WALWORTH®

Since 1842

PRESSURE SEAL

CATALOG

www.walworth.com

PRESSURE CAST STEEL VALVES BODY MATERIALS

Material suffix	Common designation	Forging specification	Wrought bar specifiction	Service recommendations (1)	Common trim for this base material
					600 To 2500 #
ASTM A216 Grade WCB	Carbon Steel	A105	A105	Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°F)and +800°F (+425°C)	HF, 3HF+HF, NUC
ASTM A216 Grade WCC	Carbon Steel	A105N	A105N	Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°F)and +800°F (+425°C)	HF, 3HF+HF, NUC
ASTM A217 Grade WC6	1 1/4% Chrome; 1/2% Moly Low Alloy Steel	A182 F11	A182 F11 Class 2	Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°C) and + 1100°F(+593°C).	UT, 3HF, A
ASTM A217 Grade WC9	2 1/4 % Chrome Low Alloy Steel	A182 F22	A182 F11 Class 3	Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°C) and + 1100°F(+593°C).	UT, 3HF, A
ASTM A217 Grade C5	5% Chrome; 1/2 % Moly, Medium Alloy Steel	A182 F5	A182 F5	Mild corrosive or erosive applications as well as non-corrosive applications at temperatures between- 20°F (-3O°C) and + 1200°F (+649°C).	UT, 3HF, A
ASTM A217 Grade C12	9% Chrome; 1% Moly, Medium Alloy Steel	A182 F9	A182 F9	Mild corrosive or erosive applications as well as non-corrosive applications at temperatures between- 20°F (-3O°C) and + 1200°F (+649°C).	UT, 3HF, A
ASTM A217 Grade C12-A	9% Chrome; 1% Moly; V-N, Medium Alloy Steel	A182 F91	A182 F91	Mild corrosive or erosive applications as well as non-corrosive applications at temperatures between- 20°F (-3O°C) and + 1200°F (+649°C).	HF, 3HF+HF, NUC
ASTM A351 Grade CF8	18% Chrome; 8% Nickel; 0.08 % C Stainless Steel	ASTM A182 F304	ASTM A479 304	Corrosive or extremely high temperature non-corrosive serviceS between -450°F (- 268°C) and + 1200°F (+649°C). Above + 800°F (+ 425°C) specify carbon content of 0.04% or greater.	4HF+HF
ASTM A351 Grade CF8M	18% Chrome; 12% Nickel; 2 % Mo; 0.08 % C Stainless Steel	ASTM A182 F316	ASTM A479 316	Corrosive or either extremely low or high temperature non-corrosive services between -450°F (-268°C) and + 1200°F (+ 649°C). Above +800°F (+ 425°C)specify carbon content of 0.04% or greater.	3HF+HF
ASTM A351 Grade CF8C	18% Chrome; 10% Nickel; Cb; 0.08 % C Stainless Steel	ASTM A182 F347	ASTM A479 347	Primarily for high temperature, corrosive applications between -450°F (-268°C) and + 1200°F (+ 649°C). Above +1000°F (+540°C) specify carbon oontent of 0.04% or greater. Hydrogen service."	347HF
ASTM A487 Grade CA15	12% Chrome Steel	ASTM A182 F6	ASTM A276 410	Corrosive application at temperatures between -20°F (-30°C) and + 900°F (+482°C).	HF, NUC
ASTM A487 Grade CA6NM	12% Chrome Steel	ASTM A182 F6	ASTM A276 410	Corrosive application at temperatures up to +1300°F (704°C). Boiler feed water 250 °F (115°C), sea water, steam sulfur.	HF, NUC
ASTM A494 Grade M-35-1	67% Ni; 30% Cu, Monel	ASTM B564 N04400	ASTM B164 N04400	Weldable grade. Good resistance to corrosion by all common organic acids and salt water. Also highly resistant to most alkaline solutions to +7W°F (+400°C)	AHF
ASTM A494 Grade CY-40	75% Nickel; 15% Cr; 8% Fe, Inconel 600	ASTM B564 N06600	ASTM B166 N06600	Very good for high temperature servive. Good resistance to strongly corrosive media and atmosphere to + 800°F (+425°C). Hot boiler feed water, hot caustics, hot concentrate alk water, elevated temperature oxidizing conditions.	600HF
ASTM A494 Grade CW6MC	60% Nickel; 22% Cr; 9% Mo; 3.5% Cb, Inconel 625	ASTM B564 N06625	ASTM B446 N06625	Very good for high temperature servive. Good resistance to strongly corrosive media and atmosphere to + 800°F (+425°C).	625HF
ASTM A494 Grade CU5MCuC	42% Nickel; 21.5% Cr; 3% Mo; 2.3% Cu, Incoloy 825	ASTM B564 N08825	ASTM B425 N08825	Sour gas service. Excellent resistance to both reducing and oxidizing acids, stress corrosion cracking, localized attack such as pitting and sulfuric and phosphoric acids.	23HF
ASTM A995 Grade CD3MN	22% Chrome; 5% Nickel; 3% Mo; N; 0.030% C Duplex Stainless Steel Grade 4A.	ASTM A182 F51	ASTM A479 31803	Concentrate brine, fatty acids, potable water, pulp water, pulp liquors at 220 °F (104 °C), sea water, stem, sulfuric acid (15-30% @ 140-160 °F (60-71 °C), sulfuric acid (35-40 % @185 °F (85 °C), plus 5 % organics).	32750HF, 31803HF, 51H

(1) The above list of consuming industries and corrosive materials are useful as examples of typical applications where these materials can be used where they can be used as a guide; however, the responsability to choice the proper alloy is from the Engineering firm or End User.

PRESSURE CAST STEEL VALVES BODY MATERIALS

NOMENCLATURE

Type	Class
ST6	STELLITE 6
347	STAINLESS STEEL 347
625	INCONEL 625
410 T	STAINLESS 410 (HARDNESS 200-275 BHN)
316	STAINLESS STEEL 316

Type	Class
304	STAINLESS STEEL 304
825	INCOLOY 825
K500	MONEL K500
31803	STAINLESS STEEL 31803
NUC	NUCALLOY

WALWORTH CAST STEEL VALVES TRIM ARRANGEMENTS

WALWORTH valves are available in the widest range of standard and special trims available in the Industry. The following table shows the most popular trims used for this product line offered these days by the Company.

Special trims as per Customer requirements are available upon request. Please contact your closest WALWORTH Distributor.

