WALWORTH®

Since 1842

FLOATING BALL VALVE

CATALOG

www.walworth.com

INDEX

INTRODUCTION

FLOATING BALL VALVES

CE TÜV CERT YARMOUTH RESEARCH AND TECHNOLOGY QMS REGISTERED ISO 9001 Certificate Number: 0038

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.

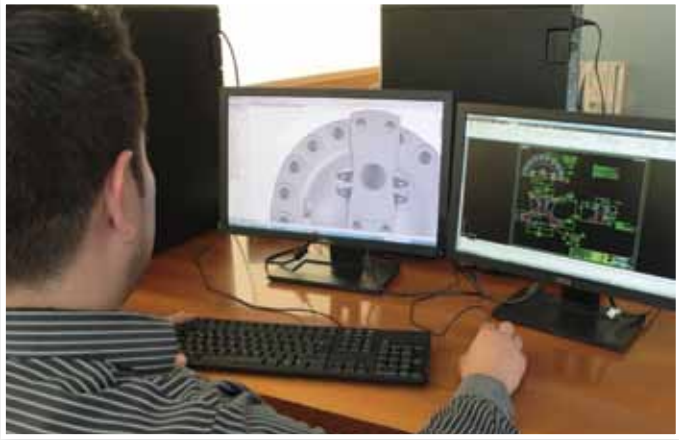
VISION
To be the world leader of unparalleled valve manufacturing and supply, WALWORTH:

- 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 strictly the most recognized international standards all over the world, such as API, ANSI, ASME, ASTM, MSS, NACE, AWWA, BSI, CSA, among others. Our Engineering team is always studying the new updates of these standards to incorporate any changes that may affect the design, regulations or performance of our products, being leaders in the new developments achieved.

Design is made using the most advanced technology and equipment, using finite elements and CAD system programs to ensure the proper assembly and performance of products since the concept, calculation and detailed drawings for manufacturing. WALWORTH is a leader in the development of new products according to valve market current needs.



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 of Authority to use the Official API Monogram
License Number: 6D-0097
ORIGINAL
WALWORTH
Avenida de la Industria Lote 16
Fraccionamiento Industrial El Trebol
Tepotzotlan
Mexico
API Spec 6D
The scope of this license includes the following products: Gate Valves, Plug Valves, Ball Valves, Check Valves
QMS Exclusions: No Exclusions Identified as Applicable
American Petroleum Institute
Effective Date: OCTOBER 13, 2011
Expiration Date: NOVEMBER 4, 2014

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 of Authority to use the Official API Monogram
License Number: 6A-0234
ORIGINAL
WALWORTH
Avenida de la Industria Lote 16
Fraccionamiento Industrial El Trebol
Tepotzotlan
Mexico
API Spec 6A
American Petroleum Institute
Effective Date: OCTOBER 13, 2011
Expiration Date: NOVEMBER 4, 2014

Certificate API-6A No. 6A-0234
From American Petroleum Institute to apply on valves at PSI, 1 through 4.


Certificate of Authority to use the Official API Monogram
License Number: 594-0007
WALWORTH
Avenida de la Industria Lote 16
Fraccionamiento Industrial El Trebol
Tepotzotlan
Mexico
American Petroleum Institute
Effective Date: OCTOBER 13, 2011
Expiration Date: NOVEMBER 4, 2014

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 of Authority to use the Official API Monogram
License Number: 600-0109
WALWORTH
Avenida de la Industria Lote 16
Fraccionamiento Industrial El Trebol
Tepotzotlan
Mexico
American Petroleum Institute
Effective Date: OCTOBER 13, 2011
Expiration Date: NOVEMBER 4, 2014

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 of Authority to use the Official API Monogram
License Number: 602-0024
WALWORTH
Avenida de la Industria Lote 16
Fraccionamiento Industrial El Trebol
Tepotzotlan
Mexico
American Petroleum Institute
Effective Date: OCTOBER 13, 2011
Expiration Date: NOVEMBER 4, 2014

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.


