



WALWORTH®

Since 1842



**PRESSURE SEAL
CATALOG**

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YARMOUTH RESEARCH AND TECHNOLOGY



WALWORTH

WALWORTH is one of the world's most comprehensive industrial valve manufacturers. Founded in 19th century by James Walworth, the Company has consistently dedicated itself to improvements in design and manufacturing of an array of valves exceptionally suited for the world's fluid control sector. We satisfy all end use industries and comprehensive customer requirements by adhering to the most demanding quality standards.

WALWORTH relies on its broad experience in supplying valves to the petrochemical, oil & gas, petroleum, power generation, pulp and paper, cryogenic and geothermal industries, among others.

Over the years, Walworth has produced over 40,000 different types of products and serves as a global supplier to various markets utilizing the expertise of over 500 trained employees.

Our manufacturing system includes: utilization of Company directed raw material warehouses; modern and newly acquired specialized machinery; welding processes such as SMAW, GMAW, SAW, PAW; assembly testing for all low pressure, high pressure, and at low or high temperatures; painting and coating processes; export crating and shipment.

WALWORTH is capable of providing the world's most comprehensive industrial valve line to the North American, Central American, South American, European and African markets. WALWORTH is proud to meet and satisfy the precise demands of our customers throughout the world by providing a quality product, competitive cost, and excellent service.



WALWORTH VALUES

MISSION

WALWORTH manufactures and supplies world-class valves and components for the flow control industry through exceptional service, competitive pricing, and consistently, on-time deliveries.



VISION

To be the world leader of unparalleled valve manufacturing and supply, WALWORTH:

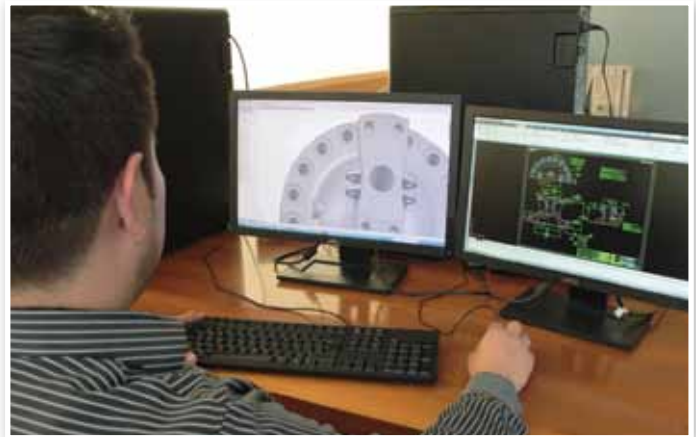
- Set the standard for product quality in the flow control industry.
- Exceed the service expectations of our customers.
- Forge enduring relationships with customers, team members, and community.
- Hire, develop, and retain experienced and dedicated team members.



WALWORTH ENGINEERING CONTROL

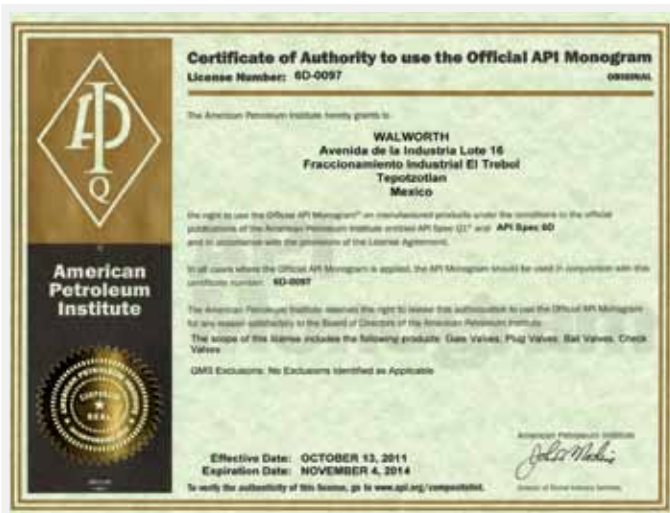
WALWORTH products are manufactured following strict international standards recognized all over the world, such as API, ANSI, ASME, ASTM, MSS, NACE, AWWA, BSI, and CSA, among others. Our Engineering team consistently monitors, updates and incorporates these standards and makes any applicable changes that affect the design, regulations, and/or performance of our products.

Our designs use the most advanced technology and equipment, finite elements, and CAD system programs to ensure proper assembly and performance. From conception to calculation to detailed drawings for manufacturers, WALWORTH is a leader in development of new products that meet the needs of the current valve market.



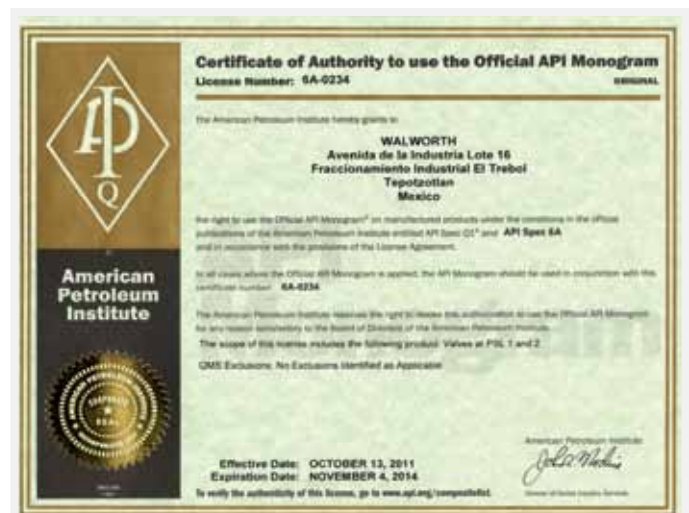
WALWORTH QUALITY SYSTEM

Throughout the years, WALWORTH has developed its Quality System which is an integral part of our manufacturing policy. Our primary goal is to provide products that meet and exceed market standards. In this sense, WALWORTH is an ISO-9001 Audited and Certified Company that has achieved major certifications worldwide. Our system includes the selection of raw materials from approved vendors, and rigorous oversight of our manufacturing process that is vital to quality control. The use of serial numbers allows WALWORTH the ability to not only ensure the quality of components used but to monitor and trace the fabrication process as well.



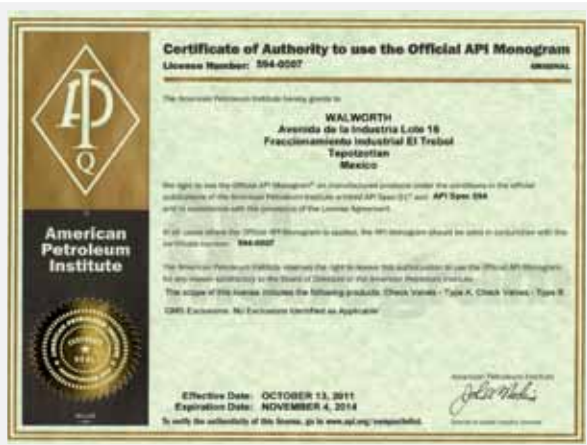
Certificate API-6D No. 6D-0097

Issued by American Petroleum Institute to apply on Gate valves, Plug valves, Ball valves and Check valves manufactured in accordance with API-6D specification.



Certificate API-6A No. 6A-0234

From American Petroleum Institute to apply on valves at PSI, 1 through 4.



Certificate API-594 No. 594-0007
Issued by American Petroleum Institute to apply on Check Valves-Type A; Check Valves Type B manufactured in accordance with API-594 specification.



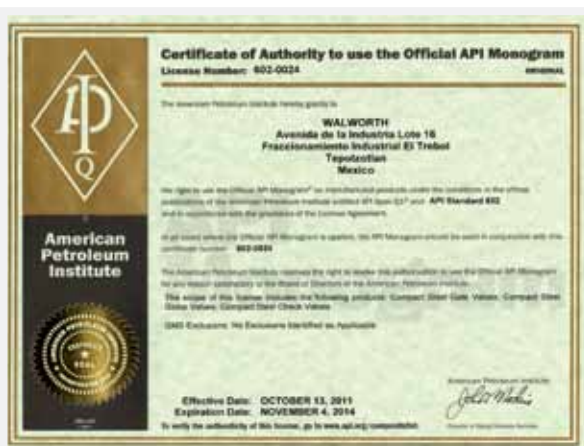
Certificate ISO-9001 No. 0038
Issued by American Petroleum Institute since April 1999.



API-600 Certificate No. 600-0109
Issued by American Petroleum Institute to apply on Bolted Bonnet Steel Gate Valves manufactured in accordance with API-600 specification.



Certificate as per PED 97/23/EC Module H
To stamp CE products.



API-602 Certificate No. 602-0024
Issued by American Petroleum Institute to apply on Compact Steel Gate Valves, Compact Steel Globe Valves, and Compact Steel Check Valves manufactured in accordance with API-602 specification.



Supplier Qualification Certificate NO. 279/13
Issued by the Equipment and Materials Testing Laboratory, CFE (LAPEM in Spanish)



Certificate NMX-CC-9001 (Mexican Standards ISO-9001) No. 0552/2007 Issued by PEMEX in accordance with ISO-9001 Quality Assurance System.

PRODUCT CERTIFICATIONS



Emissions after 500 cycles at ambient and 350 °F
Issued by Yarmouth Research and Technology Lab for 3 inch Class 300 Gate Valve After 500 cycles the measurement result was less than 50 ppm.



Emissions after 500 cycles at ambient and 350 °F
Issued by Yarmouth Research and Technology Lab for 8 inch Class 300 Gate Valve After 500 cycles the measurement result was less than 50 ppm.

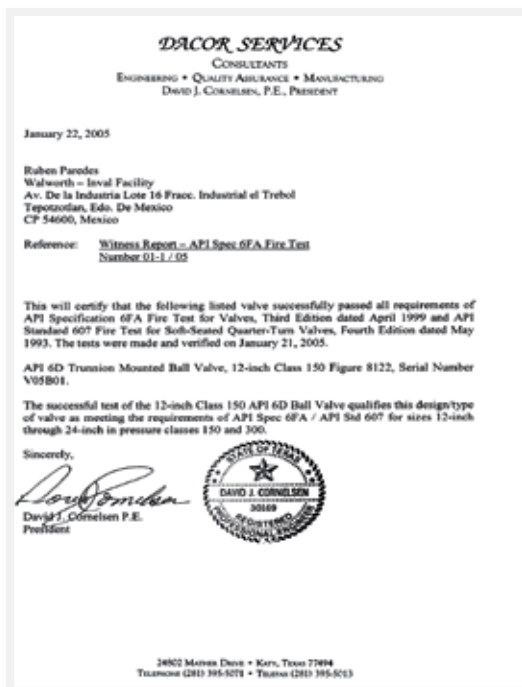


Emissions after 500 cycles at ambient and 350 °F
Issued by Yarmouth Research and Technology Lab for 16 inch Class 150 Gate Valve After 500 cycles the measurement result was less than 50 ppm.



Certificates of Ultra Low Fugitive Emissions No. 20985-3, 8 & 16 in accordance with ISO-15848-1 "Industrial Valves" Measurement, Test and Qualification Procedures for Fugitive Emissions "Part 1: Classification System and Qualification Procedures for Type Testing of Valves".

TÜV Rheinland Certificate No. TRASA 700-13-0019
 API-6D Trunnion mounted bolted body ball valves, carbon steel (A105-WCB) construction, double block and bleed service, primarily used but not limited to the oil and gas standard and severe applications.

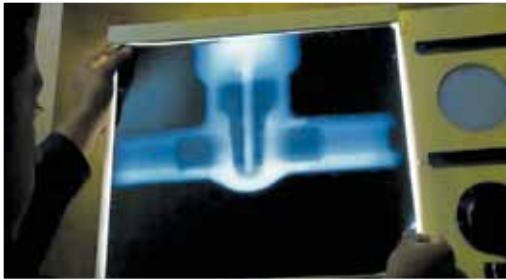


Fire Test Certificate No. 01-1/05
 In accordance with API-6FA and API Standard API-607 for Trunnion Ball Valves in accordance with API-6D.

TA Luft Certificate (Fugitive Emission) Approval
 ISO-5211 Top Flange, Anti-Static Device.

QUALITY CONTROL EQUIPMENT

In order to assure that WALWORTH products comply with international quality standards, in-house equipment is kept for monitoring control, some of this equipment includes:



X-Ray Examination Equipment. WALWORTH has its own Ir-92 source in-house for the radiographic examination (RT) of castings from 0.100" up to 2 1/2" wall thickness to verify the soundness of the casting raw material.

PMI Equipment. A new generation of Positive Material Identification Equipment gives WALWORTH the capability to perform quick chemical analysis on incoming raw materials and on pieces after assembly, to certify that materials used were produced and assembled in accordance with WALWORTH's and our Customer's specifications.



Magnetic Particle Test. On a random basis for standard products or when a Customer requests MT Certification, WALWORTH has Magnetic Particle Test Equipment to perform on ferromagnetic materials.

Penetrant Test Examination. WALWORTH has the personnel and materials to perform PT examination by solvent removable or water washable techniques. NDT personnel are ASNT Certified.



Test Loop. A complete Laboratory Test loop exists for design validation of WALWORTH products. The test is performed at maximum design pressure, advances the valves from 3000 to 5000 cycles, and requires more than four months to complete.

Pressure Gradient Test Loop. This test exposes Plug valves to the extremes of both positive and negative pressure gradients to verify that the plug in a balanced plug design will prevent lock-up in the body.





Metrology Laboratory. WALWORTH developed a calibration and/or verification system in all of the equipment used in its facilities. This ensures our ability to trace measurements, control products, and comply with international standards.

Fire Test Facilities. WALWORTH has the facilities to perform fire tests in accordance with API requirements. The test exposes the valve to a fire flame at 1400 to 1800 °F (761 to 980 °C) to verify proper seal of the valve.



Low Fugitive Emissions Test. This test is performed when a Customer requires low fugitive emissions certification. Our Lab has its own LFE test equipment that is capable of measuring less than 20 ppm in both static and mechanical conditions at either ambient temperature or thermal cycle operations.

Ultrasonic Testing Equipment. Using ultrasonic techniques, we can detect sub surface flaws in materials and evaluate castings and forgings that cannot be radiographed. In addition, we utilize these techniques to measure the wall thickness of castings and forgings.



Tensile Test Equipment. We use this equipment to verify the mechanical properties of materials used for manufacturing. WALWORTH tests samples on a random basis even though we receive MTR's from our suppliers and foundries.

Hardness Test Equipments. - In both lab and shop tests, WALWORTH uses hardness tester equipment, such as Rockwell B, C Brinell or Vickers, to ensure compliance with specifications.



PRESSURE CAST STEEL VALVES BODY MATERIALS

Material suffix	Common designation	Forging specification	Wrought bar specification	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°C) 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°C) 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 (-30°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 (-30°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 (-30°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 content 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 service. 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 service. 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 responsibility 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	Gland 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 A 217				ASTM A 351		
	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	70,000-95,000	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
Reduction Area % 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 excellent 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 its 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

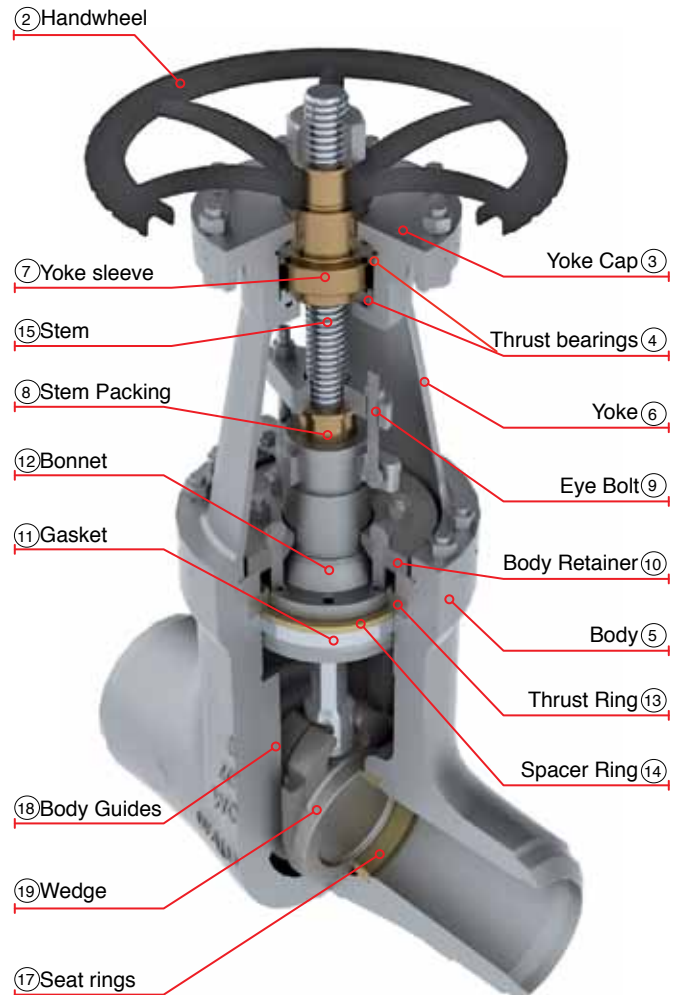
Type	Size	Pressure class as per ASME/ANSI B16.34	Ends
Gate	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Globe	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Stop Check	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Globe "Y" Pattern	2" to 24"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Stop Check "Y" 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 extrusion rings for low fugitive emmissions control. Optional live load packing system with extra deep stuffing box and Belleville 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 plated) 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.



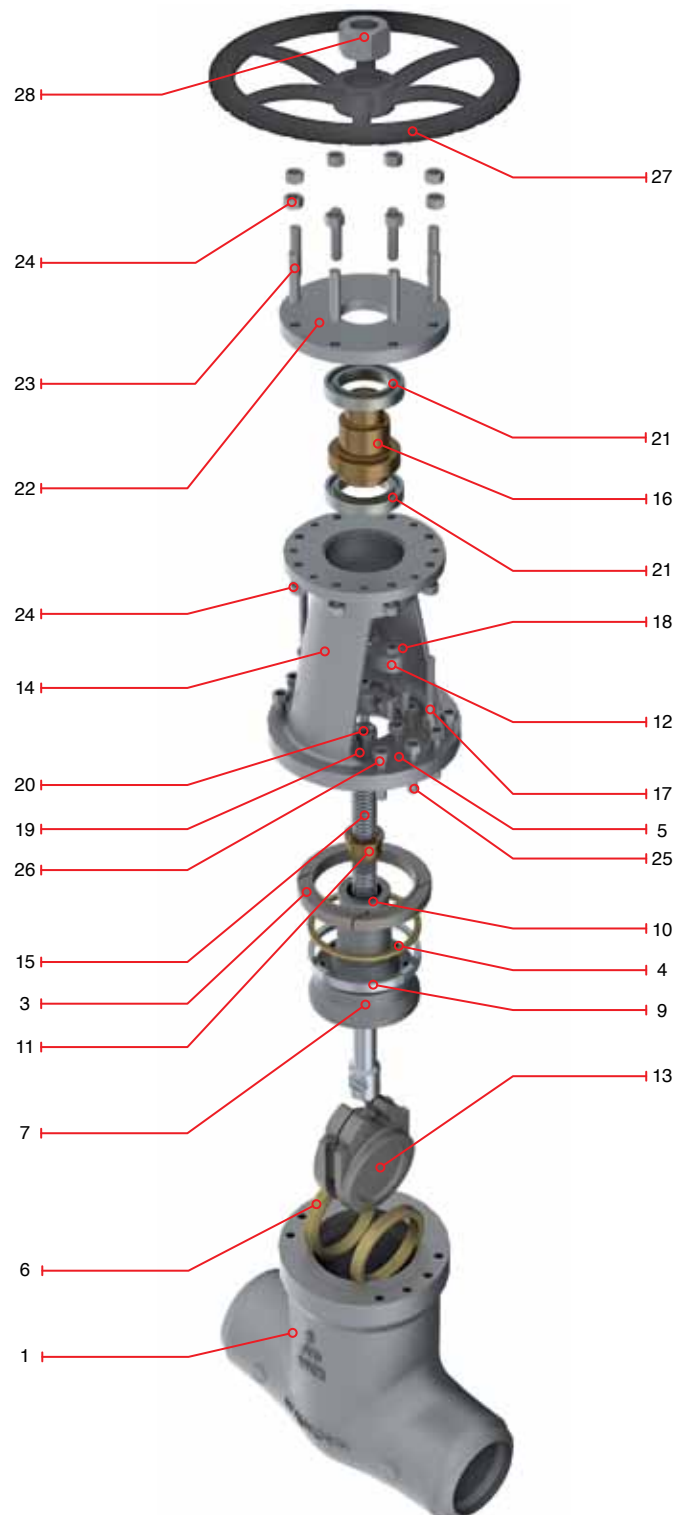
- ⑮ Stem with ACME thread is polished to improve low fugitive emmissions control and easy operation during opening and closing.
- ⑯ Back seat is provided with differential angle with bonnet back seat for packing change even in service (not shown).
- ⑰ Seat rings with stellite 6 overlay for better sealing 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 permit 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	Gland 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



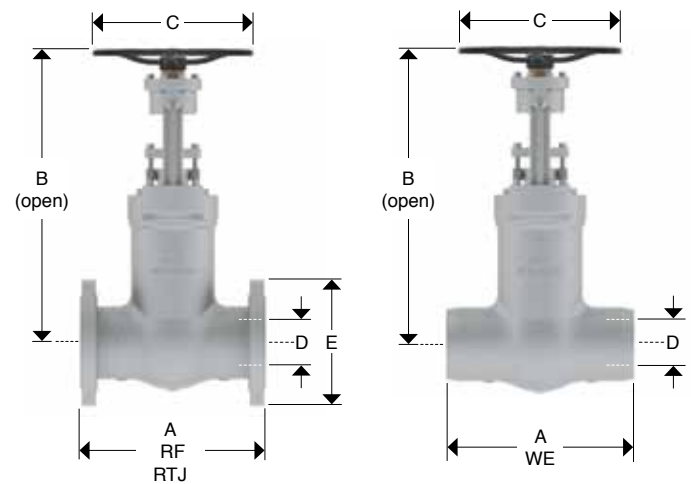
WALWORTH PRESSURE SEAL GATE VALVES CLASS 600 (HANDWHEEL OPERATED)



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 coefficient		280	351	612	1188	2457	4325	6726	9902	11978	15864

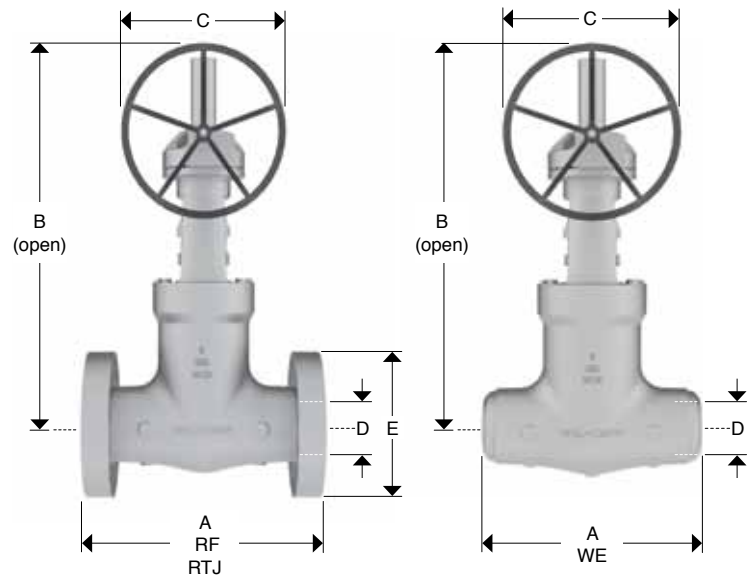
WALWORTH PRESSURE SEAL GATE VALVES CLASS 600 (GEAR OPERATED)



