 0°C to 593°C
- ASTM 351 CF8 from 0°C to 537°C

Design

- As per BS 1868
- Pressure, Temperature rating as per ASME B 16.34
- Hard faced Seats (13% Cr / Stellite)
- The Valves meet the safety requirement of the Pressure Equipment Directive 97/23/EC(PED) of annex I for fluids of the groups 1 and 2.

Variants on Request

- Drain Plug
- Bypass arrangement
- Dampener / Dash Pot arrangement for DN 350 and above
- Other Material of construction

Remarks :

(Type Series Booklet References)

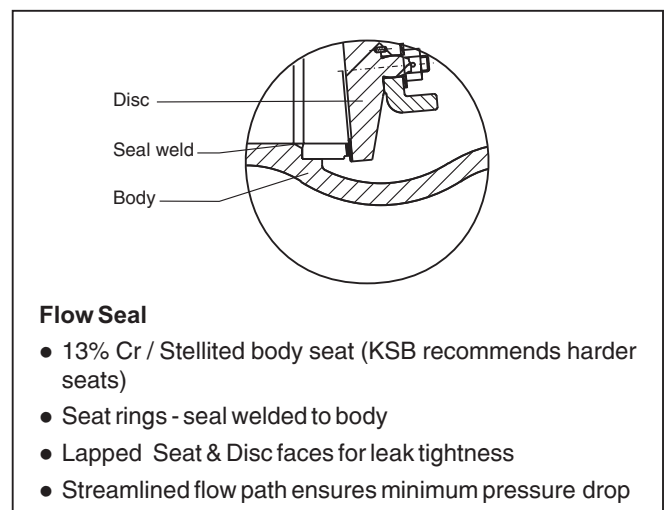
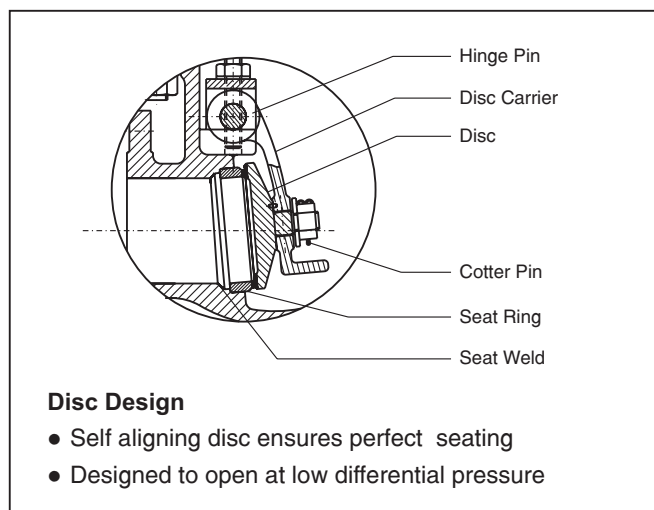
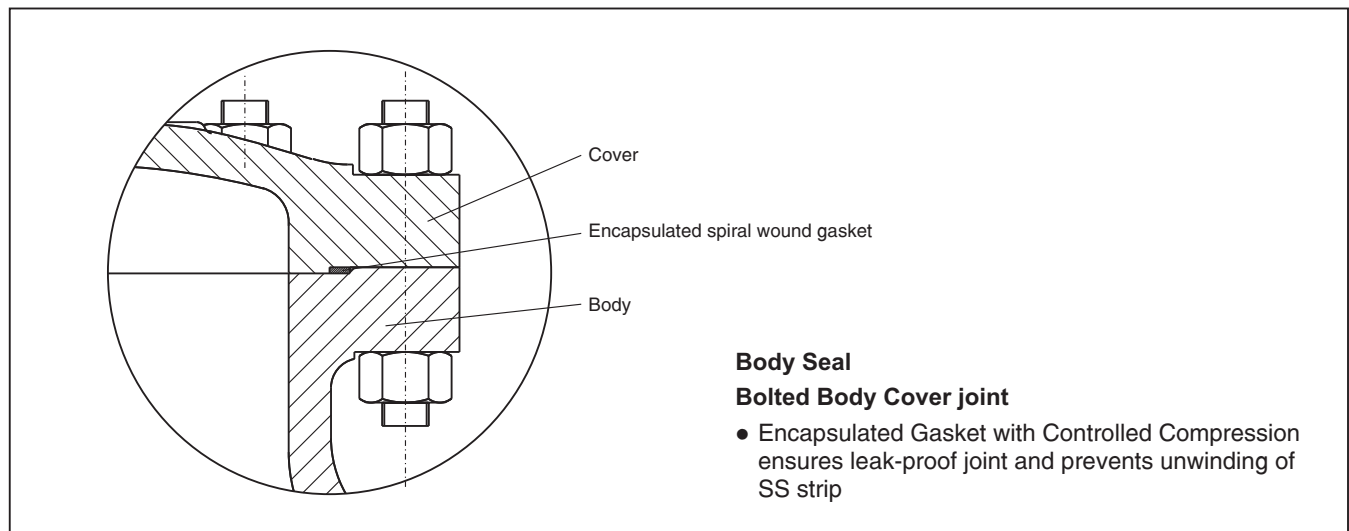
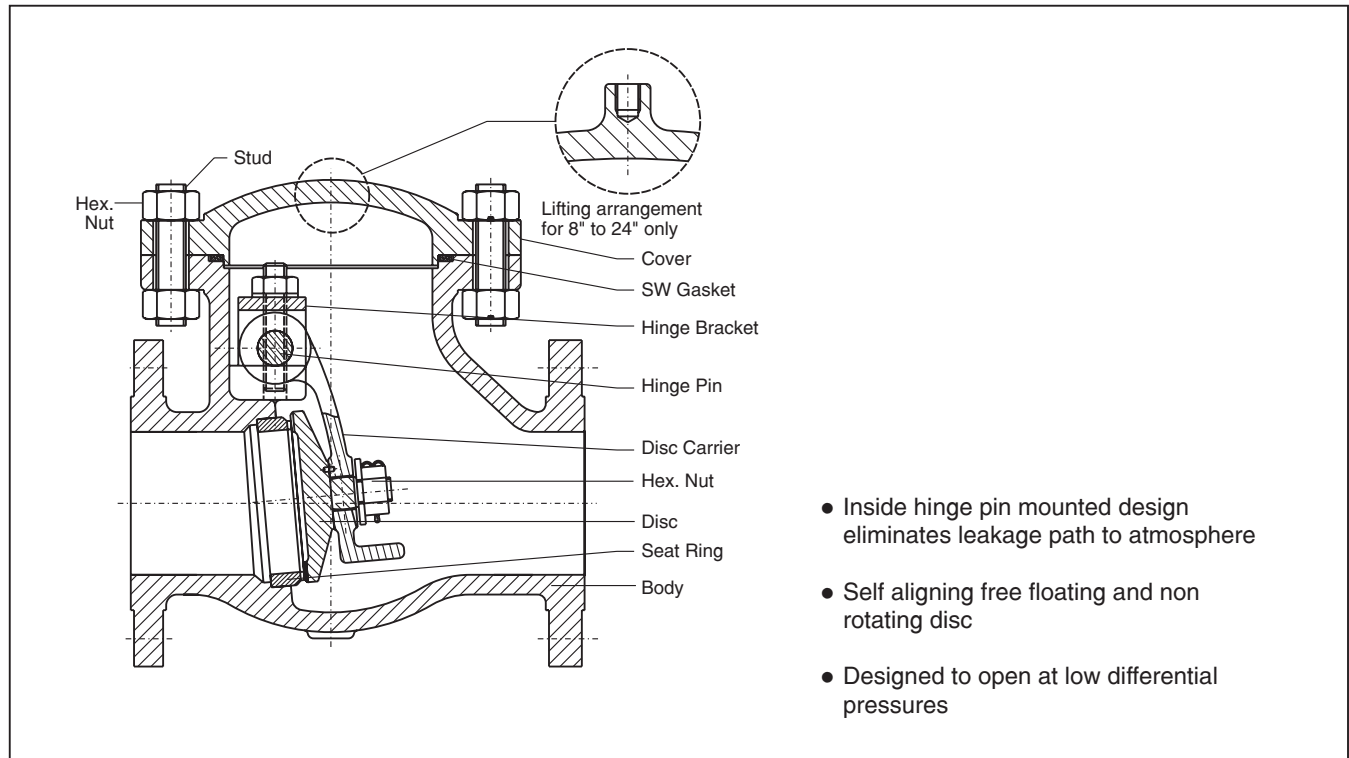
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SICCA 900-2500 SCC	: 7243.2/01-14
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SICCA 150-600 GLC	: 7245.2/01-14
Operating instructions no.	: 0500.80/06-18 G3

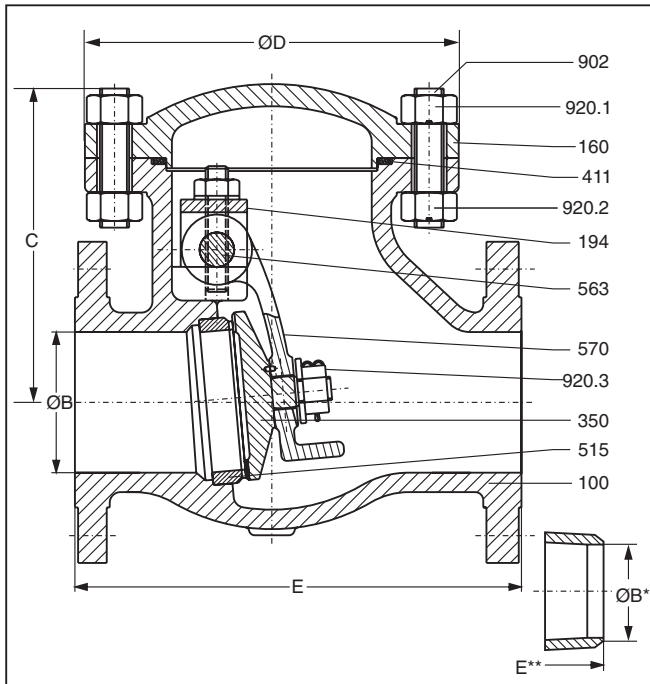
On all enquiries/orders please specify

- | | |
|--------------------------------|--------------------------------------|
| 1. Type | 9. Flow Medium |
| 2. ASME Pressure class | 10. Flow rate Min. / Max. |
| 3. Size | 11. Type of end connection |
| 4. Design pressure/temperature | 12. Pipe Schedule Inlet/ Outlet Dia |
| 5. Operating pressure | 13. Variants |
| 6. Operating temperature | 14. Type Series Booklet no. |
| 7. Differential pressure | 15. Valve data sheet (if applicable) |
| 8. Material of construction | |

When ordering spares, Indicate Serial number of Valve.

Product features to our customer benefit





Design Specifications

General valve design	: BS 1868
Pressure, temperature rating	: ASME B 16.34
Flanged end design	: ASME B 16.5
Buttweld end design	: ASME B 16.25
End to end dimension/ face to face	: ASME B 16.10
Testing standard	: API 598

Dimensions in mm

Class 150

	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
E	203.2	241.3	292.1	355.6	495.3	622.3	698.5	787.4	863.6	977.9	977.9	1295.4
ØB	51.0	76.0	102.0	152.0	203.0	254.0	305.0	336.0	387.0	438.0	489.0	591.0
C(max)	160.0	200.0	230.0	250.0	310.0	380.0	420.0	500.0	555.0	610.0	655.0	740.0
ØD	205.0	210.0	235.0	305.0	350.0	460.0	474.0	536.0	605.0	680.0	750.0	870.0
E**	203.2	241.3	292.1	355.6	495.3	622.3	698.5	787.4	863.6	977.9	977.9	1295.4
ØB**	52.5	78.0	102.0	154.0	203.0	254.5	303.0	333.5	381.0	428.5	478.0	574.5

** For Butt weld end valves schedule 40 for class 150. Alternate schedule on request.

Class 300

	2"	3"	4"	6"	8"	10"	12"	14"	16"
E	266.7	317.5	355.6	444.5	533.4	622.3	711.2	838.2	863.6
ØB	51.0	76.0	102.0	152.0	203.0	254.0	305.0	337.0	387.0
C(max)	155.0	210.0	240.0	280.0	330.0	385.0	445.0	560.0	640.0
ØD	205.0	210.0	245.0	305.0	370.0	435.0	474.0	580.0	650.0
E**	266.7	317.5	355.6	444.5	533.4	622.3	711.2	838.2	863.6
ØB**	52.5	78.0	102.0	154.0	203.0	254.5	303.0	333.5	381.0

** For Butt weld end valves schedule 40 for class 300.
Alternate schedule on request.

Class 600

	2"	3"	4"	6"	8"	10"	12"
E	292.1	355.6	431.8	558.8	660.4	787.4	838.2
ØB	51.0	76.0	102.0	152.0	200.0	248.0	298.0
C(max)	190.0	230.0	260.0	300.0	395.0	460.0	560.0
ØD	187.0	224.0	280.0	340.0	422.0	506.0	560.0
E**	292.1	355.6	431.8	558.8	660.4	787.4	838.2
ØB**	49.2	73.5	97.0	146.5	193.5	243.0	289.0