QMS REGISTERED
Certificate of Registration
APIQR® REGISTRATION NUMBER
0038
This certifies that the quality management system of
WALWORTH
Avenida de la Industria Lote 16
Fraccionamiento Industrial El Trebol
Tepotzotlan
Mexico
has been assessed by the American Petroleum Institute Quality Registrar (APIQR®) and found it to be in conformance with the following standard
ISO 9001:2008
The scope of this registration and the approved quality management system applies to the
Design and Manufacture of Valves
APIQR® approves the organization's justification for excluding:
No Exclusions Identified as Applicable
Effective Date: November 4, 2011
Expiration Date: November 4, 2014
Registered Since: November 4, 2011
Manager of Operations, APIQR®

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


Certificate
Quality-Assurance System
acc. to Directive 97/23/EC
Certificate no.: 01 202 USA/Q-10 0012
Name and address of the manufacturer: Walworth – Inval Facility
Industrial de Válvulas, S.A. de C.V.
Avenida de la Industrial Lote 16
Fraccionamiento Industrial El Trébol
C.P. 54600, Tepotzotlan, Estado de Mexico
Herewith we certify that the above mentioned manufacturer operates a quality system according to the European Directive 97/23/EC. The manufacturer has the permission to affix the following CE marking to pressure equipment described and manufactured in accordance to the scope covered by this Quality-Assurance System:
CE 0035
Tested acc. to Directive 97/23/EC: QS-System (Module H)
Audit report no.: USA/Q-10 0012
Area of validity: Design, Manufacturing and testing of industrial valves, see annex to certificate
Manufacturing plant: Walworth – Inval Facility
Industrial de Válvulas, S.A. de C.V.
Avenida de la Industrial Lote 16
Fraccionamiento Industrial El Trébol
C.P. 54600, Tepotzotlan, Estado de Mexico
Valid until: April 07, 2016
Cologne, April 30, 2013
www.tuv.com
TÜVRheinland®
Precisely Right.

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


CFE
COMISIÓN FEDERAL DE ELECTRICIDAD
LAPEM.
LABORATORIO DE PRUEBAS DE EQUIPOS Y MATERIALES
CONSTANCIA DE CALIFICACIÓN DE PROVEEDOR

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


PETROLEOS MEXICANOS
GRUPO TECNICO DE EVALUACION DE PROVEEDORES E INSPECCION DE BIENES
CONSTANCIA DE PROVEEDOR CONFIABLE

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

PRODUCT CERTIFICATIONS


FUGITIVE EMISSION TEST CERTIFICATE

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.


FUGITIVE EMISSION TEST CERTIFICATE

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.


FUGITIVE EMISSION TEST CERTIFICATE

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.

YARMOUTH RESEARCH AND TECHNOLOGY

PROJECT SUMMARY

Project Number: 99068

Customer: The Walworth Company

Contact: David Cornelsen

Date(s) of Test: 12/9/99 – 12/23/99

Product(s) Tested: One 8" Class 300 Gate Valve with Empak 5lvs EAF-100-001 packing

Purpose of Test: The test was conducted to evaluate the valve's stem sealing performance at ambient and at 350° F as related to the 1990 Amendments to the Clean Air Act requirements. Leakage measurements were conducted in accordance with 40 CFR Part 60, Appendix A, Method 21.

Conclusion: Three thermal cycles from ambient to 350 deg. F were conducted throughout 3500 open/close cycles with the valve pressurized to 648 psig. The valve was cycled with a 45 RPM gear motor coupled to the handwheel. One packing nut adjustment was required at cycle number 300 to maintain leakage levels below 100 PPMv.

At cycle number 3500, the packing leakage was 25-29 PPMv with the stem static. The packing nuts were tightened from 12/14 ft-lb back to 28 ft-lb and leakage decreased to about 1 PPMv.

See the attached data sheets for more information.

Test Witness:

Matthew J. Wasielewski, P. E., President
YARMOUTH RESEARCH AND TECHNOLOGY

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 Argentina S.A.
Servicios Industriales

TÜVRheinland®

Certificate

Certificate No.

Customer

Product Tested

Trademark

Model / Type

Applicable Standard

TÜV Report No.