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 coefficient		20013	24663	36324

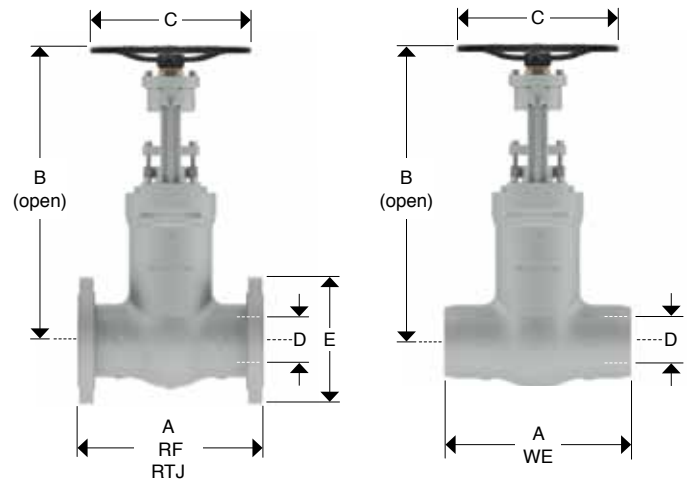
WALWORTH PRESSURE SEAL GATE VALVES CLASS 900 (HANDWHEEL OPERATED)



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 coefficient		233	338	457	844	1899	3283	5204	7400	9015

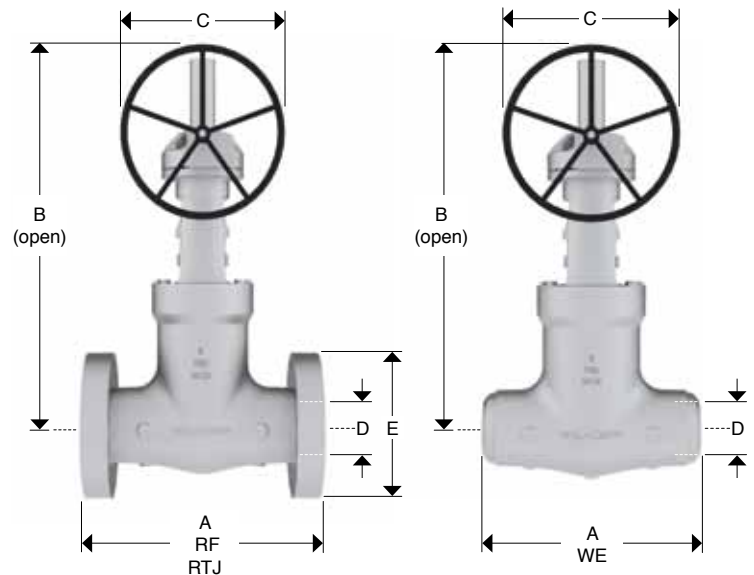
WALWORTH PRESSURE SEAL GATE VALVES CLASS 900 (GEAR OPERATED)



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 coefficient		11864	15116	18774	27311

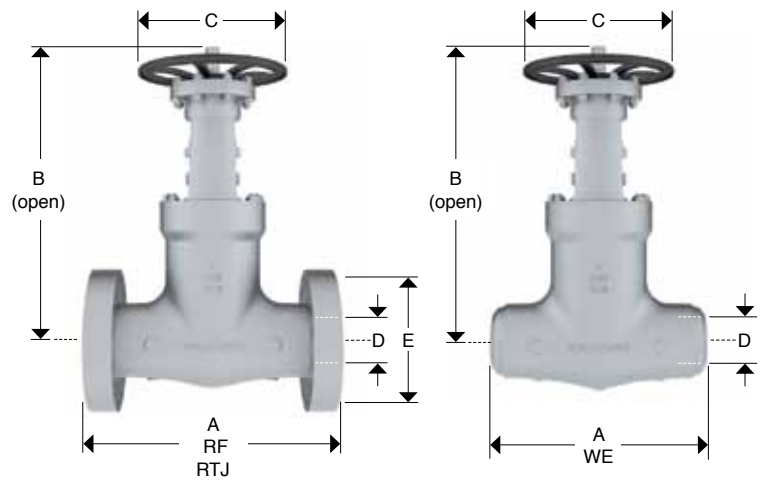
WALWORTH PRESSURE SEAL GATE VALVES CLASS 1500 (HANDWHEEL OPERATED)



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 coefficient		233	338	405	754	1620	2843	4509	6410

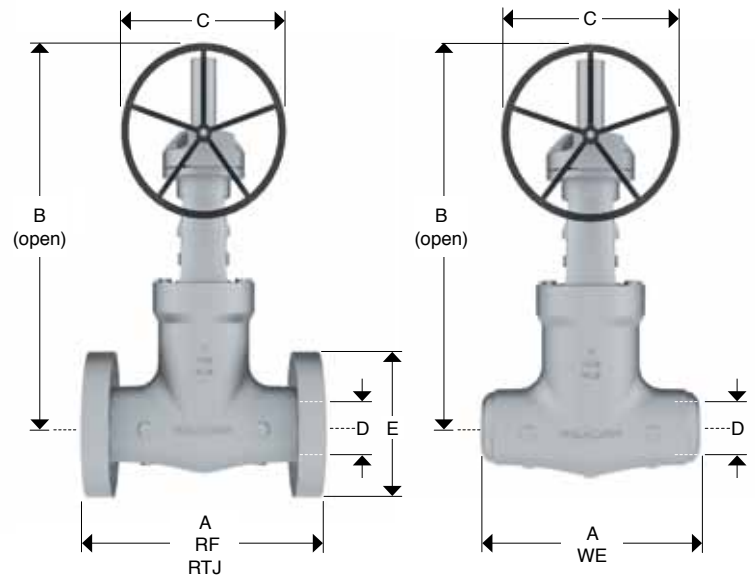
WALWORTH PRESSURE SEAL GATE VALVES CLASS 1500 (GEAR OPERATED)



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 coefficient		7746	10186	12988	17016	23744

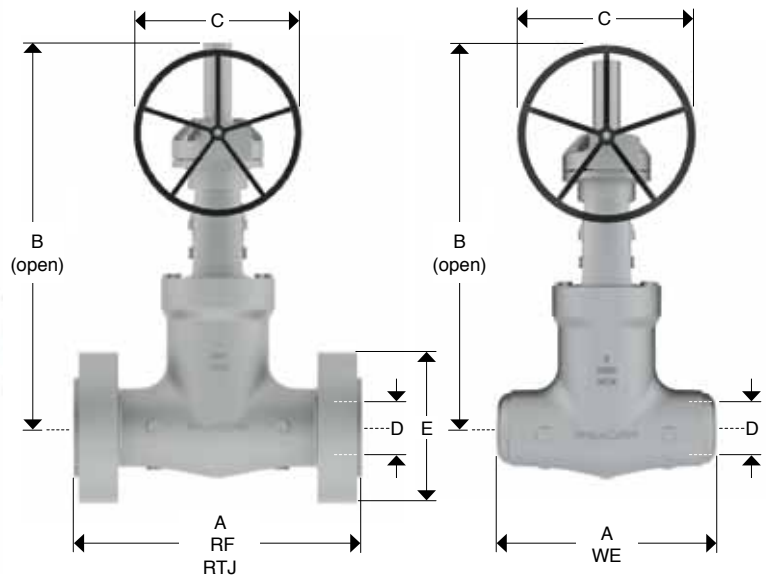
WALWORTH PRESSURE SEAL GATE VALVES CLASS 2500 (GEAR OPERATED)

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 coefficient		810	1602	2700	3825	4824	6552	8114	10800	16119	14500	16600	11200	16400

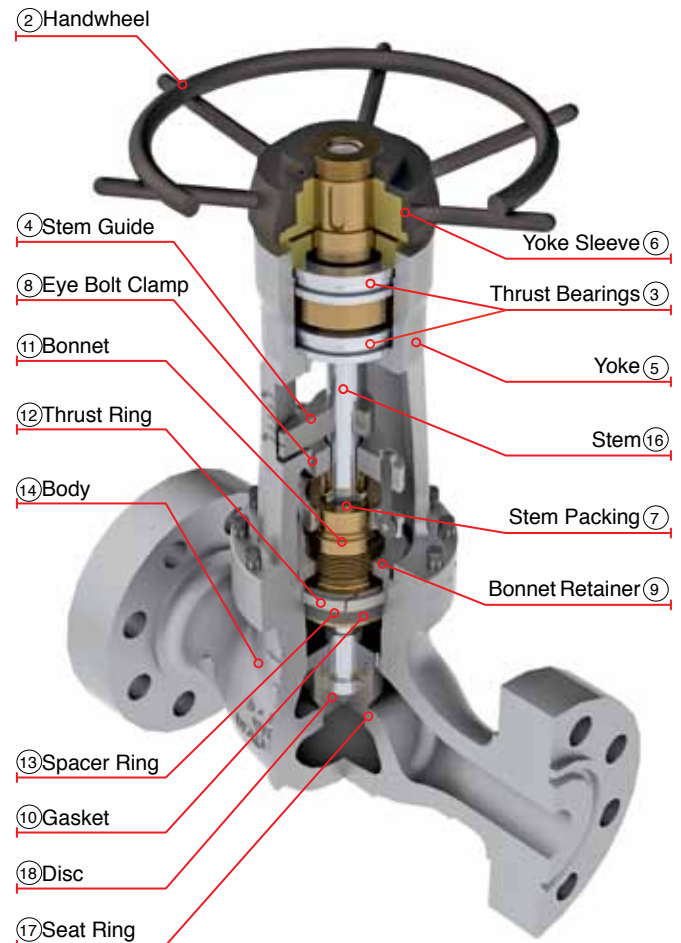
PCR = Per customer request.

WALWORTH PRESSURE SEAL CAST STEEL GLOBE VALVES

PRESSURE SEAL GLOBE 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. Impactor handwheel provides closing force for positive sealing against disc or back seat. Gear operator is also available for easy operation and maximum torque.
- ③ Thrust bearings for larger sizes minimize torque requirements and facilitate operation due the smooth forces involved.
- ④ Stem guide collar is designed with strong construction to prevent stem rotation; also is suitable for position indicator as per Customer request.
- ⑤ Yoke designed with two windows for easy disassembly and access to the packing chamber or bonnet retainer when maintenance is required.
- ⑥ Yoke sleeve design permit removal from from the yoke while the valve still in service. Due the material of manufacturing ASTM A439 D2 or B148 95600 reduce coefficient of friction reducing torque operation, minimize wear and eliminate galling.
- ⑦ 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 extrusion rings for low fugitive emmissions control. Optional live load packing system with extra deep stuffing box and Belleville washers is available upon request.
- ⑧ Eye Bolt Clamp design allows easy access to the packing chamber and keeps fixed loads on the stem packing regardless of bonnet position.
- ⑨ Bonnet retainer is used to help by tightening the retainer bolt/nuts to seal bonnet-bonnet gasket against body inlay.
- ⑩ Pressure seal gasket made from soft carbon steel (silver plated) 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.
- ⑪ 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 system.
- ⑫ 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.
- ⑬ Spacer ring prevent deformation when pressures push the complete set bonnet-gasket against segmented thrust ring.
- ⑭ 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 a better seal and increase life of sealing area due provided corrosion resistance.
- ⑮ Body guide ribs hardfaced on some sizes of globe, stop check and angle globe patterns provide body guiding for disc or piston assemblies.
- ⑯ Stem with ACME thread is polished to improve low fugitive



emmissions control and easy operation during opening and closing. Back seat is provided with differential angle with bonnet back seat for packing change even in service.

- ⑰ Seat ring with stellite 6 overlay for better sealing service provide wear, abrasion and erosion resistance. Seat ring is welded to the body to provide tight joint.
- ⑱ Body guided plug disc designed to avoid vibration, bending of the stem and/or misalignment during opening, closing or throttle service. Sealing areas of the disc with stellite 6 overlay for better operation service. Other sealing surfaces materials can be provided upon request.
- ⑲ Test in accordance with API-598.

Notes

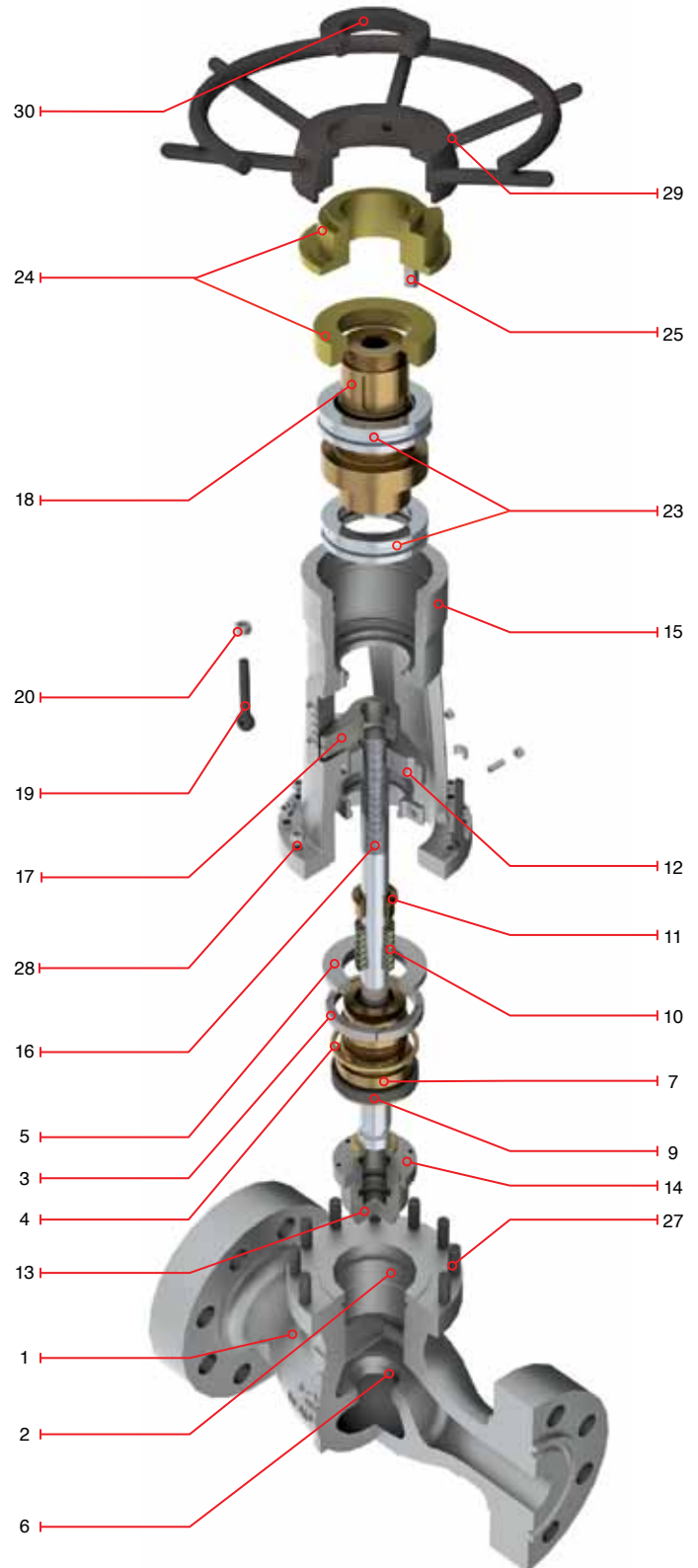
1. WALWORTH offers two options: Globe Valve and Stop Check Valve.
2. Globe valve works basically as a tight sealing valve offering also service throttle service.
3. Stop Check Valve works same as a Globe Valve but also offer protection in case of back flow due lost of pressure.

WALWORTH PRESSURE SEAL GLOBE VALVES

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

Regular Bill of Materials

No.	Description	1 1/4 % Chrome
1	"T" pattern body	ASTM A217 GR. WC6
2	Body inlay	SS-309
3	Segmental thrust ring	AISI 410
4	Spacer ring	AISI 410
5	Bonnet retainer	ASTM A-515 GR. 70
6	Seat ring	ASTM A-217 GR. WC6 & Co-Cr-W overlay
7	Bonnet	ASTM A-217 GR. WC6 or ASTM A182 GR. F11
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 A-276 GR. 410
12	Gland flange	ASTM A-216 GR. WCB
13	Guided plug	ASTM A-217 GR. WC6 or ASTM A182 GR. F11 & Co-Cr-W overlay
14	Disc nut	ASTM A 276-410
15	Yoke	ASTM A-216 GR. WCB
16	Stem	ASTM A-182 GR. F6A CL2
17	Stem guide	ASTM A-515 GR. 70
18	Stem nut	ASTM B-148 C95600
19	Gland flange stud	ASTM A-193 GR. B7
20	Gland flange nut	ASTM A-194 GR. 2H
21	Bonnet studs	ASTM A-193 GR. B16 (not shown)
22	Stud nuts	ASTM A-194 GR. 7 (not shown)
23	Bearings	Commercial
24	Bearing cover	ASTM A-515 GR. 70
25	Bearing cover stud	ASTM A-193 GR. B7
26	Bearing cover stud nut	ASTM A-194 GR. 2H (not shown)
27	Yoke bolt	ASTM A-193 GR. B7
28	Yoke nuts	ASTM A-194 GR. 2H
29	Handwheel	Commercial
30	Handwheel nut	ASTM A-515 GR. 70



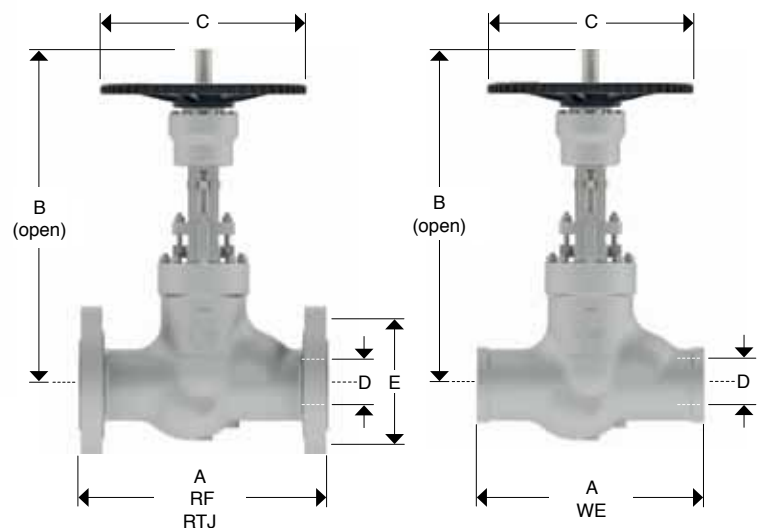
WALWORTH PRESSURE SEAL GLOBE VALVES CLASS 600 (HANDWHEEL OPERATED)

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Rising Stem.
- Guided plug type disc.
- From 2" to 3" handwheel operated.
- From 4" to 10" Impactor 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
5295PSWE	5295PSWE	Buttweld
5295PSRF	5295PSF	Flanged raised face
5295PSRTJ	5295PSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	2	2.5	3	4	6	8	10
		mm	51	63	76	102	152	203	254
A	End to end WE	in	7	8.5	10	12	18	23	28
		mm	178	216	254	305	457	584	711
A	Face to face RF	in	11.5	13	14	17	22	26	31
		mm	292	330	356	432	559	660	787
A	Face to face RTJ	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12
		mm	295	333	359	435	562	663	790
B	Center to top	in	23	23	25	28	33.5	44	49
		mm	584	584	635	711	851	1118	1245
C	Handwheel	in	12	12	12	14	18	20	24
		mm	305	305	305	356	457	508	610
WE	Weight	lbs	85.8	94.6	101.2	189.2	382.8	695.2	1174.8
		Kg	39	43	46	86	174	316	534
RF or RTJ	Weight	lbs	103.4	121	134.2	264	543.4	924	1529
		Kg	47	55	61	120	247	420	695
Cv	Flow coefficient		49.5	78.3	114.3	208.8	427.5	754.2	1174.5

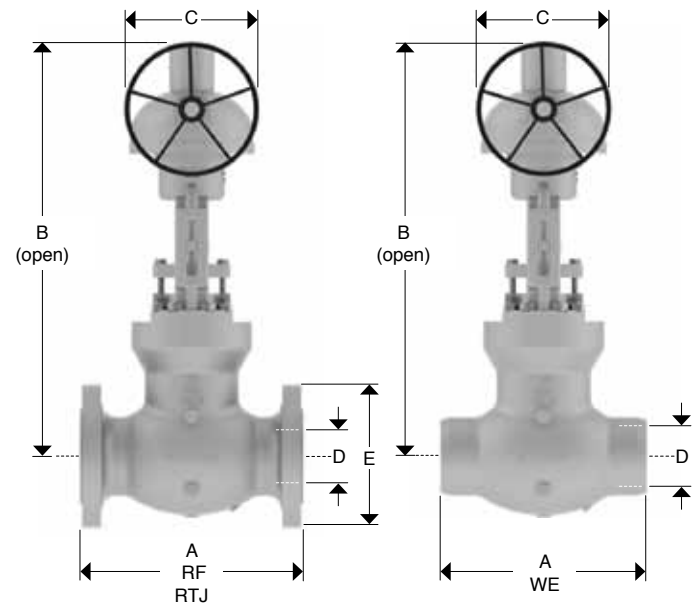
WALWORTH PRESSURE SEAL GLOBE VALVES CLASS 600 (GEAR OPERATED)



Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Rising Stem.
- Guided plug type disc.
- From 12" and up Gear Operated. 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
5295PSWE	5295PSWE	Buttweld
5295PSRF	5295PSF	Flanged raised face
5295PSRTJ	5295PSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	12	14	16	18	20	24
		mm	305	356	406	457	508	607
A	End to end WE	in	32	35	39	43	47	55
		mm	813	889	991	1092	1194	1397
A	Face to face RF	in	33	35	39	43	47	55
		mm	838	889	991	1092	1194	1397
A	Face to face RTJ	in	33.12	35.12	39.12	43.12	47.25	55.38
		mm	841	892	994	1095	1200	1407
B	Center to top (open)	in	53	62	70	78	85	93
		mm	1346	1575	1778	1981	2159	2362
C	Handwheel	in	30	30	34	34	38	38
		mm	762	762	864	864	965	965
WE	Weight	lbs	1885.4	2754.4	3546.4	4155.8	5816.8	7053.2
		Kg	857	1252	1612	1889	2644	3206
RF or RTJ	Weight	lbs	2314.4	3271.4	4276.8	5106.2	7040	8802.2
		Kg	1052	1487	1944	2321	3200	4001
Cv	Flow coefficient		1731.6	2096.1	PCR	PCR	PCR	PCR

PCR = Per customer request.