WALWORTH Trim nr.	Api-600 Trim nr.	Seal material Type	Stem and other Trim parts (1)	Wedge/disc seat Surfaces	Body seat Surfaces (2)
HF	5 or 5A	13Cr-0.5Ni-1Mn/Co-Cr-A	SS-410(200-275 HBN)	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
3HF+HF	NOT SPECIFIED	18Cr-12Ni-2.5Mo-2Mn/Co-Cr-A	SS-316	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
4HF+HF	NOT SPECIFIED	19Cr-9.5Ni-2Mn-0.08C/Co-Cr-A	SS-304	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
347HF	NOT SPECIFIED	18.5Cr-11Ni-2Mn-Co/Co-Cr-A	SS-347	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
AHF	11 or 11A	70Ni-30Cu/1/2Co-Cr-A	UN N04400 (Monel 400)	UN N04400 (Monel 400)	Stellite 6 (350 HBN min)
600HF	NOT SPECIFIED	75Ni+Co-15Cr-1Mn-8.0Fe-0.15C-0.5Si	UNS N06600 (Inconel 600)	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
625HF	NOT SPECIFIED	60Ni-22Cr-9Mo-3.5Cb/Co-Cr-A	UNS N06625 (Inconel 625)	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
23HF	NOT SPECIFIED	42Ni-21.5Cr-3Mo/Co-Cr-Mo	UNS N08825 (Incoloy 825)	Stellite 21 (320 HBN min)	Stellite 21 (320 HBN min)
NUC	NOT SPECIFIED	13Cr-0.5Ni-1Mn/NUCALLOY	SS-410(200-275 HBN)	NUCALLOY	NUCALLOY
23HF	NOT SPECIFIED	42Ni-21.5Cr-3Mo/Co-Cr-Mo	UNS N08825 (Incoloy 825)	Stellite 21 (320 HBN min)	Stellite 21 (320 HBN min)
32750HF	NOT SPECIFIED	25Cr-7Ni-4Mo-0.28N-0.03C/Co-Cr-A	UNS S32750	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
31803HF	NOT SPECIFIED	22Cr-5.5Ni-3Mo-N-0.03C/Co-Cr-A	UNS S31803	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
51H	NOT SPECIFIED	22Cr-5.5Ni-3Mo-N-0.03C/Co-Cr-A	UNS S31803	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)

(1) Stem shall be wrought material.
(2) Back seat fro trims API-600 No. 5 shall have 250 HBN minimum.

COMMON CONSTRUCTION MATERIALS COMBINATION

Following table shows the most common combination in between base material and trim. There are many other trims which can be combined with these base materials; please refer to other sections of this catalog or directly to the Plant for additional information.

No.	Description	Carbon steel	1 1/4 % Chrome	2 1/4 % Chrome	9Cr-1MO-V	316 Stainless steel	347 Stainless steel
1	Body	ASTM A216 GR. WCB	ASTM A217 GR. WC6	ASTM A217 GR. WC9	ASTM A217 GR. C12A	ASTM A351 GR. CF8M	ASTM A351 GR. CF8C
2	Body inlay	SS-309	SS-309	SS-309	SS-309	INTEGRAL	INTEGRAL
3	Thrust ring	AISI 4140	AISI 4140	AISI 4140	AISI 4140	AISI 410	AISI 410
4	Spacer ring	AISI 4140	AISI 4140	AISI 4140	AISI 4140	AISI 4140	AISI 4140
5	Bonnet Retainer	ASTM A515 GR. 70	ASTM A515 GR. 70	ASTM A515 GR. 70	ASTM A515 GR. 70	ASTM A515 GR. 70	ASTM A515 GR. 70
6	Seat rings	ASTM A515 GR. 70 & Co-Cr-W OVERLAY	ASTM A217 GR. WC6 & Co-Cr-W OVERLAY	ASTM A217 GR. WC9 & Co-Cr-W OVERLAY	ASTM A276 GR. 410 & Co-Cr-W OVERLAY	AISI 316 & W/Co-Cr-W OVERLAY	AISI 347 & Co-Cr-W OVERLAY
7	Bonnet	ASTM A216 GR. WCB or ASTM A105	ASTM A217 GR. WC6 or ASTM A182 GR. F11	ASTM A217 GR. WC9 or ASTM A182 GR. F22	ASTM A217 GR.C12A or ASTM A182 GR. F91	ASTM A-351 GR. CF8M or ASTM A182 GR. F316	ASTM A-351 GR. CF8C or ASTM A182 GR. F347
8	Bonnet Back seat	Integral	Integral	Integral	Integral	Integral	Integral
9	Gasket	MILD STEEL (100 HB) SILVER PLATED	MILD STEEL (100 HB) SILVER PLATED	MILD STEEL (100 HB) SILVER PLATED	MILD STEEL (100 HB) SILVER PLATED	ASTM A182 GR. F316 CHROME PLATED	ASTM A182 GR. F347 CHROME PLATED
10	Packing	Flexible graphite intermediate rings / anti extrusion rings on top and bottom side of the packing chamber.					
11	Gland Bushing	ASTM A276 GR. 410	ASTM A276 GR. 410	ASTM A276 GR. 410	ASTM A276 GR. 410	ASTM A276 GR. F316	ASTM A276 GR. F347
12	Gland Flange	ASTM A216 GR. WCB	ASTM A216 GR. WCB	ASTM A216 GR. WCB	ASTM A216 GR. WCB	ASTM A240 GR. 304	ASTM A240 GR. 304
13	Wedge	ASTM A216 GR.WCB & Co-Cr-W OVERLAY	ASTM A217 GR. WC6 & Co-Cr-W OVERLAY	ASTM A217 GR. WC9 & Co-Cr-W OVERLAY	ASTM A351 GR. CF8M & Co-Cr-W OVERLAY	ASTM A351 GR. CF8M & Co-Cr-W OVERLAY	ASTM A351 GR. CF8C & Co-Cr-W OVERLAY
14	Yoke	ASTM A216 GR. WCB	ASTM A216 GR. WCB	ASTM A216 GR. WCB	ASTM A216 GR. WCB	ASTM A216 GR. WCB	ASTM A216 GR. WCB
15	Stem	ASTM A182 GR. F6A CL2	ASTM A182 GR. F6A CL2	ASTM A182 GR. F6A CL2	ASTM A182 GR. F6A CL2	ASTM A182 GR. F316	ASTM A182 GR. F347
16	Stem nut	ASTM B148 C95600	ASTM B148 C95600	ASTM B148 C95600	ASTM B148 C95600	ASTM B148 C95600	ASTM B148 C95600
17	Glang flange studs	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 B7	ASTM A193 B7
18	Gland flange nuts	ASTM A194 GR. 2H	ASTM A194 GR. 2H	ASTM A194 GR. 2H	ASTM A194 GR. 2H	ASTM A194 GR. 2H	ASTM A194 GR. 2H
19	Bonnet studs	ASTM A193 GR. B7	ASTM A193 GR. B16	ASTM A193 GR. B16	ASTM A193 GR. B16	ASTM A193 GR. B16 FLUorOCARBON COATED	ASTM A193 GR. B16 FLUorOCARBON COATED
20	Stud nuts	ASTM A194 GR. 2H	ASTM A194 GR. 7	ASTM A194 GR. 7	ASTM A194 GR. 7	ASTM A194 GR. 7 FLUorOCARBON COATED	ASTM A194 GR. 7 FLUorOCARBON COATED
21	Bearings	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL
22	Bearing cover	ASTM A-515 GR. 70	ASTM A-515 GR. 70	ASTM A-515 GR. 70	ASTM A-515 GR. 70	ASTM A-515 GR. 70	ASTM A-515 GR. 70
23	Bearing cover studs	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7
24	Bearing cover stud nuts	ASTM A194 GR. 2H	ASTM A194 GR. 2H	ASTM A194 GR. 2H	ASTM A194 GR. 2H	ASTM A194 GR. 2H	ASTM A194 GR. 2H
25	Yoke bolt	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7	ASTM A193 GR. B7
26	Handwheel or gear op.	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL	COMMERCIAL
27	Handwheel nut	ASTM A515 GR. 70	ASTM A515 GR. 70	ASTM A515 GR. 70	ASTM A515 GR. 70	ASTM A515 GR. 70	ASTM A515 GR. 70

CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES

Following table shows the nominal chemical composition and mechanical properties for the most common materials supplied. Additional information can be requested from your closest WALWORTH Distributor for other steel, stainless steels or Nickel alloys.

Chemical composition and mechanical properties											
Elements and properties	Carbon steel		Low carbon steel		Low alloy steel		Medium alloy steel		Stainless steel		
	ASTM A 216		ASTM A 352		ASTM A217				ASTM A351		
	WCB	WCC	LCB	LCC	WC6	WC9	C12	C12-A	CF8	CF8M	CF8C
Carbon	0.30	0.25	0.30	0.25	0.05-0.20	0.05-0.18	0.20	0.08-0.12	0.08	0.08	0.08
Manganese	1	1.2	1	1.2	0.50-0.80	0.40-0.70	0.35-0.65	0.30-0.60	1.5	1.5	1.5
Phosphorus	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.030	0.04	0.04	0.04
Sulphur	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.010	0.04	0.04	0.04
Silicon	0.6	0.6	0.6	0.6	0.6	0.6	1	0.2-0.5	2	1.5	2
Nickel	0.5	0.5	0.5	0.5	-	-	-	0.40	8.00-11.0	9.00-12.0	9.00-12.0
Chromium	0.5	0.5	0.5	0.5	1.00-1.50	2.00-2.75	8.00-10.0	8.0-9.5	18.00-21.0	18.00-21.0	18.00-21.0
Molybdenum	0.2	0.2	0.2	0.2	0.45-0.65	0.90-1.20	0.90-1.20	0.85-1.05	0.5	2.00-3.00	0.5
Copper	0.3	0.3	0.3	0.3	0.5	0.5	0.5	-	-	-	-
Columbium	-	-	-	-	-	-	-	0.060-0.1	-	-	(2)
Vanadium	0.03	0.03	0.03	0.03	-	-	-	0.18-0.25	-	-	-
Nitrogen	-	-	-	-	-	-	-	0.030-0.070	-	-	-
Aluminum	-	-	-	-	-	-	-	0.040	-	-	-
Tensile Strength PSI minimum	70,000-95,000	70,000	65,000	70000-95,000	70,000	70,000	90,000-115,000	85,000-110,000	70,000	70,000	70,000
Yield Strength PSI minimum	36,000	40,000	35,000	40,000	40,000	40,000	60,000	60,000	30,000	30,000	30,000
Elongation In 2"% minimum	22	22	24	22	20	20	18	18	35	30	30
ReductionArea "% minimum	35	35	35	35	35	35	35	45	-	-	-
Hardness (HB) Maximum	185	185	190	200	200	200	237	237	-	-	-

Notes:
1. The percentage (%) shown on the elements is the maximum except where ranges are indicated.
2. Steel CF8C should have a Columbium content of not less than 8 times the carbon content, but not exceeding 1%.

PRESSURE SEAL CAST STEEL VALVES

Pressure Seal valves are used primarily, but not limited, to power generation plants with fossil, coal, thermal, gas, nuclear power plants, steam power stations, etc.

Pressure seal valves are excelent in the following conditions: high pressure, high temperature, steam, oxidizing environments, among others.

One of the most important features of WALWORTH Pressure Seal Cast Steel Valves is it ability to use the pressure line to assist in the seal of the valve with a preloaded metallic or graphite pressure seal gasket placed between body and bonnet which reduces weight for easy installation and maintenance increasing safety and seal of the body-bonnet joint.

WALWORTH Pressure Seal Valves are designed in accordance ASME B16.34. Pressure Classes 600, 900, 1500 & 2500 # and sizes from 2" up to 24" nominal diameter.

We offer an array of materials used for this product line, including but not limited to:

1. Carbon Steel WCB, WCC, etc.
2. Low Alloy Steel WC6, WC9, etc.
3. Medium Alloy Steel C12 or nitrogenated C12A, etc.
4. Stainless Steel CF8, CF8M, CF8C, CF10, CG8M, etc.
5. Super Stainless Steel CN7M (Alloy 20), CN3M (Alloy 20 modified), CT15C, etc.
6. High Nickel Alloys Monel M30C, Monel M35-1, Monel CZ100, Inconel CY40 (Inconel 600), CW2M (Hastelloy C4), N12MV (Hastelloy B), CW12MW (Former Hastelloy C-276), CW6M (New Hastelloy C-276), CU5MCuC (Incoloy 825), N7M (Hastelloy B2), CW6MC (Inconel 625), etc.

Design Features

- Design in accordance with ASME B16.34.
- Walworth offer Gate, Globe, Stop Check, Globe "Y" Pattern, Stop Check "Y" Pattern, Swing Check, Tilting Disc Check & Lift Check valves.
- Flexible wedge or Parallel Slide disc options for Gate valve.
- Hand-wheel, Impact Hand-wheel, Chain-wheel, Gear operation, Electric, Pneumatic or Hydraulic Actuation as per Customer requirements.
- Damper and Counterweights for Check valves.
- By-Pass, Lantern rings, grease injectors, connections, etc.
- Extra deep stuffing box available upon Customer request.
- Standard Trim with Stellite 6 on seats and wedge/disc. Non-cobalt base hard facing is also available for nuclear plants applications.
- Test in accordance API-598.