Results

Safety Function

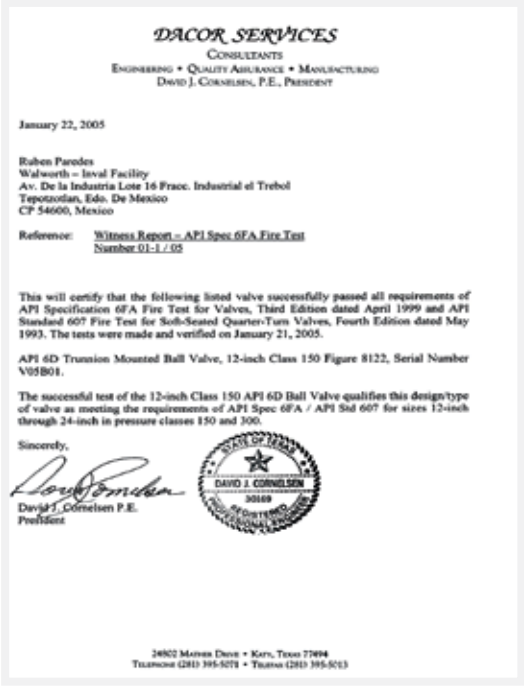
Specific Requirements

Buenos Aires, January 23th, 2014

Eng. Mauricio Schanidar

Page 1 of 3

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.



DACOR SERVICES
CONSULTANTS
ENGINEERING • QUALITY ASSURANCE • MANUFACTURING
DAVID J. CORNELSEN, P.E., PRESIDENT

January 22, 2005

Ruben Paredes
Walworth – Inval Facility
Av. De la Industria Lote 16 Fracc. Industrial el Trebol
Tepotzotlan, Edo. De Mexico
CP 54600, Mexico

Reference: Witness Report – API Spec 6FA Fire Test
Number 01-1 / 05

This will certify that the following listed valve successfully passed all requirements of API Specification 6FA Fire Test for Valves, Third Edition dated April 1999 and API Standard 607 Fire Test for Soft-Seated Quarter-Turn Valves, Fourth Edition dated May 1993. The tests were made and verified on January 21, 2005.

API 6D Trunnion Mounted Ball Valve, 12-inch Class 150 Figure 8122, Serial Number V05B01.

The successful test of the 12-inch Class 150 API 6D Ball Valve qualifies this design/type of valve as meeting the requirements of API Spec 6FA / API Std 607 for sizes 12-inch through 24-inch in pressure classes 150 and 300.

Sincerely,

David J. Cornelsen P.E.
President

STATE OF TEXAS
DAVID J. CORNELSEN
90169
REGISTERED
PROFESSIONAL ENGINEER

24802 Mayfair Drive • Katy, Texas 77494
Telephone (281) 395-5078 • Telefax (281) 395-5013

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.

TÜV CERT

TÜVRheinland®
Precisely Right.

CERTIFICATE

Certificate No.: 01 202 USA-TA-09-78788

Concerning the Agreement with the Technical Requirements in:

TA-Luft 2002, VDI 2440 Nov. 2000, Sec. 3.3.1.3

Test report: 200140 Datum: 03 December, 2009

Client: Industrial de Valvulas, S.A. de C.V.

Manufacturer's Address: Av. De la Industria Lote 16
Fracc. Industrial El Trebol,
Tepotzotlan, Edo. De Mexico, CP 54600

The stem sealing system and internal flange connection have been successfully tested to meet the tightness criteria of ≤ 10⁻⁶ mbar x l/(s x m) with a helium mass spectrometer under the following conditions. The SFV Valve with the examined mechanical shaft seals fulfills the requirements of Section 5.2.6.4 of The German Clean Air Act, (TA-Luft), (Leakage Verification) in accordance with Section 3.3.1.3 of VDI 2440 (Rev. 2000).