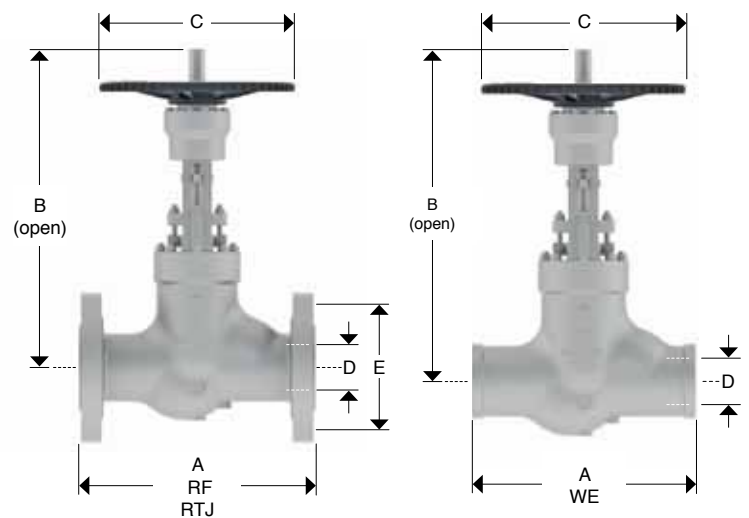
WALWORTH PRESSURE SEAL GLOBE VALVES CLASS 900 (HANDWHEEL OPERATED)

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Rising Stem.
- Guided plug type disc.
- From 2" to 3" handwheel operated.
- From 4" to 10" Impactor 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
5301PSWE	5301PSWE	Buttweld
5301PSRF	5301PSF	Flanged raised face
5301PSRTJ	5301PSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	2	2.5	3	4	6	8	10
		mm	51	63	76	102	152	203	254
A	End to end WE	in	10	10	12	14	20	26	31
		mm	254	254	305	356	508	660	787
A	Face to face RF	in	14.5	16.5	15	18	24	29	33
		mm	368	419	381	457	610	737	838
A	Face to face RTJ	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12
		mm	371	422	384	460	613	740	841
B	Center to top (open)	in	23	24	28	31	37	46	51
		mm	584	610	711	787	940	1168	1295
C	Handwheel	in	12	14	14	18	20	24	30
		mm	305	356	356	457	508	610	762
WE	Weight	lbs	96.8	125.4	136.4	228.8	677.6	1144	1650
		Kg	44	57	62	104	308	520	750
RF or RTJ	Weight	lbs	140.8	187	209	334.4	897.6	1487.2	2138.4
		Kg	64	85	95	152	408	676	972
Cv	Flow coefficient		41	63	93	173	392	681	1084

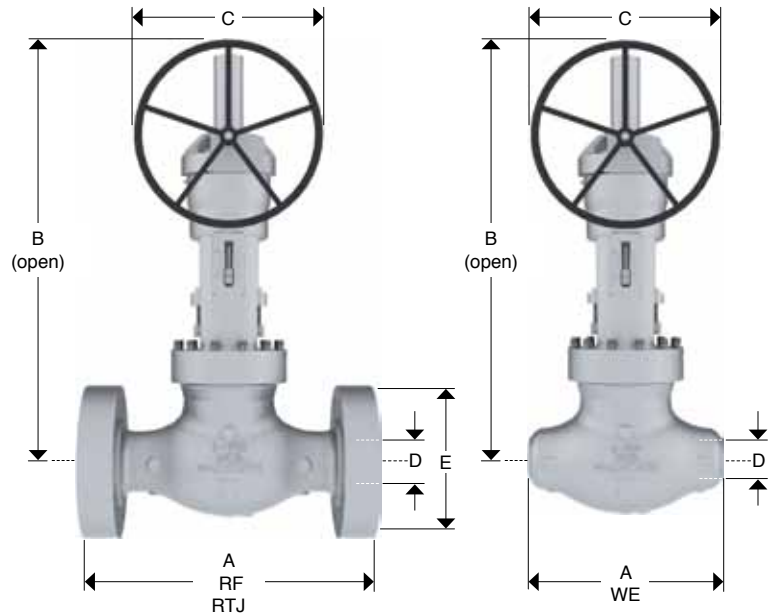
WALWORTH PRESSURE SEAL GLOBE VALVES CLASS 900 (GEAR OPERATED)

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Rising Stem.
- Guided plug type disc.
- From 12" and up Gear Operated. 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
5301PSWE	5301PSWE	Buttweld
5301PSRF	5301PSF	Flanged raised face
5301PSRTJ	5301PSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	12	14	16	18	20	24
		mm	305	356	406	457	508	607
A	End to end WE	in	36	39	43	48	52	61
		mm	914	991	1092	1219	1321	1549
A	Face to face RF	in	38	40.5	44.5	48	52	61
		mm	965	1029	1130	1219	1321	1549
A	Face to face RTJ	in	38.12	40.88	44.88	48.5	52.5	61.75
		mm	968	1038	1140	1232	1334	1568
B	Center to top (open)	in	55	65	76	80	88	95
		mm	1397	1651	1930	2032	2235	2413
C	Handwheel	in	30	30	30	38	38	38
		mm	762	762	762	965	965	965
WE	Weight	lbs	2457.4	3418.8	4221.8	5176.6	7636.2	10289.4
		Kg	1117	1554	1919	2353	3471	4677
RF or RTJ	Weight	lbs	3108.6	4217.4	5139.2	6468	9218	13246.2
		Kg	1413	1917	2336	2940	4190	6021
Cv	Flow coefficient		1548	1890	PCR	PCR	PCR	PCR

PCR = Per customer request.

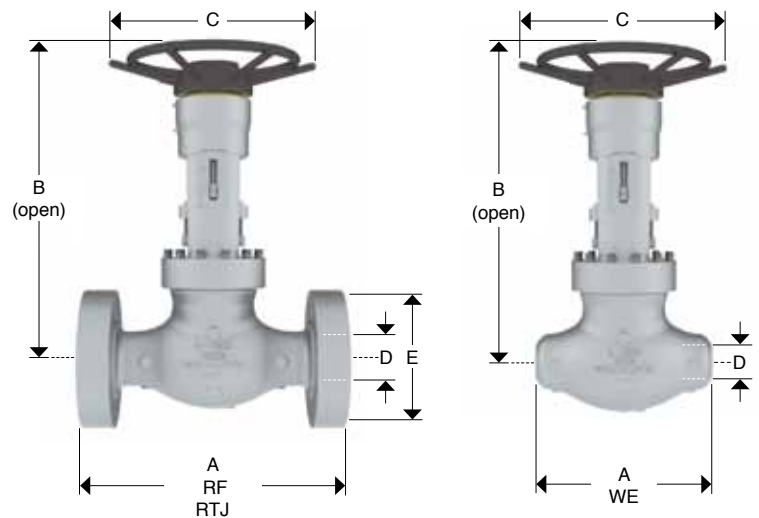
WALWORTH PRESSURE SEAL GLOBE VALVES CLASS 1500 (HANDWHEEL)



Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Rising Stem.
- Guided plug type disc.
- From 2" to 3" handwheel operated.
- From 4" to 10" Impactor 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
5308PSWE	5308PSWE	Buttweld
5308PSRF	5308PSF	Flanged raised face
5308PSRTJ	5308PSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	2	2.5	3	4	6	8	10
		mm	51	63	76	102	152	203	254
A	End to end WE	in	8.5	10	12	16	22	28	34
		mm	216	254	305	406	559	711	864
A	Face to face RF	in	14.5	16.5	18.5	21.5	27.75	32.75	39
		mm	368	419	470	546	705	832	991
A	Face to face RTJ	in	14.62	16.62	18.62	21.62	28	33.12	39.38
		mm	371	422	473	549	711	841	1000
B	Center to top (open)	in	23	24	28	31	37	47	52
		mm	584	610	711	787	940	1194	1321
C	Handwheel	in	12	14	14	18	20	24	30
		mm	305	356	356	457	508	610	762
WE	Weight	lbs	182.6	198	198	341	974.6	1623.6	3091
		Kg	83	90	90	155	443	738	1405
RF or RTJ	Weight	lbs	233.2	270.6	294.8	486.2	1304.6	2142.8	3962.2
		Kg	106	123	134	221	593	974	1801
Cv	Flow coefficient		41	59	85	151	342	589	938

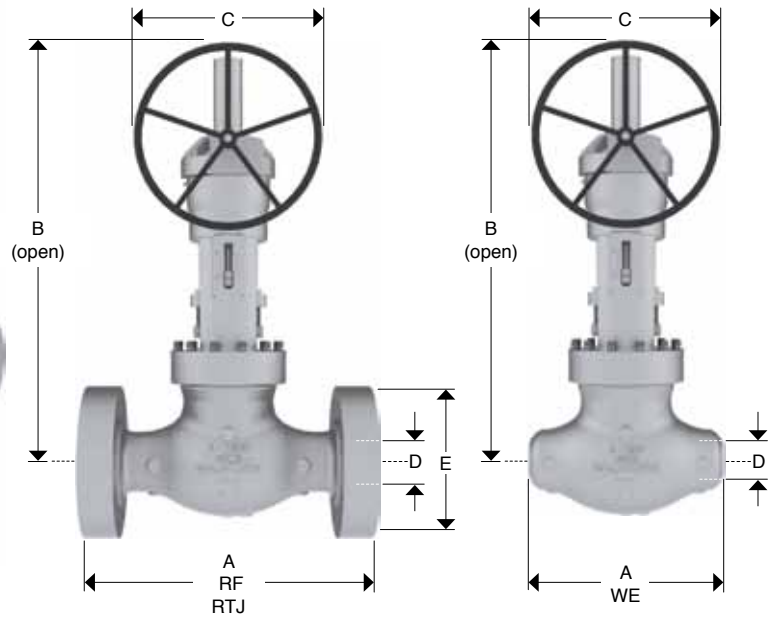
WALWORTH PRESSURE SEAL GLOBE VALVES CLASS 1500 (GEAR OPERATED)



Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Rising Stem.
- Guided plug type disc.
- From 12" and up Gear Operated. 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
5308PSWE	5308PSWE	Buttweld
5308PSRF	5308PSF	Flanged raised face
5308PSRTJ	5308PSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	12	14	16	18	20	24
		mm	305	356	406	457	508	607
A	End to end WE	in	39	42	47	53	58	58
		mm	991	1067	1194	1346	1473	1473
A	Face to face RF	in	44.5	49.5	PCR	PCR	PCR	PCR
		mm	1130	1257	PCR	PCR	PCR	PCR
A	Face to face RTJ	in	45.12	50.25	PCR	PCR	PCR	PCR
		mm	1146	1276	PCR	PCR	PCR	PCR
B	Center to top (open)	in	58	65	76	80	88	95
		mm	1473	1651	1930	2032	2235	2413
C	Handwheel	in	30	30	38	38	38	38
		mm	762	762	965	965	965	965
WE	Weight	lbs	4741	6465.8	9446.8	11429	13745.6	17529.6
		Kg	2155	2939	4294	5195	6248	7968
RF or RTJ	Weight	lbs	6074.2	8344.6	11943.8	14676.2	17839.8	23172.6
		Kg	2761	3793	5429	6671	8109	10533
Cv	Flow coefficient		1339	PCR	PCR	PCR	PCR	PCR

PCR = Per customer request.

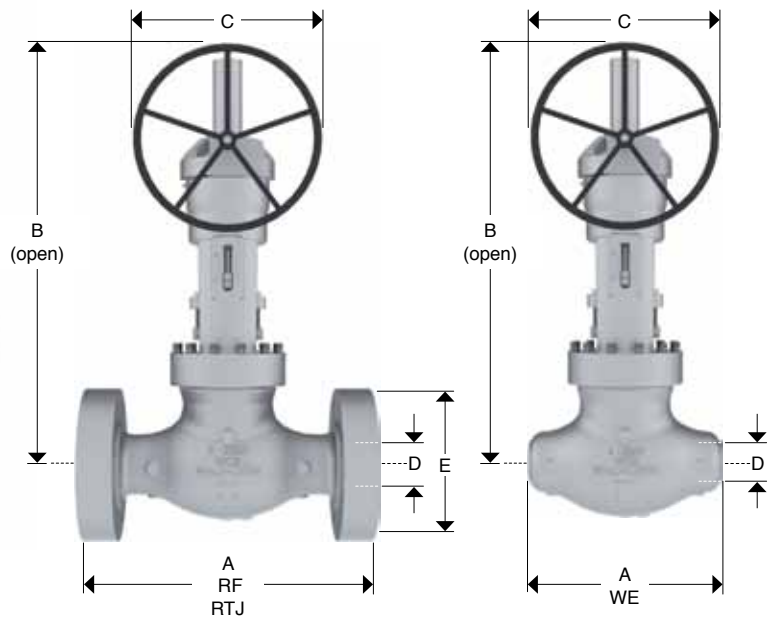
WALWORTH PRESSURE SEAL GLOBE VALVES CLASS 2500 (GEAR OPERATED)

Design Features

- in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Rising Stem.
- Guided plug type disc.
- From 2" and up Gear Operated. 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
5563PSWE	5563PSWE	Buttweld
5563PSRF	5563PSF	Flanged raised face
5563PSRTJ	5563PSRJ	Flanged ring type joint



Dimensions and Weights

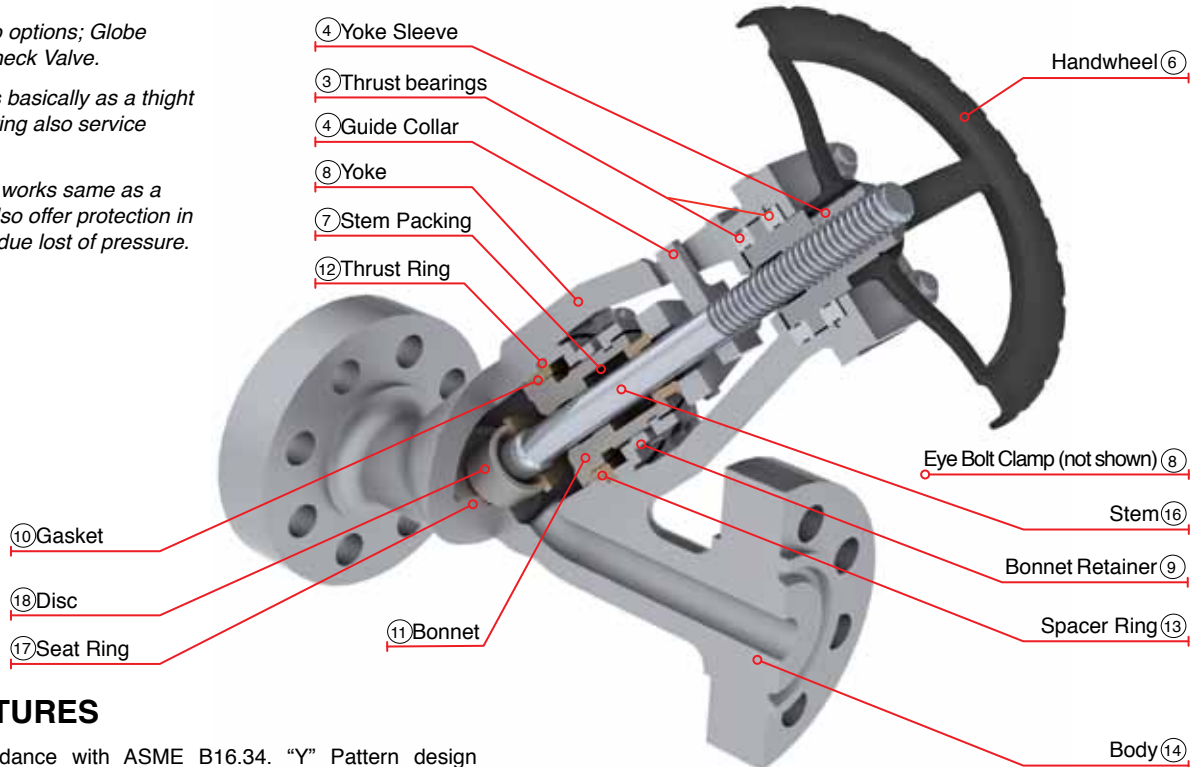
D Nominal diameter		in	2	2.5	3	4	6	8	10	12	14	16	18	20	24
		mm	51	63	76	102	152	203	254	305	356	406	457	508	607
A	End to end WE	in	11	13	14.5	18	24	30	36	41	44	49	55	58	58
		mm	279	330	368	457	610	762	914	1041	1118	1245	1397	1473	1473
A	Face to face RF	in	17.75	20	22.75	26.5	36	40.25	50	56	PCR	PCR	PCR	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	40.87	50.88	56.88	PCR	PCR	PCR	PCR	PCR
		mm	454	514	584	683	927	1038	1292	1445	PCR	PCR	PCR	PCR	PCR
B	CENTER TO TOP	in	24	26	26	33	39	51	53	61	70	79	87	96	105
		mm	610	660	660	838	991	1295	1346	1549	1778	2007	2210	2438	2667
C	Handwheel	in	14	18	18	20	24	30	30	30	30	38	38	38	38
		mm	356	457	457	508	610	762	762	762	762	965	965	965	965
WE	Weight	lbs	255.2	514.8	514.8	629.2	1086.8	1601.6	2717	4061.2	7293	8294	10124.4	12058.2	15930.2
		Kg	116	234	234	286	494	728	1235	1846	3315	3770	4602	5481	7241
RF or RTJ	Weight	lbs	331.1	624.8	679.8	882.2	1507	2246.2	3685	5909.2	9889	PCR	PCR	PCR	PCR
		Kg	151	284	309	401	685	1021	1675	2686	4495	PCR	PCR	PCR	PCR
Cv	Flow coefficient		25	41	56	92	222	392	635	909	PCR	PCR	PCR	PCR	PCR

PCR = Per customer request.

WALWORTH PRESSURE SEAL GLOBE VALVES “Y” PATTERN

PRESSURE SEAL GLOBE VALVES “Y” PATTERN HANDWHEEL or GEAR OPERATED, RISING STEM; OUTSIDE SCREW & YOKE (OS&Y).

1. Walworth offer two options; Globe Valve and Stop Check Valve.
2. Globe valve works basically as a tight sealing valve offering also service throttle service.
3. Stop Check Valve works same as a Globe Valve but also offer protection in case of back flow due lost of pressure.



DESIGN FEATURES

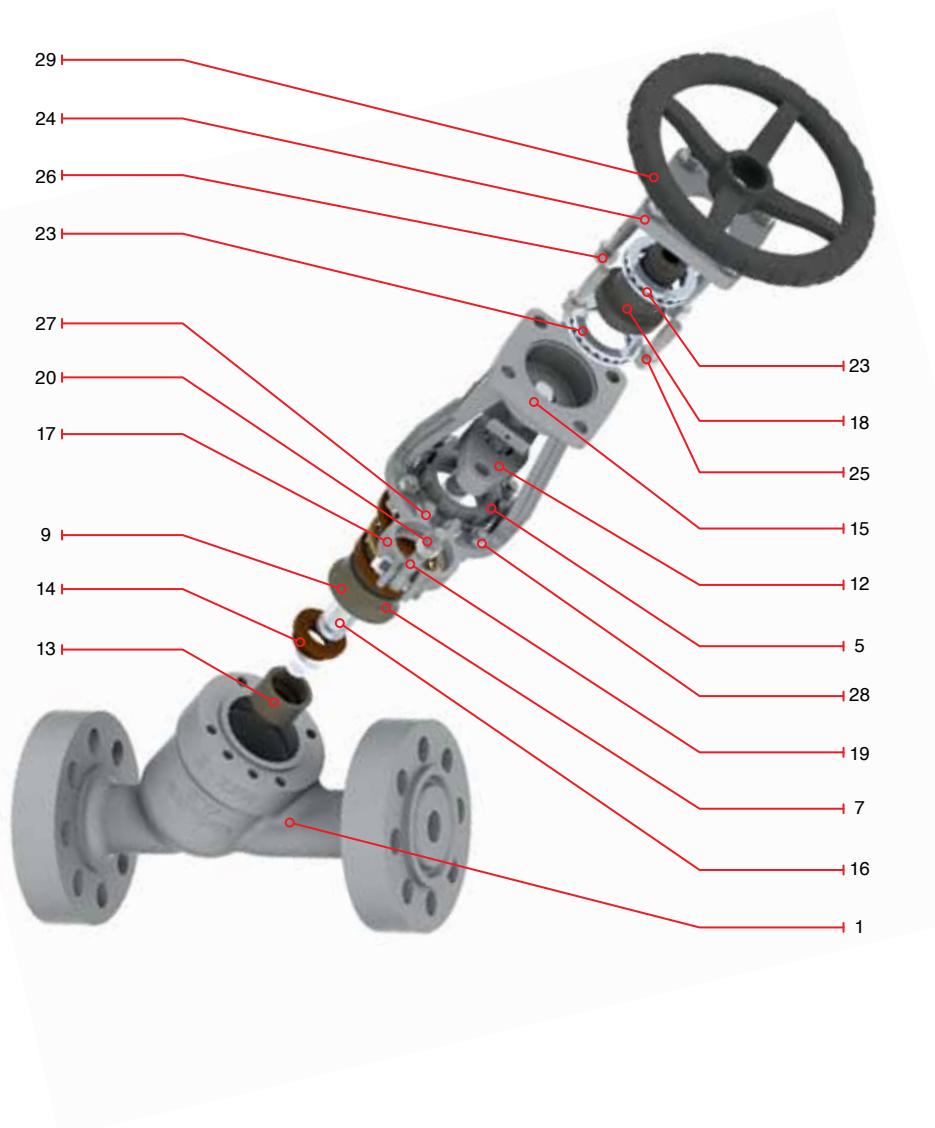
- ① Design in accordance with ASME B16.34. “Y” Pattern design increase Cv.
- ② Handwheel design made of ASTM A197 or ASTM A216 grade WCB provides more efficient transfer of loads with minimum weight. Impactor handwheel provides closing force for positive sealing against disc or back seat. Gear operator is also available for easy operation and maximum torque.
- ③ Thrust bearings for larger sizes minimize torque requirements and facilitate operation due the smooth forces involved.
- ④ Stem guide collar is designed with strong construction to prevent stem rotation; also is suitable for position indicator as per Customer request.
- ⑤ Yoke designed with two windows for easy disassembly and access to the packing chamber or bonnet retainer when maintenance is required.
- ⑥ Yoke sleeve design permit removal from from the yoke while the valve still in service. Due the material of manufacturing ASTM A439 D2 or B148 95600 reduce coefficient of friction reducing torque operation, minimize wear and eliminate galling.
- ⑦ 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 extrusion rings for low fugitive emmissions control. Optional live load packing system with extra deep stuffing box and Belleville washers is available upon request.
- ⑧ Eye Bolt Clamp design allows easy access to the packing chamber and keeps fixed loads on the stem packing regardless of bonnet position.
- ⑨ Bonnet retainer is used to help by tightening the retainer bolt/nuts to seal bonnet-bonnet gasket against body inlay.
- ⑩ Pressure seal gasket made from soft carbon steel (silver plated) 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.
- ⑪ 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 system.
- ⑫ 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.
- ⑬ Spacer ring prevent deformation when pressures push the complete set bonnet-gasket against segmented thrust ring.
- ⑭ 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 a better seal and increase life of sealing area due provided corrosion resistance.
- ⑮ Body guide ribs hardfaced on some sizes of globe, stop check and angle globe patterns provide body guiding for disc or piston assemblies (not shown).
- ⑯ Stem with ACME thread is polished to improve low fugitive emmissions control and easy operation during opening and closing. Back seat is provided with differential angle with bonnet back seat for packing change even in service.
- ⑰ Seat ring with stellite 6 overlay for better sealing service provide wear, abrasion and erosion resistance. Seat ring is welded to the body to provide tight joint.
- ⑱ Body guided plug design to avoid vibration, bending of the stem and/or misalignment during opening, closing or throttle service. Sealing areas of the disc with stellite 6 overlay for better operation service. Other sealing surfaces materials can be provided upon request.
- ⑲ Test in accordance with API-598.

WALWORTH PRESSURE SEAL GLOBE VALVES “Y” PATTERN

Following table shows the most common bill of materials for a pressure seal “Y” Pattern globe valve. There are many other combinations of base material and trim, please refer to other sections of this catalog for additional information.