** For Butt weld end valves schedule 80 for class 600.
Alternate schedule on request.

Materials

Part No.	Description	Material			
100	Body	A 216-WCB	A 217-WC6	A 351-CF8	A 351-CF8M
160	Cover	A 216-WCB	A 217-WC6	A 351-CF8	A351-CF8M
194	Hinge bracket	A 216-WCB IS 2002 (A 516-60)	A 217-WC6 IS 2002 (A 516-60)	A 351-CF8	A 351-CF8M
350	Disc	A 105+13% Cr ¹⁾ / A 105+ST6 ²⁾ A 216-WCB+13% Cr / A 216-WCB+ST6 ²⁾	A 217 GR WC6+13% Cr / A 217-WC6+ST6 ²⁾	A 351-CF8	A 351-CF8M
411	Gasket	SS 316 + GRPH	SS 316 + GRPH	SS 316+GRPH	SS 316+GRPH
515	Seat ring	A 105+13% Cr ³⁾ / A 105+ST6	A 182-F11+ST6	A 182-F 304	A 182-F 316
563	Hing pin	A 479-410-1	A 479-410-1	A 276-304	A 276-316
570	Disc carrier	A 216-WCB	A 217-WC6	A 351-CF8	A 351-CF8M
902	Stud	A 193-B7	A 193-B16	A 193-B8	A 193-B8M
920.1/2	Hex. nut	A 194-2H	A 194-4/7	A 194-B8	A 194-8M
920.3	Hex. nut	SS (18-8) / A 194-2H	SS (18-8) / A 194-4/7	SS (18-8)	A 194-8M

1) Disc material is A 105 only for sizes 2" to 8"

2) Weld deposition on disc is ST6 for Trim 5 only

3) Seat Ring Material A 105+13% Cr for Trim 1 only

Testing

Test / Test pressure	#150		#300		#600		Testing medium
	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
Shell	32	450	79	1125	160	2250	Water
Seat	23	325	59	825	117	1650	

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	285	20.4	740	52.0	1480	104.1
200	93.3	260	18.3	680	47.8	1360	95.6
300	148.9	230	16.2	655	46.1	1310	92.1
400	204.4	200	14.1	635	44.6	1265	88.9
500	260.0	170	12.0	605	42.5	1205	84.7
600	315.6	140	9.8	570	40.1	1135	79.8
650	343.3	125	8.8	550	38.7	1100	77.3
700	371.1	110	7.7	530	37.3	1060	74.5
750	398.9	95	6.7	505	35.5	1015	71.4
800	426.7	80	5.6	410	28.8	825	58.0
850	454.4	65	4.6	320	22.5	640	45.0
900	482.2	50	3.5	230	16.2	460	32.3
950	510.0	35	2.5	135	9.5	275	19.3
1000	537.8	20	1.4	85	6.0	170	12.0

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ^{(1) (2)} Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	290	20.4	750	52.7	1500	105.5
200	93.3	260	18.3	750	52.7	1500	105.5
300	148.9	230	16.2	720	50.6	1445	101.6
400	204.4	200	14.1	695	48.9	1385	97.4
500	260.0	170	12.0	665	46.8	1330	93.5
600	315.6	140	9.8	605	42.5	1210	85.1
650	343.3	125	8.8	590	41.5	1175	82.6
700	371.1	110	7.7	570	40.1	1135	79.8
750	398.9	95	6.7	530	37.3	1065	74.9
800	426.7	80	5.6	510	35.9	1015	71.4
850	454.4	65	4.6	485	34.1	975	68.5
900	482.2	50	3.5	450	31.6	900	63.3
950	510.0	35	2.5	320	22.5	640	45.0
1000	537.8	20	1.4	215	15.1	430	30.2
1050	565.6	20	1.4	145	10.2	290	20.4
1100	593.3	20	1.4	95	6.7	190	13.4
1150	621.1	20	1.4	65	4.6	130	9.1
1200	648.9	15	1.1	40	2.8	80	5.6

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 2.1 Material : A 351 Gr. CF8 ⁽¹⁾ Standard Class

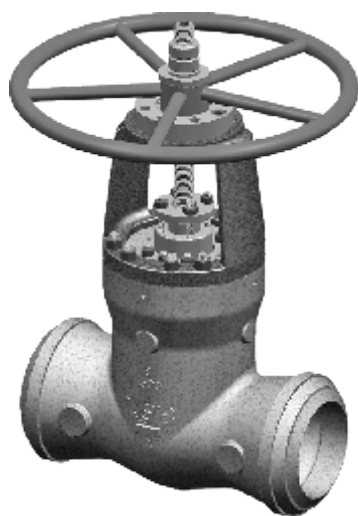
Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	275	19.3	720	50.6	1440	101.2
200	93.3	230	16.2	600	42.2	1200	84.4
300	148.9	205	14.4	540	38.0	1075	75.6
400	204.4	190	13.4	495	34.8	995	70.0
500	260.0	170	12.0	465	32.7	930	65.4
600	315.6	140	9.8	440	30.9	885	62.2
650	343.3	125	8.8	430	30.2	865	60.8
700	371.1	110	7.7	420	29.5	845	59.4
750	398.9	95	6.7	415	29.2	825	58.0
800	426.7	80	5.6	405	28.5	810	56.9
850	454.4	65	4.6	395	27.8	790	55.5
900	482.2	50	3.5	390	27.4	780	54.8
950	510.0	35	2.5	380	26.7	765	53.8
1000	537.8	20	1.4	355	25.0	710	49.9
1050	565.6	20	1.4	325	22.8	650	45.7
1100	593.3	20	1.4	255	17.9	515	36.2
1150	621.1	20	1.4	205	14.4	410	28.8
1200	648.9	20	1.4	165	11.6	330	23.2
1250	676.7	20	1.4	135	9.5	265	18.6
1300	704.4	20	1.4	115	8.1	225	15.8
1350	732.2	20	1.4	95	6.7	185	13.0
1400	760.0	20	1.4	75	5.3	150	10.5
1450	787.8	20	1.4	60	4.2	115	8.1
1500	815.6	15	1.1	40	2.8	85	6.0

1) At temperatures over 1000°F, use only when the carbon content is 0.04% or higher.

Rating for Group 2.2 Material : A 351 Gr. CF8M ⁽¹⁾ Standard Class

Temperature		# 150		# 300		# 600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	275	19.3	720	50.6	1440	101.2
200	93.3	235	16.5	620	43.6	1240	87.2
300	148.9	215	15.1	560	39.4	1120	78.7
400	204.4	195	13.7	515	36.2	1025	72.1
500	260.0	170	12.0	480	33.7	955	67.1
600	315.6	140	9.8	450	31.6	900	63.3
650	343.3	125	8.8	440	30.9	885	62.2
700	371.1	110	7.7	435	30.6	870	61.2
750	398.9	95	6.7	425	29.9	855	60.1
800	426.7	80	5.6	420	29.5	845	59.4
850	454.4	65	4.6	420	29.5	835	58.7
900	482.2	50	3.5	415	29.2	830	58.4
950	510.0	35	2.5	385	27.1	775	54.5
1000	537.8	20	1.4	365	25.7	725	51.0
1050	565.6	20	1.4	360	25.3	720	50.6
1100	593.3	20	1.4	305	21.4	610	42.9
1150	621.1	20	1.4	235	16.5	475	33.4
1200	648.9	20	1.4	185	13.0	370	26.0
1250	676.7	20	1.4	145	10.2	295	20.7
1300	704.4	20	1.4	115	8.1	235	16.5
1350	732.2	20	1.4	95	6.7	190	13.4
1400	760.0	20	1.4	75	5.3	150	10.5
1450	787.8	20	1.4	60	4.2	115	8.1
1500	815.6	15	1.1	40	2.8	85	6.0

1) At temperatures over 1000°F, use only when the carbon content is 0.04% or higher.



Type GTC

Gate Valve
Cast Steel, Pressure seal Bonnet
Butt weld ends

2" - 24" (50-600 mm)
Class 900, 1500, 2500

Design in accordance with ASME B16.34

Applications

- Power stations, general industry, process engineering
- For water, steam, gas, oil & other non-aggressive media
- Further applications on request

Operating Data

- Pressure up to 431 bar (6250 psi)
- Temperature up to +650°C / 1200°F
- Minimum temperature is 0°C (less than 0°C on request)
- Pressure-temperature ratings as per ASME B 16.34, Standard class

Materials

- ASTM A 216 WCB from 0°C to 425°C
- ASTM A 217 WC6/WC9 from 0°C to 593°C
- ASTM A 217 C12A from 0°C to 650°C
- ASTM A216 WCC from 0°C to 538°C

Design

- As per ASME B 16.34
- Pressure Seal Bonnet Design
- Stellite hard-faced Seats & Disc surface
- Graphite gaskets & packings with Braided wiping rings
- Internal pressure relieving on disc
- Direct retrofitting of Actuator
- Reduced bore
- Double disc wedge design
- The Valves meet the safety requirement of the Pressure Equipment Directive 97/23/EC(PED) of annex I for fluids of the groups 1 and 2.

Variants on Request

- Bypass Arrangement
- Gear / Electrical Actuator
- Other pressure relief arrangements
- Full bore execution
- Position indicator
- Locking Arrangement
- Stem Protector
- Special class execution
- Parallel slide double disc gate

Remarks :

(Type Series Booklet References)

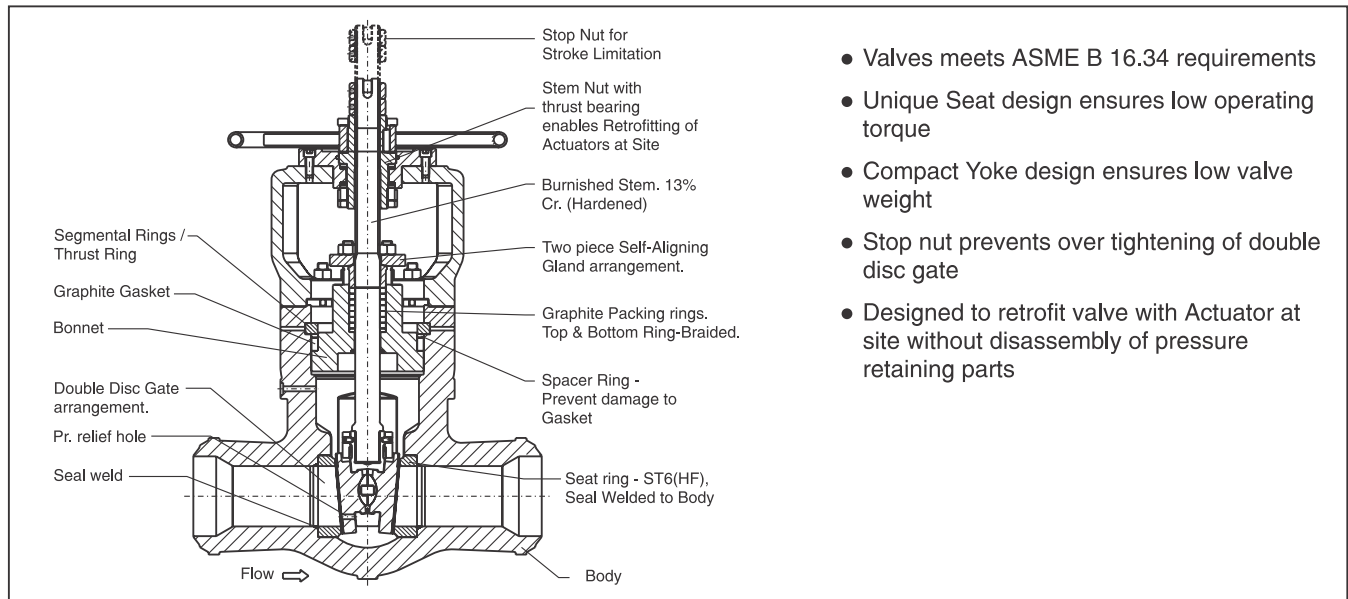
SICCA 800-4500 GTF / GLF / PCF	: 7240.1/06-16
SICCA 900-2500 GLC	: 7242.2/06-16
SICCA 900-2500 SCC	: 7243.2/06-16
SICCA 150-600 GTC	: 7244.2/06-16
SICCA 150-600 GLC	: 7245.2/06-16
SICCA 150-600 SCC	: 7246.2/06-16
Operating instructions no	: 0500.80/07-18 G3

On all enquiries / orders please specify :

- | | |
|--------------------------------|--------------------------------------|
| 1. Type | 9. Flow medium |
| 2. ASME Pressure class | 10. Flow rate Min./Max. |
| 3. Size | 11. Type of end connection |
| 4. Design pressure/temperature | 12. Pipe Schedule Inlet/Outlet Dia |
| 5. Operating pressure | 13. Variants |
| 6. Operating temperature | 14. Type Series Booklet no. |
| 7. Differential pressure | 15. Valve data sheet (if applicable) |
| 8. Material of construction | |

When ordering spares, Indicate Serial number of Valve.