Kind of Valve:	Walworth API 600 Gate Valve	
Valve Type:	4 Inch, Class 300, Figure 83067 WCB Body / CR 13 Stem & Disc / HF Seat	
Sealing System:	Graphite Seals	
Nominal Size, Nominal Pressure:	4 Inch, ANSI 300	
Inspection Media/Pressure:	Helium / 51 Bars	Temperature = Ambient
Switching Cycles: (3 tests)	9 Cycles	Total Cycles 500
Leakage Rate: (mbar - l / sec)	5.2e-7 (mbar – l/sec)	3.7e-6 (mbar – l/sec)
Testing Method:	Helium Leak Test – VDI 2440, Appendix A	

Testing Laboratory:
Yarmouth Research and Technology
Matthew J Wasielewski, PE
416 Walnut Hill Road, N. Yarmouth, ME USA
www.yarmouthresearch.com

TÜV Rheinland North America, Inc.
Industrial Services Division, Newtown, CT., USA

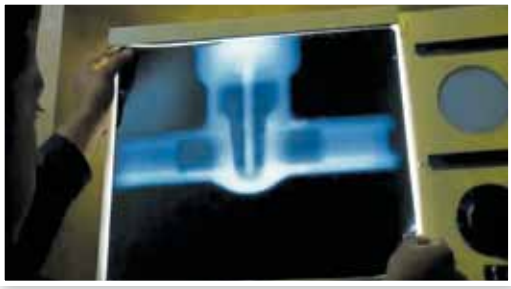
Kareema J. Saleem, Jr. – Examiner

TÜVRheinland Inspection Body

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 quality international standards, in-house equipments are 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.- 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 and the Customer's specifications.

Magnetic Particle Test.- In a random basis for standard products or when a Customer request 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. The NDT personnel are ASNT Certified.

Test Loop. A complete Laboratory Test loop exists for design validation of WALWORTH products performing the test at maximum design pressure and cycling the valves from 3000 to 5000 cycles. The test expends more than 4 months to be finished.

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 into the body.

Metrology Laboratory.- WALWORTH developed a calibration and/or verification system in all the equipment used in its facilities to ensure the traceability of measurements to international standards. In this way, WALWORTH gets measurement control of its products to comply with international standards.

Fire Test Facilities.- Facilities to perform fire test in accordance to 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.- When a Customer requires low fugitive emissions certification. The Lab has its own LFE Test Equipment capable to measure less than 20 ppm either in both static or Mechanical conditions at 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.- To verify the mechanical properties of materials used for manufacturing, WALWORTH tests samples on a random basis even thought we receive MTR's from our suppliers and foundries.

Hardness Test Equipments.- Either lab or shop test, WALWORTH use hardness tester equipments as Rockwell B, C Brinell or Vickers to check compliance against specifications.

FLOATING BALL VALVES

This product line is used primarily in the Oil & Gas, Building and construction Industries, Chemical and Petrochemical services, among others. WALWORTH offers Floating Ball valves to provide positive shut-off while minimizing pressure drop.

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

a) Carbon Steel such as A-105 or WCB, etc.

b) Stainless Steel such as CF8, CF8M or F316, etc.

c) Low Carbon Stainless Steel such as CF3, CF3M, CG3M, etc.

d) Super Stainless Steel such as CN7M (Alloy 20), CN3M (Alloy 20 modified), CT15C, etc.

e) Brass like B283 grade C37700, Low Temperature Carbon Steel such as LCB, LCC or LF2, etc.

WALWORTH offers a variety of trim materials including but not limited to the following:

a) Ball and stem made from SS-304, PTFE, RPTFE or Nylon seats, PTFE packing.

b) Ball and stem made from SS-316, PTFE, RPTFE or Nylon seats, PTFE packing.

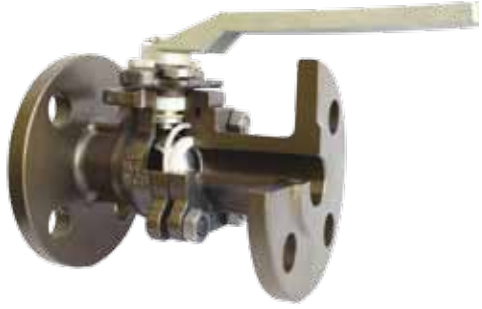
c) Ball and stem made from SS-304, PTFE, RPTFE or Nylon seats and graphite stem packing suitable for fire safe design.

d) Ball and stem made from SS-316, PTFE, RPTFE or Nylon seats and graphite stem packing suitable for fire safe design.

e) Other trim materials could be manufactured to match with body materials.

