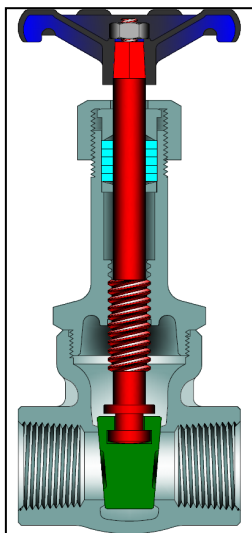


GATE VALVES

THREADED BONNET, ASME CLASS 200

1/4" - 2" (6 - 50 mm), THREADED OR SOCKET WELD ENDS

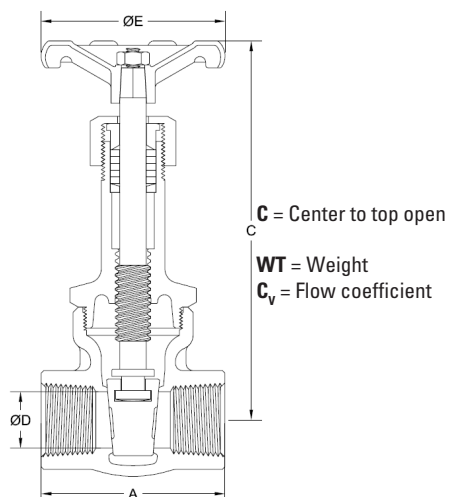
CAST STAINLESS STEEL



Class	Fig. No.
200	1832

DESIGN FEATURES:

- Fully guided solid wedge.
- Socket weld ends are available.
- Each valve is shell, seat and backseat pressure tested per industry standard API 598.
- Integral seats are standard.
- Threaded ends are NPT type per ASME B1.20.1.
- Socket weld ends are per ASME B16.11.



STANDARD MATERIALS

PART	MATERIALS
Body	A351 Gr. CF8M
Bonnet	A351 Gr. CF8M
Wedge	A351 Gr. CF8M
Stem	A276 316
Packing Nut	SST 316
Gland	SST 316
Packing	PTFE
Packing Collar	SST 316
Hand Wheel	A47
Hand Wheel Nut	Steel
Identification Plate	Aluminum

Design Specifications

Item	Applicable Specification
Pressure - temperature ratings	ASME B16.34
General valve design	ASME B16.34
Materials	ASTM

SIZE	ASME 200						
	A	C	D	E	WT	lb kg	CV
1/4	1.75	4.6	0.38	2.5	0.8		7.1
7	44	116	10	64	0.4		
3/8	2.00	4.6	0.38	2.5	0.8		7.1
10	51	116	10	64	0.4		
1/2	2.25	5.3	0.5	2.8	1.3		12.6
13	57	133	13	70	0.6		
3/4	2.50	6.7	0.75	3.0	2.1		30
20	64	170	19	76	1.0		
1	3.25	7.8	1.00	3.3	3.3		55
25	83	198	25	83	1.5		
1 1/4	3.50	9.3	1.25	3.6	4.8		87
32	89	236	32	91	2.2		
1 1/2	3.75	10.5	1.50	4.1	6.2		130
38	95	267	38	103	2.8		
2	4.00	12.6	2.00	4.8	10.4		240
50	102	321	51	121	4.7		

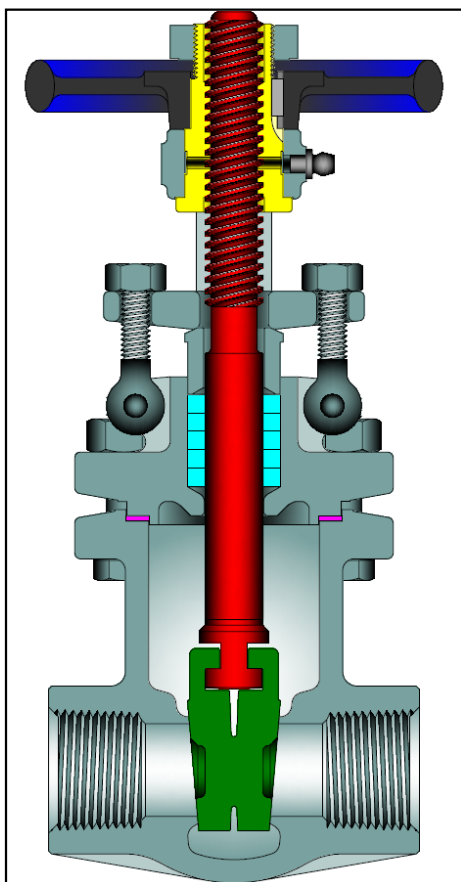
NOTE: Powell reserves the right to convert threaded ends to socket weld. Remnant of threads will exist as pipe stop behind socket bore.

API 603 GATE VALVES

BOLTED BONNET, ASME CLASSES 200-600

1/4" - 2" (6 - 50 mm), THREADED OR SOCKET WELD ENDS

CAST STAINLESS STEEL



Class	Fig. No.
200	2490
300	2467 (1)
600	1973 (1)

DESIGN FEATURES:

- Seat face: Ground and lapped to a smooth finish.
- Flexible Wedge with low center stem –wedge contact. Wedge is ground and lapped to a smooth finish and closely guided to prevent dragging and seat damage.
- Non-rotating stem with precision ACME threads and burnished finish. Double ACME thread for faster operation.
- Body and bonnet joint accurately machined. Gasket materials and details on page 6.

- Each valve is shell, seat and backseat pressure tested per industry standard API 598.
- Valves are available with socket weld ends.
- Yoke bushing can be lubricated to minimize friction and prolong life of the stem.
- Body and bonnet castings are precision machined.
- Gland has two-piece construction for easy alignment.
- Each valve has a unique certification number that is traceable to the valve certification

STANDARD MATERIALS (Other materials available)

PART	MATERIALS
Body	A351 Gr. CF3M
Bonnet	A351 Gr. CF8M
Wedge	A351 Gr. CF8M
Stem	A276 316
Stem Bushing	A 439 Ductile NI-Resist Gr. D2
Gland Flange	A351 Gr. CF8M
Eye Bolt	A193 Gr. B8
Eye Bolt Nut	A194 Gr.8
Groove Pin	Series 300
Gland	A276 316
Packing	PTFE (2)
Gasket	PTFE (2)
Hand Wheel	Malleable Iron or Steel
Hand Wheel Nut	Malleable Iron or Steel
Key	Steel
Lubricant Fitting	Steel
Body / Bonnet Stud	A193 Gr. B8
Body / Bonnet Nut	A194 Gr.8
Identification Plate	Series 300 SST

1. See pages 10-12 for flanged and butt weld designs.
2. For API 603 compliance, optional graphitic packing and gasket are required.

Design Specifications

Item	Applicable Specification
Wall thickness	API 603 + B16.34
Pressure - temperature ratings	ASME B16.34
General valve design	API 603 & B16.34
End threads—NPT	ASME B1.20.1
Socket weld ends	ASME B16.11
Materials	ASTM

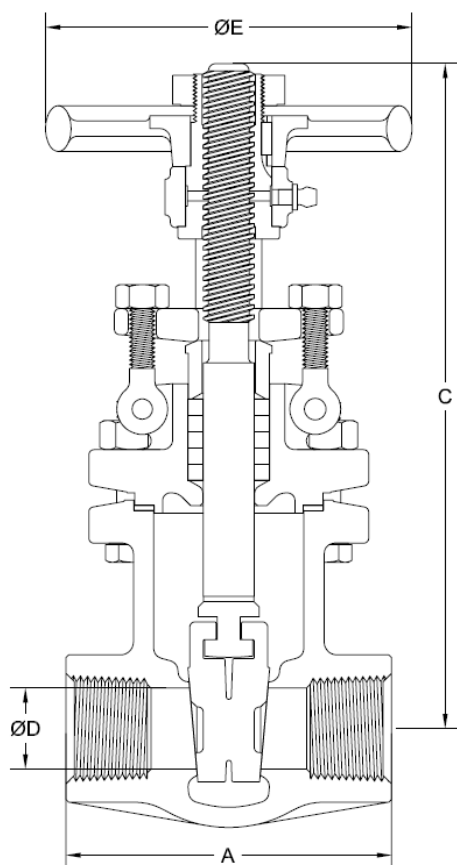
sheet which includes MTR data, pressure test report, inspection report and certificate of conformance.

- Other available options as follows:
 - » Alternate valve materials
 - » Alternate trim materials
 - » NACE service
 - » Special cleaning for applications such as oxygen or chlorine
 - » Other options available as specified

NOTE: Powell reserves the right to convert threaded ends to socket weld. Remnant of threads will exist as pipe stop behind socket bore.