Product features to our customer benefit (class 900-2500)



Flow Seal

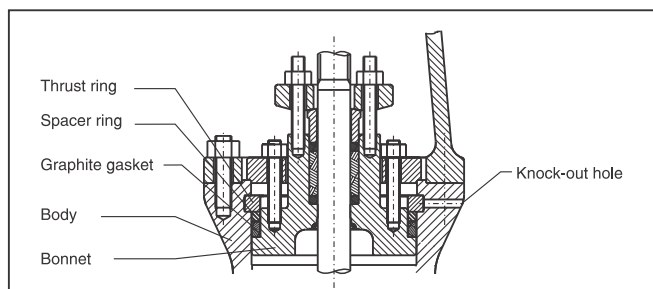
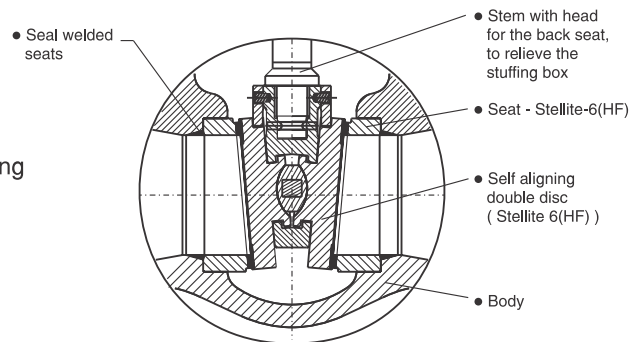
- Fully stellited Body & Disc seats
- Seat rings - seal welded to body
- Lapped Seat & Disc faces for leak tightness
- Streamlined flow path ensures minimum pressure drop

Disc Design

- Self aligning double disc arrangement ensures perfect seating
- Wedging action ensures leak tightness
- Leak tightness at low & high differential pressure
- Extended disc wear life by possibility of shim addition

Stem Wedge Connection

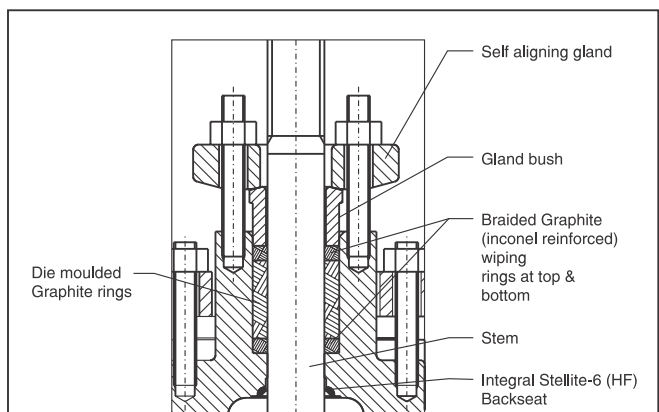
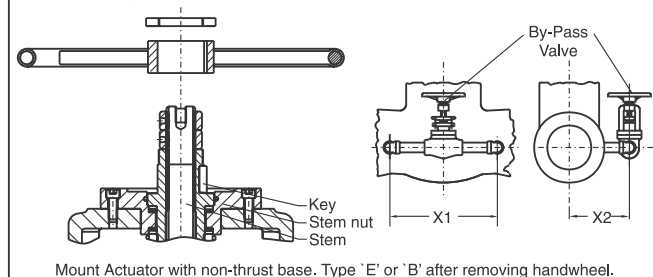
- Strong stem-disc joint capable of withstanding higher operating forces



Pressure Seal Bonnet

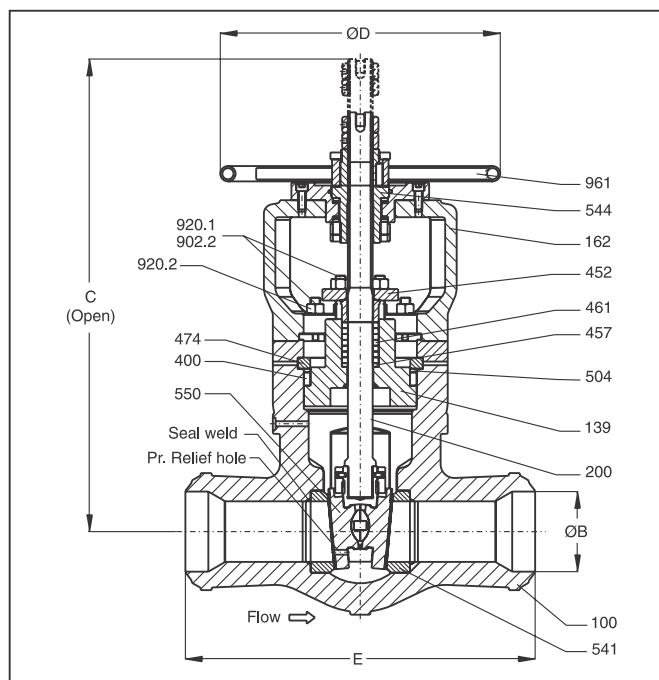
- Die moulded graphite gasket
- Segmental ring arrangement with knock out hole ensures easy disassembly

Retrofitting of Actuator & By-pass Execution



Gland Seal

- Die moulded graphite rings ensures effective sealing to atmosphere
- Top & bottom rings are braided graphite and inonel reinforced
- Braided rings offer smooth wiping action thereby arresting graphite depletion
- Smooth finished & polished stem and smooth stuffing box surfaces improve gland sealing life
- Two piece self aligning gland arrangement
- Integral hard faced back seat for maximum service life



Design Specifications (class 900-2500)

General valve design & pressure, temperature rating : ASME B 16.34
 Butt weld end design : ASME B 16.25
 End to end dimension : ASME B 16.10
 Testing : API 598

Dimensions in mm (class 900-2500)

Class 900 RB

Size (Inch)	2"	3x2x3	4x3x4	6x4x6	8x6x8	10x8x10	12x10x12
E	216	216	305	356	508	660	787
ØB*	49.5	73.5	92	139.5	182.5	230	273
C (max)	537	537	625	713	862	1017	1266
ØD	254	254	356	457	508	610	610

* Schedule 80 up to 3". Schedule 120 for 4" and above. Alternate schedule on request.

Class 900 FB

Size (Inch)	3"	4"	6"	8"	10"	12"
E	305	356	508	660	787	914
ØB*	73.5	92	139.5	182.5	230	273
C (max)	645	724	885	1042	1295	1568
ØD	356	457	610	610	610	610

* Schedule 80 up to 3". Schedule 120 for 4" and above. Alternate schedule on request.

Class 1500 RB

Size (Inch)	3x2x3	4x3x4	6x4x6	8x6x8	10x8x10	12x10x12	14x12x14	16x14x16	18x16x18	20x18x20	24x20x24
E	216	305	406	559	711	864	991	1067	1194	1346	1473
ØB*	66.5	87.5	131.5	173	216	257	284	325.5	366.5	408	490.5
C (max)	537	625	708	860	1033	1269	1470	1601	1778	1977	2148
ØD	254	356	457	610	610	610	**	**	**	**	**

* Schedule 160. Alternate schedule on request.

Class 1500 FB

Size (Inch)	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
E	216	305	406	559	711	864	991	1067	1194	1346	1473
ØB*	43	66.5	87.5	131.5	173	216	257	284	325.5	366.5	408
C (max)	537	625	708	946	1033	1269	1470	1601	1778	1977	2148
ØD	254	356	457	610	610	610	**	**	**	**	**

* Schedule 160. Alternate schedule on request. ** Mandatory Gear Box.

Class 2500 RB

Size (Inch)	3x2x3	4x3x4	6x4x6	8x6x8	10x8x10	12x10x12	14x12x14	16x14x16	18x16x18	20x18x20	24x20x24
E	279	368	457	610	762	914	1041	1118	1245	1397	1575
ØB*	58.5	80	124.5	174.5	216	257	284	325.5	366.5	408	490.5
C (max)	531	634	682	911	1071	1209	1386	1574	1728	1912	2114
ØD	254	457	457	610	610	**	**	**	**	**	**

* Schedule XXS up to 6". Schedule 160 for 8" and above. Alternate schedule on request.

** Mandatory Gear Box.

Class 2500 FB

Size (Inch)	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
E	279	368	457	610	762	914	1041	1118	1245	1397	1575
ØB*	38	58.5	80	124.5	174.5	216	257	284	325.5	366.5	408
C (max)	531	634	682	922	1072	1209	1386	1574	1728	1912	2114
ØD	254	457	457	610	610	**	**	**	**	**	**

* Schedule XXS up to 6". Schedule 160 for 8" and above. Alternate schedule on request.

** Mandatory Gear Box.

Materials (class 900-2500)

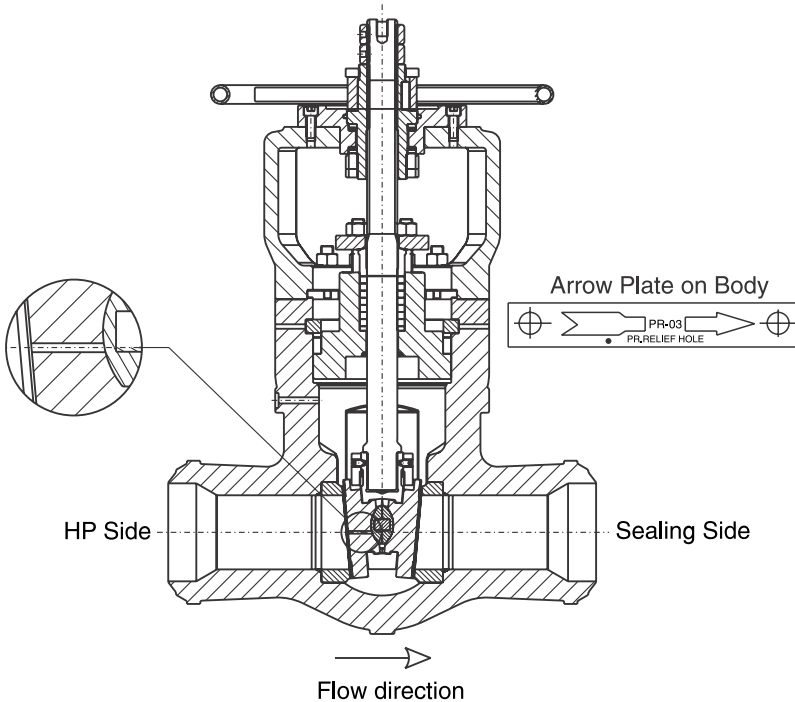
Part No.	Description	Material				
100	Body	A 216-WCB	A 217-WC6	A 217-WC9	A 217-C12A	A 216-WCC
139	Bonnet ¹⁾	A 216-WCB+ST6 / A 105+ST6	A 217-WC6+ST6 / A 182-F11+ST6	A 217-WC9+ST6 / A 182-F22+ST6	A 217-C12A+ST6 / A 182-F91+ST6	A 216 WCC+ST6 A 182-F11+ST6
162	Yoke	A 216-WCB	A 217-WCB	A 216-WCB	A 217-WC9	A 216 WCC
200	Stem	A 479-410-2	A 479-410-2	A 479-410-2	A 479-XM19-A	A 479-410-2
324	Thrust bearing	FAG/EQUIVALENT	FAG/EQUIVALENT	FAG/EQUIVALENT	FAG/EQUIVALENT	FAG/EQUIVALENT
367	Disc holder	A 216-WCB	A 217-WC6	A 217-WC9	A 217-C12A	A 216-WCC
400	Gasket	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE
452	Gland flange	IS 2002-2	IS 2002-2	IS 2002-2	A 182-F22 CL3	IS 2002-2
456	Gland bush	A 276-410-A	A 276-410-A	A 276-410-A	A 276-410-A	A 276-410-A
457	Packing ring	A 439-D2	A 439-D2	A 439-D2	A 439-D2	A 439-D2
461	Gland packing	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE
474	Thrust ring	A 336-F91	A 336-F91	A 336-F91	A 336-F91	A336-F91
504	Spacer ring	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3
541	Seat ring	A 105+ST6	A 182-F11+ST6	A 182-F22+ST6	A 182-F91+ST6	A 182-F11+ST6
544	Stem nut	AL. BRONZE	AL. BRONZE	AL. BRONZE	AL. BRONZE	AL. BRONZE
550	Disc ²⁾	A 216-WCB+ST6 / A 105+ST6	A 217-WC6+ST6 / A 182-F11+ST6	A 217-WC9+ST6 / A 182-F22+ST6	A 217-C12A+ST6 / A 182-F91+ST6	A 216 WCC+ST6 A 182-F11+ST6
583	Bonnet retainer	IS 2002-2 (A 516-60)	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	IS 2002-2
701.1	By-pass tube	A 106-B	A 335-P22	A 335-P22	A 335-P91	A 335-P22
741.1	By-pass valve	A 105	A 182-F22	A 182-F22	A 182-F91	A 182-F22
902.1 / .2	Stud	A 193-B7	A 193-B16	A 193-B16	A 193-B16	A 193-B16
920.1 / .2	Hex. nut	A 194-2H	A 194-4/7	A 194-4/7	A 194-4/7	A 194-4/7
961	Handwheel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel

1) Forging Upto 8" RB

2) Forging Upto 10" RB

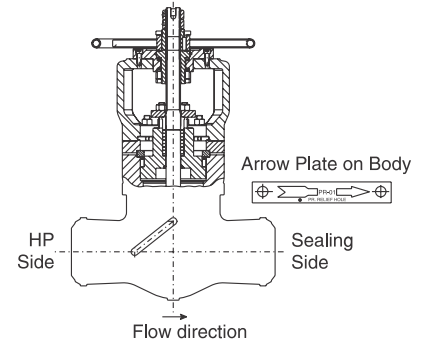
Pressure Relief Arrangement :