PRODUCT RANGE

Type	Size	Pressure class as per ASME/ANSI B16.34	Ends
Gate	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Globe	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Stop Check	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Globe "Y" Pattern	2" to 24"	600, 900, 1500 & 2500#	RF, RTJ or BW
Stop Check "Y" Pattern	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Swing Check	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Tilting Disc Check	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Lift Check	2" To 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW

WALWORTH PRESSURE SEAL CAST STEEL GATE VALVES

PRESSURE SEAL GATE VALVES HANDWHEEL OR GEAR OPERATED, RISING STEM; OUT SIDE SCREW & YOKE (OS&Y).

Design Features

① Design in accordance with ASME B16.34.

② Handwheel design made of ASTM A197 or ASTM A216 grade WCB provides more efficient transfer of loads with minimum weight. Gear operator is also available for easy operation and maximum torque.

③ Yoke cap ASTM A515 grade 70 allows easy access to the bearing chamber.

④ Thrust bearings for larger sizes minimize torque requirements and facilitate operation due the smooth forces involved.

⑤ Body made from carbon steel or alloy steel are manufactured with overlay made from stainless steel in a band inside the body where contact is made in between gasket and body to improve better seal and increase life of sealing area because enhance corrosion resistance. Strong construction of body provides maximum life service and flow efficiency. Options for body material are given in other sections of this catalog. Special materials can be supplied upon request.

⑥ Yoke designed with two windows for easy disassembly and/or access to the packing chamber or bonnet retainer when maintenance is required.

⑦ Yoke sleeve design permit yoke removal while the valve still in service. Due the material of manufacturing ASTM A439 D2 or B148 95600 reduce friction coefficient reducing torque operation, minimize the wear and eliminate galling.

⑧ Stem packing system of two sacrificial packings on top and bottom of the chamber made from braided graphite; remaining rings are made from flexible graphite anti extruxion rings for low fugitive emmisions control. Optional live load packing system with extra deep stuffing box and bellevile washers is available upon request.

⑨ Eye Bolt Clamp design allows easy access to the packing chamber and keeps fixed loads on the stem packing regardless of bonnet position.

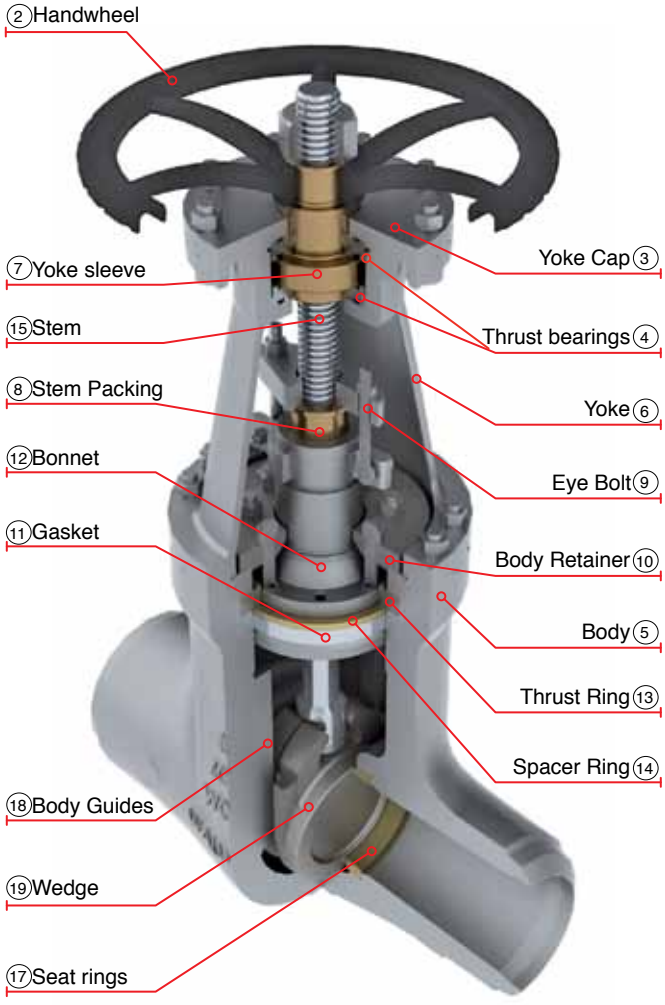
⑩ Bonnet retainer is used to help by tightening the retainer bolt/nuts to seal bonnet-bonnet gasket against body inlay.

⑪ Pressure seal gasket made from soft carbon steel (silver platted) or stainless steel for corrosion resistance and avoid galling. The angular relationship in between pressure seal gasket and body utilize forces generated by pressure line to increase gasket sealing effect and long life service. Graphite gasket is available upon request.

⑫ Bonnet encapsulated inside the upper side of the body is designed with precision machined sealing surfaces to fit against pressure seal gasket surface to utilize forces coming from line pressure to seal the complete set body-bonnet-gasket. Bonnet retains the packing system and incorporate also integral back seat.

⑬ Segmented thrust ring made from hardened steel absorb all internal forces coming from the internal pressure and hold the complete set bonnet-gasket-spacer ring.

⑭ Spacer ring prevent deformation when pressures push the complete set bonnet-gasket against segmented thrust ring.



⑮ Stem with ACME thread is polished to improve low fugitive emmisions control and easy operation during opening and closing.

⑯ Back seat is provided with differential angle with bonnet back seat for packing change even in service (not shown).

⑰ Seat rings with stellite 6 overlay forbetter sealing service provide wear, abrasion and erosion resistance. Seat rings are welded to the body to provide tight joint.

⑱ Body guided to minimize thrust loads due flow conditions and guide wedge / parallel slide disc during opening and close. Also helps to avoid damage of the wedge because does not permitt sealing areas stroke against seats.

⑲ Flexible wedge designed to avoid entrapping due temperature changes and pipe line stress. Sealing areas of the wedge with stellite 6 overlay for better operation service. Other sealing surfaces materials can be provided upon request. Parallel slide disc is an option for specific services as per Customer request.