GATE VALVE DIMENSIONS (CLASSES 200 - 600)

SIZE	ASME 200							ASME 300						
in	A	C	D	E	WT	lb	C _v	A	C	D	E	WT	lb	C _v
mm						kg							kg	
¼	2.13	6.5	0.38	3.0	3.5		7.1	2.13	6.5	0.38	3	3.4		7.1
6	54	165	10	76	1.6			54	165	10	76	1.5		
3/8	2.13	6.5	0.38	3.0	3.5		7.1	2.13	6.5	0.38	3	3.4		7.1
10	54	165	10	76	1.6			54	165	10	76	1.5		
½	3.00	7.8	0.50	3.5	4.8		12.6	3.00	7.9	0.50	3.5	4.6		12.6
13	76	198	13	89	2.2			76	200	13	89	2.1		
¾	3.50	8.6	0.75	4.0	6.5		30	3.5	8.9	0.75	4	6.1		30
19	89	219	19	102	2.9			89	225	19	102	2.8		
1	4.00	9.4	1.00	4.5	9.0		55	4.00	9.4	1.00	4.5	9.1		55
25	102	240	25	114	4.1			102	240	25	114	4.1		
1¼	4.63	10.8	1.50	5.0	13.1		130	4.63	10.8	1.25	5	13.1		87
32	140	274	38	127	6.0			178	274	32	127	6.0		
1½	4.63	12.1	1.50	6.0	18.0		130	4.63	12.1	1.50	6	18.0		130
38	117	308	38	152	8.2			117	308	38	152	8.2		
2	5.00	14.3	2.00	7.0	24.3		240	5.00	14.3	2.00	7	28.9		240
50	127	362	51	178	11.0			127	362	51	178	13.1		



SIZE	ASME 600						
in	A	C	D	E	WT	lb	C _v
mm						kg	
¼	2.13	6.6	0.38	3.0	4.3		7.1
6	54	168	10	76	2.0		
3/8	2.13	6.6	0.38	3.0	4.3		7.1
10	54	168	10	76	2.0		
½	3.00	7.9	0.50	3.5	5.1		12.6
13	76	202	13	89	2.3		
¾	3.50	8.9	0.75	4.0	7.1		30
19	89	225	19	102	3.2		
1	4.00	9.8	1.00	5.0	10.6		55
25	102	248	25	127	4.8		
1¼	4.50	11.1	1.25	6.0	15.7		87
32	229	281	32	152	7.1		
1½	5.00	12.4	1.50	7.0	21.3		130
38	127	316	38	178	9.7		
2	5.75	14.3	2.00	8.0	32.0		240
50	146	362	51	203	14.5		

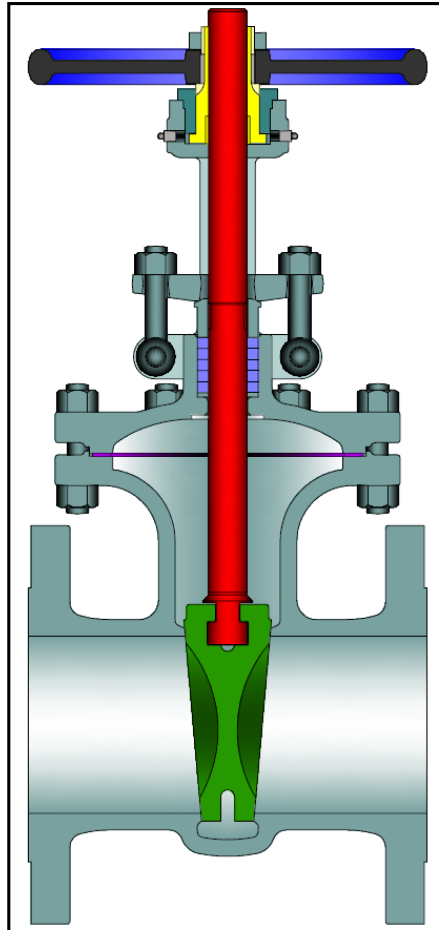
C = Center to top open

WT = Weight

C_v = Flow coefficient

API 603 GATE VALVES

BOLTED BONNET, ASME CLASSES 150-600
FLANGED OR BUTTWELD ENDS
CAST STAINLESS STEEL



Class	Fig. No.
150	2456
300	2467 (4)
600	1973 (4)

DESIGN FEATURES:

- Seat face: Ground and lapped to a smooth finish.
- Flexible Wedge with low center stem – wedge contact. Wedge is ground and lapped to a smooth finish and tightly guided to prevent dragging and seat damage.
- Non-rotating stem with precision ACME threads and burnished finish. Double start ACME thread for faster operation.
- Body and bonnet joint accurately machined. Gasket materials and details on page 6.
- Body and bonnet castings are precision machined. One-piece bonnet up to 12" (350 mm) valve size on all classes.
- Gland has two-piece construction for easy alignment.

- Flanges:
 - » Classes 150-300: 1/16" raised face.
 - » Class 600: 1/4" raised face.
 - » Finish 125-250 AARH for all valves.
- Rotating stem nut is Austenitic ductile iron Gr D2 renewable in line. Thrust bearings are supplied as follows:
 - » Class 150 & 300 14" (400 mm) and larger valve size.
 - » Class 600 6" (150 mm) and larger valve size.

STANDARD MATERIALS (Other materials available)

PART	MATERIALS
Body	A351 Gr. CF8M (2)
Bonnet	A351 Gr. CF8M
Wedge	A351 Gr. CF8M
Stem	SST 316
Stem Bushing	A 439 Ductile NI-Resist Gr. D2
Stem Bushing Lock Nut	Series 300 SST
Gland Flange	A351 Gr. CF8M
Eye Bolt	A193 Gr. B8
Eye Bolt Nut	A194 Gr.8
Groove Pin	Series 300 SST
Gland	SST 316
Packing	PTFE (3)
Packing Washer / Packing Spacer	SST 316
Gasket	PTFE (3)
Hand Wheel	Malleable Iron or Steel
Hand Wheel Nut	Malleable Iron or Steel
Key	Steel
Lubricant Fitting	Steel
Body / Bonnet Stud	A193 Gr. B8
Body / Bonnet Nut	A194 Gr.8
Yoke arm (1)	A351 CF8
Bonnet / Yoke arm Stud (1)	A193 Gr. B8
Bonnet / Yoke arm Nut (1)	A194 Gr.8
Bearing Cap (1)	Series 300 SST
Cap Screws (1)	
Identification Plate	

1. 14" Valve sizes and up all classes have a two piece yoke.
2. CF3M for weld end bodies.
3. For API 603 compliance, optional graphitic packing and gasket are required.
4. See pages 8-9 for 2" and smaller sizes with threaded or socket weld ends.

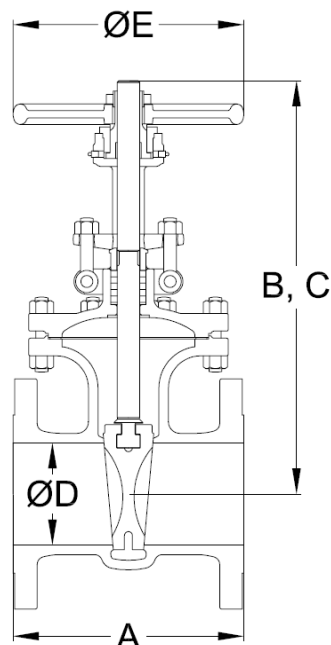
Design Specifications

Item	Applicable Specification
Wall thickness	API 603 + B16.34
Pressure - temperature ratings	ASME B16.34
General valve design	API 603 & B16.34
End to End dimensions	ASME B16.10
Flange design	ASME B16.5
Butt Weld design	ASME B16.25
Materials	ASTM

- Heavier walled API 600 design available.
- Classes above 600 are available; see the API 600 catalog.
- Other available options as follows:
 - » Alternate valve materials available
 - » Bypass, drain and other auxiliary connections
 - » Gear, motor, and cylinder actuators available
 - » NACE service
 - » Special cleaning for applications such as oxygen or chlorine
 - » Other options available as specified

GATE VALVE DIMENSIONS (CLASSES 150 -600)