Standard Pressure Relief Arrangement Execution Ref. No. PR-03

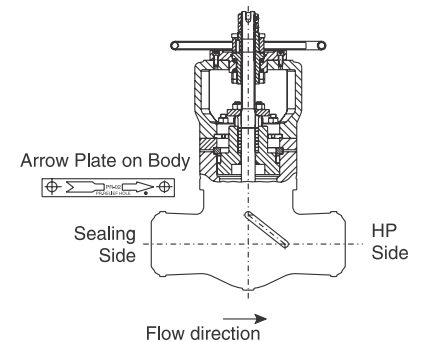


Rest shown here are optional arrangements

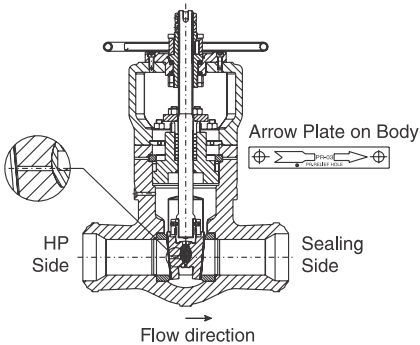
PR-01 External Pipe Connecting Bonnet cavity at 'K' side, Valve - Unidirectional



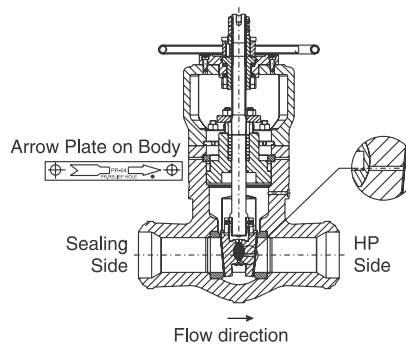
PR-02 External Pipe Connecting Bonnet cavity at 'B' side, Valve - Unidirectional



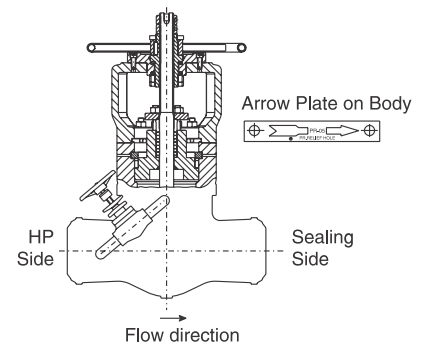
PR-03 Internal Pr. Relief Arrangement Pr. Relief Hole on Disc at 'K' side, Valve - Unidirectional



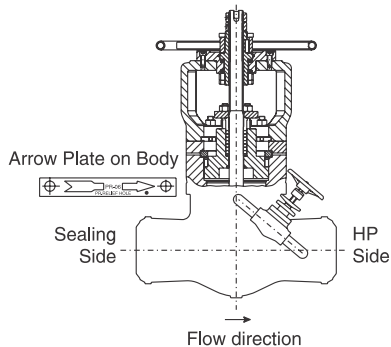
PR-04 Internal Pr. Relief Arrangement Pr. Relief Hole on Disc at 'B' side, Valve - Unidirectional



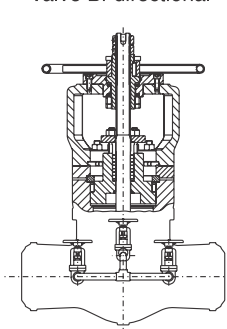
PR-05 External Pr. Relief pipe with interconnection valve at 'K' side, Valve - Unidirectional



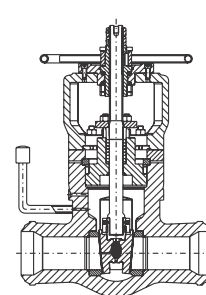
PR-06 External Pr. Relief pipe with interconnection valve at 'B' side, Valve - Unidirectional



PR-07 External Pr. Relief Arrangement Decompression system Valve Bi-directional



PR-08 External Pr. Relief Arrangement with a Stub pipe at bonnet cavity for mounting Safety Valve Valve - Bi-directional



Note : 'K' side & 'B' side indicated above are with respect to as cast "KSB" mark on the valve body.

Testing

Test / Test pressure	#900		#1500		#2500		Testing medium
	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
Shell	238	3375	396	5625	660	9375	Water
Seat / Back Seat	175	2475	291	4125	484	6875	
Seat	6	85	6	85	6	85	Air

Pressure Temperature Rating - Standard Class

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2220.0	156.1	3705.0	260.5	6170.0	433.8
200	93.3	2035.0	143.1	3395.0	238.7	5655.0	397.6
300	148.9	1965.0	138.2	3270.0	229.9	5450.0	383.2
400	204.4	1900.0	133.6	3170.0	222.9	5280.0	371.2
500	260.0	1810.0	127.3	3015.0	212.0	5025.0	353.3
600	315.6	1705.0	119.9	2840.0	199.7	4730.0	332.6
650	343.3	1650.0	116.0	2745.0	193.0	4575.0	321.7
700	371.1	1590.0	111.8	2665.0	187.4	4425.0	311.1
750	398.9	1520.0	106.9	2535.0	178.2	4230.0	297.4
800	426.7	1235.0	86.8	2055.0	144.5	3430.0	241.2
850	454.4	955.0	67.1	1595.0	112.1	2655.0	186.7
900	482.2	690.0	48.5	1150.0	80.9	1915.0	134.6
950	510.0	410.0	28.8	685.0	48.2	1145.0	80.5
1000	537.8	255.0	17.9	430.0	30.2	715.0	50.3

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2165.0	152.2	3610.0	253.8	6015.0	422.9
400	204.4	2080.0	146.2	3465.0	243.6	5775.0	406.0
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	955.0	67.1	1595.0	112.1	2655.0	186.7
1000	537.8	650.0	45.7	1080.0	75.9	1800.0	126.6
1050	565.6	430.0	30.2	720.0	50.6	1200.0	84.4
1100	593.3	290.0	20.4	480.0	33.7	800.0	56.2
1150	621.1	195.0	13.7	325.0	22.8	545.0	38.3
1200	648.9	125.0	8.8	205.0	14.4	345.0	24.3

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.10 Material : A 217 Gr. WC9 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2185.0	153.6	3640.0	255.9	6070.0	426.8
400	204.4	2115.0	148.7	3530.0	248.2	5880.0	413.4
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	1160.0	81.6	1930.0	135.7	3220.0	226.4
1000	537.8	800.0	56.2	1335.0	93.9	2230.0	156.8
1050	565.6	525.0	36.9	875.0	61.5	1454.0	102.2
1100	593.3	330.0	23.2	550.0	38.7	915.0	64.3
1150	621.1	205.0	14.4	345.0	24.3	570.0	40.1
1200	648.9	125.0	8.8	205.0	14.4	345.0	24.3

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.15 Material : A 217 Gr. C12A

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2185.0	153.6	3640.0	255.9	6070.0	426.8
400	204.4	2115.0	148.7	3530.0	248.2	5880.0	413.4
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	1160.0	81.6	1930.0	135.7	3220.0	226.4
1000	537.8	1090.0	76.6	1820.0	128.0	3030.0	213.0
1050	565.6	1080.0	75.9	1800.0	126.6	3000.0	210.9
1100	593.3	905.0	63.6	1510.0	106.2	2515.0	176.8
1150	621.1	670.0	47.1	1115.0	78.4	1855.0	130.4
1200	648.9	430.0	30.2	720.0	50.6	1200.0	84.4

Pressure Temperature Rating - Standard Class

Rating for Group 1.2 Material : A 216 WCC

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	0 to 38	2249.5	158.2	3750.7	263.7	6249.7	439.4
200	100	2242.3	157.6	3736.2	262.7	6227.9	437.9
300	150	2182.8	153.5	3637.5	255.7	6064.0	426.3
400	200	2114.6	148.7	3527.3	248.0	5879.8	413.4
500	250	2016.0	141.7	3362.0	236.4	5601.4	393.8
600	325	1798.5	126.4	2996.5	210.7	4993.6	351.1
650	350	1741.9	122.5	2902.2	204.0	4837.0	340.1
700	375	1646.2	115.7	2744.1	192.9	4573.0	321.5
750	400	1511.3	106.3	2517.9	177.0	4195.9	295.0
800	425	1251.7	88.0	2085.6	146.6	3476.6	244.4
850	450	1000.8	70.4	1667.9	117.3	2780.4	195.5
900	475	744.0	52.3	1238.6	87.1	2065.3	145.2
950	500	503.3	35.4	839.8	59.0	1399.6	98.4
1000	538	256.7	18.0	427.9	30.1	713.6	50.2

Pressure Temperature Rating - Special Class

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2220.0	156.1	3700.0	260.1	6170.0	439.4
400	204.4	2200.0	154.7	3665.0	257.7	6105.0	429.2
500	260.0	2200.0	154.7	3665.0	257.7	6105.0	429.2
600	315.6	2200.0	154.7	3665.0	257.7	6105.0	429.2
650	343.3	2145.0	150.8	3575.0	251.3	5960.0	419.0
700	371.1	2075.0	145.9	3455.0	242.9	5760.0	405.0
750	398.9	1905.0	133.9	3170.0	222.9	5285.0	371.6
800	426.7	1545.0	108.6	2570.0	180.7	4285.0	301.3
850	454.4	1195.0	84.0	1995.0	140.3	3320.0	233.4
900	482.2	860.0	60.5	1435.0	100.9	2395.0	168.4
950	510.0	515.0	36.2	855.0	60.1	1430.0	100.5
1000	537.8	320.0	22.5	535.0	37.6	895.0	62.9

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ⁽¹⁾⁽²⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2250.0	158.2	3750.0	263.7	6250.0	439.4
400	204.4	2250.0	158.2	3750.0	263.7	6250.0	439.4
500	260.0	2250.0	158.2	3750.0	263.7	6250.0	439.4
600	315.6	2250.0	158.2	3750.0	263.7	6250.0	439.4
650	343.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
700	371.1	2200.0	154.7	3665.0	257.7	6110.0	429.6
750	398.9	2185.0	153.6	3645.0	256.3	6070.0	426.8
800	426.7	2160.0	151.9	3600.0	253.1	6000.0	421.8
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1760.0	123.7	2935.0	206.4	4895.0	344.2
950	510.0	1195.0	84.0	1995.0	140.3	3320.0	233.4
1000	537.8	810.0	56.9	1350.0	94.9	2250.0	158.2
1050	565.6	540.0	38.0	900.0	63.3	1500.0	105.5
1100	593.3	360.0	25.3	600.0	42.2	1000.0	70.3
1150	621.1	245.0	17.2	405.0	28.5	680.0	47.8
1200	648.9	155.0	10.9	255.0	17.9	430.0	30.2

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Pressure Temperature Rating - Special Class

Rating for Group 1.10 Material : A 217 Gr. WC9 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2220.0	156.1	3695.0	259.8	6160.0	433.1
400	204.4	2185.0	153.6	3640.0	255.9	6065.0	426.4
500	260.0	2175.0	152.9	3620.0	254.5	6035.0	424.3
600	315.6	2165.0	152.2	3605.0	253.5	6010.0	422.5
650	343.3	2145.0	150.8	3580.0	251.7	5965.0	419.4
700	371.1	2120.0	149.1	3535.0	248.5	5895.0	414.5
750	398.9	2120.0	149.1	3535.0	248.5	5895.0	414.5
800	426.7	2120.0	149.1	3535.0	248.5	5895.0	414.5
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1800.0	126.6	3000.0	210.9	5000.0	351.5
950	510.0	1415.0	99.5	2360.0	165.9	3930.0	276.3
1000	537.8	1005.0	70.7	1670.0	117.4	2785.0	195.8
1050	565.6	655.0	46.1	1095.0	77.0	1820.0	128.0
1100	593.3	410.0	28.8	685.0	48.2	1145.0	80.5
1150	621.1	255.0	17.9	430.0	30.2	715.0	50.3
1200	648.9	155.0	10.9	255.0	17.9	430.0	30.2

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.15 Material : A 217 Gr. C12A

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2250.0	158.2	3750.0	263.7	6250.0	439.4
400	204.4	2250.0	158.2	3750.0	263.7	6250.0	439.4
500	260.0	2250.0	158.2	3750.0	263.7	6250.0	439.4
600	315.6	2250.0	158.2	3750.0	263.7	6250.0	439.4
650	343.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
700	371.1	2200.0	154.7	3665.0	257.7	6110.0	429.6
750	398.9	2185.0	153.6	3645.0	256.3	6070.0	426.8
800	426.7	2160.0	151.9	3600.0	253.1	6000.0	421.8
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1800.0	126.6	3000.0	210.9	5000.0	351.5
950	510.0	1415.0	99.5	2360.0	165.9	3930.0	276.3
1000	537.8	1260.0	88.6	2105.0	148.0	3505.0	246.4
1050	565.6	1260.0	88.6	2105.0	148.0	3505.0	246.4
1100	593.3	1130.0	79.4	1885.0	132.5	3145.0	221.1
1150	621.1	835.0	58.7	1395.0	98.1	2320.0	163.1
1200	648.9	540.0	38.0	900.0	63.3	1500.0	105.5

Pressure Temperature Rating - Special Class

Rating for Group 1.2 Material : A 216 WCC

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	0 to 38	2249.5	158.2	3750.7	263.7	6249.7	439.4
200	100	2249.5	158.2	3750.7	263.7	6249.7	439.4
300	150	2249.5	158.2	3750.7	263.7	6249.7	439.4
400	200	2249.5	158.2	3750.7	263.7	6249.7	439.4
500	250	2249.5	158.2	3750.7	263.7	6249.7	439.4
600	325	2249.5	158.2	3750.7	263.7	6249.7	439.4
650	350	2223.4	156.3	3705.7	260.5	6175.7	434.2
700	375	2104.5	148.0	3508.5	246.7	5846.5	411.0
750	400	1888.4	132.8	3147.3	221.3	5246.0	368.8
800	425	1565.0	110.0	2607.8	183.3	4345.3	305.5
850	450	1251.7	88.0	2085.6	146.6	3475.1	244.3
900	475	784.7	55.2	1549.0	108.9	2581.7	181.5
950	500	629.5	44.3	1050.1	73.8	1750.6	123.1
1000	538	322.0	22.6	535.2	37.6	893.4	62.8