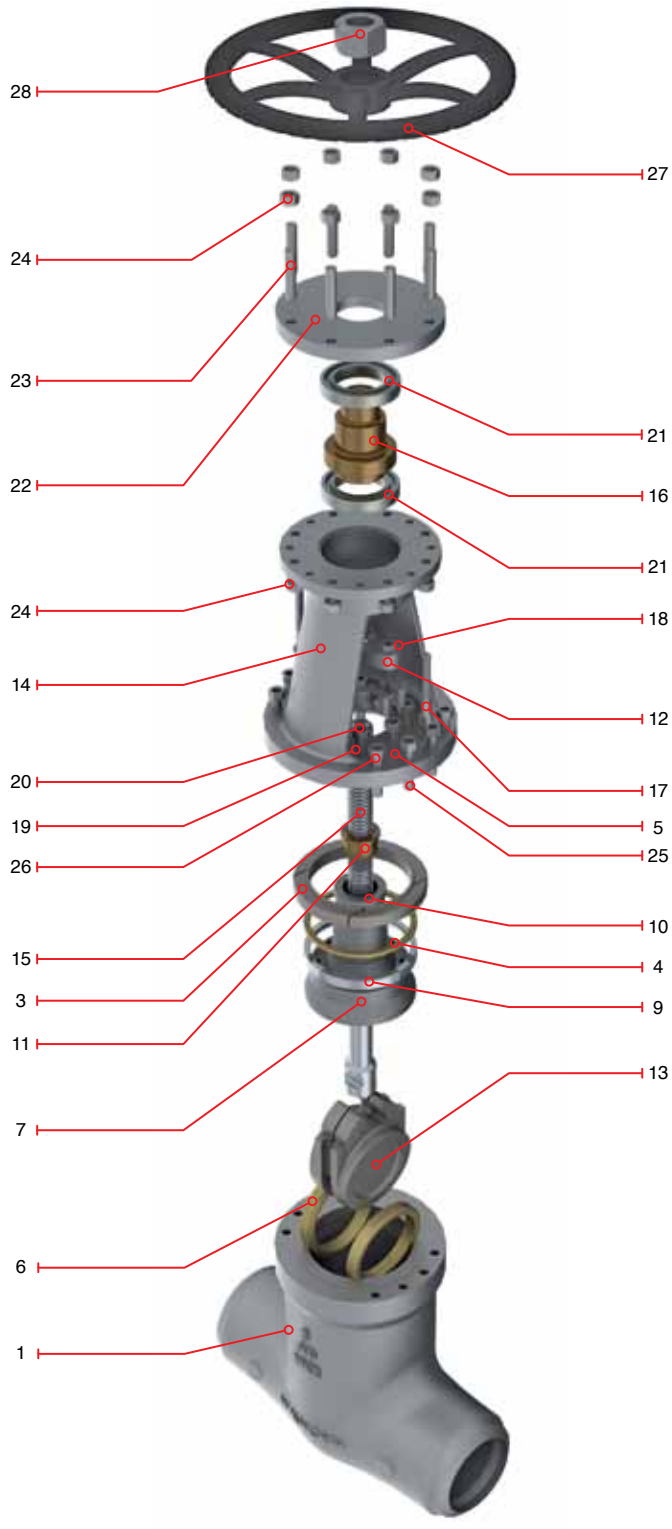
⑳ Test in accordance with API-598.

WALWORTH PRESSURE SEAL GATE VALVES

Following table shows the most common bill of materials for a pressure seal gate valve. There are many other combinations of base material and trim, please refer to other sections of this catalog for additional information or contact to the Plant for more options.

Regular Bill of Materials

No.	Description	Carbon steel
1	Body	ASTM A216 GR. WCB
2	Body inlay	SS-309 (not shown)
3	Thrust ring	AISI 4140
4	Spacer ring	AISI 4140
5	Bonnet retainer	ASTM A515 GR. 70
6	Seat rings	ASTM A515 GR. 70 & Co-Cr-W overlay
7	Bonnet	ASTM A216 GR. WCB or ASTM A105
8	Bonnet Back seat	Integral (not shown)
9	Gasket	Mild steel (100 HB) silver plated
10	Packing	Flexible graphite intermediate rings / anti extrusion rings on top and bottom side of the packing chamber.
11	Gland Bushing	ASTM A276 GR. 410
12	Gland Flange	ASTM A216 GR. WCB
13	Wedge	ASTM A216 GR.WCB & Co-Cr-W OVERLAY
14	Yoke	ASTM A216 GR. WCB
15	Stem	ASTM A182 GR. F6A CL2
16	Stem nut	ASTM B148 C95600
17	Glang flange studs	ASTM A193 GR. B7
18	Gland flange nuts	ASTM A194 GR. 2H
19	Bonnet studs	ASTM A193 GR. B7
20	Stud nuts	ASTM A194 GR. 2H
21	Bearings	Commercial
22	Bearing cover	ASTM A-515 GR. 70
23	Bearing cover studs	ASTM A193 GR. B7
24	Bearing cover stud nuts	ASTM A194 GR. 2H
25	Yoke bolt	ASTM A193 GR. B7
26	Yoke bolt nuts	ASTM A194 GR. 2H
27	Handwheel or gear operator	Commercial
28	Handwheel nut	ASTM A515 GR. 70

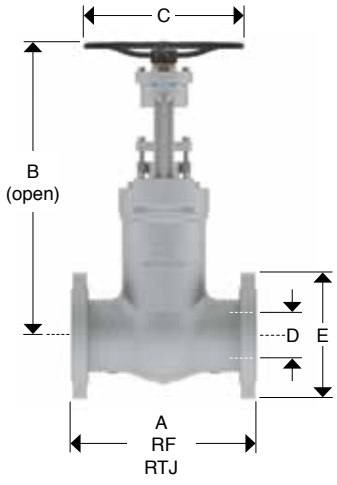


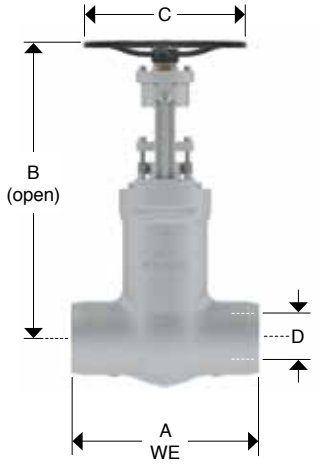
WALWORTH PRESSURE SEAL GATE VALVES CLASS 600
(HANDWHEEL OPERATED)

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Outside Screw & Yoke (OS&Y)
- Flexible wedge
- Option with Parallel Slide disc available upon request
- From 2" to 16" handwheel operated
- End to end dimensions as per ASME B16.10
- Flange dimensions as per ASME B16.5
- Weld end dimensions as per ASME B16.25

Catalog figure No.	ID plant figure No.	Type of ends
5232PSWE	5232PSWE	Buttweld
5232PSRF	5232PSF	Flanged raised face
5232PSRTJ	5232PSRJ	Flanged ring type joint