SIZE in mm	ASME 150						ASME 300					ASME 600				
	A		B(1)	C(1)	D	E	A	B(1)	C(1)	D	E	A	B(1)	C(1)	D	E
	FE	WE														
½	4.25	4.25	7.2	7.8	0.50	3.5	5.50	7.2	7.9	0.50	3.5	6.50	7.3	7.9	0.50	3.5
13	109	108	183	198	13	89	140	183	200	13	89	165	185	202	13	89
¾	4.63	4.63	7.7	8.6	0.75	4.0	6.00	7.9	8.9	0.75	4.0	7.50	8.0	8.9	0.75	4.0
19	117	117	196	219	19	102	152	201	225	19	102	191	203	225	19	102
1	5.00	5.00	8.3	9.4	1.00	4.5	6.50	8.3	9.4	1.00	4.5	8.50	8.6	9.8	1.00	5.0
25	127	127	211	240	25	114	165	211	240	25	114	216	218	248	25	127
1½	6.50	6.50	10.4	12.1	1.50	5.0	7.50	10.4	12.1	1.50	6.0	9.50	10.7	12.4	1.50	7.0
38	165	165	264	308	38	127	191	264	308	38	152	241	272	316	38	178
2	7.00	8.50	12.0	14.3	2.00	6.0	8.50	12.0	14.3	2.00	7.0	11.50	12.3	14.3	2.00	9.0
50	178	216	305	362	51	152	216	305	362	51	178	292	312	362	51	229
2½	7.50	9.50	12.3	15.0	2.50	7.0	9.50	12.6	14.3	2.50	7.9	13.00	18.1	21.9	2.50	12.0
65	191	241	312	380	64	178	241	319	364	64	201	330	461	555	64	305
3	8.00	11.12	13.8	17.0	3.00	7.0	11.12	13.8	17.0	3.00	9.0	14.00	19.2	22.8	3.00	12.0
80	203	282	350	431	76	178	283	350	431	76	229	356	487	580	76	305
4	9.00	12.00	16.8	20.9	4.00	9.0	12.00	16.8	20.9	4.00	10.0	17.00	23.0	27.5	4.00	14.0
100	229	305	427	530	102	229	305	426	530	102	254	432	585	698	102	356
6	10.50	15.88	22.2	28.3	6.00	11.0	15.88	22.6	28.7	6.00	14.0	22.00	32.5	39.1	6.00	20.0
150	267	403	563	720	152	279	403	574	730	152	356	559	825	993	152	508
8	11.50	16.50	29.3	38.0	8.00	14.0	16.50	30.6	39.2	8.00	16.0	26.00	35.0	45.4	7.87	22.0
200	292	419	744	965	203	356	419	777	995	203	406	660	890	1154	200	560
10	13.00	18.00	35.6	46.3	10.00	16.0	18.00	36.8	47.2	10.00	20.0	31.00	41.9	52.4	9.75	25.2
250	330	457	905	1175	254	406	457	935	1199	254	508	787	1065	1332	248	640
12	14.00	19.75	41.1	53.5	12.00	18.0	19.75	42.6	54.7	12.00	20.0	33.00	47.3	59.9	11.75	26.8
300	356	502	1045	1359	305	457	502	1082	1390	305	508	838	1202	1521	298	680
14	15.00	22.50	46.3	60.3	13.25	20.0	30.00	49.1	63.4	13.25	22.0	35.00	51.6	65.4	12.87	28.3
350	381	572	1175	1531	337	508	762	1248	1611	337	560	889	1310	1662	327	720
16	16.00	24.00	51.6	67.9	15.25	22.0	33.00	70.7	88.0	15.25	25.2	39.00	73.2	92.0	14.75	35.4
400	406	610	1310	1725	387	560	838	1796	2387	387	640	991	1860	2475	375	900
18	17.00	26.00	58.1	76.4	17.25	25.2	36.00	77.2	98.0	17.00	26.8	43.00	79.1	101.0	16.5	35.4
450	432	660	1477	1940	438	640	914	1961	2614	432	680	1092	2008	2660	419	900
20	18.00	28.00	63.3	83.3	19.25	26.7	38.88	85.3	109.0	19.00	28.2	46.75	85.3	110.0	18.25	28.0
500	457	711	1615	2123	489	680	991	2176	2920	483	720	1194	2166	2920	464	710
24	20.00	32.00	76.7	101.1	23.25	28.3	45.00	100.9	128.0	23.00	35.4	55.00	102.3	128.0	22.00	32.0
600	508	813	1948	2568	591	720	1143	2562	3390	584	900	1397	2599	3390	559	810



1. Gear operators standard for 16" and up classes 300 and 600. Height is to top of actuator.

FE = Flanged
WE = Butt weld

B = Center to top closed
C = Center to top open

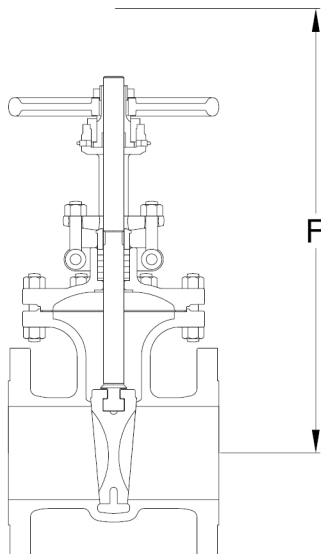
API 603 GATE VALVES

BOLTED BONNET, ASME CLASSES 150-600

FLANGED OR BUTTWELD ENDS

CAST STAINLESS STEEL

SIZE	ASME 150							ASME 300							ASME 600						
in	F	in	WT	lb	WT	lb	CV	F	in	WT	lb	WT	lb	CV	F	in	WT	lb	WT	lb	CV
mm		mm	FE	kg	WE	kg			mm	FE	kg	WE	kg				mm	FE	kg	WE	
½	9.5		6.0		4.8		12.6	9.5		7.3		4.6		12.6	9.6		8.3		5.1		12.6
13	241		2.7		2.2			241		3.3		2.1			244		3.8		2.3		
¾	10.3		8.4		6.5		30	10.3		11.2		6.1		30	10.6		15.0		7.1		30
19	262		3.8		2.9			262		5.1		2.8			269		6.8		3.2		
1	11.3		12.5		9.0		55	11.3		15.4		9.1		55	11.5		20.9		10.6		55
25	287		5.7		4.1			287		7.0		4.1			292		9.5		4.8		
1½	14.5		23.9		18.0		130	14.5		33.1		18.0		130	14.8		38.1		21.3		130
38	368		10.8		8.2			368		15.0		8.2			376		17.3		9.7		
2	16.6		29		24.3		240	16.8		37		28		240	19.8		77		57		240
50	421		13		11			426		17		13			502		35		26		
2½	18.3		43		37		390	20.2		50		36		390	25.7		148		126		390
65	464		20		17			514		23		16			653		67		57		
3	20.7		53		48		560	20.9		53		48		560	27.9		174		143		560
80	527		24		22			530		24		22			709		79		65		
4	25.8		86		75		1020	25.9		119		101		1020	33.4		315		251		1020
100	655		39		34			658		54		46			848		143		114		
6	34.1		139		129		2440	34.6		227		174		2440	46.5		677		573		2440
150	867		63		58			878		103		79			1182		307		260		
8	44.1		251		210		4490	46.5		412		379		4490	54.3		1096		942		4340
200	1119		114		95			1180		187		172			1380		497		427		
10	53.6		419		348		7000	56.0		673		617		7000	62.2		1574		1334		6660
250	1362		190		158			1423		305		280			1581		714		605		
12	61.4		551		536		10500	65.0		957		917		10500	71.1		2000		1702		10000
300	1560		250		243			1650		434		416			1806		907		772		
14	66.7		741		732		12800	73.8		1555		1277		12800	76.2		2761		2373		12000
350	1693		336		332			1875		705		579			1935		1252		1076		
16	74.4		975		963		16900	81.8		1949		1663		16900	84.7		3616		3098		15800
400	1889		442		437			2078		884		754			2151		1640		1405		
18	84.7		1433		1299		22500	89.3		4935		2196		21900	91.5		4507		3861		20600
450	2151		650		589			2267		2238		996			2324		2044		1751		
20	94.7		1744		1678		28100	98.1		3380		2745		27300	99.1		4507		4279		25200
500	2414		791		761			2502		1533		1245			2517		2044		1941		
24	112.6		2580		2481		40900	115.8		4911		3958		40000	116.5		7949		7621		36600
600	2859		1170		1125			2942		2227		1795			2960		3605		3457		



FE = Flanged ends

WE = Weld ends

F = Dismantling
Dimension

WT = Weight

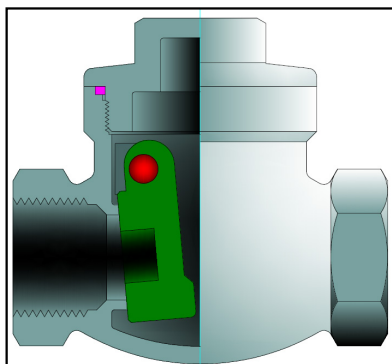
C_v = Flow coefficient

SWING CHECK VALVES

THREADED BONNET, 200 W.O.G.

1/4" - 2" (6 - 50 mm), THREADED

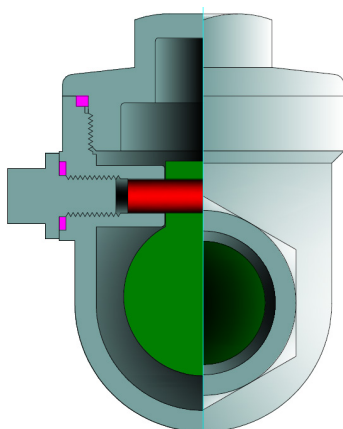
CAST STAINLESS STEEL



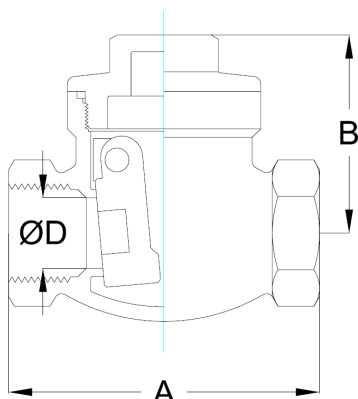
Class	Fig. No.
200 W.O.G.	1847

DESIGN FEATURES:

- Integral Seats.
- Each valve is shell and seat pressure tested per industry standard API 598.
- Check valve are suitable for service in horizontal line with cap vertical or in a vertical line with flow upward.
- Threaded ends are NPT type per ASME B1.20.1.



Side view of valve.