Type GLC

**Globe Valve
Cast Steel, Pressure seal Bonnet
Butt weld ends**

**2" - 8" (50-200 mm)
Class 900, 1500, 2500**

Design in accordance with ASME B16.34

Applications

- Power stations, general industry, process engineering
- For water, steam, gas, oil & other non-aggressive media
- Further applications on request

Operating Data

- Pressure up to 431 bar (6250 psi)
- Temperature up to +650°C / 1200°F
- Minimum temperature is 0°C (less than 0°C on request)
- Pressure-temperature ratings as per ASME B 16.34, Standard class

Materials

- ASTM A 216 WCB from 0°C to 425°C
- ASTM A 217 WC6/WC9 from 0°C to 595°C
- ASTM A 217 C12A from 0°C to 650°C
- ASTM 216 WCC from 0°C to 425°C
- ASTM A 217 WC9 from 0°C to 595°C

Design

- As per ASME B 16.34
- Pressure Seal Bonnet Design
- Stellite hard-faced Seats & Disc surface
- Graphite gaskets & packings with Braided wiping rings
- Direct retrofitting of Actuator
- The Valves meet the safety requirement of the Pressure Equipment Directive 97/23/EC(PED) of annex I for fluids of the groups 1 and 2.(Standard class to B16.34)
- Rating : Special class / Standard class

Variants on Request

- Bypass Arrangement
- Gear / Electrical Actuator
- Position indicator
- Locking Arrangement
- Stem Protector

Remarks :

(Type Series Booklet References)

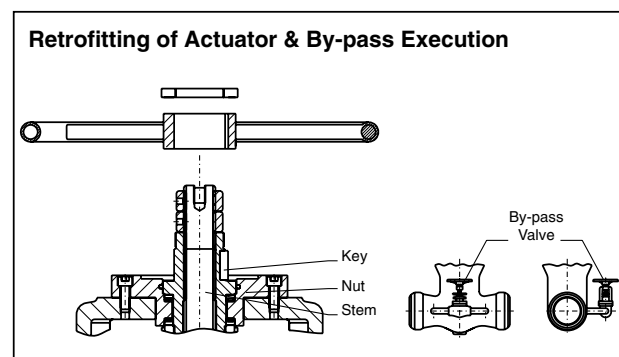
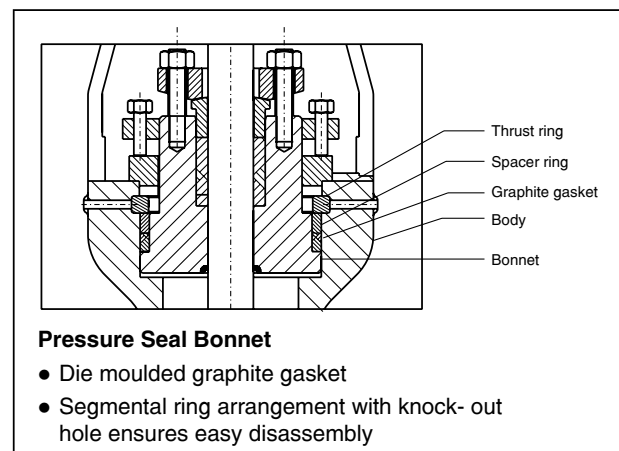
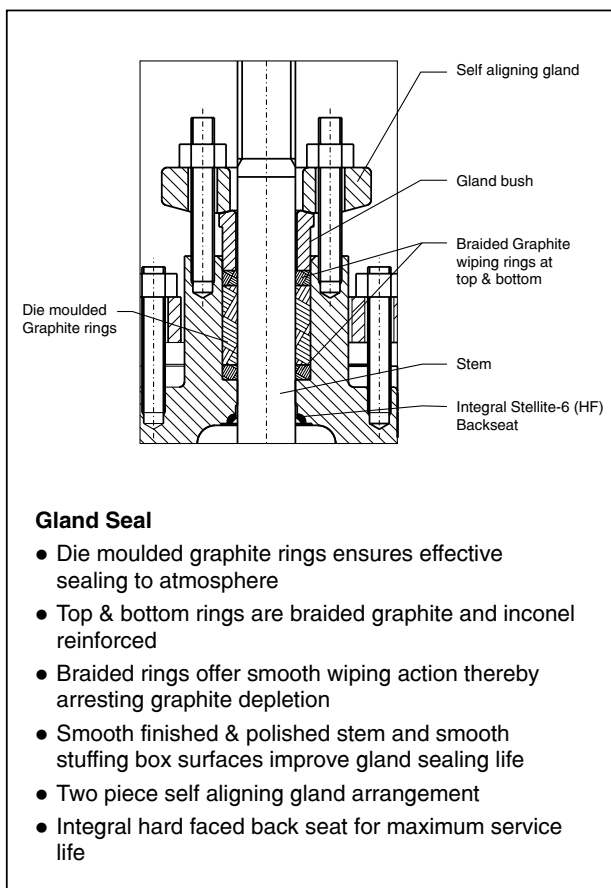
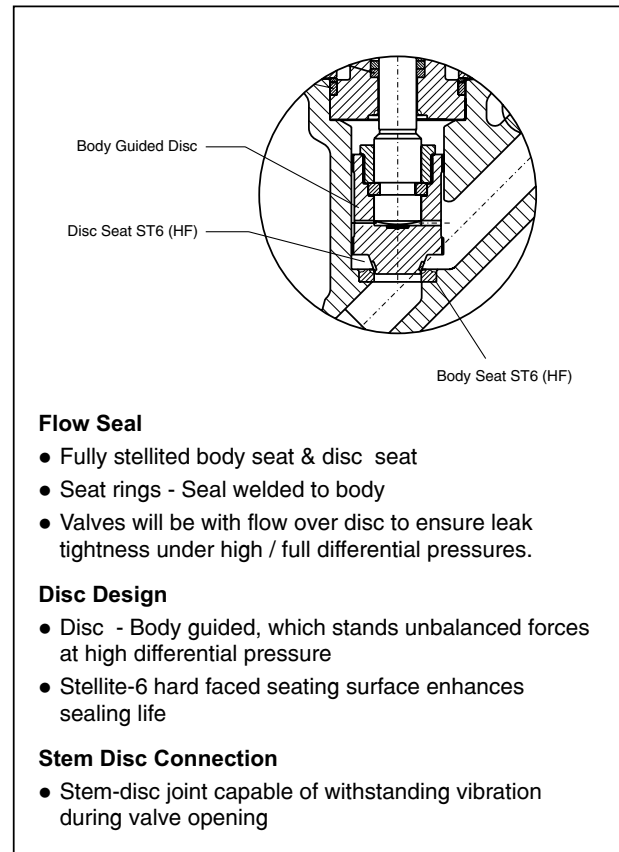
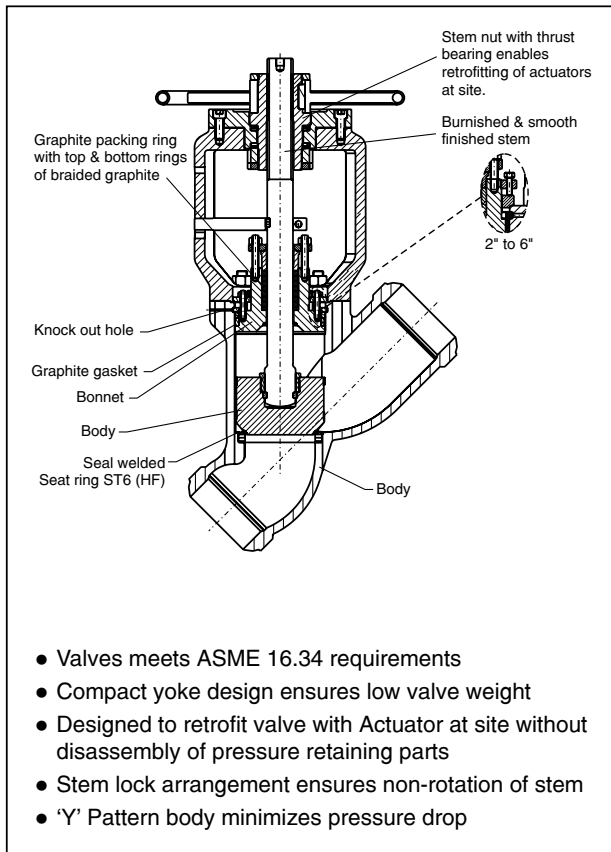
SICCA 800-4500 GTF / GLF / PCF	: 7240.1/06-16
SICCA 900-2500 GTC	: 7241.2/06-16
SICCA 900-2500 SCC	: 7243.2/06-16
SICCA 150-600 GTC	: 7244.2/06-16
SICCA 150-600 GLC	: 7245.2/06-16
SICCA 150-600 SCC	: 7246.2/06-16
Operating instructions no.	: 0500.80/07-18 G3

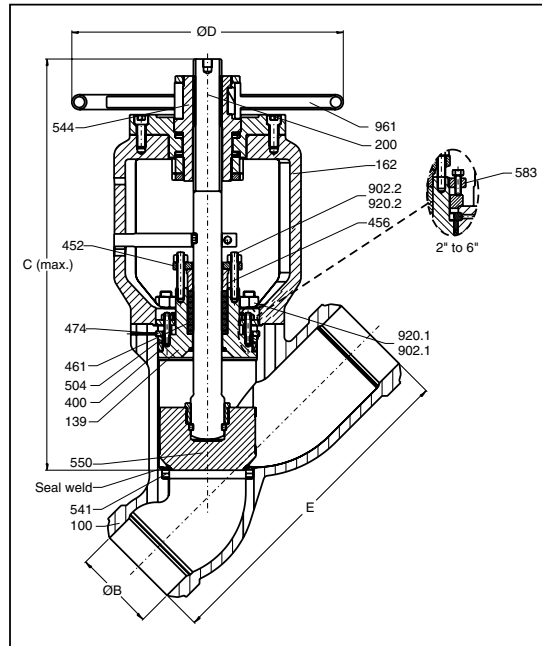
On all enquiries / orders please specify :

1. Type	9. Flow medium
2. ASME Pressure class	10. Flow rate Min./Max.
3. Size	11. Type of end connection
4. Design pressure/temperature	12. Pipe Schedule Inlet/ Outlet Dia
5. Operating pressure	13. Variants
6. Operating temperature	14. Type Series Booklet no.
7. Differential pressure	15. Valve data sheet (if applicable)
8. Material of construction	

When ordering spares, Indicate Serial number of Valve.

Product features to our customer benefit





Design Specifications

General valve design & pressure, temperature rating	: ASME B 16.34
Butt weld end design	: ASME B 16.25
End to end dimension	: ASME B 16.10
Testing	: API 598

Dimensions in mm

Class 900

Size (Inch)	2"	3"	4"	5"	6"	8"
E	368	381	457	457	610	737
ØB*	49.5	73.5	92	116.0	139.5	182.5
C (max)	490	600	685	685	925	1090
ØD	254	457	610	610	610	610

* Schedule 80 up to 3". Schedule 120 for 4" and above.
Alternate schedule on request.

Class 1500

Size (Inch)	2"	3"	4"	5"	6"
E	368	470	546	546	705
ØB*	43	66.5	87.5	109.5	131.5
C (max)	565	630	765	765	1025
ØD	457	610	610	610	610

* Schedule 160. Alternate schedule on request.

Class 2500

Size (Inch)	2"	3"	4"	5"	6"
E	451	578	673	673	914
ØB*	38	58.5	80	103.5	124.5
C (max)	560	675	765	765	1030
ØD	457	610	610	610	610

* Schedule XXS. Alternate schedule on request.