Dimensions and Weights

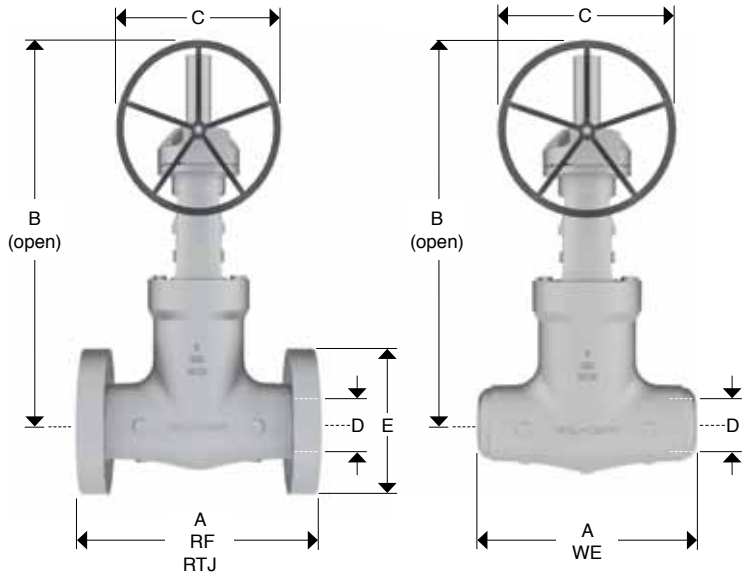
Nominal diameter		in	2	2.5	3	4	6	8	10	12	14	16
		mm	51	63	76	102	152	203	254	305	356	406
A	End to end WE	in	7	8.5	10	12	18	23	28	32	35	39
		mm	178	216	254	305	457	584	711	813	889	991
A	Face to face RF	in	11.5	13	14	17	22	26	31	33	35	39
		mm	292	330	356	432	559	660	787	838	889	991
A	Face to face RTJ	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12
		mm	295	333	359	435	562	663	790	841	892	994
B	Center to top (open)	in	24	24	24	28	35	46	51	58	64	73
		mm	610	610	610	711	889	1168	1295	1473	1626	1854
C	Handwheel	in	10	10	10	14	14	20	24	30	30	34
		mm	254	254	254	356	356	508	610	762	762	864
WE	Weight	lbs	66	72.6	77	145.2	294.8	534.6	904.2	1449.8	2118.6	2728
		Kg	30	33	35	66	134	243	411	659	963	1240
RF or RTJ	Weight	lbs	83.6	99	110	220	455.4	763.4	1258.4	1878.8	2635.6	3458.4
		Kg	38	45	50	100	207	347	572	854	1198	1572
Cv	Flow coeficient		280	351	612	1188	2457	4325	6726	9902	11978	15864

WALWORTH PRESSURE SEAL GATE VALVES CLASS 600
(GEAR OPERATED)

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Outside Screw & Yoke (OS&Y)
- Flexible wedge
- Option with Parallel Slide disc available upon request
- From 18" and up Gear operated
- End to end dimensions as per ASME B16.10
- Flange dimensions as per ASME B16.5
- Weld end dimensions as per ASME B16.25

Catalog figure No.	ID plant figure No.	Type of ends
5232PSWE	5232PSWE	Buttweld
5232PSRF	5232PSF	Flanged raised face
5232PSRTJ	5232PSRJ	Flanged ring type joint



Dimensions and Weights

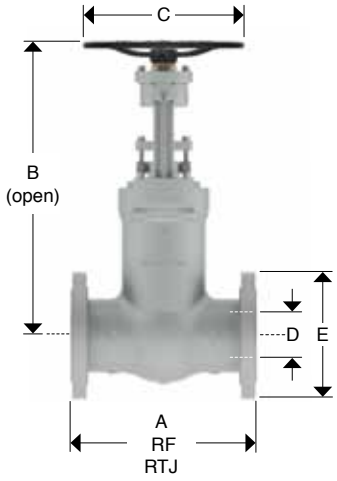
Nominal diameter		in	18	20	24
		mm	457	508	607
A	End to end WE	in	43	47	55
		mm	1092	1194	1397
A	Face to face RF	in	43	47	55
		mm	1092	1194	1397
A	Face to face RTJ	in	43.12	47.25	55.38
		mm	1095	1200	1407
B	Center to top (open)	in	80	90	98
		mm	2032	2286	2489
C	Handwheel	in	34	34	38
		mm	864	864	965
WE	Weight	lbs	3197	4475	5425
		Kg	1453	2034	2466
RF or RTJ	Weight	lbs	4147	5698	7174
		Kg	1885	2590	3261
Cv	Flow coeficient		20013	24663	36324

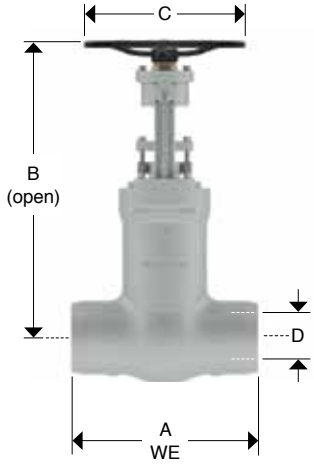
WALWORTH PRESSURE SEAL GATE VALVES CLASS 900
(HANDWHEEL OPERATED)

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Outside Screw & Yoke (OS&Y)
- Flexible wedge
- Option with Parallel Slide disc available upon request
- From 2" to 14" handwheel operated
- End to end dimensions as per ASME B16.10
- Flange dimensions as per ASME B16.5
- Weld end dimensions as per ASME B16.25

Catalog figure No.	ID plant figure No.	Type of ends
5247PSWE	5247PSWE	Buttweld
5247PSRF	5247PSF	Flanged raised face
5247PSRTJ	5247PSRJ	Flanged ring type joint