STANDARD MATERIALS (Other materials available)

PART	MATERIALS
Body	A351 Gr. CF8M
Cap	A351 Gr. CF8M
Disc	A276 316
Gasket	PTFE
Pin	A276 316
Plug	SST 316
Plug Gasket	PTFE
Identification Plate	Series 300 SST

SIZE	200 W.O.G.				
in	A	B	D	WT	lb
mm					kg
1/4	2.50	1.7	0.56	0.7	1.0
6	65	42	15	0.3	
3/8	2.50	1.7	0.56	0.7	2.2
10	65	42	15	0.3	
1/2	2.50	1.7	0.56	0.7	3.9
13	65	42	15	0.3	
3/4	3.13	2.0	0.75	0.9	9.2
19	80	51	20	0.4	
1	3.56	2.4	1.00	1.5	17
25	90	60	25	0.7	
1 1/4	4.13	2.64	1.25	2.2	27
32	105	67	32	1.0	
1 1/2	4.75	3.0	1.56	3.2	40
38	120	75	40	1.5	
2	5.50	3.2	2.00	4.7	75
50	140	81	50	2.1	

B = Center to top

WT = Weight

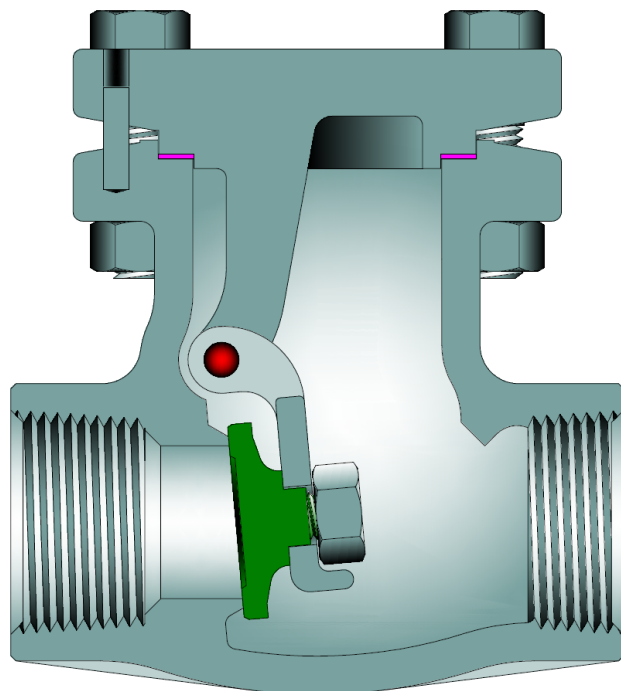
C_v = Flow coefficient

API 603 WALL SWING CHECK VALVES

BOLTED BONNET, CLASSES 200 - 600

1/4" - 2" (6 - 50 mm), THREADED OR SOCKET WELD ENDS

CAST STAINLESS STEEL



Class	Fig. No.
200	2341
300	2346 (1)
600	2350 (1)

1) See pages 22-24 for flanged and butt weld designs.

DESIGN FEATURES:

- Integral Seats.
- Wall thickness per API 603 requirements.
- Swivel disc for improved seat alignment and longer life.
- Each valve is shell and seat pressure tested per industry standard API 598.
- Check valves are suitable for service in horizontal line with cap vertical or in a vertical line with flow upward.
- Carrier Pin is confined within the body wall and is not accessible from the exterior. This eliminates potential leak path with side plug design.

STANDARD MATERIALS (Other materials available)

PART	MATERIALS
Body	A351 Gr. CF3M
Cap	A351 Gr. CF8M
Disc	A276 316
Gasket	PTFE
Carrier	A351 Gr. CF8M
Carrier Pin	A276 316
Disc Nut	SST 316
Body / Cap Stud	A193 Gr. B8
Body / Cap Nut	A194 Gr.8
Locating Pin	SST
Identification Plate	Series 300 SST

Design Specifications

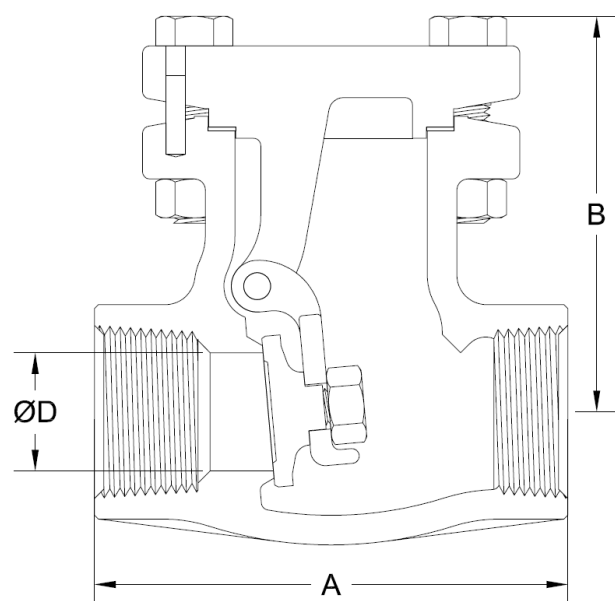
Item	Applicable Specification
Wall thickness	API 603 & B16.34
Pressure - temperature ratings	ASME B16.34
General valve design	ASME B16.34
End Threads-NPT	ASME B1.20.1
Socket Weld Ends	ASME B16.11
Materials	ASTM

- Disc suspended from valve cap and without side plugs.
- Cap has a male and female joint.
- Each valve has a unique certification number that is traceable to the valve certification sheet which includes MTR data, pressure test, inspection result and certificate of conformance.
- Other available options as follows:
 - » Alternate valve materials
 - » Alternate trim materials
 - » NACE service
 - » Special cleaning for applications such as oxygen or chlorine

NOTE: Powell reserves the right to convert threaded ends to socket weld, which will result in thread remnants as pipe stop.

SWING CHECK VALVE DIMENSIONS (CLASSES 200 - 600)

SIZE	ASME 200						ASME 300					
	A	B	D	WT	lb kg	C _v	A	B	D	WT	lb kg	C _v
¼	2.75	2.2	0.44	2.1	3.0		2.75	2.2	0.44	2.1	3.0	
6	70	55	11	1.0			70	55	11	1.0		
3/8	2.75	2.2	0.44	2.1	3.0		2.75	2.2	0.44	2.1	3.0	
10	70	55	11	1.0			70	55	11	1.0		
½	2.75	2.2	0.44	2.1	3.0		2.75	2.2	0.44	2.1	3.0	
13	70	55	11	1.0			70	55	11	1.0		
¾	3.75	3.0	0.75	3.3	9.2		3.75	3.0	0.75	4.4	9.2	
19	95	76	19	1.5			95	76	19	2.0		
1	4.00	3.4	1.00	4.9	17		4.00	3.4	1.00	6.1	17	
25	102	86	25	2.2			102	86	25	2.8		
1¼	4.75	3.4	1.25	7.3	27		4.75	3.4	1.25	8.5	27	
32	121	86	32	3.3			121	86	32	3.9		
1½	5.50	4.1	1.50	10.6	40		5.50	4.1	1.50	10.6	40	
38	140	103	38	4.8			140	103	38	4.8		
2	6.00	4.6	2.00	15.5	75		6.00	4.6	2.00	15.5	75	
50	152	116	51	7.0			152	116	51	7.0		



B = Center to top

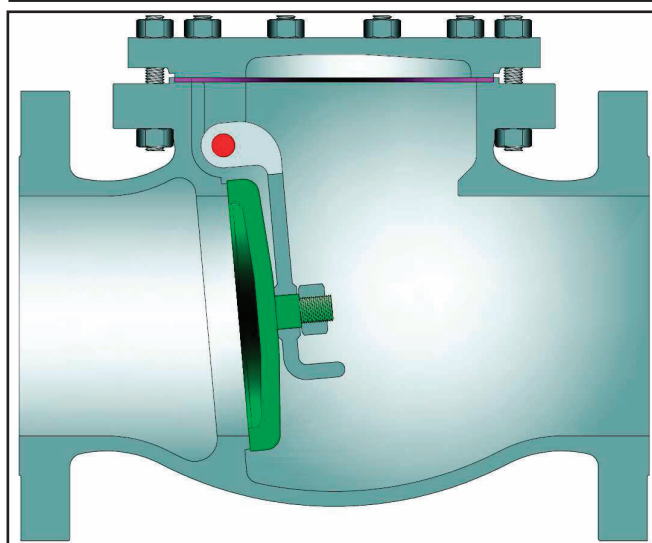
WT = Weight

C_v = Flow coefficient

SIZE	ASME 600					
	A	B	D	WT	lb kg	C _v
¼	2.75	2.3	0.44	7.0	3.0	
6	70	58	11	3.2		
3/8	2.75	2.3	0.44	7.0	3.0	
10	70	58	11	3.2		
½	2.75	2.3	0.44	7.0	3.0	
13	70	58	11	3.2		
¾	3.75	3.1	0.75	8.5	9.2	
19	95	79	19	3.9		
1	4.00	3.5	1.00	11.0	17	
25	102	90	25	5.0		
1¼	4.75	3.5	1.25	13.2	27	
32	121	90	32	6.0		
1½	5.63	4.3	1.50	14.6	40	
38	143	108	38	6.6		
2	6.25	5.4	2.00	35.0	75	
50	159	138	51	15.9		



API 603 WALL SWING CHECK VALVES
BOLTED BONNET, CLASSES 150-600
FLANGED AND BUTTWELD ENDS
CAST STAINLESS STEEL



Class	Figure Number
150	2342
300	2346 (3)
600	2350 (3)

STANDARD MATERIALS (Other materials available)