Materials

Part No.	Description	Material				
100	Body	A 216-WCB	A 217-WC6	A 217-WC9	A 217-C12A	A 216-WCC
139	Bonnet ¹⁾	A 216-WCB+ST6 / A 105+ST6	A 217-WC6+ST6 / A 182-F11+ST6	A 217-WC9+ST6 / A 182-F22+ST6	A 217-C12A+ST6 / A 182-F91+ST6	A 216-WCC+ST6 / A 182-F11+ST6
162	Yoke	A 216-WCB	A 217-WCB	A 216-WCB	A 217-WC9	A 216-WCC
200	Stem	A 479-410-2	A 479-410-2	A 479-410-2	A 479-XM19-A	A 479-410-2
324	Thrust bearing	FAG/EQUIVALENT	FAG/EQUIVALENT	FAG/EQUIVALENT	FAG/EQUIVALENT	FAG/EQUIVALENT
400	Gasket	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE
452	Gland flange	IS 2002-2	IS 2002-2	IS 2002-2	A 182-F22 CL3	IS 2002-2
456	Gland bush	A 276-410	A 276-410	A 276-410	A 276-410	A 276-410
457	Packing ring	A 439-D2	A 439-D2	A 439-D2	A 439-D2	A 439-D2
461	Gland packing	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE
474	Thrust ring	A 336-F91	A 336-F91	A 336-F91	A 336-F91	A 336-F91
504	Spacer ring	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3
541	Seat ring	A 105+ST6	A 182-F11+ST6	A 182-F22+ST6	A 182-F91+ST6	A 182-F11+ST6
544	Stem nut	AL. BRONZE	AL. BRONZE	AL. BRONZE	AL. BRONZE	AL. BRONZE
550	Disc ²⁾	A 216-WCB+ST6 / A 105+ST6	A 217-WC6+ST6 / A 182-F11+ST6	A 217-WC9+ST6 / A 182-F22+ST6	A 217-C12A+ST6 / A 182-F91+ST6	A 216-WCC+ST6 / A 182-F11+ST6
583.1	Bonnet retainer	IS 2002-2 (A 516-60)	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	IS 2002-2
583.2	Retaining plate	IS 2002-2 (A 516-60)	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	IS 2002-2
701.1	By-pass tube	A 106-B	A 335-P22	A 335-P22	A 335-P91	A 335-P22
741.1	By-pass valve	A 105	A 182-F22	A 182-F22	A 182-F91	A 182-F22
901	Hex. bolt	A 193-B7	A 193-B16	A 193-B16	A 193-B16	A 193-B7
902.1 / .2	Stud	A 193-B7	A 193-B16	A 193-B16	A 193-B16	A 193-B16
920.1 / .2	Hex. nut	A 194-2H	A 194-4/7	A 194-4/7	A 194-4/7	A 194-4/7
961	Handwheel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel

1) Casting only for 6" #900, 8" #900, 6" #1500, 4" #2500, 6" #2500

2) Casting only for 6" #1500, 6" #2500, 8" #900

Testing

Test / Test pressure	#900		#1500		#2500		Testing medium
	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
Shell	238	3375	396	5625	660	9375	Water
Seat	175	2475	291	4125	484	6875	
Back Seat	175	2475	291	4125	484	6875	

Pressure Temperature Rating - Standard Class

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2220.0	156.1	3705.0	260.5	6170.0	433.8
200	93.3	2035.0	143.1	3395.0	238.7	5655.0	397.6
300	148.9	1965.0	138.2	3270.0	229.9	5450.0	383.2
400	204.4	1900.0	133.6	3170.0	222.9	5280.0	371.2
500	260.0	1810.0	127.3	3015.0	212.0	5025.0	353.3
600	315.6	1705.0	119.9	2840.0	199.7	4730.0	332.6
650	343.3	1650.0	116.0	2745.0	193.0	4575.0	321.7
700	371.1	1590.0	111.8	2665.0	187.4	4425.0	311.1
750	398.9	1520.0	106.9	2535.0	178.2	4230.0	297.4
800	426.7	1235.0	86.8	2055.0	144.5	3430.0	241.2
850	454.4	955.0	67.1	1595.0	112.1	2655.0	186.7
900	482.2	690.0	48.5	1150.0	80.9	1915.0	134.6
950	510.0	410.0	28.8	685.0	48.2	1145.0	80.5
1000	537.8	255.0	17.9	430.0	30.2	715.0	50.3

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ⁽¹⁾⁽²⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2165.0	152.2	3610.0	253.8	6015.0	422.9
400	204.4	2080.0	146.2	3465.0	243.6	5775.0	406.0
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	955.0	67.1	1595.0	112.1	2655.0	186.7
1000	537.8	650.0	45.7	1080.0	75.9	1800.0	126.6
1050	565.6	430.0	30.2	720.0	50.6	1200.0	84.4
1100	593.3	290.0	20.4	480.0	33.7	800.0	56.2
1150	621.1	195.0	13.7	325.0	22.8	545.0	38.3
1200	648.9	125.0	8.8	205.0	14.4	345.0	24.3

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.10 Material : A 217 Gr. WC9 ⁽¹⁾⁽²⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2185.0	153.6	3640.0	255.9	6070.0	426.8
400	204.4	2115.0	148.7	3530.0	248.2	5880.0	413.4
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	1160.0	81.6	1930.0	135.7	3220.0	226.4
1000	537.8	800.0	56.2	1335.0	93.9	2230.0	156.8
1050	565.6	525.0	36.9	875.0	61.5	1454.0	102.2
1100	593.3	330.0	23.2	550.0	38.7	915.0	64.3
1150	621.1	205.0	14.4	345.0	24.3	570.0	40.1
1200	648.9	125.0	8.8	205.0	14.4	345.0	24.3

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.15 Material : A 217 Gr. C12A

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2185.0	153.6	3640.0	255.9	6070.0	426.8
400	204.4	2115.0	148.7	3530.0	248.2	5880.0	413.4
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	1160.0	81.6	1930.0	135.7	3220.0	226.4
1000	537.8	1090.0	76.6	1820.0	128.0	3030.0	213.0
1050	565.6	1080.0	75.9	1800.0	126.6	3000.0	210.9
1100	593.3	905.0	63.6	1510.0	106.2	2515.0	176.8
1150	621.1	670.0	47.1	1115.0	78.4	1855.0	130.4
1200	648.9	430.0	30.2	720.0	50.6	1200.0	84.4

Pressure Temperature Rating - Standard Class

Rating for Group 1.2 Material : A 216 WCC

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	0 to 38	2249.5	158.2	3750.7	263.7	6249.7	439.4
200	100	2242.3	157.6	3736.2	262.7	6227.9	437.9
300	150	2182.8	153.5	3637.5	255.7	6064.0	426.3
400	200	2114.6	148.7	3527.3	248.0	5879.8	413.4
500	250	2016.0	141.7	3362.0	236.4	5601.4	393.8
600	325	1798.5	126.4	2996.5	210.7	4993.6	351.1
650	350	1741.9	122.5	2902.2	204.0	4837.0	340.1
700	375	1646.2	115.7	2744.1	192.9	4573.0	321.5
750	400	1511.3	106.3	2517.9	177.0	4195.9	295.0
800	425	1251.7	88.0	2085.6	146.6	3476.6	244.4
850	450	1000.8	70.4	1667.9	117.3	2780.4	195.5
900	475	744.0	52.3	1238.6	87.1	2065.3	145.2
950	500	503.3	35.4	839.8	59.0	1399.6	98.4
1000	538	256.7	18.0	427.9	30.1	713.6	50.2

Pressure Temperature Rating - Special Class

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2220.0	156.1	3700.0	260.1	6170.0	439.4
400	204.4	2200.0	154.7	3665.0	257.7	6105.0	429.2
500	260.0	2200.0	154.7	3665.0	257.7	6105.0	429.2
600	315.6	2200.0	154.7	3665.0	257.7	6105.0	429.2
650	343.3	2145.0	150.8	3575.0	251.3	5960.0	419.0
700	371.1	2075.0	145.9	3455.0	242.9	5760.0	405.0
750	398.9	1905.0	133.9	3170.0	222.9	5285.0	371.6
800	426.7	1545.0	108.6	2570.0	180.7	4285.0	301.3
850	454.4	1195.0	84.0	1995.0	140.3	3320.0	233.4
900	482.2	860.0	60.5	1435.0	100.9	2395.0	168.4
950	510.0	515.0	36.2	855.0	60.1	1430.0	100.5
1000	537.8	320.0	22.5	535.0	37.6	895.0	62.9

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2250.0	158.2	3750.0	263.7	6250.0	439.4
400	204.4	2250.0	158.2	3750.0	263.7	6250.0	439.4
500	260.0	2250.0	158.2	3750.0	263.7	6250.0	439.4
600	315.6	2250.0	158.2	3750.0	263.7	6250.0	439.4
650	343.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
700	371.1	2200.0	154.7	3665.0	257.7	6110.0	429.6
750	398.9	2185.0	153.6	3645.0	256.3	6070.0	426.8
800	426.7	2160.0	151.9	3600.0	253.1	6000.0	421.8
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1760.0	123.7	2935.0	206.4	4895.0	344.2
950	510.0	1195.0	84.0	1995.0	140.3	3320.0	233.4
1000	537.8	810.0	56.9	1350.0	94.9	2250.0	158.2
1050	565.6	540.0	38.0	900.0	63.3	1500.0	105.5
1100	593.3	360.0	25.3	600.0	42.2	1000.0	70.3
1150	621.1	245.0	17.2	405.0	28.5	680.0	47.8
1200	648.9	155.0	10.9	255.0	17.9	430.0	30.2

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Pressure Temperature Rating - Special Class

Rating for Group 1.10 Material : A 217 Gr. WC9 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2220.0	156.1	3695.0	259.8	6160.0	433.1
400	204.4	2185.0	153.6	3640.0	255.9	6065.0	426.4
500	260.0	2175.0	152.9	3620.0	254.5	6035.0	424.3
600	315.6	2165.0	152.2	3605.0	253.5	6010.0	422.5
650	343.3	2145.0	150.8	3580.0	251.7	5965.0	419.4
700	371.1	2120.0	149.1	3535.0	248.5	5895.0	414.5
750	398.9	2120.0	149.1	3535.0	248.5	5895.0	414.5
800	426.7	2120.0	149.1	3535.0	248.5	5895.0	414.5
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1800.0	126.6	3000.0	210.9	5000.0	351.5
950	510.0	1415.0	99.5	2360.0	165.9	3930.0	276.3
1000	537.8	1005.0	70.7	1670.0	117.4	2785.0	195.8
1050	565.6	655.0	46.1	1095.0	77.0	1820.0	128.0
1100	593.3	410.0	28.8	685.0	48.2	1145.0	80.5
1150	621.1	255.0	17.9	430.0	30.2	715.0	50.3
1200	648.9	155.0	10.9	255.0	17.9	430.0	30.2

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.15 Material : A 217 Gr. C12A

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2250.0	158.2	3750.0	263.7	6250.0	439.4
400	204.4	2250.0	158.2	3750.0	263.7	6250.0	439.4
500	260.0	2250.0	158.2	3750.0	263.7	6250.0	439.4
600	315.6	2250.0	158.2	3750.0	263.7	6250.0	439.4
650	343.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
700	371.1	2200.0	154.7	3665.0	257.7	6110.0	429.6
750	398.9	2185.0	153.6	3645.0	256.3	6070.0	426.8
800	426.7	2160.0	151.9	3600.0	253.1	6000.0	421.8
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1800.0	126.6	3000.0	210.9	5000.0	351.5
950	510.0	1415.0	99.5	2360.0	165.9	3930.0	276.3
1000	537.8	1260.0	88.6	2105.0	148.0	3505.0	246.4
1050	565.6	1260.0	88.6	2105.0	148.0	3505.0	246.4
1100	593.3	1130.0	79.4	1885.0	132.5	3145.0	221.1
1150	621.1	835.0	58.7	1395.0	98.1	2320.0	163.1
1200	648.9	540.0	38.0	900.0	63.3	1500.0	105.5

Rating for Group 1.2 Material : A 216 WCC

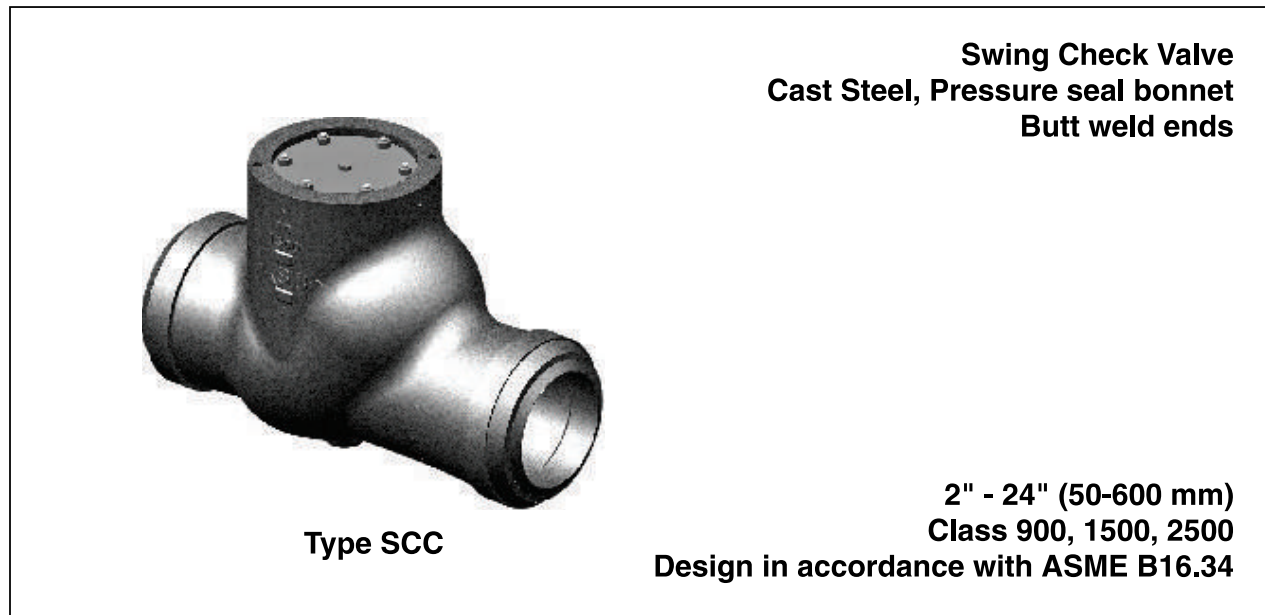
Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	0 to 38	2249.5	158.2	3750.7	263.7	6249.7	439.4
200	100	2249.5	158.2	3750.7	263.7	6249.7	439.4
300	150	2249.5	158.2	3750.7	263.7	6249.7	439.4
400	200	2249.5	158.2	3750.7	263.7	6249.7	439.4
500	250	2249.5	158.2	3750.7	263.7	6249.7	439.4
600	325	2249.5	158.2	3750.7	263.7	6249.7	439.4
650	350	2223.4	156.3	3705.7	260.5	6175.7	434.2
700	375	2104.5	148.0	3508.5	246.7	5846.5	411.0
750	400	1888.4	132.8	3147.3	221.3	5246.0	368.8
800	425	1565.0	110.0	2607.8	183.3	4345.3	305.5
850	450	1251.7	88.0	2085.6	146.6	3475.1	244.3
900	475	784.7	55.2	1549.0	108.9	2581.7	181.5
950	500	629.5	44.3	1050.1	73.8	1750.6	123.1
1000	538	322.0	22.6	535.2	37.6	893.4	62.8