Design Features

- Standard Floating Ball valves in accordance with API 608, API6D & MSS-SP-72 for flanged and BW ends from 1/2” up to 8”. Test in accordance with API 598.
- Standard Floating Ball Valves in accordance with MSS-SP-110 for threaded and socketweld ends from 1/4” up to 4”. Test in accordance with MSS-SP-110
- Fire Safe Floating Ball valves in accordance with API-6D & API-608 for flanged and BW ends from 1/2 up to 8”. Test in accordance with API-598.
- Fire Safe Floating Ball valves in accordance with API-608 or ASME B16.34 for threaded and socket well ends from 1/2” up to 2”. Test in accordance with API-598



PRODUCT RANGE

Type	Firesafe or Not Firesafe design	Size	Pressure Class	Ends	Figure Nr
Two-Piece Floating Ball Valve	Not Firesafe	1/4” to 2”	600 WOG	Threaded	7711
Three-Piece Floating Ball Valve	Not Firesafe	1/4” to 4”	1000 & 2000 WOG	Threaded or Socket Weld	7011, 7017, 7411, 7417
Two-Piece Floating Ball Valve	Not Firesafe	1/4” to 8”	150 & 300#	Flanged	7112, 7312
Two-Piece Floating Ball Valve	Not Firesafe	1/2” to 4”	600#	Flanged	7612
Two-Piece Floating Ball Valve	Firesafe	1/4” to 8”	150 & 300#	Flanged	7112 Z, 7312 Z
Two-Piece Floating Ball Valve	Firesafe	1/2” to 4”	600#	Flanged	7612 Z
Three-Piece Floating Ball Valve	Firesafe	1/4” to 2”	1500#	Flanged	7512 Z
Three-Piece Floating Ball Valve	Firesafe	1/4” to 2”	800, 1500 & 2500#	Threaded or Socket Weld	7811 Z, 7817 Z, 7511 Z, 7517 Z, 7211 Z, 7217 Z

STRUCTURAL FEATURES

Lever Positions

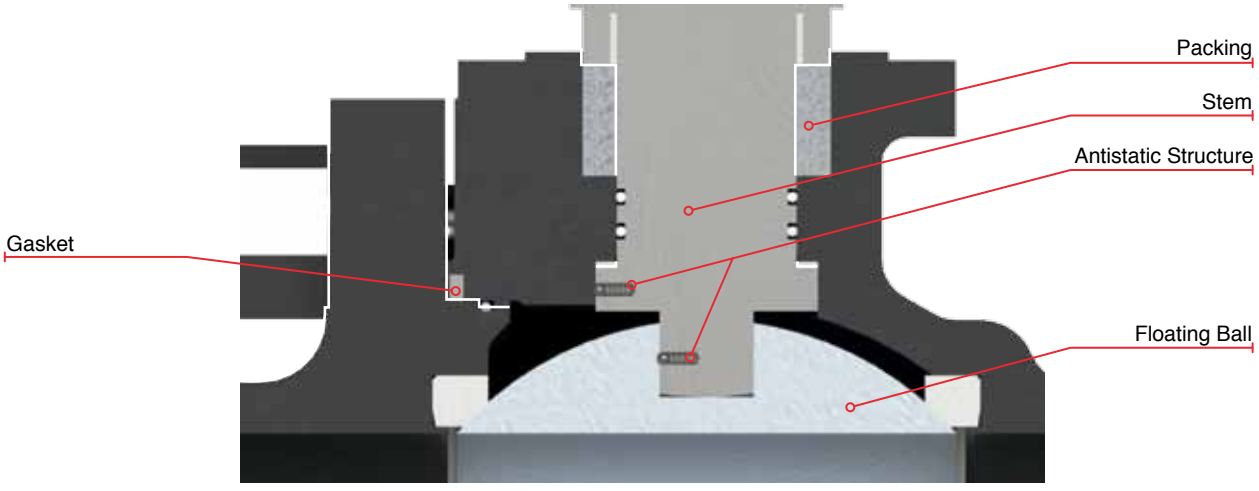
Valves with wrench aligned with the valve is in open position, and wrench in perpendicular to the valve is in closed position.