PART	MATERIALS
Body	A351 Gr. CF8M (2)
Cap	A351 Gr. CF8M
Disc	A276 316
Gasket	PTFE
Carrier	A351 Gr. CF8M
Carrier Pin	A276 316
Disc Nut	SST 316
Disc Carrier Hanger (1)	A351 Gr. CF8M
Disc Carrier Hanger Bolts (1)	A193 Gr. B8
Body / Cap Stud	A193 Gr. B8
Body / Cap Nut	A194 Gr.8
Identification Plate	Series 300 SST

DESIGN FEATURES:

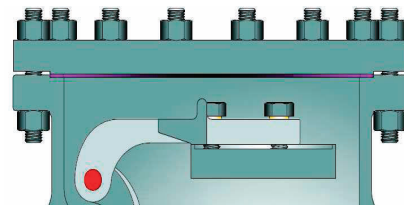
- **Integral Seats**, however, renewable screwed-in seat rings are available on order.
- **Wall thickness** per API 603 requirements.
- **Swivel disc** for improved seat alignment and longer life.
- **Each** valve is shell and seat pressure tested per industry standard API 598.
- **Check** valve are suitable for service in horizontal line with cap vertical or in a vertical line with flow upward.
- **Carrier Pin** is confined within the body wall and is not accessible from the exterior reducing potential leak points.
- **End Flanges** have the following raised faces per ASME B16.5:
Classes 150-300: 1/16" (2mm).
Classes 600-1500: 1/4" (7mm).
- **Weld ends** are available per ASME B16.25 or per customer's specification.
- **Each** valve has a unique certification number that is traceable to the valve certification sheet which includes MTR data, pressure test, inspection result and certificate of conformance.
- **Thicker** walled API 600 design available.

- (1) 10" Valve size and up have a hanger design as shown below.
- (2) CF3M for weld end bodies.
- (3) See pages 20-21 for 2" and smaller sizes with threaded or socket weld ends.

Design Specifications

Item	Applicable Specification
Wall thickness	API 603 & B16.34
Pressure - temperature ratings	ASME B16.34
General valve design	B16.34
End to End dimensions	ASME B16.10
Flange design	ASME B16.5
Butt Weld design	ASME B16.25
Materials	ASTM

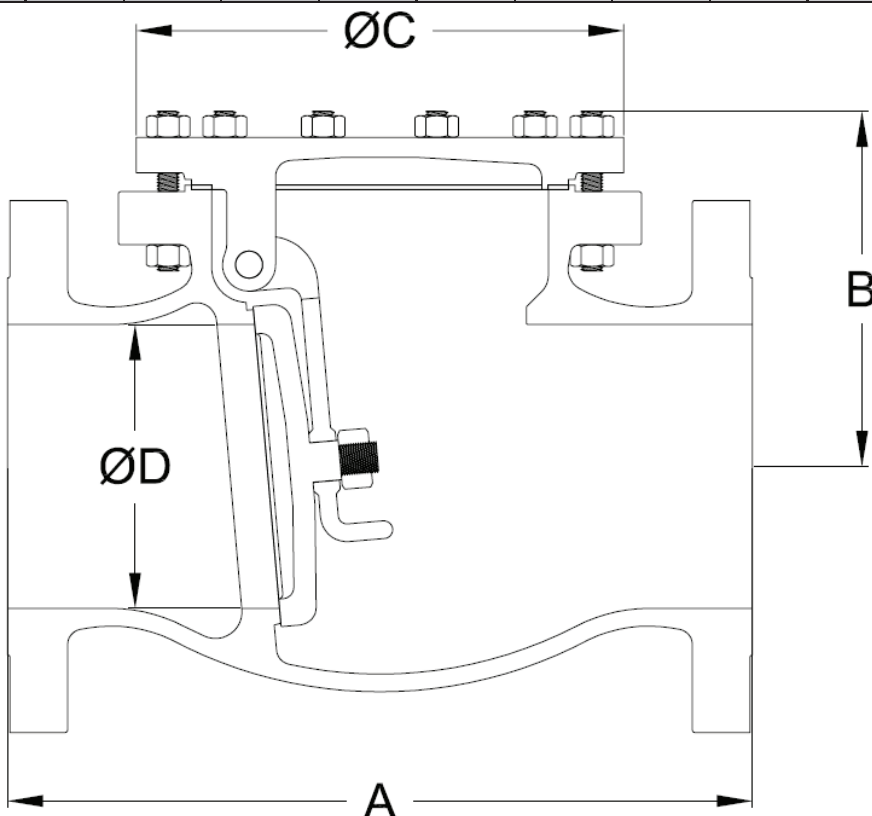
- **Other** available options as follows:
-Alternate valve materials such as chrome and stainless steel alloys
-Alternate trim materials
-Bypass, drain and other auxiliary connections
-NACE service
-Special cleaning for applications such as oxygen or chlorine
-Other options available as specified



Valve design for valve sizes 10" and above all classes.

SWING CHECK VALVE DIMENSIONS (CLASS 150—600).

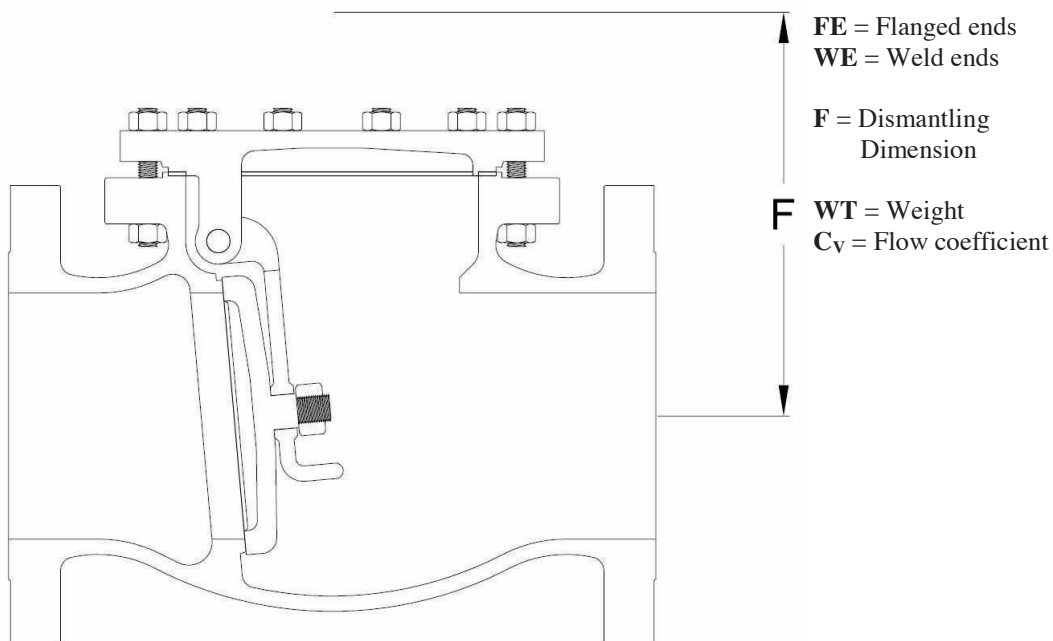
SIZE	ASME 150				ASME 300				ASME 600			
in mm	A	B	C	D	A	B	C	D	A	B	C	D
½	4.25	2.2	2.4	0.50	6.00	2.2	2.4	0.50	6.50	2.3	2.4	0.50
13	108	55	61	13	152	55	61	13	165	58	61	13
¾	4.62	3.0	2.8	0.75	7.00	3.0	2.8	0.75	7.50	3.1	2.8	0.75
20	117	76	70	19	178	76	70	19	190	79	70	19
1	5.00	3.4	3.2	1.00	8.50	3.4	3.2	1.00	8.50	3.5	3.2	1.00
25	127	86	81	25	216	86	81	25	216	90	81	25
1½	6.50	4.1	4.2	1.50	9.50	4.1	4.2	1.50	9.50	4.3	4.2	1.50
38	165	103	106	38	241	103	106	38	241	108	106	38
2	8.00	4.6	4.6	2.00	10.50	4.6	4.6	2.00	11.50	5.4	6.5	2.00
50	203	116	117	51	267	116	117	51	292	138	165	51
2½	8.50	5.6	5.9	2.50	11.50	5.6	5.9	2.50	13.00	7.4	7.9	2.50
65	216	142	151	170	292	142	151	170	330	189	200	64
3	9.50	5.8	6.8	3.00	12.50	5.8	6.8	3.00	14.00	8.3	8.5	3.00
80	241	148	171	192	318	148	171	192	356	212	215	76
4	11.50	6.5	7.4	4.00	14.00	6.5	7.4	4.00	17.00	10.3	10.6	4.00
100	292	165	189	213	356	164	189	213	432	262	270	102
6	14.00	8.2	10.0	6.00	17.50	8.6	10.0	6.00	22.00	14.0	13.5	6.00
150	356	208	254	273	444	218	254	299	559	356	342	152
8	19.50	10.1	13.8	8.00	21.00	10.7	13.8	8.00	26.00	18.5	17.1	7.88
200	495	257	349	349	533	273	349	375	660	469	435	200
10	24.50	14.2	17.8	10.00	24.50	15.3	18.5	10.00	31.00	21.2	20.1	9.75
250	622	359	451	451	622	388	470	470	787	539	510	248
12	27.50	15.6	20.5	12.00	28.00	17.9	22.3	12.00	33.00	23.4	22.6	11.75
300	698	397	521	521	711	455	565	305	838	594	575	298
14	31.00	16.3	20.9	13.25	33.00	23.4	21.7	13.25	35.00	25.4	23.5	12.88
350	787	413	532	337	838	595	550	337	889	645	598	327
16	34.00	23.7	25.3	15.25	34.00	24.9	27.4	15.25	39.00	28.6	27.6	14.75
400	864	602	642	387	864	632	695	387	991	727	700	375
18	38.50	27.9	29.6	17.25	38.50	28.5	30.4	17.00	43.00	32.5	29.1	16.50
450	978	709	752	438	978	723	772	432	1092	826	740	419
20	38.50	26.7	27.0	19.25	40.00	24.9	29.1	19.00	47.00	31.6	32.3	18.25
500	978	679	685	489	1016	632	738	483	1194	802	820	464
24	51.00	33.5	36.0	23.25	53.00	34.8	37.6	23.00	55.00	40.2	39.4	22.00
600	1295	852	915	591	1346	884	955	584	1397	1020	1000	559