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KSB Pumps Limited

151, Mettupalayam Road, NSN Palayam Post, Coimbatore - 641 031. (India)
Tel. : +91 422 2468222 Fax : +91 422 2468232 www.ksbindia.co.in



Swing Check Valve
Cast Steel, Pressure seal bonnet
Butt weld ends

Type SCC

2" - 24" (50-600 mm)
Class 900, 1500, 2500

Design in accordance with ASME B16.34

Applications

- Power stations, general industry, process engineering
- For water, steam, gas, oil & other non-aggressive media
- Further applications on request

Operating Data

- Pressure up to 431 bar (6250 psi)
- Temperature up to +650°C/1200°F
- Minimum temperature is 0°C (less than 0°C on request)
- Pressure-temperature ratings as per ASME B 16.34, Standard class

Materials

- ASTM A 216 WCB from 0°C to 425°C
- ASTM A 217 WC6/WC9 from 0°C to 595°C
- ASTM A 217 C12A from 0°C to 650°C
- ASTM A 216 WCC from 0°C to 425°C

Design

- As per ASME B 16.34
- Pressure Seal Bonnet Design
- Stellite hard-faced Seats & Disc surface
- Graphite gaskets
- The Valves meet the safety requirement of the Pressure Equipment Directive 97/23/EC(PED) of annex I for fluids of the groups 1 and 2.(Standard class to B 16.34)

* Rating special class/standard class

Remarks :

(Type Series Booklet References)

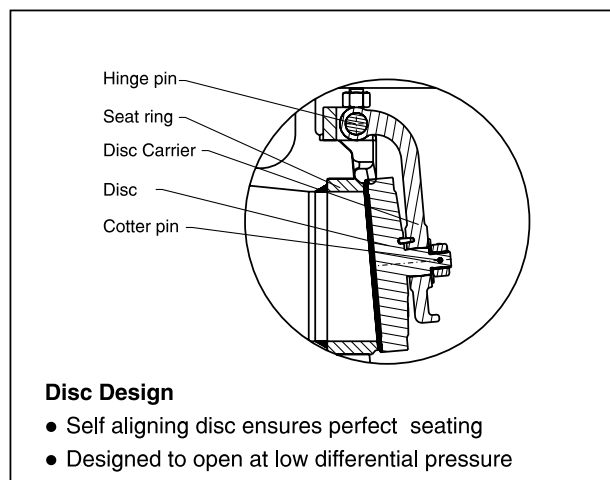
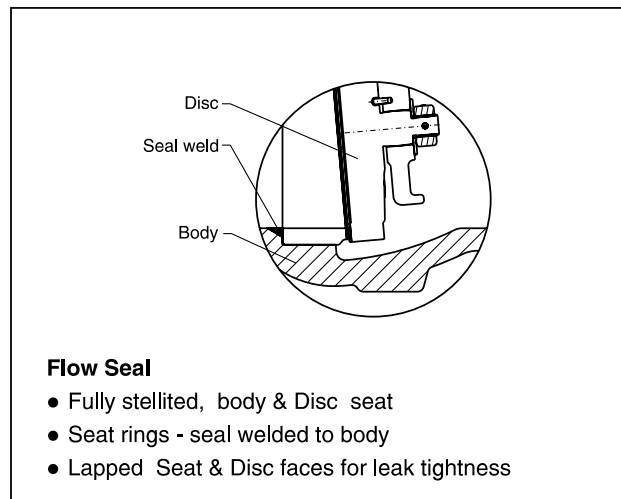
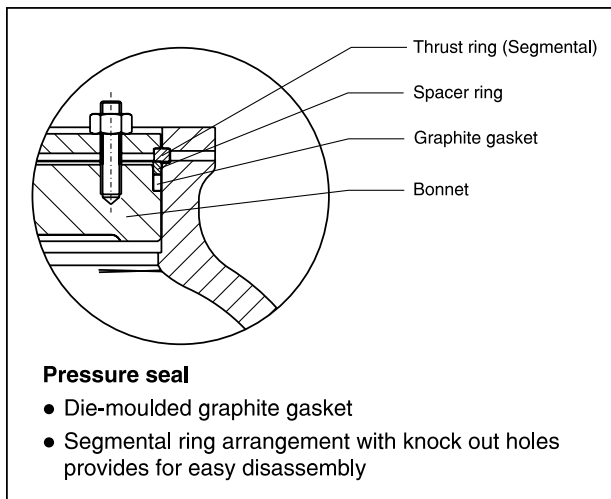
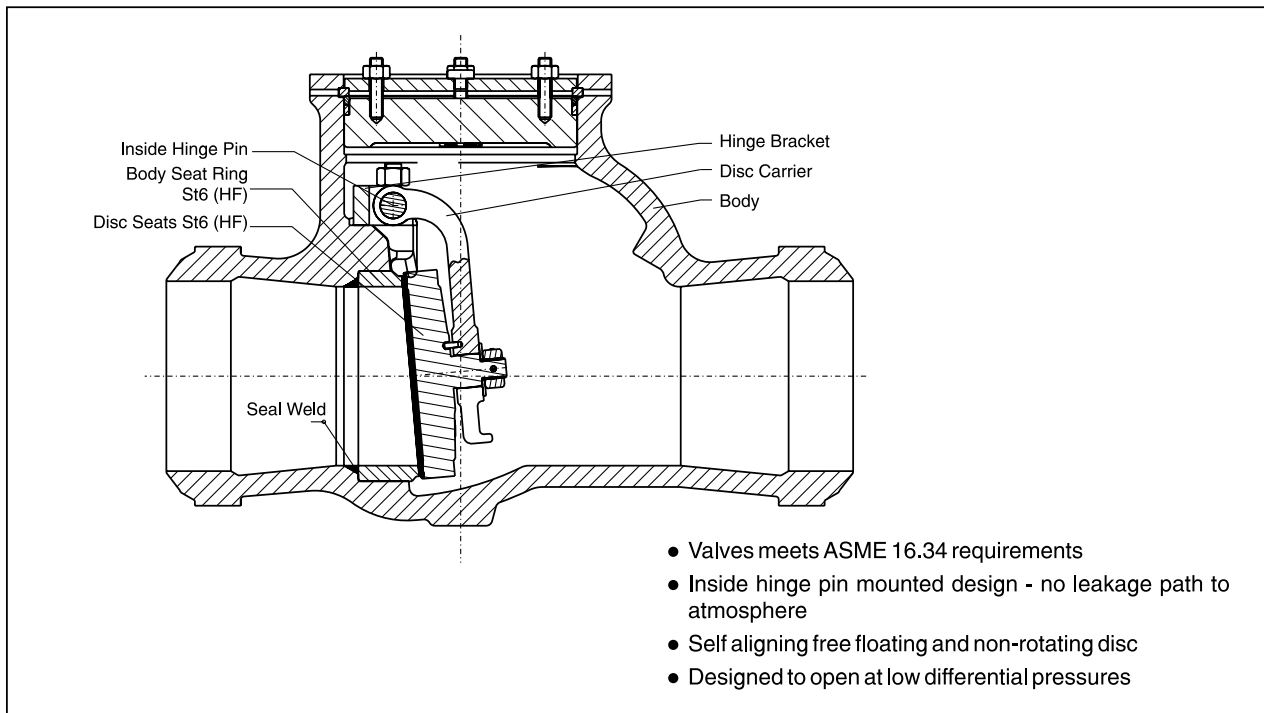
SICCA 800-4500 GTF / GLF / PCF	: 7240.1/06-16
SICCA 900-2500 GTC	: 7241.2/06-16
SICCA 900-2500 GLC	: 7242.2/06-16
SICCA 150-600 GTC	: 7244.2/06-16
SICCA 150-600 GLC	: 7245.2/06-16
SICCA 150-600 SCC	: 7246.2/06-16
Operating instructions no.	: 0500.80/07-18 G3

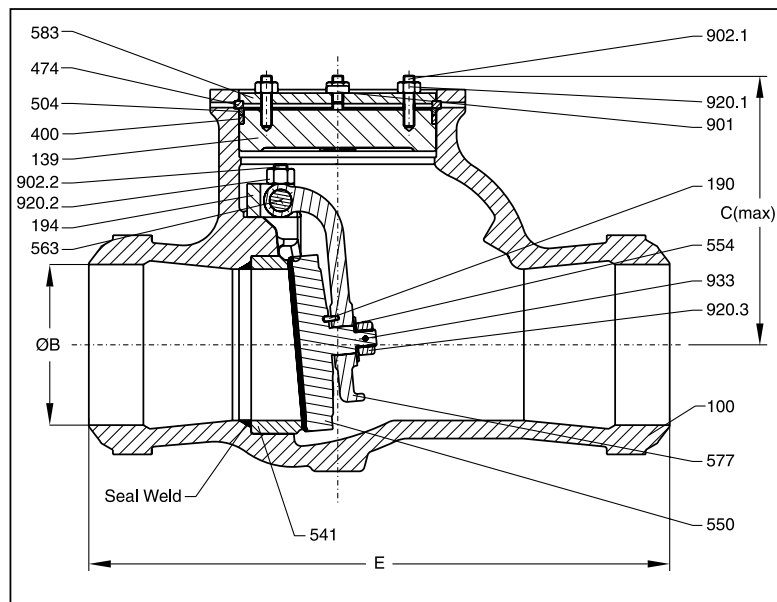
On all enquiries / orders please specify :

1. Type	9. Flow medium
2. ASME Pressure class	10. Flow rate Min. / Max.
3. Size	11. Type of end connection
4. Design pressure/temperature	12. Pipe Schedule Inlet/ Outlet Dia
5. Operating pressure	13. Variants
6. Operating temperature	14. Type Series Booklet no.
7. Differential pressure	15. Valve data sheet (if applicable)
8. Material of construction	

When ordering spares, Indicate Serial number of Valve.

Product features to our customer benefit





Design Specifications

General valve design & pressure, temperature rating	: ASME B 16.34
Butt weld end design	: ASME B 16.25
End to end dimension ¹⁾	: ASME B 16.10
Testing	: API 598

1) Only up to class 2500

Dimensions in mm

Class 900

Size (Inch)	2"	3"	4"	5"	6"	8"	10"	12"
E	216	305	356	356	508	660	787	914
ØB*	49.5	73.5	92	116	139.5	182.5	230	273
C _(max)	145	180	200	200	265	290	335	410

* Schedule 80 up to 3". Schedule 120 for 4" and above. Alternate schedule on request.

Class 1500

Size (Inch)	2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
E	216	305	406	406	559	711	864	991	1067	1194	1194	1346	1473
ØB*	43	66.5	87.5	109.5	131.5	173	216	257	284	325.5	366.5	408	490.5
C (max)	145	180	210	220	285	315	380	440	475	550	620	665	770

* **Schedule 160. Alternate schedule on request.**

Class 2500

Size (Inch)	2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
E	279	368	457	457	610	762	914	1041	1041	1118	1245	1397	1575
ØB*	38	58.5	80	103	124.5	174.5	216	257	284	325.5	366.5	408	490.5
C_(max)	165	195	230	240	300	340	425	495	545	610	700	730	835

* Schedule XXS up to 6". Schedule 160 for 8" and above. Alternate schedule on request.