Dimensions and Weights

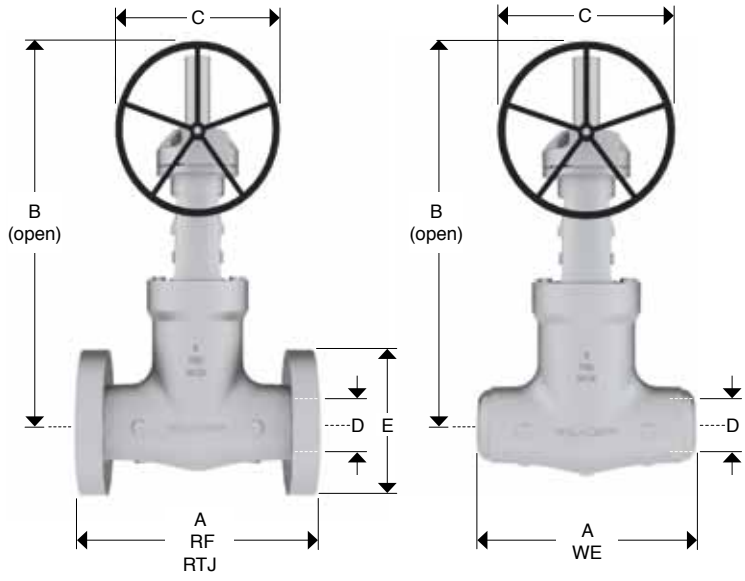
Nominal diameter		in	2	2.5	3	4	6	8	10	12	14
		mm	51	63	76	102	152	203	254	305	356
A	End to end WE	in	8.5	10	12	14	20	26	31	36	39
		mm	216	254	305	356	508	660	787	914	991
A	Face to face RF	in	14.5	16.5	15	18	24	29	33	38	40.5
		mm	368	419	381	457	610	737	838	965	1029
A	Face to face RTJ	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88
		mm	371	422	384	460	613	740	841	968	1038
B	Center to top (open)	in	23	24	24	29	38	52	56	63	70
		mm	584	610	610	737	965	1321	1422	1600	1778
C	Handwheel	in	10	10	14	18	18	20	24	30	30
		mm	254	254	356	457	457	508	610	762	762
WE	Weight	lbs	75	97	106	176	521	880	1269	1890	2629
		Kg	34	44	48	80	237	400	577	859	1195
RF or RTJ	Weight	lbs	119	158	178	282	741	1223	1758	2541	3428
		Kg	54	72	81	128	337	556	799	1155	1558
Cv	Flow coeficient		233	338	457	844	1899	3283	5204	7400	9015

WALWORTH PRESSURE SEAL GATE VALVES CLASS 900
(GEAR OPERATED)

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Outside Screw & Yoke (OS&Y)
- Flexible wedge
- Option with Parallel Slide disc available upon request
- From 16" and up Gear operated
- End to end dimensions as per ASME B16.10
- Flange dimensions as per ASME B16.5
- Weld end dimensions as per ASME B16.25

Catalog figure No.	ID plant figure No.	Type of ends
5247PSWE	5247PSWE	Buttweld
5247PSRF	5247PSF	Flanged raised face
5247PSRTJ	5247PSRJ	Flanged ring type joint



Dimensions and Weights

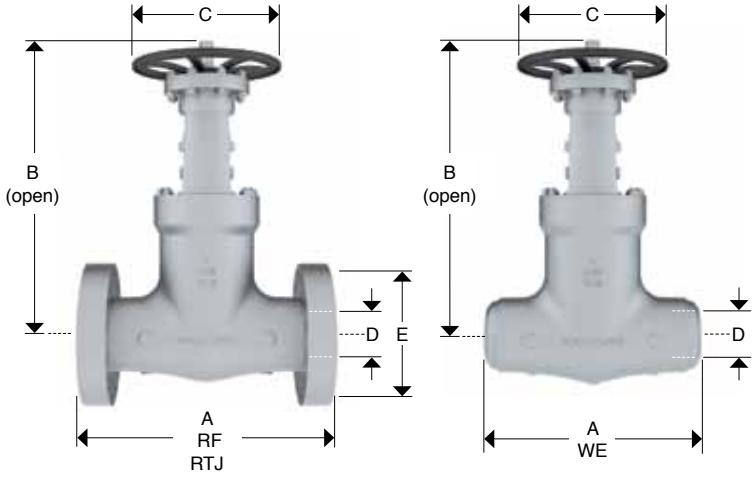
Nominal diameter		in	16	18	20	24
		mm	406	457	508	607
A	End to end WE	in	43	48	52	61
		mm	1092	1219	1321	1549
A	Face to face RF	in	44.5	48	52	61
		mm	1130	1219	1321	1549
A	Face to face RTJ	in	44.88	48.5	52.5	61.75
		mm	1140	1232	1334	1568
B	Center to top (open)	in	78	85	94	105
		mm	1981	2159	2388	2667
C	Handwheel	in	30	30	30	38
		mm	762	762	762	965
WE	Weight	lbs	3247	3982	5874	7916
		Kg	1476	1810	2670	3598
RF or RTJ	Weight	lbs	4165	5273	7456	10872
		Kg	1893	2397	3389	4942
Cv	Flow coeficient		11864	15116	18774	27311

WALWORTH PRESSURE SEAL GATE VALVES CLASS 1500
(HANDWHEEL OPERATED)

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Outside Screw & Yoke (OS&Y)
- Flexible wedge
- Option with Parallel Slide disc available upon request
- From 2" to 12" handwheel operated
- End to end dimensions as per ASME B16.10
- Flange dimensions as per ASME B16.5
- Weld end dimensions as per ASME B16.25.

Catalog figure No.	ID plant figure No.	Type of ends
5262PSWE	5262PSWE	Buttweld
5262PSRF	5262PSF	Flanged raised face
5262PSRTJ	5262PSRJ	Flanged ring type joint



Dimensions and Weights

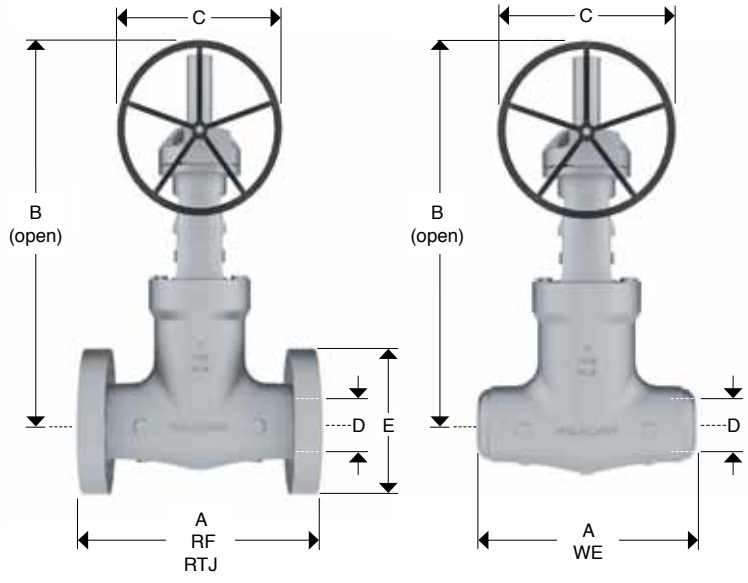
Nominal diameter		in	2	2.5	3	4	6	8	10	12
		mm	51	63	76	102	152	203	254	305
A	End to end WE	in	8.5	10	12	16	22	28	34	39
		mm	216	254	305	406	559	711	864	991
A	Face to face RF	in	14.5	16.5	18.5	21.5	27.75	32.75	39	44.5
		mm	368	419	470	546	705	832	991	1130
A	Face to face RTJ	in	14.62	16.62	18.62	21.62	28	33.13	39.38	45.12
		mm	371	422	473	549	711	842	1000	1146
B	Center to top (open)	in	23	24	24	29	39	53.5	58	65.5
		mm	584	610	610	737	991	1359	1473	1664
C	Handwheel	in	10	10	14	18	18	20	30	30
		mm	254	254	356	457	457	508	762	762
WE	Weight	lbs	141	152	152	262	750	1250	2378	3648
		Kg	64	69	69	119	341	568	1081	1658
RF or RTJ	Weight	lbs	191	224	249	407	1080	1769	3249	4981
		Kg	87	102	113	185	491	804	1477	2264
Cv	Flow coeficient		233	338	405	754	1620	2843	4509	6410