WE = Butt weld
FE = Flanged
B = Center to top

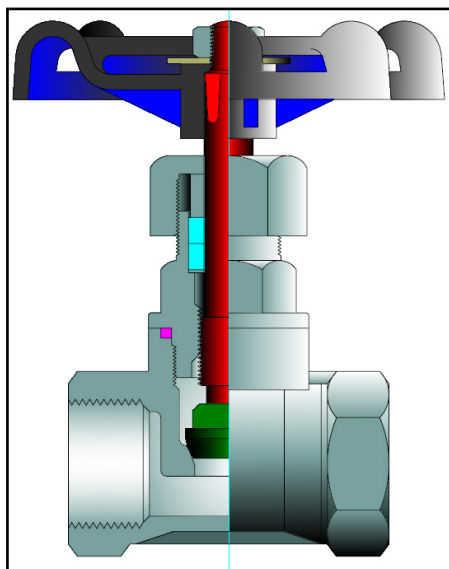
API 603 SWING CHECK VALVES
BOLTED BONNET, CLASSES 150-600
FLANGED AND BUTTWELDED ENDS
CAST STAINLESS STEEL

SIZE	ASME 150							ASME 300							ASME 600						
in	F	in	WT	lb	WT	lb	C _v	F	in	WT	lb	WT	lb	C _v	F	in	WT	lb	WT	lb	C _v
mm		mm	FE	kg	WE	kg		mm	FE	kg	WE	kg	mm		FE	kg	WE	kg	WE	kg	
½	3.8		3.6		2.1		3.9	4.1		7.0		2.1		3.9	4.1		9.1		2.8		3.9
13	97		1.6		1.0			104		3.2		1.0			104		4.1		1.3		
¾	5.4		5.3		3.3		9.2	5.8		12.5		3.3		9.2	5.8		14.9		5.2		9.2
20	137		2.4		1.5			147		5.7		1.5			147		6.8		2.4		
1	6.2		7.5		4.9		17	6.3		18.0		4.9		17	6.5		23.8		6.6		17
25	157		3.4		2.2			160		8.2		2.2			165		10.8		3.0		
1½	7.3		14.6		10.6		40	7.5		30.0		10.6		40	7.8		40.0		14.5		40
38	185		6.6		4.8			191		13.6		4.8			198		18.1		6.6		
2	8.4		24.0		15.5		75	8.7		39.0		15.5		75	9.6		52.4		34.7		75
50	213		10.9		7.0			221		17.7		7.0			244		23.8		15.7		
2½	10.1		33		30		120	10.3		45		34		120	13.1		79		62		120
65	257		17		15			262		22		17			333		36		28		
3	11.0		38		37		175	11.2		73		52		175	14.8		110		79		175
80	279		19		18			284		36		26			376		50		36		
4	12.3		69		51		315	12.6		92		69		315	18.4		215		168		315
100	312		34		25			320		46		34			467		98		76		
6	15.9		119		94		760	16.2		172		124		760	23.8		439		335		760
150	404		59		46			411		85		61			605		199		152		
8	19.0		229		178		1390	19.7		365		273		1390	26.5		811		633		1350
200	483		113		88			500		180		135			673		368		287		
10	25.2		448		348		2175	25.8		759		577		2175	31.1		1343		1047		2070
250	640		221		172			655		375		285			790		609		475		
12	28.6		648		504		3250	30.1		1160		1077		3250	35.4		1702		1363		3120
300	726		320		249			765		526		488			899		772		618		
14	31.5		979		834		3960	37.0		1411		1241		3960	38.6		1958		1585		3740
350	800		444		378			940		640		563			980		888		719		
16	40.1		1438		1250		5250	42.3		1764		1550		5250	44.0		2994		2364		4910
400	1019		652		567			1074		800		703			1118		1358		1072		
18	47.2		1927		1656		6990	48.9		2578		2192		6790	50.7		3449		2932		6400
450	1199		874		751			1242		1169		994			1288		1564		1330		
20	49.4		1771		1522		8700	52.5		2913		2505		8480	53.1		4792		4121		7800
500	1255		803		690			1334		1321		1136			1349		2174		1869		
24	57.7		3559		3062		12700	60.4		5204		4428		12400	62.5		7608		6467		11400
600	1466		1614		1388			1534		2360		2008			1588		3451		2933		



GLOBE VALVES

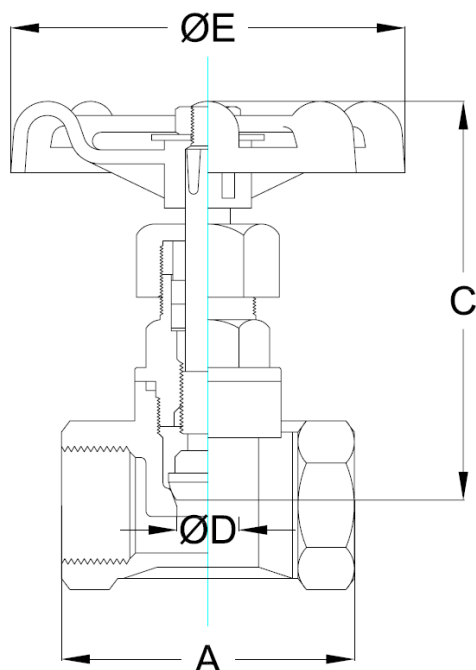
THREADED BONNET, 200 W.O.G.
1/4 - 2" (6 - 50 mm) THREADED ENDS
CAST STAINLESS STEEL



Class	Fig. No.
200 W.O.G.	1861

DESIGN FEATURES:

- Swivel disc for optimal seating and longer seat life are non-rotating.
- Stems are rotating / rising design.
- Each valve is shell, seat and backseat pressure tested per industry standard API 598.
- Integral seats are standard.
- Threaded ends are NPT type per ASME B1.20.1.



STANDARD MATERIALS (Other materials available)

PART	MATERIALS
Body	A351 Gr. CF8M
Bonnet	A351 Gr. CF8M
Disc	SST 316
Disc Nut	SST 316
Stem	SST 316
Packing Nut	SST 316
Gland	SST 304
Packing	PTFE
Packing Washer	SST 316
Gasket	PTFE
Hand Wheel	Aluminum
Hand Wheel Nut	SST 304
Identification Plate	Series 300 SST

SIZE	200 W.O.G.						
in	A	C	D	E	WT	lb	C _v
mm						kg	
¼	2.05	3.0	0.50	2.8	0.6	2.5	
7	52	77	12	70	0.3		
3/8	2.05	3.0	0.50	2.8	0.6	2.5	
10	52	77	12	70	0.3		
½	2.05	3.1	0.50	2.8	0.6	2.5	
13	52	79	12	70	0.3		
¾	2.36	3.6	0.60	2.8	1.0	3.7	
20	60	91	15	70	0.4		
1	2.83	4.1	0.80	3.1	1.3	6.8	
25	72	105	20	80	0.6		
1¼	3.19	5.0	1.00	3.1	2.5	10.9	
32	81	127	25	80	1.1		
1½	3.54	5.6	1.25	3.5	2.7	17.5	
38	90	142	32	90	1.2		
2	3.98	6.2	1.60	3.9	3.8	30	
50	101	158	40	100	1.7		

C = Center to top open

WT = Weight

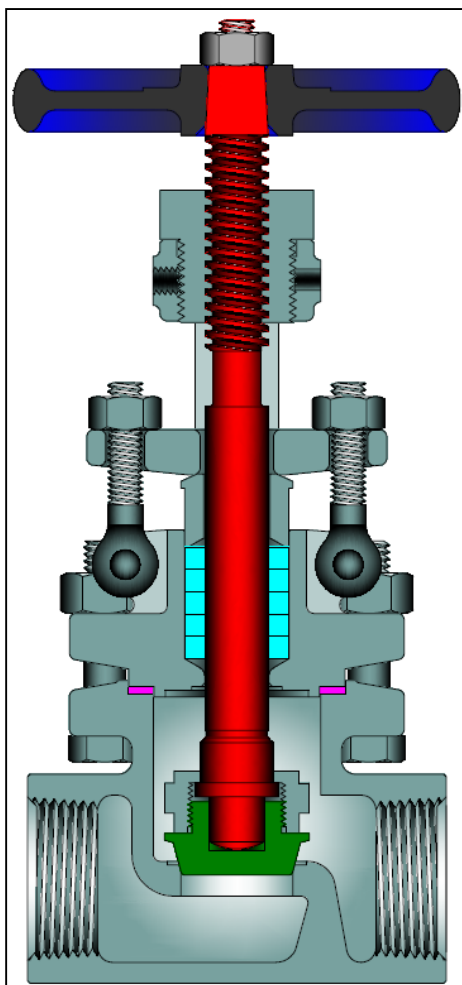
C_v = Flow coefficient

API 603 WALL GLOBE VALVES

BOLTED BONNET, CLASSES 200-600

1/4 - 2" (6 - 50 mm), THREADED OR SOCKET WELD ENDS

CAST STAINLESS STEEL



Class	Fig. No.
200	2474
300	2447 (1)
600	1983 (1)

1). See pages 16-18 for flanged and butt weld designs

DESIGN FEATURES:

- Seat face: Ground and lapped to a smooth finish.
- Body and bonnet joint accurately machined. Gasket materials and details on page 6.
- Swivel disc for optimal seating and longer seat life .
- Stems are rotating / rising design.
- Each valve is shell, seat and backseat pressure tested per industry standard API 598.
- Body and bonnet castings are precision machined.