Materials (class 900-2500)

Part No.	Description	Material				
		A 216-WCB	A 217-WC6	A 217-WC9	A 217-C12A	A 216-WCC
100	Body	A 216-WCB	A 217-WC6	A 217-WC9	A 217-C12A	A 216-WCC
139	Bonnet ¹⁾	A 216-WCB / A 105	A 217-WC6 / A 182-F11	A 217-WC9 / A 182-F22	A 217-C12A / A 182-F91	A 216-WCC / A 182-F11
400	Gasket	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE
474	Thrust ring	A 336-F91	A 336-F91	A 336-F91	A 336-F91	A 336-F91
504	Spacer ring	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3	A 182-F22 CL3
541	Seat ring	A 105+ST6	A 182-F11+ST6	A 182-F22+ST6	A 182-F91+ST6	A 182-F11+ST6
550	Disc ²⁾	A 216-WCB+ST6 / A 105+ST6	A 217-WC6+ST6 / A 182-F11+ST6	A 217-WC9+ST6 / A 182-F22+ST6	A 217-C12A+ST6 / A 182-F91+ST6	A 216-WCC+ST6 / A 182-F11+ST6
563	Hinge pin	A 479-410-2	A 479-410-2	A 479-410-2	A 479-410-2	A 479-410-2
570	Disc carrier	A 216-WCB	A 217-WC6	A 217-WC9	A 217-C12A	A 216-WCC
902	Stud	A 193-B7	A 193-B16	A 193-B16	A 193-B16	A 193-B16
920.1/.2	Hex. nut	A 194-2H	A 194-4/7	A 194-4/7	A 194-4/7	A 194-4/7
920.3	Hex. nut	SS (18-8) / A 194-4/7	SS (18-8) / A 194-4/7	SS (18-8) / A 194-4/7	SS (18-8) / A 194-4/7	SS (18-8) / A 194-4/7

1) Forging Upto 6" RB

2) Forging Upto 8" RB

Testing

Test / Test pressure	#900		#1500		#2500		Testing medium
	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
Shell	238	3375	396	5625	660	9375	Water
Seat	175	2475	291	4125	484	6875	

Pressure Temperature Rating - Standard Class

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2220.0	156.1	3705.0	260.5	6170.0	433.8
200	93.3	2035.0	143.1	3395.0	238.7	5655.0	397.6
300	148.9	1965.0	138.2	3270.0	229.9	5450.0	383.2
400	204.4	1900.0	133.6	3170.0	222.9	5280.0	371.2
500	260.0	1810.0	127.3	3015.0	212.0	5025.0	353.3
600	315.6	1705.0	119.9	2840.0	199.7	4730.0	332.6
650	343.3	1650.0	116.0	2745.0	193.0	4575.0	321.7
700	371.1	1590.0	111.8	2665.0	187.4	4425.0	311.1
750	398.9	1520.0	106.9	2535.0	178.2	4230.0	297.4
800	426.7	1235.0	86.8	2055.0	144.5	3430.0	241.2
850	454.4	955.0	67.1	1595.0	112.1	2655.0	186.7
900	482.2	690.0	48.5	1150.0	80.9	1915.0	134.6
950	510.0	410.0	28.8	685.0	48.2	1145.0	80.5
1000	537.8	255.0	17.9	430.0	30.2	715.0	50.3

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2165.0	152.2	3610.0	253.8	6015.0	422.9
400	204.4	2080.0	146.2	3465.0	243.6	5775.0	406.0
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	955.0	67.1	1595.0	112.1	2655.0	186.7
1000	537.8	650.0	45.7	1080.0	75.9	1800.0	126.6
1050	565.6	430.0	30.2	720.0	50.6	1200.0	84.4
1100	593.3	290.0	20.4	480.0	33.7	800.0	56.2
1150	621.1	195.0	13.7	325.0	22.8	545.0	38.3
1200	648.9	125.0	8.8	205.0	14.4	345.0	24.3

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.10 Material : A 217 Gr. WC9 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2185.0	153.6	3640.0	255.9	6070.0	426.8
400	204.4	2115.0	148.7	3530.0	248.2	5880.0	413.4
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	1160.0	81.6	1930.0	135.7	3220.0	226.4
1000	537.8	800.0	56.2	1335.0	93.9	2230.0	156.8
1050	565.6	525.0	36.9	875.0	61.5	1454.0	102.2
1100	593.3	330.0	23.2	550.0	38.7	915.0	64.3
1150	621.1	205.0	14.4	345.0	24.3	570.0	40.1
1200	648.9	125.0	8.8	205.0	14.4	345.0	24.3

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.15 Material : A 217 Gr. C12A

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2185.0	153.6	3640.0	255.9	6070.0	426.8
400	204.4	2115.0	148.7	3530.0	248.2	5880.0	413.4
500	260.0	1995.0	140.3	3325.0	233.8	5540.0	389.5
600	315.6	1815.0	127.6	3025.0	212.7	5040.0	354.3
650	343.3	1765.0	124.1	2940.0	206.7	4905.0	344.9
700	371.1	1705.0	119.9	2840.0	199.7	4730.0	332.6
750	398.9	1595.0	112.1	2660.0	187.0	4430.0	311.5
800	426.7	1525.0	107.2	2540.0	178.6	4230.0	297.4
850	454.4	1460.0	102.6	2435.0	171.2	4060.0	285.4
900	482.2	1350.0	94.9	2245.0	157.8	3745.0	263.3
950	510.0	1160.0	81.6	1930.0	135.7	3220.0	226.4
1000	537.8	1090.0	76.6	1820.0	128.0	3030.0	213.0
1050	565.6	1080.0	75.9	1800.0	126.6	3000.0	210.9
1100	593.3	905.0	63.6	1510.0	106.2	2515.0	176.8
1150	621.1	670.0	47.1	1115.0	78.4	1855.0	130.4
1200	648.9	430.0	30.2	720.0	50.6	1200.0	84.4

Pressure Temperature Rating - Standard Class

Rating for Group 1.2 Material : A 216 WCC

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	0 to 38	2249.5	158.2	3750.7	263.7	6249.7	439.4
200	100	2242.3	157.6	3736.2	262.7	6227.9	437.9
300	150	2182.8	153.5	3637.5	255.7	6064.0	426.3
400	200	2114.6	148.7	3527.3	248.0	5879.8	413.4
500	250	2016.0	141.7	3362.0	236.4	5601.4	393.8
600	325	1798.5	126.4	2996.5	210.7	4993.6	351.1
650	350	1741.9	122.5	2902.2	204.0	4837.0	340.1
700	375	1646.2	115.7	2744.1	192.9	4573.0	321.5
750	400	1511.3	106.3	2517.9	177.0	4195.9	295.0
800	425	1251.7	88.0	2085.6	146.6	3476.6	244.4
850	450	1000.8	70.4	1667.9	117.3	2780.4	195.5
900	475	744.0	52.3	1238.6	87.1	2065.3	145.2
950	500	503.3	35.4	839.8	59.0	1399.6	98.4
1000	538	256.7	18.0	427.9	30.1	713.6	50.2

Rating for Group 1.1 Material : A 216 WCB

Temperature		# 3100		# 3600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	0 to 38	7652.5	538.0	8886.7	624.8
200	100	6983.7	491.0	8110.3	570.2
300	150	6755.1	474.9	7844.7	551.5
400	200	6564.4	461.5	7623.2	536.0
500	250	6285.6	441.9	7299.5	513.2
600	325	5801.9	407.9	6737.8	473.7
650	350	5629.6	395.8	6537.9	459.7
700	375	5450.8	383.2	6329.7	445.0
750	400	5203.2	365.8	6042.6	424.8
800	425	4311.1	303.1	5006.6	352.0
850	450	3447.8	242.4	4004.1	281.5
900	475	2613.0	183.7	3034.3	213.3
950	500	1761.0	123.8	2045.3	143.8
1000	538	885.0	62.2	1027.9	72.3

Pressure Temperature Rating - Special Class

Rating for Group 1.1 Material : A 216 Gr. WCB ⁽¹⁾

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2220.0	156.1	3700.0	260.1	6170.0	437.4
400	204.4	2200.0	154.7	3665.0	257.7	6105.0	429.2
500	260.0	2200.0	154.7	3665.0	257.7	6105.0	429.2
600	315.6	2200.0	154.7	3665.0	257.7	6105.0	429.2
650	343.3	2145.0	150.8	3575.0	251.3	5960.0	419.0
700	371.1	2075.0	145.9	3455.0	242.9	5760.0	405.0
750	398.9	1905.0	133.9	3170.0	222.9	5285.0	371.6
800	426.7	1545.0	108.6	2570.0	180.7	4285.0	301.3
850	454.4	1195.0	84.0	1995.0	140.3	3320.0	233.4
900	482.2	860.0	60.5	1435.0	100.9	2395.0	168.4
950	510.0	515.0	36.2	855.0	60.1	1430.0	100.5
1000	537.8	320.0	22.5	535.0	37.6	895.0	62.9

1) Permissible, but not recommended for prolonged use above 800°F

1 Kg/cm² = 0.981 Bar

Rating for Group 1.9 Material : A 217 Gr. WC6 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2250.0	158.2	3750.0	263.7	6250.0	439.4
400	204.4	2250.0	158.2	3750.0	263.7	6250.0	439.4
500	260.0	2250.0	158.2	3750.0	263.7	6250.0	439.4
600	315.6	2250.0	158.2	3750.0	263.7	6250.0	439.4
650	343.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
700	371.1	2200.0	154.7	3665.0	257.7	6110.0	429.6
750	398.9	2185.0	153.6	3645.0	256.3	6070.0	426.8
800	426.7	2160.0	151.9	3600.0	253.1	6000.0	421.8
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1760.0	123.7	2935.0	206.4	4895.0	344.2
950	510.0	1195.0	84.0	1995.0	140.3	3320.0	233.4
1000	537.8	810.0	56.9	1350.0	94.9	2250.0	158.2
1050	565.6	540.0	38.0	900.0	63.3	1500.0	105.5
1100	593.3	360.0	25.3	600.0	42.2	1000.0	70.3
1150	621.1	245.0	17.2	405.0	28.5	680.0	47.8
1200	648.9	155.0	10.9	255.0	17.9	430.0	30.2

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Pressure Temperature Rating - Special Class

Rating for Group 1.10 Material : A 217 Gr. WC9 ^{(1) (2)}

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2220.0	156.1	3695.0	259.8	6160.0	433.1
400	204.4	2185.0	153.6	3640.0	255.9	6065.0	426.4
500	260.0	2175.0	152.9	3620.0	254.5	6035.0	424.3
600	315.6	2165.0	152.2	3605.0	253.5	6010.0	422.5
650	343.3	2145.0	150.8	3580.0	251.7	5965.0	419.4
700	371.1	2120.0	149.1	3535.0	248.5	5895.0	414.5
750	398.9	2120.0	149.1	3535.0	248.5	5895.0	414.5
800	426.7	2120.0	149.1	3535.0	248.5	5895.0	414.5
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1800.0	126.6	3000.0	210.9	5000.0	351.5
950	510.0	1415.0	99.5	2360.0	165.9	3930.0	276.3
1000	537.8	1005.0	70.7	1670.0	117.4	2785.0	195.8
1050	565.6	655.0	46.1	1095.0	77.0	1820.0	128.0
1100	593.3	410.0	28.8	685.0	48.2	1145.0	80.5
1150	621.1	255.0	17.9	430.0	30.2	715.0	50.3
1200	648.9	155.0	10.9	255.0	17.9	430.0	30.2

1) Use Normalised and tempered material only.

2) Not to be used over 1100°F

Rating for Group 1.15 Material : A 217 Gr. C12A

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	-29 to 38	2250.0	158.2	3750.0	263.7	6250.0	439.4
200	93.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
300	148.9	2250.0	158.2	3750.0	263.7	6250.0	439.4
400	204.4	2250.0	158.2	3750.0	263.7	6250.0	439.4
500	260.0	2250.0	158.2	3750.0	263.7	6250.0	439.4
600	315.6	2250.0	158.2	3750.0	263.7	6250.0	439.4
650	343.3	2250.0	158.2	3750.0	263.7	6250.0	439.4
700	371.1	2200.0	154.7	3665.0	257.7	6110.0	429.6
750	398.9	2185.0	153.6	3645.0	256.3	6070.0	426.8
800	426.7	2160.0	151.9	3600.0	253.1	6000.0	421.8
850	454.4	2030.0	142.7	3385.0	238.0	5645.0	396.9
900	482.2	1800.0	126.6	3000.0	210.9	5000.0	351.5
950	510.0	1415.0	99.5	2360.0	165.9	3930.0	276.3
1000	537.8	1260.0	88.6	2105.0	148.0	3505.0	246.4
1050	565.6	1260.0	88.6	2105.0	148.0	3505.0	246.4
1100	593.3	1130.0	79.4	1885.0	132.5	3145.0	221.1
1150	621.1	835.0	58.7	1395.0	98.1	2320.0	163.1
1200	648.9	540.0	38.0	900.0	63.3	1500.0	105.5

Pressure Temperature Rating - Special Class

Rating for Group 1.2 Material : A 216 WCC

Temperature		# 900		# 1500		# 2500	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	0 to 38	2249.5	158.2	3750.7	263.7	6249.7	439.4
200	100	2249.5	158.2	3750.7	263.7	6249.7	439.4
300	150	2249.5	158.2	3750.7	263.7	6249.7	439.4
400	200	2249.5	158.2	3750.7	263.7	6249.7	439.4
500	250	2249.5	158.2	3750.7	263.7	6249.7	439.4
600	325	2249.5	158.2	3750.7	263.7	6249.7	439.4
650	350	2223.4	156.3	3705.7	260.5	6175.7	434.2
700	375	2104.5	148.0	3508.5	246.7	5846.5	411.0
750	400	1888.4	132.8	3147.3	221.3	5246.0	368.8
800	425	1565.0	110.0	2607.8	183.3	4345.3	305.5
850	450	1251.7	88.0	2085.6	146.6	3475.1	244.3
900	475	784.7	55.2	1549.0	108.9	2581.7	181.5
950	500	629.5	44.3	1050.1	73.8	1750.6	123.1
1000	538	322.0	22.6	535.2	37.6	893.4	62.8

Rating for Group 1.1 Material : A 216 WCB

Temperature		# 3100		# 3600	
°F	°C	PSI	Kg/cm ²	PSI	Kg/cm ²
-20 to 100	0 to 38	7749.9	544.9	79027.4	5556.2
200	100	7738.6	544.1	78912.1	5548.1
300	150	7648.7	537.8	77995.1	5483.6
400	200	7579.1	532.9	77285.2	5433.7
500	250	7573.0	532.4	77223.1	5429.3
600	325	7510.5	528.0	76585.6	5384.5
650	350	7330.6	515.4	74751.7	5255.6
700	375	7059.0	496.3	71981.6	5060.8
750	400	6504.8	457.3	66330.4	4663.5
800	425	5388.3	378.8	54945.3	3863.0
850	450	4309.7	303.0	43946.2	3089.7
900	475	3266.1	229.6	33305.0	2341.6
950	500	2201.7	154.8	22450.8	1578.4
1000	538	1107.5	77.9	11293.4	794.0