WALWORTH PRESSURE SEAL GATE VALVES CLASS 1500
(GEAR OPERATED)

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Outside Screw & Yoke (OS&Y)
- Flexible wedge
- Option with Parallel Slide disc available upon request
- From 14" and up Gear operated
- End to end dimensions as per ASME B16.10
- Flange dimensions as per ASME B16.5
- Weld end dimensions as per ASME B16.25

Catalog figure No.	ID plant figure No.	Type of ends
5262PSWE	5262PSWE	Buttweld
5262PSRF	5262PSF	Flanged raised face
5262PSRTJ	5262PSRJ	Flanged ring type joint



Dimensions and Weights

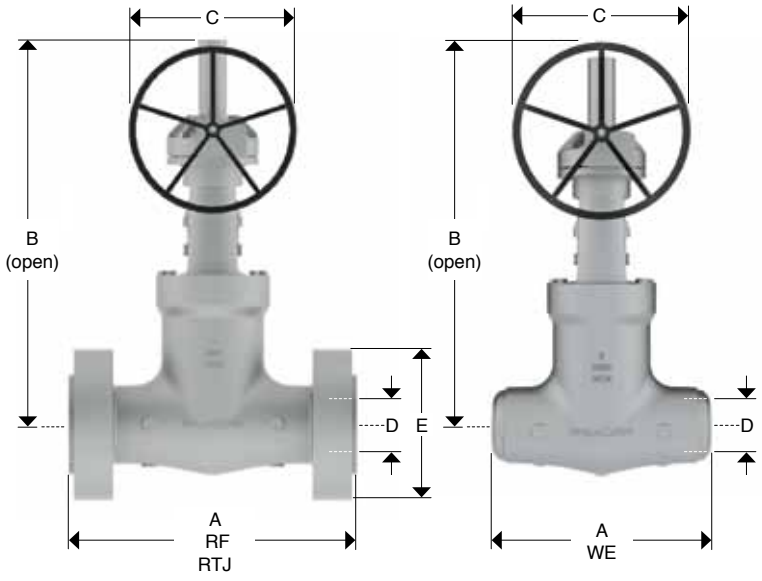
Nominal diameter		in	14	16	18	20	24
		mm	356	406	457	508	607
A	End to end WE	in	42	47	53	58	76.5
		mm	1067	1194	1346	1473	1943
A	Face to face RF	in	49.5	54.5	60.5	65.5	76.5
		mm	1257	1384	1537	1664	1943
A	Face to face RTJ	in	50.25	55.38	61.38	66.38	77.62
		mm	1276	1407	1559	1686	1972
B	Center to top (open)	in	73	80	87	95	105.5
		mm	1854	2032	2210	2413	2680
C	Handwheel	in	30	30	30	30	38
		mm	762	762	762	762	965
WE	Weight	lbs	4974	7267	8791	10573	13484
		Kg	2261	3303	3996	4806	6129
RF or RTJ	Weight	lbs	6853	9764	12038	14667	19127
		Kg	3115	4438	5472	6667	8694
Cv	Flow coeficient		7746	10186	12988	17016	23744

WALWORTH PRESSURE SEAL GATE VALVES CLASS 2500
(GEAR OPERATED)

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Outside Screw & Yoke (OS&Y).
- Flexible wedge.
- Option with Parallel Slide disc available upon request.
- From 2" and up Gear operated.
- End to end dimensions as per ASME B16.10.
- Flange dimensions as per ASME B16.5.
- Weld end dimensions as per ASME B16.25.

Catalog figure No.	ID plant figure No.	Type of ends
5560PSWE	5560PSWE	Buttweld
5560PSRF	5560PSF	Flanged raised face
5560PSRTJ	5560PSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	2	2.5	3	4	6	8	10	12	14	16	18	20	24
		mm	51	63	76	102	152	203	254	305	356	406	457	508	607
A	End to end WE	in	11	13	14.5	18	24	30	36	41	44	49	55	62	66
		mm	279	330	368	457	610	762	914	1041	1118	1245	1397	1575	1676
A	Face to face RF	in	17.75	20	22.75	26.5	36	40.25	50	56	PCR	PCR	PCR	PCR	PCR
		mm	451	508	578	673	914	1022	1270	1422	PCR	PCR	PCR	PCR	PCR
A	Face to face RTJ	in	17.87	20.25	23	26.88	36.5	40.75	50.88	56.88	PCR	PCR	PCR	PCR	PCR
		mm	454	514	584	683	927	1035	1292	1445	PCR	PCR	PCR	PCR	PCR
B	Center to top	in	26	26	26	31	39	53	60	66	75	85	95	105	115
		mm	660	660	660	787	991	1346	1524	1676	1905	2159	2413	2667	2921
C	Handwheel	in	20	30	30	30	30	38	38	38	38	38	38	38	38
		mm	508	762	762	762	762	965	965	965	965	965	965	965	965
WE	Weight	lbs	196	396	396	484	836	1232	2090	3124	5610	6380	7788	9275	12254
		Kg	89	180	180	220	380	560	950	1420	2550	2900	3540	4216	5570
RF or RTJ	Weight	lbs	273	506	561	737	1257	1877	3058	4972	8206	PCR	PCR	PCR	PCR
		Kg	124	230	255	335	571	853	1390	2260	3730	PCR	PCR	PCR	PCR
Cv	Flow coeficient		810	1602	2700	3825	4824	6552	8114	10800	16119	14500	16600	11200	16400

PCR = Per customer request.