STANDARD MATERIALS (Other materials available)

PART	MATERIALS
Body	A351 Gr. CF3M
Bonnet	A351 Gr. CF8M
Disc	A276 316
Disc Nut	A276 316
Stem	A276 316
Gland Flange	A351 Gr. CF8M
Eye Bolt	A193 Gr. B8
Eye Bolt Nut	A194 Gr. 8
Gland	A276 316
Packing	PTFE
Gasket	PTFE
Hand Wheel	A47
Hand Wheel Nut	Steel
Stem Bushing	A582 416
Body / Bonnet Bolt	A193 Gr. B8
Body / Bonnet Nut	A194 Gr.8
Set Screw	Steel
Identification Plate	Series 300 SST

Design Specifications

Item	Applicable Specification
Wall thickness	API 603 & B16.34
Pressure - temperature ratings	ASME B16.34
General valve design	ASME B16.34
End Threads-NPT	ASME B1.20.1
Socket Weld Ends	ASME B16.11
Materials	ASTM

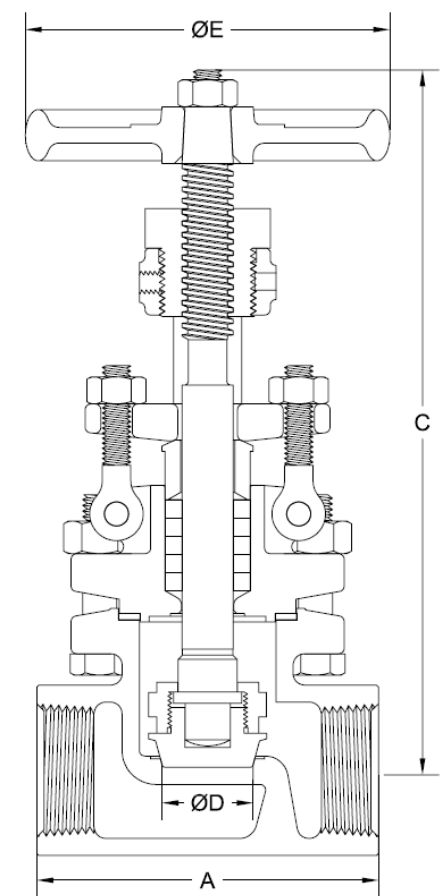
- Gland has two-piece construction for easy alignment.
- Each valve has a unique certification number that is traceable to the valve certification sheet which includes MTR data, pressure test, inspection result and certificate of conformance.
- Other available options as follows:
 - » Alternate valve materials available
 - » NACE service
 - » Special cleaning for applications such as oxygen or chlorine
 - » Other options available as specified

NOTE: Powell reserves the right to convert threaded ends to socket weld when needed, which will result in thread remnants as pipe stop.

GLOBE VALVE DIMENSIONS

(CLASSES 200 - 600)

SIZE	ASME 200							ASME 300						
	in	A	C	D	E	WT	lb	A	C	D	E	WT	lb	C _v
	mm						kg						kg	
¼		2.88	6.8	0.50	3.0	3.5	2.5	2.88	6.8	0.50	3.0	3.6	2.5	
7		73	171	13	76	1.6		73	171	13	76	1.6		
3/8		2.88	6.8	0.50	3.0	3.5	2.5	2.88	6.8	0.50	3.0	3.6	2.5	
10		73	171	13	76	1.6		73	171	13	76	1.6		
½		2.88	6.8	0.50	3.0	3.5	2.5	2.88	6.8	0.50	3.0	3.8	2.5	
13		73	171	13	76	1.6		73	171	13	76	1.7		
¾		3.25	7.3	0.75	3.5	4.5	5.8	3.25	7.3	0.75	3.5	4.6	5.8	
20		83	186	19	89	2.0		83	186	19	89	2.1		
1		3.75	8.2	1.00	4.0	6.7	10.7	3.75	8.2	1.00	4.0	7.1	10.7	
25		95	208	25	102	3.0		95	208	25	102	3.2		
1¼		5.50	8.9	1.50	5.0	10.5	25	5.50	8.9	1.50	5.0	13.5	25	
32		140	226	38	127	4.8		140	226	38	127	6.1		
1½		5.50	9.9	1.50	5.0	13.7	25	5.50	9.9	1.50	5.0	19.1	25	
38		140	251	38	127	6.2		140	251	38	127	8.7		
2		6.00	10.9	2.00	6.0	19.8	50	6.00	10.9	2.00	6.0	25.8	50	
50		152	276	51	152	9.0		152	276	51	152	11.7		



SIZE	ASME 600						
	in	A	C	D	E	WT	lb
	mm						kg
¼		2.88	6.8	0.50	3.0	3.7	2.5
7		73	171	13	76	1.7	
3/8		2.88	6.8	0.50	3.0	3.7	2.5
10		73	171	13	76	1.7	
½		2.88	6.8	0.50	3.0	3.7	2.5
13		73	171	13	76	1.7	
¾		3.25	7.3	0.75	3.5	4.8	5.8
20		83	186	19	89	2.2	
1		3.75	8.3	1.00	5.0	7.4	10.7
25		95	211	25	127	3.4	
1¼		5.00	10.6	1.25	6.0	17.5	17.1
32		127	269	32	152	7.9	
1½		5.63	10.9	1.50	7.0	21.0	25
38		143	276	38	178	9.5	
2		6.25	12.8	2.00	8.0	40.0	50
50		159	324	51	203	18.1	

C = Center to top open

WT = Weight

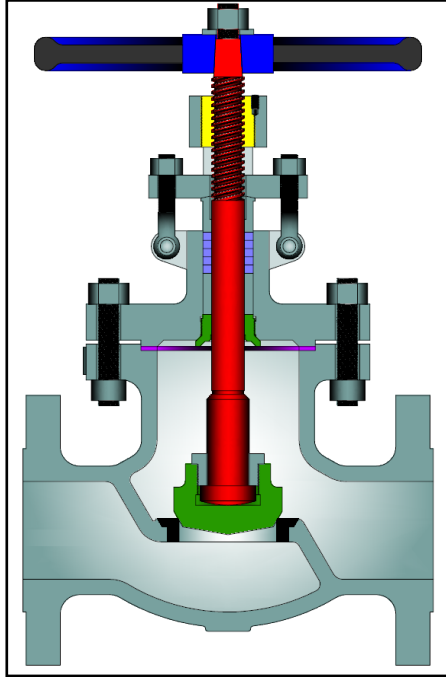
C_v = Flow Coefficient

API 603 GLOBE VALVES

BOLTED BONNET, CLASSES 150 - 600

FLANGED AND BUTTWELD ENDS

CAST STAINLESS STEEL



Class	Fig. No
150	2475
300	2447 (3)
600	1983 (3)

DESIGN FEATURES:

- Seat face: Ground and lapped to a smooth finish.
- Body and bonnet joint accurately machined. Gasket materials and details on page 6.
- Swivel disc for optimal seating and longer seat life.
- Stems of hand wheel operated design are rotating / rising design.
- Each valve is shell, seat and backseat pressure tested per industry standard API 598.
- Integral seats are standard. Renewable seat rings available on special order
- Body and bonnet castings are precision machined. One-piece bonnet up to 12" (350 mm) valve size on all classes.
- Gland has two-piece construction for easy alignment.
- Weld ends are available per ASME B16.25 or per customer's specification.
- Flanges:
 - » Classes 150-300: 1/16" raised face.
 - » Class 600: 1/4" raised face.
 - » Finish 125-250 AARH for all valves.
- Threaded and socket weld ends are available on sizes 2" and smaller.
- Each valve has a unique certification number that is traceable to the valve certification sheet which includes MTR data, pressure test, inspection result and certificate of conformance.