Regular Bill of Materials

No.	DESCRIPTION	2 1/4 % CHROME
1	"Y" pattern body	ASTM A217 GR. WC9
2	Body inlay	SS-309 8 (not shown)
3	Segmental thrust ring	AISI 410 (not shown)
4	Spacer ring	AISI 410 (not shown)
5	Bonnet retainer	ASTM A-515 GR. 70
6	Seat ring	ASTM A-351 GR. CF8M & Co-Cr-W OVERLAY (not shown)
7	Bonnet	ASTM A-217 GR. WC9 or ASTM A182 GR. F22
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 (not shown)
11	Gland Bushing	ASTM A-276 GR. 410 (not shown)
12	Glang flange	ASTM A-216 GR. WCB
13	Guided plug	ASTM A-217 GR. WC9 or ASTM A182 GR. F22 & Co-Cr-W OVERLAY
14	Disc nut	ASTM A 276-410
15	Yoke	ASTM A-216 GR. WCB
16	Stem	ASTM A-182 GR. F6A CL2
17	Stem guide	ASTM A-515 GR. 70
18	Stem nut	ASTM B-148 C95600
19	Gland Flange stud	ASTM A-193 GR. B7
20	Gland Flange nut	ASTM A-194 GR. 2H
21	Bonnet studs	ASTM A-193 GR. B16 (not shown)
22	Stud nuts	ASTM A-194 GR. 7 (not shown)
23	Bearings	COMMERCIAL
24	Bearing cover	ASTM A-515 GR. 70
25	Bearing cover stud	ASTM A-193 GR. B7
26	Bearing cover stud nut	ASTM A-194 GR. 2H
27	Yoke bolt	ASTM A-193 GR. B7
28	Yoke nut	ASTM A 199 GR. 2H
29	Handwheel	COMMERCIAL
30	Handwheel nut	ASTM A-515 GR. 70 (not shown)

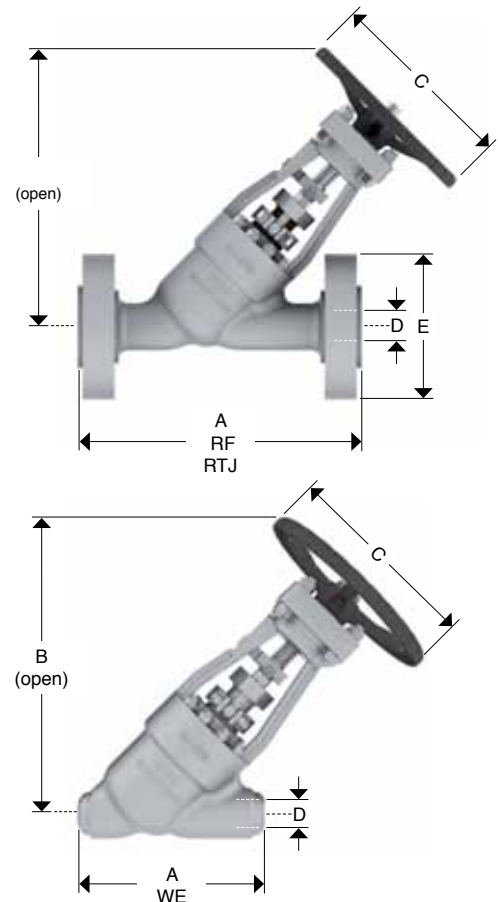


WALWORTH PRESSURE SEAL “Y” GLOBE VALVES CLASS 600 (HANDWHEEL OPERATED)

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Rising Stem
- Guided plug type disc
- From 2” to 3” handwheel operated
- From 4” to 10” Impactor 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
5295YPSWE	5295YPSWE	Buttweld
5295YPSRF	5295YPSF	Flanged raised face
5295YPSRTJ	5295YPSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	2	2.5	3	4	6	8	10
		mm	51	63	76	102	152	203	254
A	End to end WE	in	13	13	13	15.5	20	26	31
		mm	330	330	330	394	508	660	787
A	Face to face RF	in	16.75	16.75	16.75	21.25	29	33	39
		mm	425	425	425	540	737	838	991
A	Face to face RTJ	in	16.87	16.87	16.87	21.37	29.12	33.12	39.12
		mm	428	428	428	543	740	841	994
B	Center to top (open)	in	18	18	18	22	29	35	42
		mm	457	457	457	559	737	889	1067
C	Handwheel	in	12	12	12	14	18	20	24
		mm	305	305	305	356	457	508	610
WE	Weight	lbs	99	107.8	116.6	217.8	440	798.6	1350.8
		Kg	45	49	53	99	200	363	614
RF or RTJ	Weight	lbs	116.6	134.2	149.6	292.6	600.6	1027.4	1705
		Kg	53	61	68	133	273	467	775
Cv	Flow coefficient		PCR	PCR	PCR	PCR	801	1410	2195

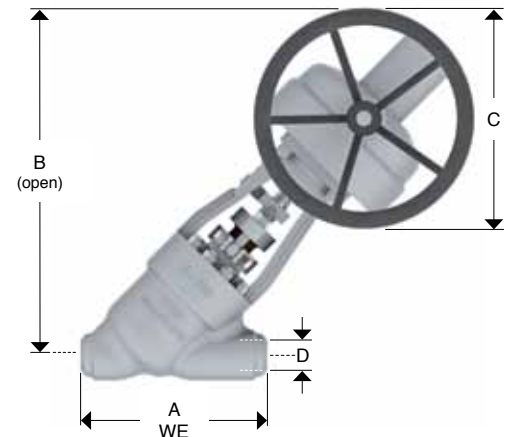
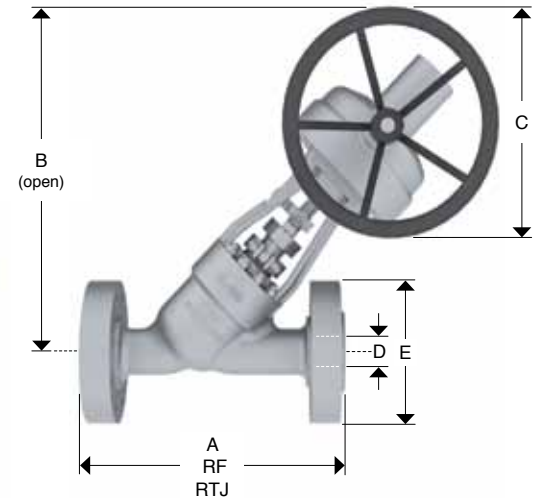
PCR = Per customer request.

WALWORTH PRESSURE SEAL “Y” GLOBE 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
- Rising Stem
- Guided plug type disc
- From 12” 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
5295YPSWE	5295YPSWE	Buttweld
5295YPSRF	5295YPSF	Flanged raised face
5295YPSRTJ	5295YPSRJ	Flanged ring type joint



Dimensions and Weights

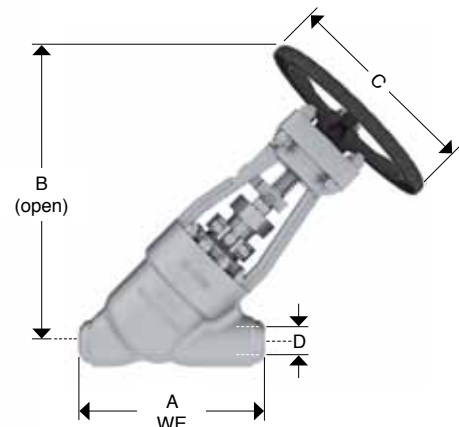
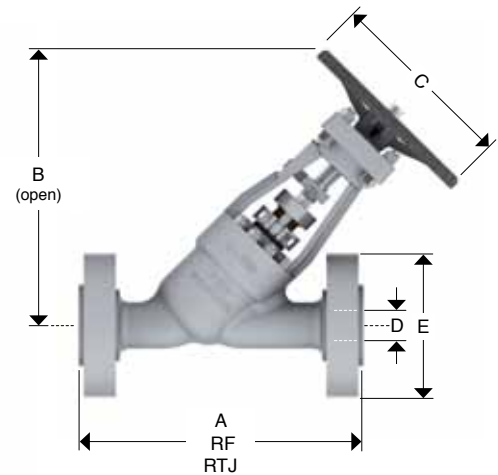
D		in	12	14	16	18	20	24
Nominal diameter		mm	305	356	406	457	508	607
A	End to end WE	in	38	39	41	54	60	66
		mm	965	991	1041	1372	1524	1676
A	Face to face RF	in	43	46	52	61	68	74.5
		mm	1092	1168	1321	1549	1727	1892
A	Face to face RTJ	in	43.12	46.12	52.12	61.12	68.25	74.88
		mm	1095	1171	1324	1552	1734	1902
B	Center to top (open)	in	50	57	75	75	76	80
		mm	1270	1448	1905	1905	1930	2032
C	Handwheel	in	30	38	38	38	38	38
		mm	762	965	965	965	965	965
WE	Weight	lbs	2169.2	3168	4078.8	4778.4	6690.2	8111.4
		Kg	986	1440	1854	2172	3041	3687
RF or RTJ	Weight	lbs	2598.2	3685	4809.2	5728.8	7913.4	9860.4
		Kg	1181	1675	2186	2604	3597	4482
Cv	Flow coefficient		3232	3911	5181	6538	8058	11874

WALWORTH PRESSURE SEAL “Y” GLOBE 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
- Rising Stem
- Guided plug type disc
- From 2” to 3” handwheel operated
- From 4” to 10” Impactor 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
5301YPSWE	5301YPSWE	Buttweld
5301YPSRF	5301YPSF	Flanged raised face
5301YPSRTJ	5301YPSRJ	Flanged ring type joint



Dimensions and Weights

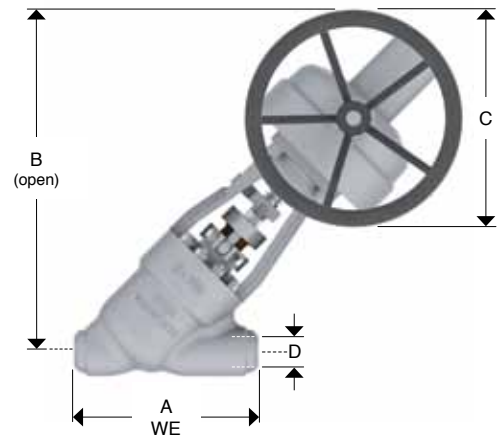
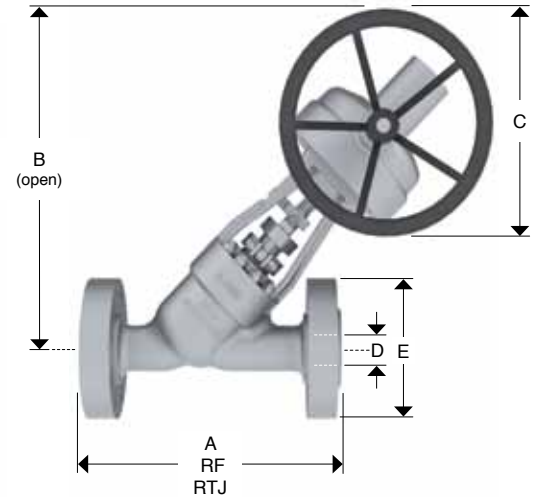
D		in	3	4	6	8	10
Nominal diameter		mm	76	102	152	203	254
A	End to end WE	in	17	18.5	20	26	31
		mm	432	470	508	660	787
A	Face to face RF	in	22.25	23.75	30	38	44
		mm	565	603	762	965	1118
A	Face to face RTJ	in	22.37	23.87	30.12	38.12	44.12
		mm	568	606	765	968	1121
B	Center to top (open)	in	21	26	36	45	52
		mm	533	660	914	1143	1321
C	Handwheel	in	7.5	7.63	10	12.5	13
		mm	191	194	254	318	330
WE	Weight	lbs	156.2	264	778.8	1315.6	1898.6
		Kg	71	120	354	598	863
RF or RTJ	Weight	lbs	228.8	369.6	998.8	1658.8	2387
		Kg	104	168	454	754	1085
Cv	Flow coefficient		171	324	733	1273	2250

WALWORTH PRESSURE SEAL “Y” GLOBE 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
- Rising Stem
- Guided plug type disc
- From 12” 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
5301YPSWE	5301YPSWE	Buttweld
5301YPSRF	5301YPSF	Flanged raised face
5301YPSRTJ	5301YPSRJ	Flanged ring type joint



Dimensions and Weights

D		in	12	14	16	18	20	24
Nominal diameter		mm	305	356	406	457	508	607
A	End to end WE	in	38	39	44.5	58	55	59.5
		mm	965	991	1130	1473	1397	1511
A	Face to face RF	in	50	51	58	PCR	PCR	PCR
		mm	1270	1295	1473	PCR	PCR	PCR
A	Face to face RTJ	in	50.12	51.38	58.38	PCR	PCR	PCR
		mm	1273	1305	1483	PCR	PCR	PCR
B	Center to top (open)	in	61	61	74	91	104	111
		mm	1549	1549	1880	2311	2642	2819
C	Handwheel	in	15	16	25.75	28	31.75	36
		mm	381	406	654	711	806	914
WE	Weight	lbs	2827	3931.4	4855.4	594	8782.4	11833.8
		Kg	1285	1787	2207	2706	3992	5379
RF or RTJ	Weight	lbs	3478.2	4730	5772.8	7244.6	10364.2	14790.6
		Kg	1581	2150	2624	3293	4711	6723
Cv	Flow coefficient		2889	3524	4649	5936	7387	10782

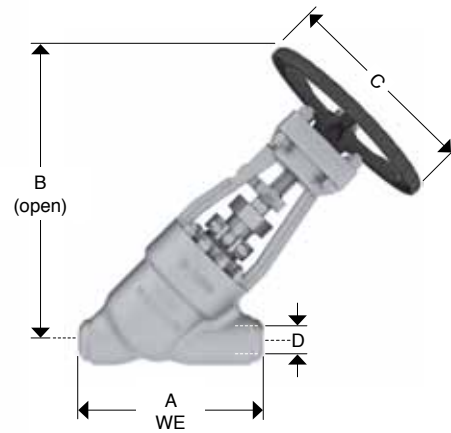
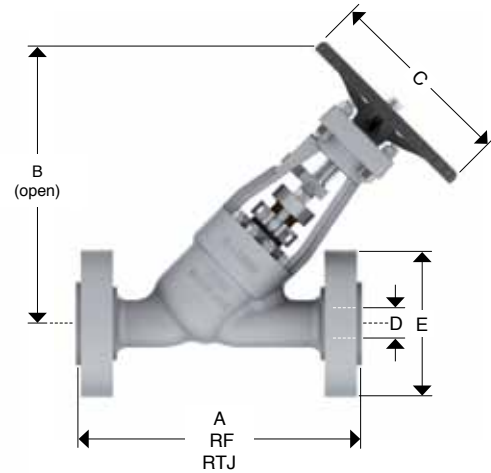
PCR = Per customer request.

WALWORTH PRESSURE SEAL “Y” GLOBE 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
- Rising Stem
- Guided plug type disc
- From 3” handwheel operated
- From 4” to 10” Impactor 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
5308YPSWE	5308YPSWE	Buttweld
5308YPSRF	5308YPSF	Flanged raised face
5308YPSRTJ	5308YPSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	3	4	6	8	10
		mm	76	102	152	203	254
A	End to end WE	in	17	18.5	27.75	30	36.25
		mm	432	470	705	762	921
B	Center to top (open)	in	21	26	36	50	58
		mm	533	660	914	1270	1473
C	Handwheel	in	18	18	24	30	36
		mm	457	457	610	762	914
WE	Weight	lbs	228.8	391.6	1119.8	1867.8	3555.2
		Kg	104	178	509	849	1616
RTJ or RF	Weight	lbs	326	537	1443	2387	4426
		Kg	148	244	656	1085	2012
Cv	Flow coefficient		158	281	639	1272	2025

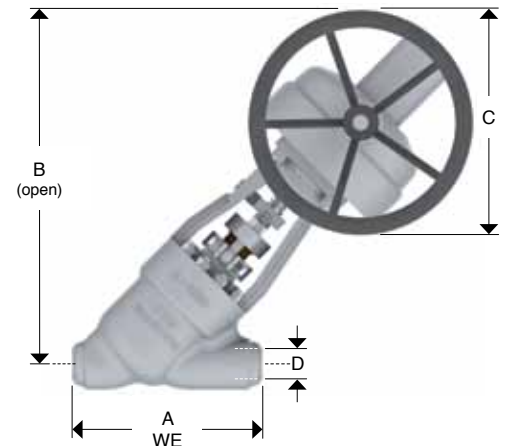
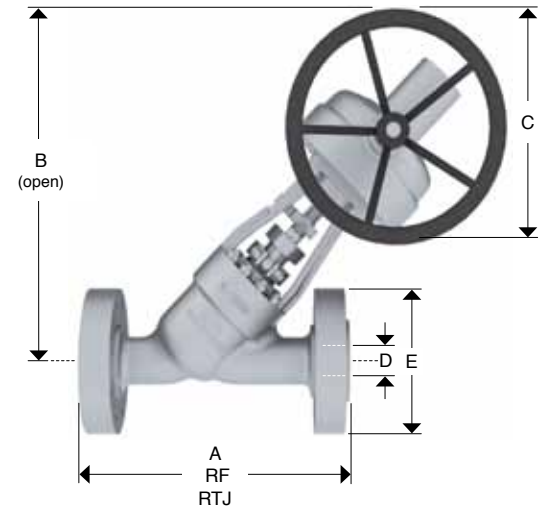
PCR = Per customer request.

WALWORTH PRESSURE SEAL “Y” GLOBE 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
- Rising Stem
- Guided plug type disc
- From 12” 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
5308YPSWE	5308YPSWE	Buttweld
5308YPSRF	5308YPSF	Flanged raised face
5308YPSRTJ	5308YPSRJ	Flanged ring type joint



Dimensions and Weights

D Nominal diameter		in	12	14	16	18	20	24
		mm	12	14	16	18	20	24
A	End to end WE	in	43	51	54	54.5	54.5	59.5
		mm	1092	1295	1372	1384	1384	1511
B	Center to top (open)	in	65	65	83	89	97	115
		mm	1651	1651	2108	2261	2464	2921
C	Handwheel	in	36	36	36	36	36	36
		mm	914	914	914	914	914	914
WE	Weight	lbs	5451.6	7436	10863.6	13142.8	15807	20158.6
		Kg	2478	3380	4938	5974	7185	9163
RTJ or RF	Weight	lbs	6785	9315	13361	16390	19901	25802
		Kg	3084	4234	6073	7450	9046	11728
Cv	Flow coefficient		2889	3492	4615	5094	6480	9374

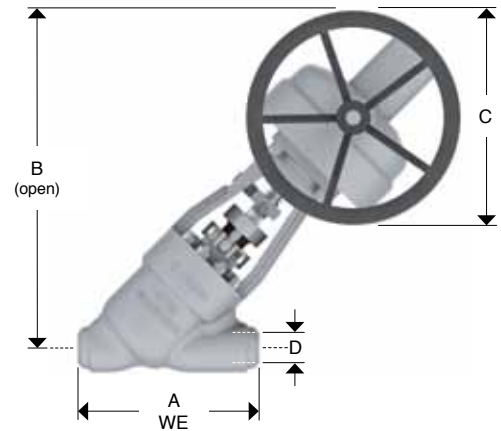
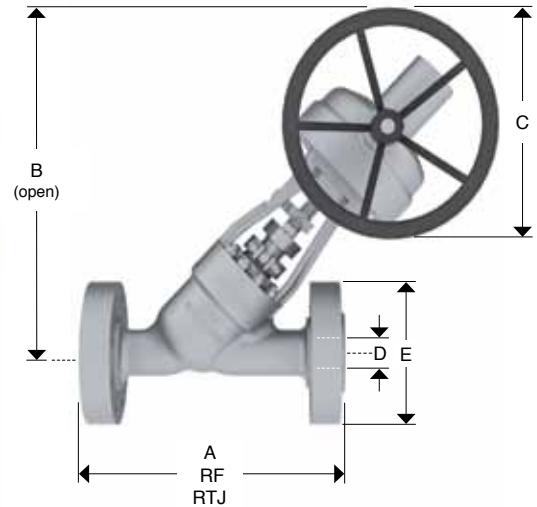
PCR = Per customer request.

WALWORTH PRESSURE SEAL “Y” GLOBE 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
- Rising Stem
- Guided plug type disc
- From 2” and up Gear Operated. 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
5563PSWE	5563PSWE	Buttweld
5563PSRF	5563PSF	Flanged raised face
5563PSRTJ	5563PSRJ	Flanged ring type joint



Dimensions and Weights

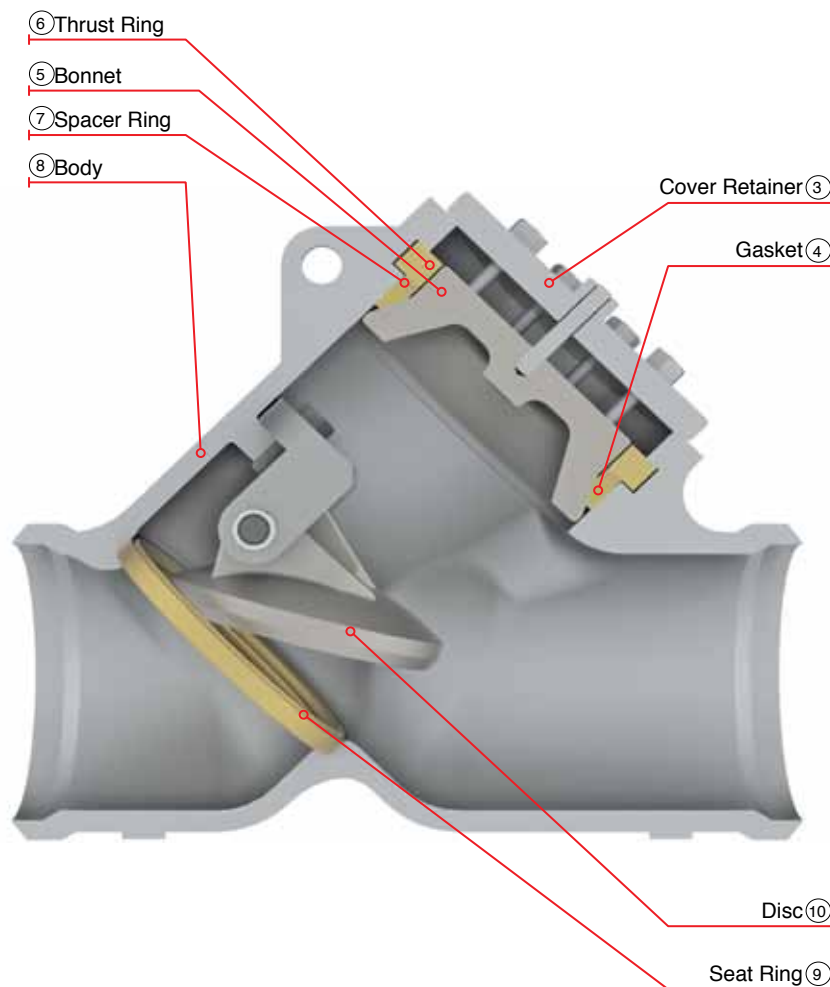
D Nominal diameter		in	3	4	6	8	10	12	14	16	18	20	24
		mm	76	102	152	203	254	305	356	406	457	508	607
A	End to end WE	in	17	18.5	24	30	36	41	48.75	48.75	58	58	68
		mm	432	470	610	762	914	1041	1238	1238	1473	1473	1727
B	Center to top (open)	in	21	26	40	50	58	70	74	74	99	99	115
		mm	533	660	1016	1270	1473	1778	1880	1880	2515	2515	2921
C	Handwheel	in	18	18	24	30	36	36	42	42	42	42	42
		mm	457	457	610	762	914	914	1067	1067	1067	1067	1067
RTJ or RF	Weight	lbs	757	977	1670	2486	4092	6519	10982	PCR	PCR	PCR	PCR
		Kg	344	444	759	1130	1860	2963	4992	PCR	PCR	PCR	PCR
WE	Weight	lbs	591.8	723.8	1249.6	1841.4	3124	4670.6	8386.4	9539.2	11642.4	13866.6	18319.4
		Kg	269	329	568	837	1420	2123	3812	4336	5292	6303	8327
Cv	Flow coefficient		136	226	517	915	1486	2131	2610	3460	4436	5547	7342

PCR = Per customer request.