STANDARD MATERIALS (Other materials available)

PART	MATERIALS
Body	A351 Gr. CF8M (2)
Bonnet / Yoke arm	A351 Gr. CF8M
Disc	A276 316
Disc Nut	A276 316
Stem	A276 316
Stem Bushing	A439 D-2 (4)
Gland Flange	A351 Gr. CF8
Eye Bolt	A193 Gr. B8
Eye Bolt Nut	A194 Gr.8
Gland	A276 316
Packing	PTFE
Packing Washer / Packing Spacer	A276 316
Gasket	PTFE
Back Seat Bushing (5)	A276 316
Hand Wheel	A47
Hand Wheel Nut	Steel
Body / Bonnet Stud	A193 Gr. B8
Body / Bonnet Nut	A194 Gr.8
Bonnet / Yoke arm Stud (1)	A193 Gr. B8
Bonnet / Yoke arm Nut (1)	A194 Gr.8
Bearing Cap (1)	Series 300 SST
Cap Screws (1)	
Identification Plate	

1. 14" Valve sizes and up all classes have a two piece yoke.
2. CF3M for weld end bodies.
3. See pages 14-15 for 2" and smaller sizes with threaded or socket weld ends.
4. For valve sizes 2" and smaller, T416 steel is used.
5. Used in valve sizes 2½" and larger.

Design Specifications

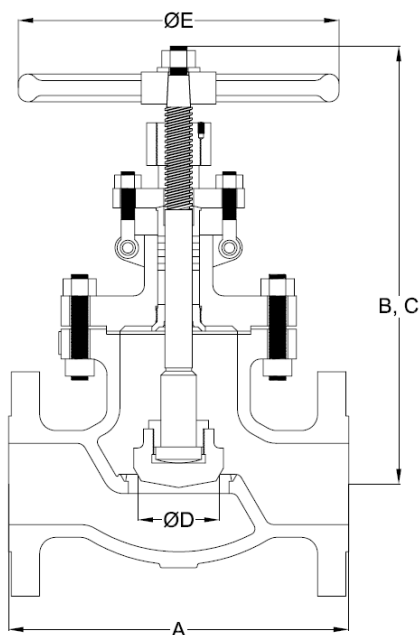
Item	Applicable Specification
Wall thickness	API 603 & B16.34
Pressure - temperature ratings	ASME B16.34
General valve design	B16.34
End to End dimensions	ASME B16.10
Flange design	ASME B16.5
Butt Weld design	ASME B16.25
Materials	ASTM

- Heavier walled API 600 design available.
- Other available options as follows:
 - » Alternate valve materials such as chrome and stainless steel alloys
 - » Alternate trim materials
 - » Bypass, drain and other auxiliary connections
 - » Gear, motor, and cylinder actuators available
 - » NACE service
 - » Special cleaning for applications such as oxygen or chlorine
 - » Other options available as specified

GLOBE VALVE DIMENSIONS (CLASSES 150 - 600)

SIZE	ASME 150					ASME 300					ASME 600				
	A	B	C	D	E	A	B	C	D	E	A	B (1)	C (1)	D	E
	FE/WE					FE/WE					FE/WE				
½	4.25	6.3	6.8	0.50	3.0	6.0	6.3	6.8	0.50	3.0	6.50	7.5	8.1	0.50	3.0
13	108	160	171	13	76	152	160	171	13	76	165	191	206	13	76
¾	4.63	6.8	7.3	0.75	3.5	7.0	6.8	7.3	0.75	3.5	7.50	8.9	9.5	0.75	3.5
20	117	173	186	19	89	178	173	186	19	89	191	225	241	19	89
1	5.00	7.7	8.2	1.00	4.0	8.0	7.7	8.2	1.00	4.0	8.50	9.9	10.5	1.00	5.0
25	127	196	208	25	102	203	196	208	25	102	216	251	267	25	127
1½	6.50	9.0	9.9	1.50	5.0	9.0	9.0	9.9	1.50	5.0	9.50	10.9	11.6	1.50	7.0
38	165	229	251	38	127	229	229	251	38	127	241	277	295	38	178
2	8.00	9.9	10.9	2.00	6.0	10.5	9.9	10.9	2.00	6.0	11.50	12.5	13.3	2.00	8.0
50	203	251	276	51	152	267	251	276	51	152	292	318	338	51	203
2½	8.50	14.9	16.4	2.50	9.8	11.5	16.7	18.2	2.50	9.8	13.00	16.4	17.6	2.50	11.81
65	216	378	416	64	250	292	423	461	64	250	330	416	448	64	300
3	9.50	14.1	15.4	3.00	11.8	12.5	14.1	15.4	3.00	11.8	14.00	17.2	18.7	3.00	13.8
80	241	357	390	76	300	318	357	390	76	300	355	438	475	76	350
4	11.50	16.5	18.0	4.00	11.8	14.0	16.7	18.0	4.00	13.8	17.00	20.2	21.7	4.00	17.7
100	292	419	457	102	300	356	423	458	102	350	431	514	552	102	450
6	16.00	17.6	19.7	6.00	15.8	17.5	21.0	23.2	6.00	17.7	22.00	25.7	27.9	6.00	23.6
150	406	446	499	152	400	445	534	589	152	450	558	653	709	152	600
8	19.50	20.1	22.6	8.00	17.7	22.0	23.9	26.3	8.00	21.7	26.00	29.1	31.6	7.88	27.7
200	495	511	574	203	450	559	606	669	203	550	660	739	803	200	700
10	24.50	23.9	26.9	10.00	21.7	24.5	26.7	29.7	10.00	23.6	31.00	41.3 (1)		9.75	27.7
250	622	606	682	254	550	622	677	753	254	600	787	1049 (1)		248	700
12	27.50	27.1	30.6	12.00	23.6	28.0	30.6	34.2	12.00	27.6	33.00	47.8 (1)		11.75	31.5
300	699	688	778	305	600	711	778	868	305	700	838	1215 (1)		298	800

(1) Gear operators standard for 10" and up for class 600. Height is to top of actuator.



FE = Flanged
WE = Butt weld

B = Center to top closed
C = Center to top open

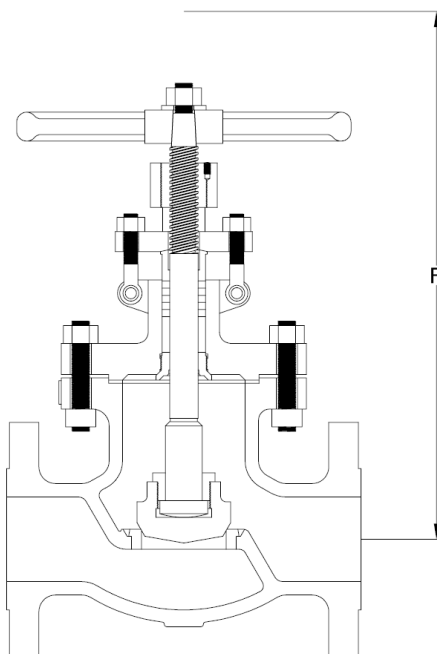
API 603 WALL GLOBE VALVES

BOLTED BONNET, ASME CLASSES 150 - 600

FLANGED AND BUTTWELD ENDS

CAST STAINLESS STEEL

SIZE	ASME 150							ASME 300							ASME 600						
in	F	in	WT	lb	WT	lb	C _v	F	in	WT	lb	WT	lb	C _v	F	in	WT	lb	WT	lb	C _v
mm		mm	FE	kg	WE	kg			mm	FE	kg	WE	kg			mm	FE	kg	WE	kg	
½	7.9	5.0	3.5	2.5	7.9	6.5	3.8	2.5	9.0	8.1	3.8	2.5									
13	201	2.3	1.6	201	2.9	1.7	229	3.7	1.7												
¾	8.5	6.5	4.5	5.8	8.5	11.3	4.6	5.8	10.6	12.8	4.8	5.8									
20	216	2.9	2.0	216	5.1	2.1	269	5.8	2.2												
1	9.6	9.3	6.7	10.7	9.6	13.1	7.1	10.7	11.9	16.5	7.4	10.7									
25	244	4.2	3.0	244	5.9	3.2	302	7.5	3.4												
1½	11.5	20.0	13.7	25	11.5	25.3	19.1	25	13.9	35.8	21.0	25									
38	292	9.1	6.2	292	11.4	8.7	353	16.2	9.5												
2	13.1	29.5	19.8	50	13.1	34.1	25.8	50	16.3	58.0	40.0	50									
50	333	13.4	9	333	15.5	11.7	414	26.3	18.1												
2½	16.0	46	38	75	16.3	71	57	75	20.1	148	126	75									
65	406	21	17	414	32	26	510	67	57												
3	18.0	87	71	110	18.0	117	95	110	25.5	174	143	110									
80	456	40	32	456	53	43	647	79	65												
4	21.3	135	108	200	20.7	165	132	200	25.0	315	251	200									
100	541	61	49	525	75	60	635	143	114												
6	25.3	227	183	480	27.2	342	273	480	32.3	677	573	480									
150	643	103	83	692	155	124	822	307	260												
8	26.7	375	300	880	30.6	644	516	880	36.5	1096	942	850									
200	678	170	136	776	292	234	928	497	427												
10	31.5	706	565	1370	34.4	1064	851	1370	41.7	1574	1334	1300									
250	801	320	256	873	483	386	1059	714	605												
12	37.6	1056	849	2050	40.1	1361	1089	2050	54.8	2000	1702	2000									
300	956	479	385	1018	617	494	1391	907	772												



FE = Flanged ends

WE = Weld ends

F = Dismantling
Dimension

WT = Weight

C_v = Flow coefficient