WALWORTH PRESSURE SEAL TILTING DISC CHECK VALVES

Design Features

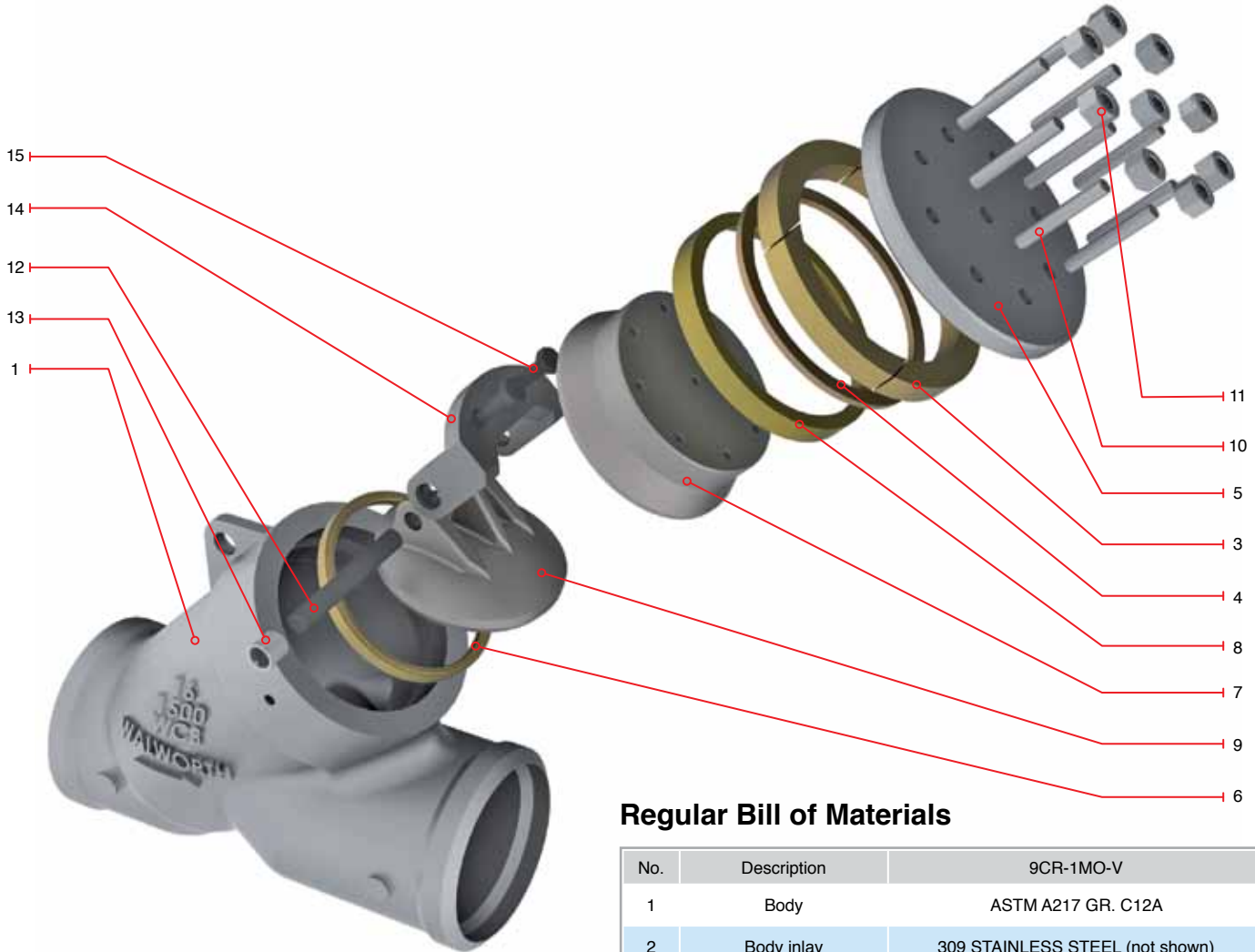
- ① Design in accordance with ASME B16.34.
- ② Designed to close quickly and quietly. It minimize damage due slamming or noise due vibration caused due high velocity reverse flow before completion of closing. Design also suitable for low pressure drop.
- ③ Cover retainer is used to help by tightening the retainer bolt/nuts to seal bonnet-bonnet gasket against body inlay.
- ④ Pressure seal gasket made from soft carbon steel (silver plated) 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.
- ⑤ 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 system.
- ⑥ 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.
- ⑦ Spacer ring prevent deformation when pressures push the complete set bonnet-gasket against segmented thrust ring.
- ⑧ 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 a better seal and increase life of sealing area due provided corrosion resistance.
- ⑨ Seat ring with stellite 6 overlay for better sealing service provide wear, abrasion and erosion resistance. Seat ring is welded to the body to provide tight joint.
- ⑩ Sealing areas of the disc with stellite 6 overlay for better operation service. Other sealing surfaces materials can be provided upon request.
- ⑪ Damper and counterweight options also available as per Customer request.
- ⑫ Test in accordance with API-598.



CAUTION: install this valve in a horizontal position only. Contact WALWORTH for other installation orientations.

WALWORTH PRESSURE SEAL TILTING DISC CHECK VALVES

Following table shows the most common bill of materials for a pressure seal Tilting Disc Check valve. There are many other combinations of base material and trim, please refer to other sections of this catalog for additional information.



Regular Bill of Materials

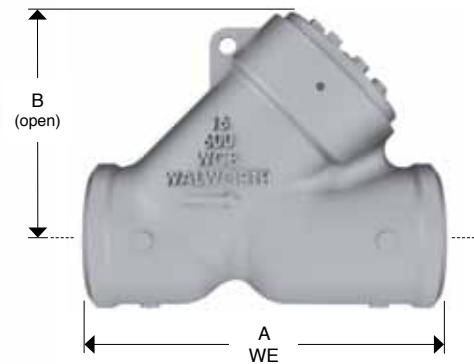
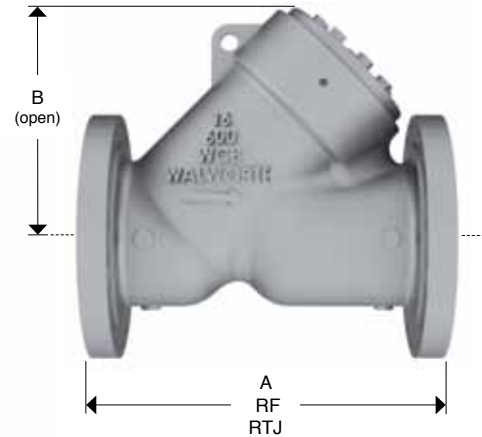
No.	Description	9CR-1MO-V
1	Body	ASTM A217 GR. C12A
2	Body inlay	309 STAINLESS STEEL (not shown)
3	Segmental thrust ring	AISI 410
4	Spacer ring	AISI 410
5	Bonnet retainer	ASTM A-515 GR. 70
6	Seat ring	Co-Cr-W OVERLAY
7	Bonnet	ASTM A-217 GR. C12A or ASTM A182 GR. F91
8	Gasket	WILD STEEL (100 HB) SILVER PLATED
9	Tilting disc	ASTM A-351 GR. CF8M Co-Cr-W overlay
10	Bonnet stud	ASTM A-193 GR. B16
11	Bonnet nut	ASTM A-194 GR. 7
12	Hinge pin	ASTM A276 GR. 410
13	Bushing	AISI 1045
14	Arm support	ASTM A217 GR. C12A
15	Hex screw	AISI 316

WALWORTH PRESSURE SEAL TILTING DISC CHECK VALVES CLASS 600

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Tilting type disc.
- 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
5350PSTDWE	5350PSTDWE	Buttweld
5350PSTDRF	5350PSTDF	Flanged raised face
5350PSTDRTJ	5350PSTRJ	Flanged ring type joint



Dimensions and Weights

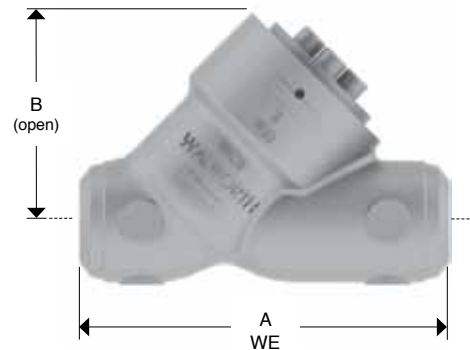
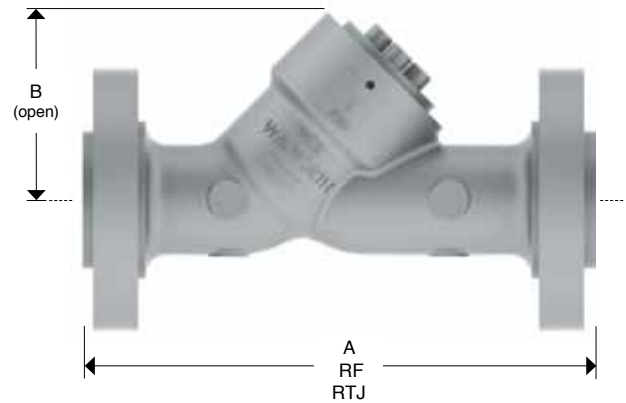
D Nominal diameter		in	2	2.5	3	4	6	8	10	12	14	16	18	20	24
		mm	51	63	76	102	152	203	254	305	356	406	457	508	607
A	End to end WE	in	8.5	8.5	10	12	18	23	28	32	35	39	43	47	55
		mm	216	216	254	305	457	584	711	813	889	991	1092	1194	1397
A	Face to face RF	in	11.5	13	14	17	22	26	31	33	35	39	43	47	55
		mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397
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	43.12	47.25	55.38
		mm	295	333	359	435	562	663	790	841	892	994	1095	1200	1407
B	Center to top (open)	in	7.5	7.5	7.5	8.5	9.5	12	15	17	18	16	24	26	31
		mm	191	191	191	216	241	305	381	432	457	406	610	660	787
WE	Weight	lbs	66	70.4	74.8	125.4	259.6	488.4	778.8	1243	1526.8	2026.2	2369.4	3768.6	7106
		Kg	30	32	34	57	118	222	354	565	694	921	1077	1713	3230
RF or RTJ	Weight	lbs	83.6	96.8	107.8	200.2	420.2	717.2	1133	1672	2024	3179	3737.8	5601.2	8296.2
		Kg	38	44	49	91	191	326	515	760	920	1445	1699	2546	3771
Cv	Flow coefficient		101	162	237	433	971	1715	2675	3749	4540	6022	7609	8647	12759

WALWORTH PRESSURE SEAL TILTING DISC CHECK VALVES CLASS 900

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Tilting type disc.
- 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
5353PSTDWE	5353PSTDWE	Buttweld
5353PSTDRF	5353PSTDF	Flanged raised face
5353PSTDRTJ	5353PSTDRJ	Flanged ring type joint



Dimensions and Weights

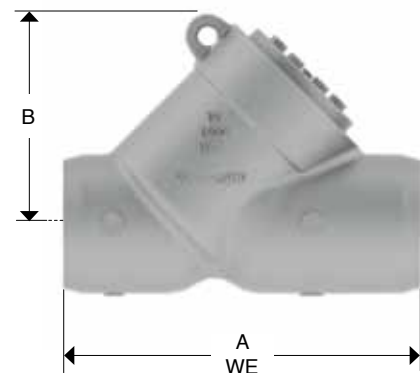
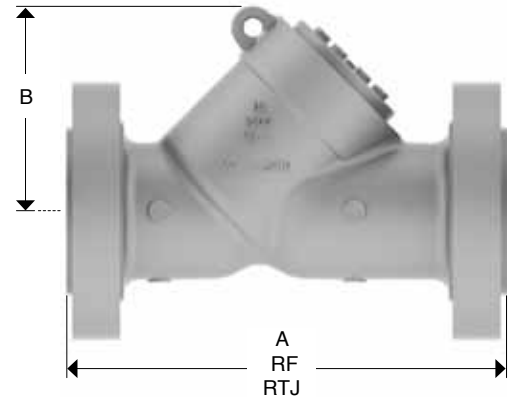
D Nominal diameter		in	2	2.5	3	4	6	8	10	12	14	16	18	20	24
		mm	51	63	76	102	152	203	254	305	356	406	457	508	607
A	End to end WE	in	10	10	12	14	20	26	31	36	39	43	48	52	61
		mm	254	254	305	356	508	660	787	914	991	1092	1219	1321	1549
A	Face to face RF	in	14.5	16.5	15	18	24	29	33	38	40.5	44.5	48	52	61
		mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
A	Face to face RTJ	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.5	52.5	61.75
		mm	371	422	384	460	613	740	841	968	1038	1140	1232	1334	1568
B	Center to top (open)	in	8	8	8	9	11	14	16	18	20	22	25	29	33
		mm	203	203	203	229	279	356	406	457	508	559	635	737	838
WE	Weight	lbs	77	85.8	90.2	154	369.6	684.2	1234.2	1777.6	2244	3322	4268	4378	7293
		Kg	35	39	41	70	168	311	561	808	1020	1510	1940	1990	3315
RF or RTJ	Weight	lbs	121	147.4	162.8	259.6	589.6	1027.4	1722.6	2428.8	2684	4620	6138	6914.6	11442.2
		Kg	55	67	74	118	268	467	783	1104	1220	2100	2790	3143	5201
Cv	Flow coefficient		101	162	209	391	889	1547	2163	3088	3771	4979	6363	7924	10026

WALWORTH PRESSURE SEAL TILTING DISC CHECK VALVES CLASS 1500

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Tilting type disc.
- 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
5356PSTDWE	5356PSTDWE	Buttweld
5356PSTDRF	5356PSTDF	Flanged raised face
5356PSTDRTJ	5356PSTDRJ	Flanged ring type joint



Dimensions and Weights

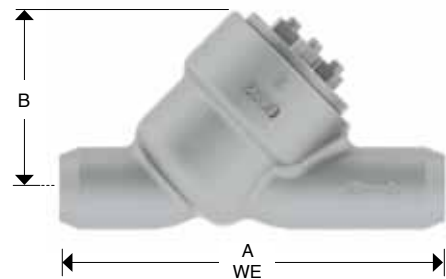
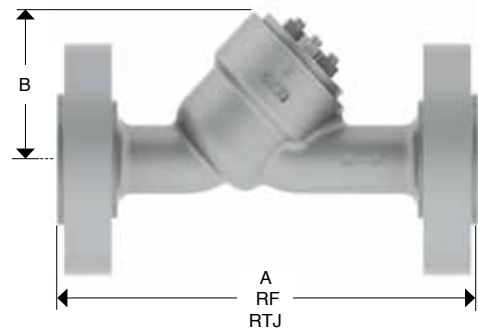
D Nominal diameter	in	2	2.5	3	4	6	8	10	12	14	16	18	20	24	
	mm	51	63	76	102	152	203	254	305	356	406	457	508	607	
A	End to end WE	in	8.5	10	12	16	22	28	34	39	42	47	52	56	58
		mm	216	254	305	406	559	711	864	991	1067	1194	1321	1422	1473
A	Face to face RF	in	14.5	16.5	18.5	21.5	27.75	32.75	39	44.5	49.5	54.5	60.5	65.5	76.5
		mm	368	419	470	546	705	832	991	1130	1257	1384	1537	1664	1943
A	Face to face RTJ	in	14.62	16.62	18.62	21.62	28	33.13	39.38	45.12	50.25	55.38	61.38	66.38	77.62
		mm	371	422	473	549	711	842	1000	1146	1276	1407	1559	1686	1972
B	Center to top (open)	in	8	8	8	9	11	14	16	19	21	23	26	30	35
		mm	203	203	203	229	279	356	406	483	533	584	660	762	889
WE	Weight	lbs	79.2	85.8	90.2	160.6	380.6	719.4	1379.4	1973.4	2277	2640	3058	4378	6820
		Kg	36	39	41	73	173	327	627	897	1035	1200	1390	1990	3100
RF or RTJ	Weight	lbs	129.8	158.4	187	305.8	710.6	1238.6	2250.6	3306.6	3216.4	5137	6349.2	8472.2	12463
		Kg	59	72	85	139	323	563	1023	1503	1462	2335	2886	3851	5665
Cv	Flow coefficient		113	181	233	435	988	1719	2404	3432	4190	5533	7071	8805	11140

WALWORTH PRESSURE SEAL TILTING DISC CHECK VALVES CLASS 2500

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Tilting type disc.
- End to end dimensions as per ASME B16.10.
- Flange dimensions as per ASME B16.5.
- Weld end dimensions as per ASME B16.25.

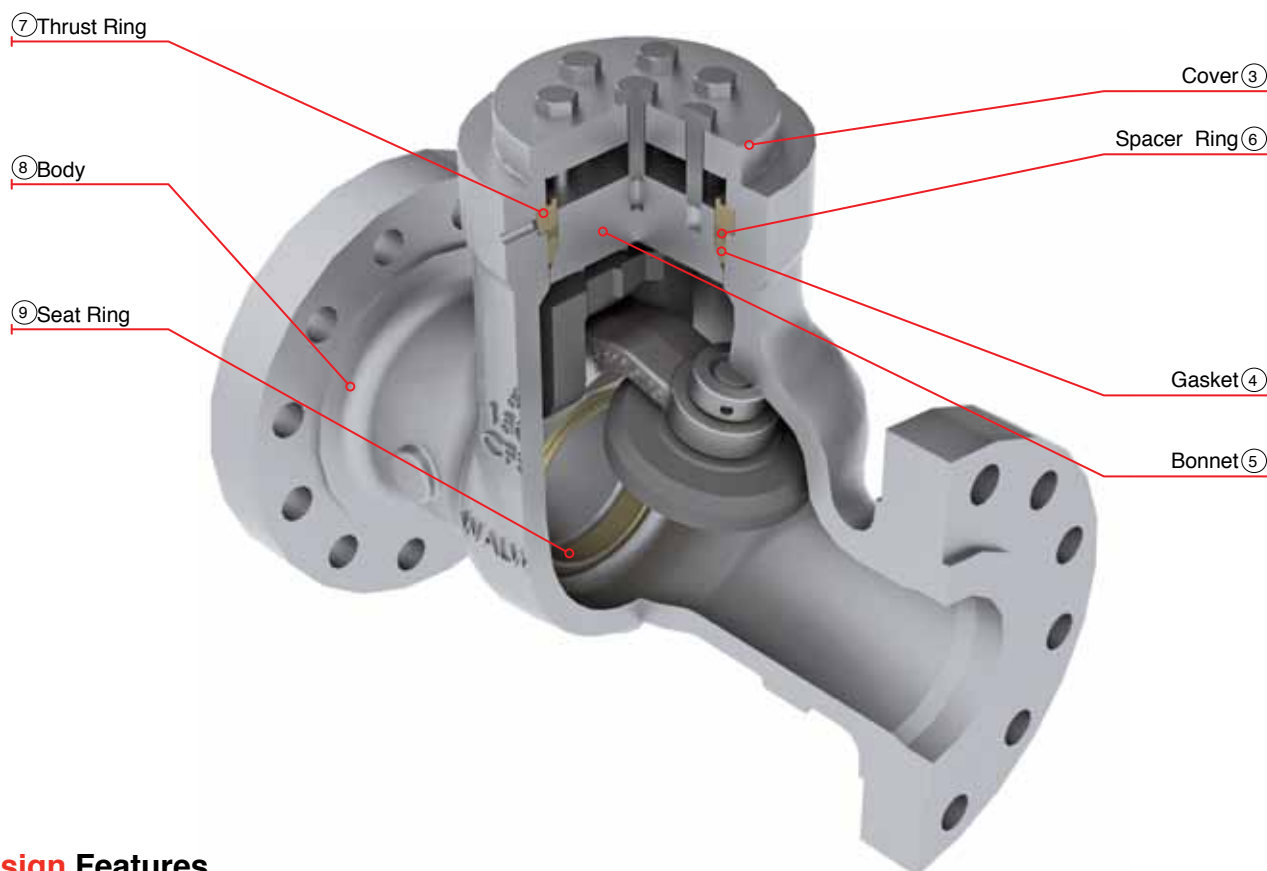
Catalog figure No.	ID plant figure No.	Type of ends
5566PSTDWE	5566PSTDWE	Buttweld
5566PSTDRF	5566PSTDF	Flanged raised face
5566PSTDRTJ	5566PSTDRJ	Flanged ring type joint



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	48	53	56	58
		mm	279	330	368	457	610	762	914	1041	1118	1219	1346	1422	1473
A	Face to face RF	in	8.5	8.5	8.5	11.5	13	16	18	21	23.5	26	29	32	36
		mm	216	216	216	292	330	406	457	533	597	660	737	813	914
A	Face to face RTJ	in	110	118.8	125.4	189.2	479.6	829.4	1399.2	2316.6	2873.2	4510	5011.6	5108.4	11880
		mm	50	54	57	86	218	377	636	1053	1306	2050	2278	2322	5400
B	Center to top (open)	in	101	125	125	208	501	889	1441	2069	2534	2940	3771	4617	6791
		mm	191	191	191	216	241	305	381	432	457	406	610	660	787
WE	Weight	lbs	110	119	125	189	480	830	1400	2317	PCR	PCR	PCR	PCR	PCR
		Kg	50	54	57	86	218	377	636	1053	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	187	229	290	442	900	1474	2367	4165	PCR	PCR	PCR	PCR	PCR
		Kg	85	104	132	201	409	670	1076	1893	PCR	PCR	PCR	PCR	PCR
Cv	Flow coefficient		101	162	237	433	971	1715	2675	3749	4540	6022	7609	8647	12759

WALWORTH PRESSURE SEAL SWING CHECK VALVES

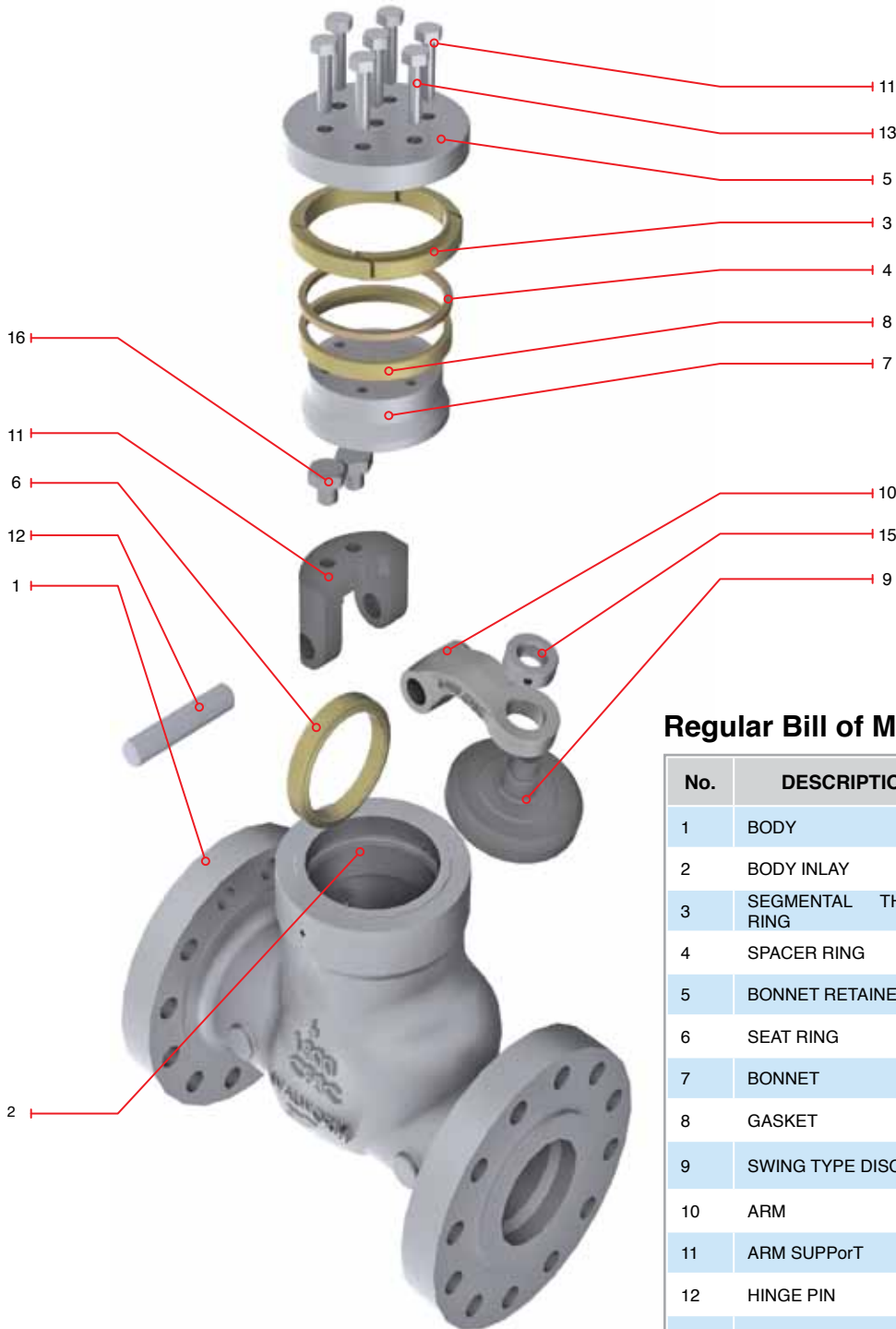


Design Features

- ① Design in accordance with ASME B16.34.
- ② Designed to close quickly and quietly.
- ③ Cover retainer is used to help by tightening the retainer bolt/nuts to seal bonnet-bonnet gasket against body inlay.
- ④ Pressure seal gasket made from soft carbon steel (silver plated) 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.
- ⑤ 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 system.
- ⑥ 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.
- ⑦ Spacer ring prevent deformation when pressures push the complete set bonnet-gasket against segmented thrust ring.
- ⑧ 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 a better seal and increase life of sealing area due provided corrosion resistance.
- ⑨ Seat ring with stellite 6 overlay for better sealing service provide wear, abrasion and erosion resistance. Seat ring is welded to the body to provide tight joint.
- ⑩ Sealing areas of the disc with stellite 6 overlay for better operation service. Other sealing surfaces materials can be provided upon request.
- ⑪ Damper and counterweight options also available as per Customer request.
- ⑫ Test in accordance with API-598.
- ⑬ Caution: install this valve in a horizontal position only. Contact Walworth for other installation orientations.

WALWORTH PRESSURE SEAL SWING CHECK VALVES

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



Regular Bill of Materials

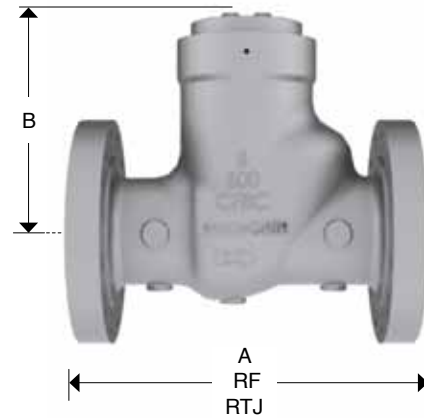
No.	DESCRIPTION	316 STAINLESS STEEL
1	BODY	ASTM A351 GR. CF8M
2	BODY INLAY	INTEGRAL
3	SEGMENTAL THRUST RING	AISI 316
4	SPACER RING	AISI 316
5	BONNET RETAINER	ASTM A-515 GR. 70
6	SEAT RING	INTEGRAL
7	BONNET	ASTM A-351 GR. CF8M
8	GASKET	ASTM A-182 GR. F316
9	SWING TYPE DISC	ASTM A-351 GR. CF8M Co-Cr-W OVERLAY
10	ARM	ASTM A351 GR. CF8M
11	ARM SUPPORt	ASTM A351 GR. CF8M
12	HINGE PIN	ASTM A276 GR 316
13	BONNET STUD	ASTM A-193 GR. B8 CLASS 2
14	BONNET NUT	ASTM A-194 GR. 8
15	DISC NUT	ASTM A-276 GR. 316
16	HEX SCREW	ASTM A-276 GR. 316

WALWORTH PRESSURE SEAL SWING CHECK VALVES CLASS 600

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Swing type disc.
- 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
5350PSSCWE	5350PSSCWE	Buttweld
5350PSSCRF	5350PSSCF	Flanged raised face
5350PSSCRTJ	5350PSSCRJ	Flanged ring type joint



Dimensions and Weights

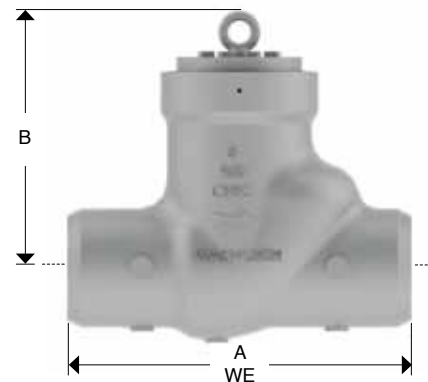
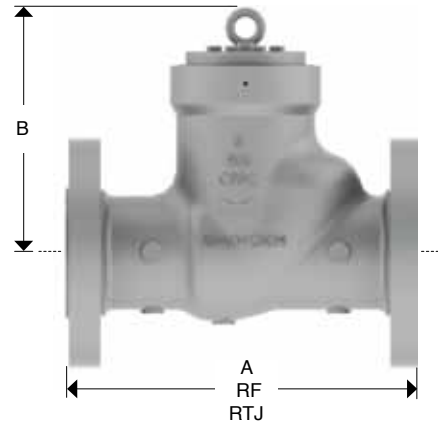
D Nominal diameter		in	2	2.5	3	4	6	8	10	12	14	16	18	20	24
		mm	51	63	76	102	152	203	254	305	356	406	457	508	607
A	End to end WE	in	8.5	8.5	10	12	18	23	28	32	35	39	43	47	55
		mm	216	216	254	305	457	584	711	813	889	991	1092	1194	1397
A	Face to face RF	in	11.5	13	14	17	22	26	31	33	35	39	43	47	55
		mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397
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	43.12	47.25	55.38
		mm	295	333	359	435	562	663	790	841	892	994	1095	1200	1407
B	Center to top (open)	in	7.5	7.5	7.5	8.5	9.5	12	15	17	18	16	24	26	31
		mm	191	191	191	216	241	305	381	432	457	406	610	660	787
WE	Weight	lbs	68	73	77	130	271	508	810	1294	PCR	PCR	PCR	PCR	PCR
		Kg	31	33	35	59	123	231	368	588	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	86	99	110	205	431	737	1164	1723	PCR	PCR	PCR	PCR	PCR
		Kg	39	45	50	93	196	335	529	783	PCR	PCR	PCR	PCR	PCR
Cv	Flow coefficient		106	170	248	454	1019	1800	2808	3936	4767	6323	7989	9079	13396

WALWORTH PRESSURE SEAL SWING CHECK VALVES CLASS 900

Catalog figure No.	ID plant figure No.	Type of ends
5353PSSCWE	5353PSSCWE	Buttweld
5353PSSCRF	5353PSSCF	Flanged raised face
5353PSSCRTJ	5353PSSCRJ	Flanged ring type joint

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Swing type disc.
- End to end dimensions as per ASME B16.10.
- Flange dimensions as per ASME B16.5.
- Weld end dimensions as per ASME B16.25.



Dimensions and Weights

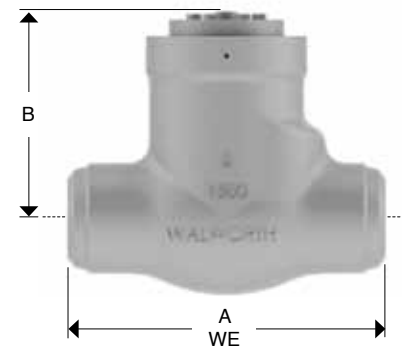
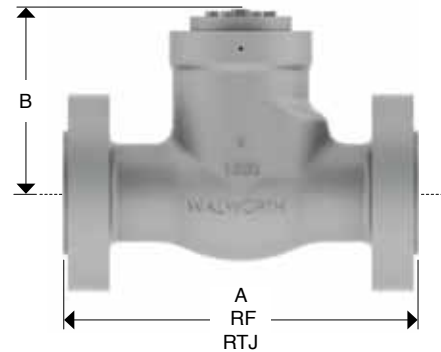
D Nominal diameter		in	2	2.5	3	4	6	8	10	12	14	16	18	20	24
		mm	51	63	76	102	152	203	254	305	356	406	457	508	607
A	End to end WE	in	10	10	12	14	20	26	31	36	39	43	48	52	61
		mm	254	254	305	356	508	660	787	914	991	1092	1219	1321	1549
A	Face to face RF	in	14.5	16.5	15	18	24	29	33	38	40.5	44.5	48	52	61
		mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
A	Face to face RTJ	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.5	52.5	61.75
		mm	371	422	384	460	613	740	841	968	1038	1140	1232	1334	1568
B	Center to top (open)	in	8	8	8	9	11	14	16	18	20	22	25	29	33
		mm	203	203	203	229	279	356	406	457	508	559	635	737	838
WE	Weight	lbs	79	90	95	161	385	711	1283	1848	PCR	PCR	PCR	PCR	PCR
		Kg	36	41	43	73	175	323	583	840	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	123	152	167	266	605	1054	1771	2499	PCR	PCR	PCR	PCR	PCR
		Kg	56	69	76	121	275	479	805	1136	PCR	PCR	PCR	PCR	PCR
Cv	Flow coefficient		106	170	219	410	933	1624	2271	3242	3959	5227	6681	8320	10527

WALWORTH PRESSURE SEAL SWING CHECK VALVES CLASS 1500

Catalog figure No.	ID plant figure No.	Type of ends
5356PSSCWE	5356PSSCWE	Buttweld
5356PSSCRF	5356PSSCF	Flanged raised face
5356PSSCRTJ	5356PSSCRJ	Flanged ring type joint

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Swing type disc.
- End to end dimensions as per ASME B16.10.
- Flange dimensions as per ASME B16.5.
- Weld end dimensions as per ASME B16.25.



Dimensions and Weights

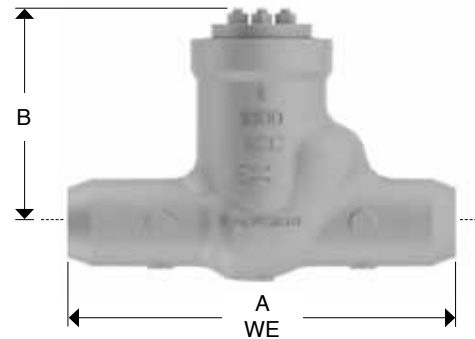
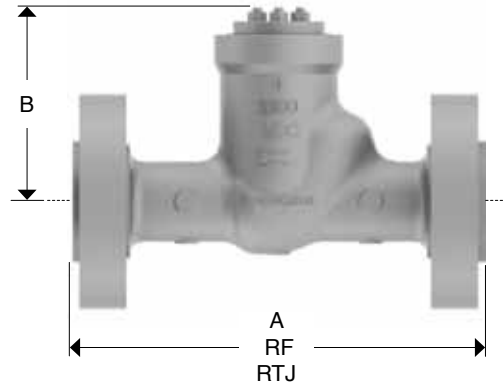
D Nominal diameter		in	2	2.5	3	4	6	8	10	12	14	16	18	20	24
		mm	51	63	76	102	152	203	254	305	356	406	457	508	607
A	End to end WE	in	8.5	10	12	16	22	28	34	39	42	47	52	56	58
		mm	216	254	305	406	559	711	864	991	1067	1194	1321	1422	1473
A	Face to face RF	in	14.5	16.5	18.5	21.5	27.75	32.75	39	44.5	49.5	54.5	60.5	65.5	76.5
		mm	368	419	470	546	705	832	991	1130	1257	1384	1537	1664	1943
A	Face to face RTJ	in	14.62	16.62	18.62	21.62	28	33.13	39.38	45.12	50.25	55.38	61.38	66.38	77.62
		mm	371	422	473	549	711	842	1000	1146	1276	1407	1559	1686	1972
B	Center to top (open)	in	8	8	8	9	11	14	16	19	21	23	26	30	35
		mm	203	203	203	229	279	356	406	483	533	584	660	762	889
WE	Weight	lbs	81	90	95	167	396	748	1434	2053	PCR	PCR	PCR	PCR	PCR
		Kg	37	41	43	76	180	340	652	933	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	130	163	189	312	726	1267	2306	3386	PCR	PCR	PCR	PCR	PCR
		Kg	59	74	86	142	330	576	1048	1539	PCR	PCR	PCR	PCR	PCR
Cv	Flow coefficient		118	181	244	456	1037	1804	2524	3603	4399	5809	7424	9245	11697

WALWORTH PRESSURE SEAL SWING CHECK VALVES CLASS 2500

Catalog figure No.	ID plant figure No.	Type of ends
5566PSSCWE	5566PSSCWE	Buttweld
5566PSSCRF	5566PSSCF	Flanged raised face
5566PSSCRTJ	5566PSSCRJ	Flanged ring type joint

Design Features

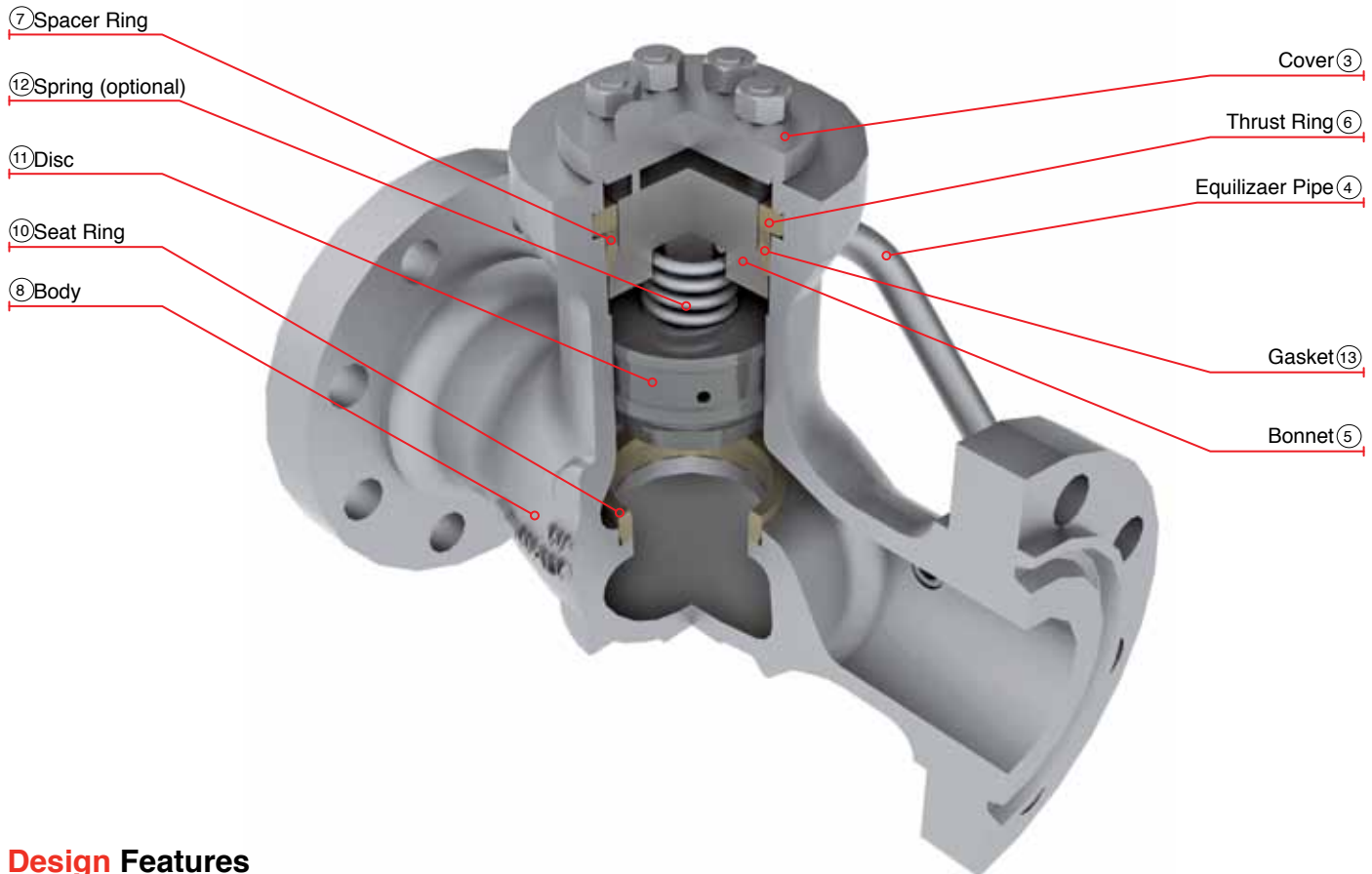
- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Swing type disc.
- End to end dimensions as per ASME B16.10.
- Flange dimensions as per ASME B16.5.
- Weld end dimensions as per ASME B16.25.



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	48	53	56	58
		mm	279	330	368	457	610	762	914	1041	1118	1219	1346	1422	1473
A	Face to face RF	in	8.5	8.5	8.5	11.5	13	16	18	21	23.5	26	29	32	36
		mm	216	216	216	292	330	406	457	533	597	660	737	813	914
A	Face to face RTJ	in	110	118.8	125.4	189.2	479.6	829.4	1399.2	2316.6	2873.2	4510	5011.6	5108.4	11880
		mm	50	54	57	86	218	377	636	1053	1306	2050	2278	2322	5400
B	Center to top (open)	in	106	131	131	218	526	933	1513	2172	2660	3087	3959	4847	7130
		mm	191	191	191	216	241	305	381	432	457	406	610	660	787
WE	Weight	lbs	114	123	130	196	499	862	1454	2409	PCR	PCR	PCR	PCR	PCR
		Kg	52	56	59	89	227	392	661	1095	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	191	233	295	449	920	1507	2422	4257	PCR	PCR	PCR	PCR	PCR
		Kg	87	106	134	204	418	685	1101	1935	PCR	PCR	PCR	PCR	PCR
Cv	Flow coefficient		101	162	237	433	971	1715	2675	3749	4540	6022	7609	8647	12759

WALWORTH PRESSURE SEAL LIFT CHECK VALVES

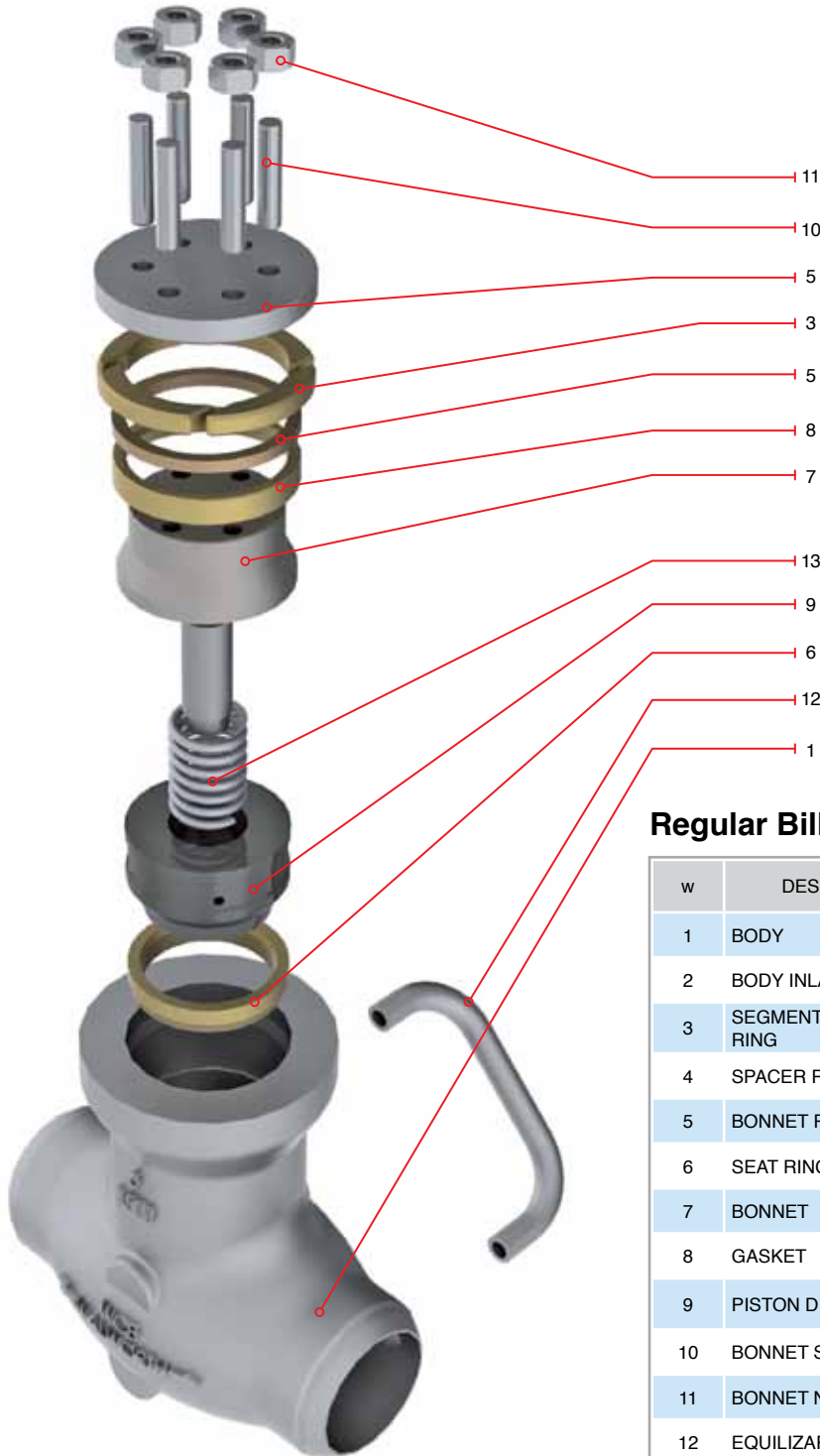


Design Features

- ① Design in accordance with ASME B16.34.
- ② Designed to close quickly and quietly. It minimize damage due slamming or noise due vibration caused due high velocity reverse flow before completion of closing.
- ③ Cover retainer is used to help by tightening the retainer bolt/nuts to seal bonnet-bonnet gasket against body inlay.
- ④ Pressure seal gasket made from soft carbon steel (silver plated) 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.
- ⑤ 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 system.
- ⑥ 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.
- ⑦ Spacer ring prevent deformation when pressures push the complete set bonnet-gasket against segmented thrust ring.
- ⑧ 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 a better seal and increase life of sealing area due provided corrosion resistance.
- ⑨ Body guide ribs hardfaced on some sizes of globe, stop check and angle globe patterns provide body guiding for disc or piston assemblies.
- ⑩ Seat ring with stellite 6 overlay for better sealing service provide wear, abrasion and erosion resistance. Seat ring is welded to the body to provide tight joint.
- ⑪ Body guided plug disc designed to avoid vibration and/or misalignment during opening or closing. Sealing areas of the disc with stellite 6 overlay for better operation service. Other sealing surfaces materials can be provided upon request.
- ⑫ Valve can be provided with spring as per Customer request.
- ⑬ Equilizer Pipe as per Customer Request
- ⑭ Damper and counterweight options also available as per Customer request.
- ⑮ Piston Check valve works also to offer protection in case of back flow due lost of pressure.
- ⑯ Valve suitable for horizontal or vertical position (when spring is requested).
- ⑰ Test in accordance with API-598.

WALWORTH PRESSURE SEAL LIFT CHECK VALVES

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



Regular Bill of Materials

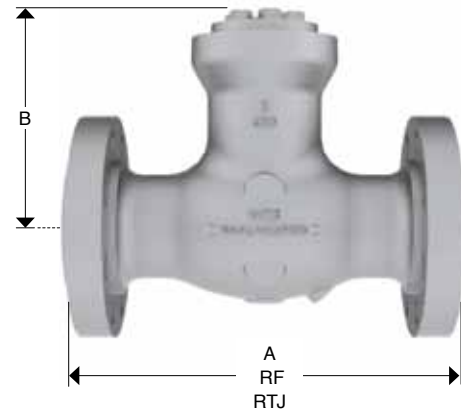
w	DESCRIPTION	347 STAINLESS STEEL
1	BODY	ASTM A351 GR. CF8C
2	BODY INLAY	INTEGRAL (not shown)
3	SEGMENTAL THRUST RING	AISI 316
4	SPACER RING	AISI 316
5	BONNET RETAINER	ASTM A-515 GR. 70
6	SEAT RING	INTEGRAL
7	BONNET	ASTM A-351 GR. CF8C
8	GASKET	ASTM A-182 GR. F347
9	PISTON DISC	ASTM A-351 GR. CF8C Co-Cr-W OVERLAY
10	BONNET STUD	ASTM A-193 GR. B8 CLASS 2
11	BONNET NUT	ASTM A-194 GR. 8
12	EQUILIZAR PIPE	AISI-347
13	SPRING	AS PER CUSTOMER REQUEST

WALWORTH PRESSURE SEAL LIFT CHECK VALVES CLASS 600

Catalog figure No.	ID plant figure No.	Type of ends
5860PSPCWE	5860PSPCWE	Buttweld
5860PSPCRF	5350PSPCF	Flanged raised face
5860PSPCRTJ	5350PSPCRJ	Flanged ring type joint

Design Features

- Design in accordance with ASME B16.34.
- WE short pattern; RF & RTJ long pattern as per ASME B16.10.
- Piston type disc.
- End to end dimensions as per ASME B16.10.
- Flange dimensions as per ASME B16.5.
- Weld end dimensions as per ASME B16.25.



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	8.5	8.5	10	12	18	23	28	32	35	39	43	47	55
		mm	216	216	254	305	457	584	711	813	889	991	1092	1194	1397
A	Face to face RF	in	11.5	13	14	17	22	26	31	33	35	39	43	47	55
		mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397
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	43.12	47.25	55.38
		mm	295	333	359	435	562	663	790	841	892	994	1095	1200	1407
B	Center to top (open)	in	7.5	7.5	7.5	8.5	9.5	12	15	17	18	16	24	26	31
		mm	191	191	191	216	241	305	381	432	457	406	610	660	787
WE	Weight	lbs	73	77	81	139	286	537	856	1368	PCR	PCR	PCR	PCR	PCR
		Kg	33	35	37	63	130	244	389	622	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	90	103	114	213	447	766	1210	1797	PCR	PCR	PCR	PCR	PCR
		Kg	41	47	52	97	203	348	550	817	PCR	PCR	PCR	PCR	PCR
Cv	Flow coefficient		49.5	78.3	114.3	208.8	427.5	754.2	1174.5	1731.6	2096.1	PCR	PCR	PCR	PCR

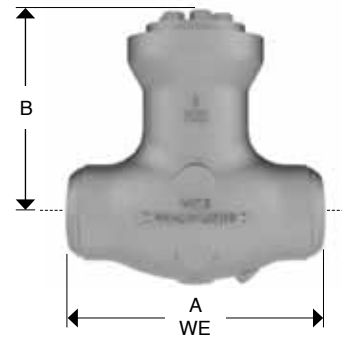
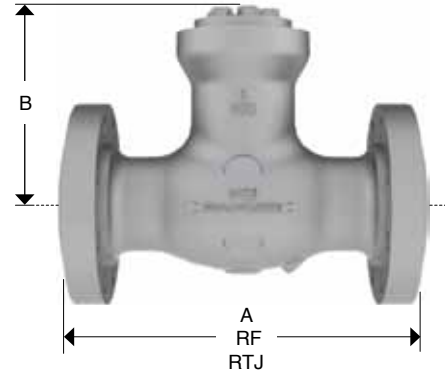
PCR = Per customer request.

WALWORTH PRESSURE SEAL LIFT CHECK VALVES CLASS 900

Catalog figure No.	ID plant figure No.	Type of ends
5540PSPCWE	5540PSPCWE	Buttweld
5540PSPCRF	5540PSPCF	Flanged raised face
5540PSPCRTJ	5540PSPCRJ	Flanged ring type joint

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Piston type disc
- End to end dimensions as per ASME B16.10
- Flange dimensions as per ASME B16.5
- Weld end dimensions as per ASME B16.25



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	10	10	12	14	20	26	31	36	39	43	48	52	61
		mm	254	254	305	356	508	660	787	914	991	1092	1219	1321	1549
A	Face to face RF	in	14.5	16.5	15	18	24	29	33	38	40.5	44.5	48	52	61
		mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
A	Face to face RTJ	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.5	52.5	61.75
		mm	371	422	384	460	613	740	841	968	1038	1140	1232	1334	1568
B	Center to top (open)	in	8	8	8	9	11	14	16	18	20	22	25	29	33
		mm	203	203	203	229	279	356	406	457	508	559	635	737	838
WE	Weight	lbs	86	95	99	169	407	752	1357	1956	PCR	PCR	PCR	PCR	PCR
		Kg	39	43	45	77	185	342	617	889	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	130	156	172	275	627	1096	1846	2607	PCR	PCR	PCR	PCR	PCR
		Kg	59	71	78	125	285	498	839	1185	PCR	PCR	PCR	PCR	PCR
Cv	Flow coefficient		41	63	93	173	392	681	1084	1548	1890	PCR	PCR	PCR	PCR

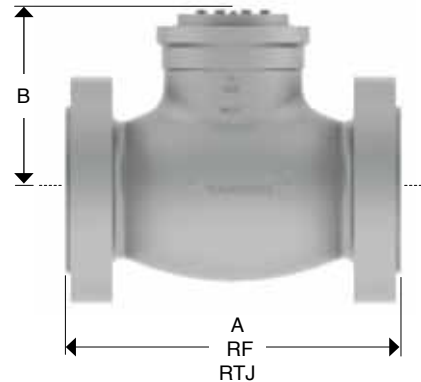
PCR = Per customer request

WALWORTH PRESSURE SEAL LIFT CHECK VALVES CLASS 1500

Catalog figure No.	ID plant figure No.	Type of ends
5541PSPCWE	5541PSPCWE	Buttweld
5541PSPCRF	5541PSPCF	Flanged raised face
5541PSPCRTJ	5541PSPCRJ	Flanged ring type joint

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Piston type disc
- End to end dimensions as per ASME B16.10
- Flange dimensions as per ASME B16.5
- Weld end dimensions as per ASME B16.25



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	8.5	10	12	16	22	28	34	39	42	47	52	56	58
		mm	216	254	305	406	559	711	864	991	1067	1194	1321	1422	1473
A	Face to face RF	in	14.5	16.5	18.5	21.5	27.75	32.75	39	44.5	49.5	54.5	60.5	65.5	76.5
		mm	368	419	470	546	705	832	991	1130	1257	1384	1537	1664	1943
A	Face to face RTJ	in	14.62	16.62	18.62	21.62	28	33.13	39.38	45.12	50.25	55.38	61.38	66.38	77.62
		mm	371	422	473	549	711	842	1000	1146	1276	1407	1559	1686	1972
B	Center to top (open)	in	8	8	8	9	11	14	16	19	21	23	26	30	35
		mm	203	203	203	229	279	356	406	483	533	584	660	762	889
WE	Weight	lbs	88	95	99	176	418	792	1518	2171	PCR	PCR	PCR	PCR	PCR
		Kg	40	43	45	80	190	360	690	987	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	139	167	189	321	748	1289	2389	3505	PCR	PCR	PCR	PCR	PCR
		Kg	63	76	86	146	340	586	1086	1593	PCR	PCR	PCR	PCR	PCR
Cv	Flow coefficient		41	59	85	151	342	589	938	1339	PCR	PCR	PCR	PCR	PCR

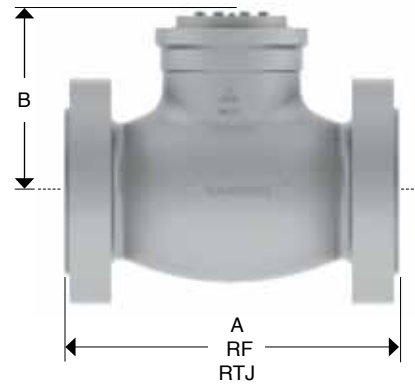
PCR = Per customer request

WALWORTH PRESSURE SEAL LIFT CHECK VALVES CLASS 2500

Design Features

- Design in accordance with ASME B16.34
- WE short pattern; RF & RTJ long pattern as per ASME B16.10
- Piston type disc
- 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
5542PSPCWE	5542PSPCWE	Buttweld
5542PSPCRF	5542PSPCF	Flanged raised face
5542PSPCRTJ	5542PSPCRJ	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	48	53	56	58
		mm	279	330	368	457	610	762	914	1041	1118	1219	1346	1422	1473
A	Face to face RTJ	in	11.125	13.125	14.625	18.125	24.125	30.125	36.125	41.125	PCR	PCR	PCR	PCR	PCR
		mm	283	333	371	460	613	765	918	1045	PCR	PCR	PCR	PCR	PCR
B	Center to top (open)	in	8.5	8.5	8.5	11.5	13	16	18	21	23.5	26	29	32	36
		mm	216	216	216	292	330	406	457	533	597	660	737	813	914
WE	Weight	lbs	121	130	139	209	528	913	1540	2548	PCR	PCR	PCR	PCR	PCR
		Kg	55	59	63	95	240	415	700	1158	PCR	PCR	PCR	PCR	PCR
RF or RTJ	Weight	lbs	198	240	304	462	948	1558	2508	4396	PCR	PCR	PCR	PCR	PCR
		Kg	90	109	138	210	431	708	1140	1998	PCR	PCR	PCR	PCR	PCR
Cv	Flow Coefficient		101	162	237	433	971	1715	2675	3749	4540	6022	7609	8647	12759

PCR = Per customer request

TECHNICAL INFORMATION

TYPE OF OPERATIONS

The WALWORTH standard cast steel pressure seal product line includes many different valves designed to meet most applications.

Special adaptations can be made to meet specific customer requirements. Valves can be supplied with manual handwheel/gear operation, chain wheel, as well as electric, pneumatic and hydraulic actuators.

This makes it possible for WALWORTH to furnish valves adapted to the customers special needs such as controlled opening/closing and remote installation.

Valves can also be supplied with a bypass, drain or vent connection, stem extension, position indicators, floor stand mounting as well as a lever and weight system for swing check valves.

Gear Operators

A manual gear operator is designed with a bevel gear and pinion ratio sized to transmit the required opening/closing torque with normal operator effort on the handwheel. They can be supplied as waterproof units and/or for underground installation with a square operating nut.



Chain Wheel Operation

Chain Wheels are designed for operating valves installed in remote or inaccessible locations. They can be furnished with roller guides to prevent the chain from jumping off the wheel. Impact type chain wheels are also available to assist in unseating a tightly closed valve



Actuators

Valves can be furnished with either electric, pneumatic or hydraulic actuators. The actuators can be furnished as either waterproof and/or explosion proof. The customer must specify such things as open-close speed, maximum differential pressure, service temperature, type of voltage-phase-frequency, air or gas pressure for pneumatic actuators and flow characteristics for hydraulic actuators to be assured of correct performance.

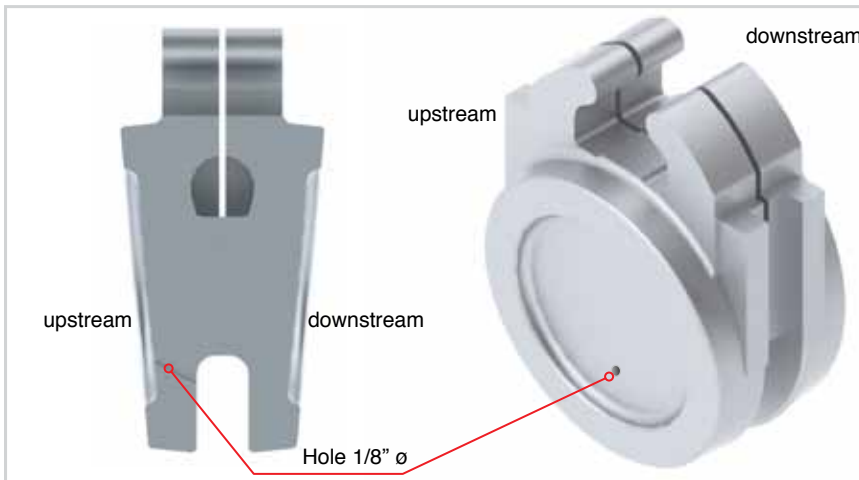


TECHNICAL INFORMATION

RELIEVE PRESSURE ACCESORIES

Excessive pressure trapped in body center cavity of standard pressure seal gate valves can produce overpressure in this area which make difficult or impossible to open the valve. An equilizer system either internal (equilizer hole or groove) or external (equilizer pipe, relieve valve, drain), may release overpressure to another specific pipe system. In case of globe or check valves, these pressure release fixtures are used also to bypass fluid from the center of the body to another specific area.

In the case of Gate Valves with parallel slide disc or inclusive wedge style (when Customer request a valve to be able to seal simultaneously in both directions), these valves are designed to seal against a differential pressure in between central cavity of the body and pipe in both directions. However, there is a physical phenomena when the valve is in closed position and then heated; pressure entrapped will overpressurize the body cavity. This is dangerous and can result in failure of the valve. ASME B16.34 (p. 2.3.3) and ASME B31.1 (p. 107.1) request that process plant designer have to ensure not exceed the rated pressure-temperature. For this, shall be specified by purchaser an equilizer system (either internal or external) to relieve overpressurized fluid to upstream or a relieve valve which can release overpressure to some other piping system. When an equilizer system or a relieve valve is used, valve becomes from bi-directional to unidirectional design and service.



Equilizer hole.- A hole drilled of 1/8" diameter or a groove 1/8" wide and deep is located in the upstream seat area of the disc wedge or parallel slide disc to equilibize pressure.

Drains or Vents.- WALWORTH valves can be supplied upon request with drains and / or vents. WALWORTH design is made with pipe and forge valve socket welded to the body. However, Customer can request specific design to fit their needs.



TECHNICAL INFORMATION



By-Pass valve.- Single by-pass valves can be connected from center cavity of the body to downstream side of the valve to equalize pressure.

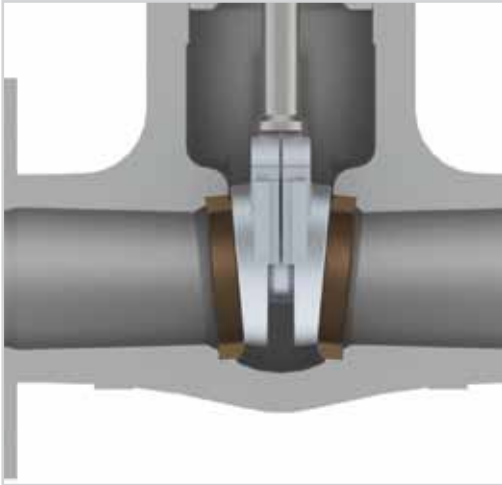
Equalizer pipe.- An external equalizer pipe can be supplied to connect bonnet cavity to downstream side of the valve.



Double By-Pass.- As per Customer requirements, WALWORTH gate valves can be manufactured with double By-Pass to permit deviate pressure from upstream to downstream side or from body cavity to downstream side of the valve.

TECHNICAL INFORMATION

WEDGE / DISC STYLES



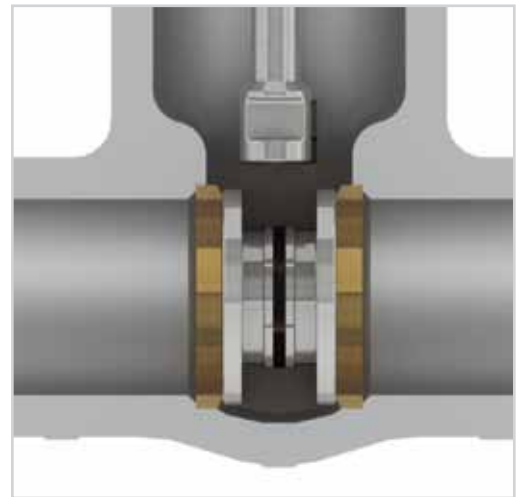
SOLID WEDGE.- Standard valves are designed with solid rigid wedge, but when pressure and temperature is involve, the rigidity of the wedge promote leak or bind in closed position.

The WALWORTH standard gate valve is designed with flexible wedge to help set seat rings-wedge to seal easily in closed position absorbing dimensional changes due pressure or temperature operation and avoid stuck wedge.

Flexible wedge is also suitable to avoid stuck wedge due their flexibility.

PARALLEL SLIDE DISC.- For applications where temperature involved may expand the stem and cause disc binding, parallel slide disc is recommended because the design use the fluid upstream to assist sealing downstream side of the valve.

During closing operation, close tolerances and guides design permit disc sliding smoothly against the seat rings to avoid wearing or seal areas damage. Stellite seal overalys on sealing areas are recommended for the majority of applications for pressure seal valves, except nuclear plants or those where Co is prohibited.



One or more Springs located in the center of the disc keep tight sealing in between disc and seat rings as per forces calculated; but also permit auto alignment due vibrations or dimensional changes because temperature or prressure.

T slot shape helps to align stem at the center of the valve.

PRESSURE-TEMPERATURE RATINGS

CAST STEEL ASTM A 216 GR WCB

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK Working PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1500	2500
-20 to 100	-29 to 38	285	740	1,480	2,220	3,705	6,170
200	93	260	680	1,360	2,035	3,395	5,655
300	149	230	655	1,310	1,965	3,270	5,450
400	204	200	635	1,265	1,900	3,170	5,280
500	260	170	605	1,205	1,810	3,015	5,025
600	316	140	570	1,135	1,705	2,840	4,730
650	343	125	550	1,100	1,650	2,745	4,575
700	371	110	530	1,060	1,590	2,665	4,425
750	399	95	505	1,015	1,520	2,535	4,230
800	427	80	410	825	1,235	2,055	3,430
850	454	65	320	640	955	1,595	2,655
900	482	50	230	460	690	1,150	1,915
950	510	35	135	275	410	685	1,145
1,000	538	20	85	170	255	430	715

Note: Upon prolonged exposure to temperatures above 800°F, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800°F.

CAST STEEL ASTM A 217 GR WC6

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK Working PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1500	2500
-20 to 100	-29 to 38	290	750	1,500	2,250	3,750	6,250
200	93	260	750	1,500	2,250	3,750	6,250
300	149	230	720	1,445	2,165	3,610	6,015
400	204	200	695	1,385	2,080	3,465	5,775
500	260	170	665	1,330	1,995	3,325	5,540
600	316	140	605	1,210	1,815	3,025	5,040
650	343	125	590	1,175	1,765	2,940	4,905
700	371	110	570	1,135	1,705	2,840	4,730
750	399	95	530	1,065	1,595	2,660	4,430
800	427	80	510	1,015	1,525	2,540	4,230
850	454	65	485	975	1,460	2,435	4,060
900	482	50	450	900	1,350	2,245	3,745
950	510	35	320	640	955	1,595	2,655
1,000	538	20	215	430	650	1,080	1,800
1,050	566	20(a)	145	290	430	720	1,200
1,100	593	20(a)	95	190	290	480	800
1,150	621	20(a)	65	130	195	325	545
1,200	649	15(a)	40	80	125	205	345

(a) Flanged-end valve ratings terminate at 1,000°F (538°C).

PRESSURE-TEMPERATURE RATINGS

CAST STEEL ASTM A 217 GR WC9

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1500	2500
-20 a 100	-29 a 38	290	750	1,500	2,250	3,750	6,250
200	93	260	750	1,500	2,250	3,750	6,250
300	149	230	730	1,455	2,185	3,640	6,070
400	204	200	705	1,410	2,115	3,530	5,880
500	260	170	665	1,330	1,995	3,325	5,540
600	316	140	605	1,210	1,815	3,025	5,040
650	343	125	590	1,175	1,765	2,940	4,905
700	371	110	570	1,135	1,705	2,840	4,730
750	399	95	530	1,065	1,595	2,660	4,430
800	427	80	510	1,015	1,525	2,540	4,230
850	454	65	485	975	1,460	2,435	4,060
900	482	50	450	900	1,350	2,245	3,745
950	510	35	385	755	1,160	1,930	3,220
1,000	538	20	265	535	800	1,335	2,230
1,050	566	20(a)	175	350	525	875	1,455
1,100	593	20(a)	110	220	330	550	915
1,150	621	20(a)	70	135	205	345	570
1,200	649	15(a)	40	80	125	205	345

(a) Flanged-end valve ratings terminate at 1,000°F.

CAST STEEL ASTM A 217 GR C5

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1500	2500
-20 a 100	-29 a 38	290	750	1,500	2,250	3,750	6,250
200	93	260	750	1,500	2,250	3,750	6,250
300	149	230	730	1,455	2,175	3,640	6,070
400	204	200	705	1,410	2,115	3,530	5,880
500	260	170	665	1,330	1,995	3,325	5,540
600	316	140	605	1,210	1,815	3,025	5,040
650	343	125	590	1,175	1,765	2,940	4,905
700	371	110	570	1,135	1,705	2,840	4,730
750	399	95	530	1,065	1,595	2,660	4,430
800	427	80	510	1,015	1,525	2,540	4,230
850	454	65	485	975	1,460	2,435	4,060
900	482	50	375	745	1,120	1,870	3,115
950	510	35	275	550	825	1,370	2,285
1,000	538	20	200	400	595	995	1,655
1,050	566	20(a)	145	290	430	720	1,200
1,100	593	20(a)	100	200	300	495	830
1,150	621	20(a)	60	125	185	310	515
1,200	649	15(a)	35	70	105	170	285

(a) For welding ends valves only. Flanged ends ratings terminate at 1000°F (538°C).

PRESSURE-TEMPERATURE RATINGS

CAST STEEL ASTM A 217 GR C12

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1,500	2500
-20 a 100	-29 a 38	290	750	1,500	2,250	3,750	6,250
200	93	260	750	1,500	2,250	3,750	6,250
300	149	230	730	1,455	2,185	3,640	6,070
300	204	200	705	1,410	2,115	3,530	5,880
500	260	170	665	1,330	1,995	3,325	5,540
600	316	140	605	1,210	1,815	3,025	5,040
650	343	125	590	1,175	1,765	2,940	4,905
700	371	110	570	1,135	1,705	2,840	4,730
700	399	95	530	1,065	1,595	2,660	4,430
800	427	80	510	1,015	1,525	2,540	4,230
850	454	65	485	975	1,460	2,435	4,060
900	482	50	450	900	1,350	2,245	3,745
950	510	35	375	755	1,130	1,885	3,145
1,000	538	20	255	505	760	1,270	2,115
1,050	566	20 (a)	170	345	515	855	1,430
1,100	593	20 (a)	115	225	340	565	945
1,150	621	20 (a)	75	150	225	375	630
1,200	649	20 (a)	50	105	155	255	430

(a) For welding ends valves only. Flanged ends ratings terminate at 1000°F (538°C).

CAST STEEL ASTM A 217 GR C12-A

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1,500	2500
-20 to 100	-29 a 38	290	750	1,500	2,250	3,750	6,250
200	93	260	750	1,500	2,250	3,750	6,250
300	149	230	730	1,455	2,185	3,640	6,070
300	204	200	705	1,410	2,115	3,530	5,880
500	260	170	665	1,330	1,995	3,325	5,540
600	316	140	605	1,210	1,815	3,025	5,040
650	343	125	590	1,175	1,765	2,940	4,905
700	371	110	570	1,135	1,705	2,840	4,730
700	399	95	530	1,065	1,595	2,660	4,430
800	427	80	510	1015	1,525	2,540	4,230
850	454	65	485	975	1,460	2,435	4,060
900	482	50	450	900	1,350	2,245	3,745
950	510	35	385	775	1,160	1,930	3,220
1,000	538	20	365	725	1,090	1,820	3,030
1,050	566	20 (a)	360	720	1,080	1,800	3,000
1,100	593	20 (a)	300	605	905	1,510	2,515
1,150	621	20 (a)	225	445	670	1,115	1,855
1,200	649	20 (a)	145	290	430	720	1,200

(a) For welding ends valves only. Flanged ends ratings terminate at 1000°F (538°C).

PRESSURE-TEMPERATURE RATINGS

CAST STEEL ASTM A 351 GR CF8

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1,500	2500
-20 a 100	-29 a 38	275	720	1,440	2,160	3,600	6,000
200	93	230	600	1,200	1,800	3,000	5,000
300	149	205	540	1,075	1,615	2,690	4,480
400	204	190	495	995	1,490	2,485	4,140
500	260	170	465	930	1,395	2,330	3,880
600	316	140	440	885	1,325	2,210	3,680
650	343	125	430	865	1,295	2,160	3,600
700	371	110	420	845	1,265	2,110	3,520
750	399	95	415	825	1,240	2,065	3,440
800	427	80	405	810	1,215	2,030	3,380
850	454	65	395	790	1,190	1,980	3,300
900	482	50	390	780	1,165	1,945	3,240
950	510	35	380	765	1,145	1,910	3,180
1,000	538	20	355	710	1,065	1,770	2,950
1,050	566	20(a)	325	650	975	1,630	2,715
1,100	593	20(a)	255	515	770	1,285	2,145
1,150	621	20(a)	205	410	615	1,030	1,715
1,200	649	20(a)	165	330	495	825	1,370
1,250	677	20(a)	135	265	400	970	1,115
1,300	704	20(a)	115	225	340	565	945
1,350	732	20(a)	95	185	280	465	770
1,400	760	20(a)	75	150	225	380	630
1,450	788	20(a)	60	115	175	290	485
1,500	816	15(a)	40	85	125	205	345

(a) For welding ends valves only. Flanged ends ratings terminate at 1000°F (538°C).

CAST STEEL ASTM A 351 GR CF8M

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1,500	2500
-20 a 100	-29 a 38	275	720	1,440	2,160	3,600	6,000
200	93	235	620	1,240	1,860	3,095	5,160
300	149	215	560	1,120	1,680	2,795	4,660
400	204	195	515	1,025	1,540	2,570	4,280
500	260	170	480	955	1,435	2,390	3,980
600	316	140	450	900	1,355	2,255	3,760
650	343	125	440	885	1,325	2,210	3,680
700	371	110	435	870	1,305	2,170	3,620
750	399	95	425	855	1,280	2,135	3,560
800	427	80	420	845	1,265	2,110	3,520
850	454	65	420	835	1,255	2,090	3,480
900	482	50	415	830	1,245	2,075	3,460
950	510	35	385	775	1,160	1,930	3,220
1,000	538	20	365	725	1,090	1,820	3,030
1,050	566	20	360	720	1,080	1,800	3,000
1,100	593	20(a)	305	610	915	1,525	2,545
1,150	621	20(a)	235	475	710	1,185	1,970
1,200	649	20(a)	185	370	555	925	1,545
1,250	677	20(a)	145	295	440	735	1,230
1,300	704	20(a)	115	235	350	585	970
1,350	732	20(a)	95	190	290	480	800
1,400	760	20(a)	75	150	225	380	630
1,450	788	20(a)	60	115	175	290	485
1,500	816	15(a)	40	85	125	205	345

(a) For welding ends valves only. Flanged ends ratings terminate at 1000°F (538°C).

PRESSURE-TEMPERATURE RATINGS

CAST STEEL ASTM A 351 GR CF8 C

°F Temperature °C		MAXIMUM ALLOWABLE NON-SHOCK WORKING PRESSURE IN PSIG BY CLASS					
		150	300	600	900	1,500	2500
-20 a 100	-29 a 38	275	720	1,440	2,160	3,600	6,000
200	93	255	660	1,325	1,985	3,310	5,520
300	149	230	615	1,235	1,850	3,085	5,140
400	204	200	575	1,150	1,730	2,880	4,800
500	260	170	540	1,085	1,625	2,710	4,520
600	316	140	515	1,030	1,550	2,580	4,300
650	343	125	505	1,015	1,520	2,530	4,220
700	371	110	495	995	1,490	2,485	4,140
750	399	95	490	985	1,475	2,460	4,100
800	427	80	485	975	1,460	2,435	4,060
850	454	65	485	970	1,455	2,425	4,040
900	482	50	450	900	1,350	2,245	3,745
950	510	35	385	775	1,160	1,930	3,220
1,000	538	20	365	725	1,090	1,820	3,030
1,050	566	20(a)	360	720	1,080	1,800	3,000
1,100	593	20(a)	310	625	935	1,560	2,600
1,150	621	20(a)	210	420	625	1,045	1,745
1,200	649	20(a)	150	300	455	755	1,255
1,250	677	20(a)	115	225	340	565	945
1,300	704	20(a)	75	150	225	375	630
1,350	732	20(a)	50	105	155	255	430
1,400	760	15(a)	40	80	125	205	345
1,450	788	10(a)	30	60	95	155	255
1,500	816	10(a)	25	55	80	135	230

(a) For welding ends valves only. Flanged ends ratings terminate at 1000°F (538°C).

DESIGN BASIS

All of WALWORTH's valve designs, when applicable, follow one or more of the following standards:

API Standards American Petroleum Institute:

- **API-598** Valve inspection and testing
- **API-600** Steel Gate Valves flanged butt-welding ends, bolted bonnets

ASME Standards American Society of Mechanical Engineers:

- **ANSI B-16.5** Pipeline flanges and flanged fittings
- **ANSI B-16.10** Valve dimensions: face to face and end to end
- **ANSI B-16.25** Buttwelding ends
- **ANSI B-16.10** Flanged, threaded and welding end valves
- **ANSI B-16.34** Flanged, threaded and welding end valves
- **ANSI/ASME B31.1** Power piping
- **ANSI/ASME B31.1** Fuel Gas piping
- **ANSI/ASME B31.1** Process piping

MSS Standards Manufacturers Standardization:

- **MSS SP-6** Standard finishes for contact faces of pipeline flanges and connecting end flanges of valves and fittings
- **MSS SP-9** Spot facing for bronze, iron and steel flanges
- **MSS SP-25** Standard marking system for valves, fittings, flanges and unions
- **MSS SP-44** Steel pipeline flanges
- **MSS SP-45** By-pass and drain connections
- **MSS SP-53** Quality standard for steel castings and forgings for valves, flanges and fittings and other piping component - Magnetic Particle Examination method
- **MSS SP-54** Quality standard for steel castings for valves, flanges and fittings and other piping components - radiographic method
- **MSS SP-55** Quality standard for steel castings for valves, flanges and fittings and other piping components - visual method for eval of surface irregularities
- **MSS SP-61** Pressure testing of steel valves
- **MSS SP-91** (R 96) Guidelines for manual operation of valves
- **MSS SP-92** (R 92) MSS Valves User Guide

ASTM Standards Manufacturers Standardization:

- **ASTM A 193** Standard specification for alloy-steel and stainless steel bolting materials for high temperature service
- **ASTM A 194** Standard specification for carbon and alloy-steel nuts for bolts high-pressure and high-temperature service
- **ASTM A 216** Standard specification for steel castings, carbon, suitable for fusion welding, for high-temperature service
- **ASTM A 217** Standard specification for steel castings, martensitic stainless and alloy, for pressure-containing parts, suitable for high-temperature service
- **ASTM A 276** Standard specification for stainless and heat-resisting steel bars and shapes
- **ASTM A 351** Standard specification for castings, austenitic, austenitic-ferritic (duplex), for pressure-containing parts
- **ASTM A 352** Standard specification for steel castings, ferritic and martensitic, for pressure-containing parts, suitable for low temperature service
- **ASTM A 515** Standard specification for pressure vessel plates, carbon steel, for intermediate and higher-temperature service
- **ASTM A 516** Standard specification for pressure vessel plates, carbon steel for moderate and low-temperature service

NACE Standards National Association of Corrosion Engineers:

- **NACE MR0175** Standard material requirements sulfide stress cracking resistant metallic materials for oilfield equipment

Boilers and pressure vessel code:

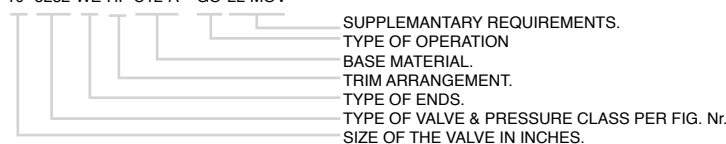
- **Section II** Part A - Ferrous material specifications
- **Section II** Part B - Non ferrous material specifications
- **Section II** Part C - Specifications for welding rods, electrodes and filler metals
- **Section V** Non destructive examination
- **Section VIII** Rules for construction of pressure vessels, divisions 1 and 2
- **Section IX** Welding and brazing qualifications

HOW TO ORDER

Size (inch)	Type of valve & Pressure class	Ends	Trim arrangements	Base material ASTM
2"	5232PS= Gate 600 # P. Seal	RF= Raised Face	AA= API No. 1	CARBON STEELS:
2 1/2"	5247PS= Gate 900 # P. Seal	RTJ= Ring Type Joint	18-8= API No. 2	A216-WCB (C-Si)
3"	5262PS= Gate 1500 # P. Seal	WE= Butt Weld	310= API No. 3	A216-WCC (C-Si)
4"	5260PS= Gate 2500 # P. Seal		HF= API No. 5	LOW ALLOY STEELS:
5"	5295PS= Globe 600 # P. Seal		AAA= API No. 6	A217-WC6 (1 1/4 % Cr- 1/2 Mo)
6"	5301PS= Globe 900 # P. Seal		UT= API No. 8	ASTM A217-WC9 (2 1/4 % Cr- 1 % Mo)
8"	5308PS= Globe 1500 # P. Seal		A= API No. 9	ASTM A217-C5 (5 % Cr- 1/2 Mo)
10"	5563PS= Globe 2500 # P. Seal		18-8smo= API No. 10	ASTM A217-C12-A (9 % Cr-1 %Mo-V-N)
12"	5295YPS= Globe 600 # Y Pattern P. Seal		AHF= API No. 11	LOW CARBON AUSTENITIC STAINLESS STEELS:
14"	5301YPS= Globe 900 # Y Pattern P. Seal		3HF= API No. 12	ASTM A351-CF3 (18 % Cr- 8 % Ni- 0.03% C)
16"	5308YPS= Globe 1500 # Y Pattern P. Seal		A20= API No. 13	ASTM A351-CF3M (18% Cr-12%Ni-2%Mo-0.03%C)
18"	5563YPS= Globe 2500 # Y Pattern P. Seal		A20H= API No. 14	ASTM A351-CG3M (18% Cr-12%Ni-3%Mo-0.03%C)
20"	5350PSTD= Tilting disc 600 # P. Seal		NUC= 410 + NUCALLOY	AUSTENITIC STAINLESS STEELS:
22"	5353PSTD= Tilting disc 900 # P. Seal		4HF= 304+304+ST6	ASTM A351-CF8 (18 % Cr- 8 % Ni- 0.08 % C)
24"	5356PSTD= Tilting disc 1500 # P. Seal		4HF+HF= 304+ST6+ST6	ASTM A351-CF8M (18% Cr-12%Ni-2%Mo-0.08%C)
	5566PSTD= Tilting disc 2500 # P. Seal		304L= 304L+304L+304L	ASTM A351-CF10 (18% Cr-8%Ni-0.08%C)
	5350PSSC= Swing check 600 # P. Seal		1HF= 316+ST21+ST21	ASTM A351-CG8M (19% Cr-10%Ni-3%Mo-0.08%C)
	5353PSSC= Swing check 900 # P. Seal		3HF+HF= 316+ST6+ST6	ASTM A351-CF8C (18% Cr-10%Ni-Cb-0.08%C)
	5356PSSC= Swing check 1500 # P. Seal		316L= 316+316+316	ASTM A351-CT15C (19%Cr-32%Ni-0.05 A 0.15%C)
	5566PSSC= Swing check 2500 # P. Seal		3LHF= 316L+316L+ST6	SUPER AUSTENITIC STAINLESS STEELS:
	5350PSPC= Lift Check 600 # P. Seal		3HFL= 316L+ST6+ST6	ASTM A351-CK20 (25% Cr-20%Ni-0.04 A 0.2 % C)
	5353PSPC= Lift Check 900 # P. Seal		21HF= 317+ST6+ST6	ASTM A351-CN7M (28% Ni-19%Cr-Cu-Mo0.07%C)
	5356PSPC= Lift Check 1500 # P. Seal		317= 317+317+317	ASTM A351-CN3M (21%Cr-24.5%Ni-6.5%Mo)
	5566PSPC= Lift Check 2500 # P. Seal		317H= 317+317+ST6	ASTM A351-CN3MN(24%Ni-21%Cr-6%Mo-Cu-N-0.03%C)
	Supplementary requirements		317LH= 317L+ST6+ST6	ASTM A351 CD4MCu (25.5%Cr-5.5%Ni2%Mo)
	GO= Gear operator.		31L= 317L+317L+317L	ASTM A351-CN2MCu(N,02C;19-23Cr;23-28Ni;4-5Mo;1-2Cu)
	MOV= Motor operated valve.		317LS= 317L+317L+ST6	LOW TEMPERATURE SERVICE CARBON STEELS:
	POV= Pneumatic operated valve.		2HF= 321+321+ST6	ASTM A352-LCB (0.03%C-0.6%Si-1%Mn)
	LD= Locking device.		321F= 321+ST6+ST6	ASTM A352-LCC (0.025%C-0.6%Si-1%Mn)
	NACEMR-01-75.		321= 321+321+321	LOW TEMPERATURE SERVICE LOW ALLOY STEELS:
	NACEMR-01-03		347HF= 347+ ST6+ST6	ASTM A352-LC2 (0.25%C-2.5%Ni-0.65%Mn)
	NACW for low temperature.		347= 347+347+347	ASTM A352-LC3 (0.15%C-3.5%Ni-0.65%Mn)
	SP= Special Paint.		347= 347+347+ST6	MARTENSITIC STAINLESS STEELS:
	SG= Special gasket.		254HF= 31254+ST6+ST6	ASTM A487-CA6NM (12.75%Cr-4%Ni-0.7%Mo)
	SPK= Special packing.		51H= 31803+ST6+ST6	ASTM A487-CA15 (12.75%Cr-1%Ni-1%Mn)
	VOC= Certification of volatile organic compounds.		31803H= 31803+31803+ST6	NICKEL ALLOYS:
	organix= Additional requirements.		T9= 17-4pH+TRIBALLOY 900+ TRIBALLOY 900	ASTM A494-M30C (67 % Ni- 30 % Cu)
			HC= Hc-276+Hc-276+Hc-276	ASTM A494-M35-1 (67 % Ni- 30 % Cu)
			HCH= Hc-276+Hc-276+ST6	ASTM A494-CZ100 (95 % Ni)
			UOP= MONELK500+MONEL 400+MONEL 400	ASTM A494-CY40 (75 % Ni-15 % Cr- 8 % Fe)
			625= INCONEL 625+INCONEL 625+INCONEL 625	ASTM A494-CW2M (61 % Ni- 16 % Mo-16 % Cr)
			625HF= INCONEL 625+ST6+ST6	ASTM A494-N12MV (62 % Ni- 28 % Mo- 5 % Fe)
			810T= INCOLOY 800H+INCOLOY 800H+INCOLOY 800H	ASTM A494-CW12MW (56 %Ni-18 %Mo- 17 %Cr-6 % Fe)
			825= INCOLOY 825+INCOLOY825+INCOLOY 825	ASTM A494-CW6M (56% Ni-19% Mo-18% Cr-2% Fe)
			23HF= INCOLOY 825+ST6+ST6	ASTM A494-CU5MCuC (42%Ni-21.5%Cr-3%Mo-2.3%Cu)
			HB= HASTELLOY B2+HASTELLOB2+HASTELLOY B2	ASTM A494-N7M (65 % Ni- 28 % Mo- 2 % FE)
			23HF= INCOLOY 825+ST6+ST6	ASTM A494-CW6MC (60%Ni-22%Cr-9%Mo-3.5%Cb)
			HB= HASTELLOY B2+HASTELLOB2+HASTELLOY B2	DUPLEX STAINLESS STEELS:
				ASTM A351-CD7MCuN (20.5%Cr-29%Ni-2.5%Mo)
				ASTM A890 1A; CD4MCu (25.5%Cr-5.5%Ni-2%Mo)
				ASTM A890 2A; CE8MN (24%Cr-9.5%Ni-4%Mo)
				ASTM A890 3A (CD6MN) (25.5%Cr-5%Ni-2.25Mo)
				ASTM A890 4A; CD3MN (22%Cr-5%Ni-3%Mo-N)

WALWORTH valves are designed by a catalog figure number which describe their main characteristics. The valve identification system shown below is intended to assist our Customers in valve below is intended to assist our Customers to specify the valve required and avoid mistakes during manufacturing. Describe in an easy way size, type of valve & pressure class, type of ends, trim arrangement, base material & additional requirements to comply with. WALWORTH gate & globe valves are supplied handwheel operation (gate & globe valve) unless otherwise is specified.

10"-5232-WE-HF-C12-A - GO-LL-MOV



THE WALWORTH COMPANY GENERAL TERMS AND CONDITIONS

ACCEPTANCE: All quotations are for acceptance within 30 days from date of quotation unless extended in writing. In the event a purchase order is placed after this period of time, the WALWORTH Company reserves the right to requote base prices of all valves offered. All orders and contracts are subject to credit approval and acceptance by the WALWORTH Company.

FREIGHT: When prices are f.o.b. point of shipment - no freight allowance - we will attempt to route shipments in the method which will result in the lowest cost unless otherwise instructed. All shipments will be freight charges collect except when stipulated on the purchase order, in which case you will be invoiced for all transportation charges. Delivery of material to a common carrier shall be considered to be delivery to Buyer and shall be at Buyer's risk thereafter. Claims of loss of or damage to material in transit shall be filed by the Buyer directly with the carrier.

PRICES: There will be added to all prices quoted sales, use, occupation or any other excise or similar tax which Seller may be required to pay or collect on or in connection with the sale. Seller shall be established by Federal, State or other government regulation with respect to the product(s) topped by the order which shall be lower than the price(s) specified in the order.

ESCALATION TERMS: Prices shown in this price schedule reflect the costs in effect at the time of publication. These prices will remain firm on all products with a quoted delivery of twenty-six (26) weeks or less. On products which have a scheduled delivery of more than twenty-six (26) weeks, the goods will be invoiced based on the applicable price sheet in effect at the time of shipment. In no event will the invoiced price be less than the price originally quoted.

PURCHASED COMPONENTS: (i.e. motors, gearing, etc.) Prices are quoted on the supplier's price in effect at the time of quotation. Actual invoice price will be adjusted in accordance with the supplier's escalation policy.

DIFFERED SHIPMENTS: If for any reason the customer desires to delay shipments more than 30 days after manufacturing is complete, or to place a on hold or stop to the order during the manufacturing cycle, The WALWORTH Company reserves the right to consider the order cancelled and to invoke cancellation charges per the schedule below.

CANCELLATION: After order acceptance by WALWORTH, items or completed orders may be cancelled and Buyer will be charged for work performed, based on the following schedule:

- Five percent (5%) of prices of stock items.
- Ten percent (10%) of price of stock items ordered in quantities which exceed normal inventory levels.
- Five percent (5%) of prices prior to drawing submittal on made-to-order items.
- 15% after drawing approval, but prior to the start of castings.
- 30% to 50% during casting cycle, depending on the state of completion.
- 55% to 75% during machining and assembly operations, depending on the state of completion.
- 100% after final assembly and test.

REMITTANCES: Remittances must be made to the address indicated on the invoice.

CREDIT TERMS: As quoted. Invoices on balances overdue will be subject to a service charge of 1 1/2 % per month on such indebtedness.

DELIVERIES: Shipments and deliveries shall at all times be subject to the approval of Seller's Credit Department. If the Buyer shall fail to make any

payments according to the terms of the contract, Seller may, in addition to and not in limitation of its other rights and remedies, at its option, cancel all or any part of Buyer's incomplete contracts with Seller, or may defer shipments of deliveries under Buyer's contracts with Seller except upon receipt of satisfactory security or for cash shipment.

All schedule of shipments are estimated as closely as possible and Seller will use its best efforts to ship within the time scheduled, but does not guarantee to do so. Schedules commence with the date Seller receives authorization to proceed with the order, subject to the provisions of the next sentence. The order will not be released for manufacture until complete specifications and approved drawings (if drawing approval is required) are received at the plant of manufacturer and the estimated schedule of shipment will commence with the date of such receipt.

Seller shall not be liable for any direct, indirect or consequential damage or loss caused by any delay in delivery, regardless of the cause of delay.

Without limiting the generality of the foregoing, Seller assumes no responsibility for delays in delivery resulting from fire, flood, accidents, riots, strikes, transportation delays, labor or material shortages, existing or future laws, acts of any governmental authority, or any other cause beyond Seller's control. Items offered from stock are subject to prior sale.

INSPECTION: Final inspection and acceptance of products must be made at the plant of manufacture, unless otherwise provided in the order and/ or in agreed upon specifications. Prices do not include charges for special tests or inspections performed at the request of the Buyer, unless called for in the order and/or in agreed upon specifications.

RETURNS: Permission in writing and return tagging instructions must be obtained from Seller before any goods returned for credit or adjustment will be accepted. Where returned goods are accepted, a minimum charge of 25% of the invoice price will be made, plus freight from both directions and costs of reconditioning the material for resale as new.

WARRANTY: Seller will replace without charge or refund the purchase price of products manufactured by Seller which prove to be defective in the material or workmanship, provided in each case that the product is properly installed and is used in the service for which Seller recommends it and that a written claim, specifying the alleged defect, is presented to Seller. Seller shall in no event be responsible for (a) claims for labor, expenses or other damages occasioned by defective products or (b) for consequences or secondary damages. THE WARRANTY STATED IN THIS PARAGRAPH IS IN LIEU OF ALL OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED. WITH RESPECT TO WARRANTIES, THIS PARAGRAPH STATES BUYER'S EXCLUSIVE REMEDY AND SELLER'S EXCLUSIVE LIABILITY.

DESIGN, ETC: Seller reserves the right to change design, materials or specifications without notice. There will be a charge for modifying an order after it has been entered when such change or modification results in additional engineering or clerical work for either The WALWORTH Company or our suppliers.

MINIMUM CHARGE: Orders totaling less than \$100.00 net will be billed at a minimum charge of \$100.00. Repair parts will be billed at a minimum charge of \$50.00.

NOTE: We reserve the right to correct obvious clerical errors in quotations, invoices, and other contracts.



WALWORTH[®]

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MÉXICO

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