OPEN POSITION

CLOSE POSITION

Blow Out Proof Stem Design & Antistatic Structure

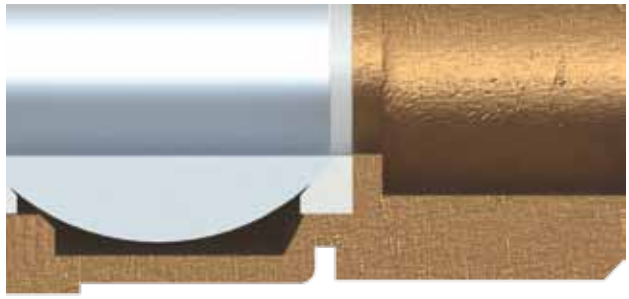
To reinforce safety, WALWORTH have fitted the product with a T-shaped blowout proof stem back seat that significantly extends stem seal life and prevents it to come out from the body structure. It also includes an antistatic device that lowers coefficient of friction between stem-ball and stem-body ball when operating the valve. Friction could cause electrostatic charges (sparks) that could cause fire when mixing with fluid. Leakage from the valve stem is prevented with the aid of two O'rings and a Gasket that work together with the graphite packing.



STRUCTURAL FEATURES

Soft Seats

Stringent limitations on ball valve designing along with operating conditions have resulted in the use of several thermoplastic materials to meet the required operating range for ball valve seat thus, WALWORTH offers soft seats such as PTFE, RPTFE, Nylon, Molon, PEEK, etc., to guarantee zero leakage in low and high pressures at different temperatures, these can be used for several services in any industry, also preferred and supplied to Oil and Gas producers. Soft seat reduce friction which result in less torque when operating the valve.



Fire Safe Design

When a fire occurs the valve soft seal areas (packing, gasket and seat) came burnt or could be damaged, to prevent this right and left body are contacted by a gasket made of graphite instead soft seal (figure a) and the same happens on the packing stem where it is made of graphite instead soft seal (figure b). To prevent internal leakage when seat came burnt, the metal seal face of the body will act as a second seal being in contact with the ball (figure c). The design is based on the standards API 607, JB/T6899 and second part of BS6755.

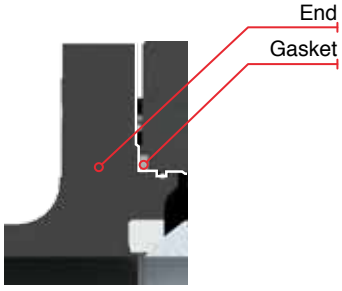


Figure a

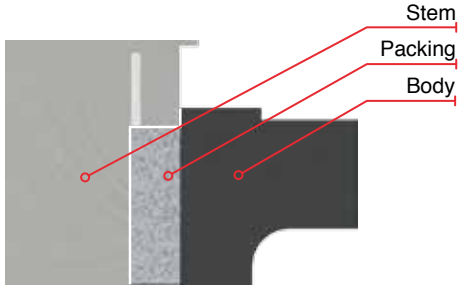


Figure b

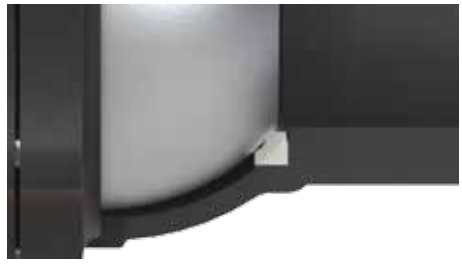


Figure c

Full and Reduced Port

There are two types of port (full and reduced) on WALWORTH floating ball valves for different purposes. The full port design means that the port will be of the same inside diameter as the pipeline, so there will be no resistance for the fluid and this valve could be cleaned by a pig being trough conduit. Reduced port provides resistance to the fluid, the inside diameter is a size smaller than that of the pipeline being a valve not piggable

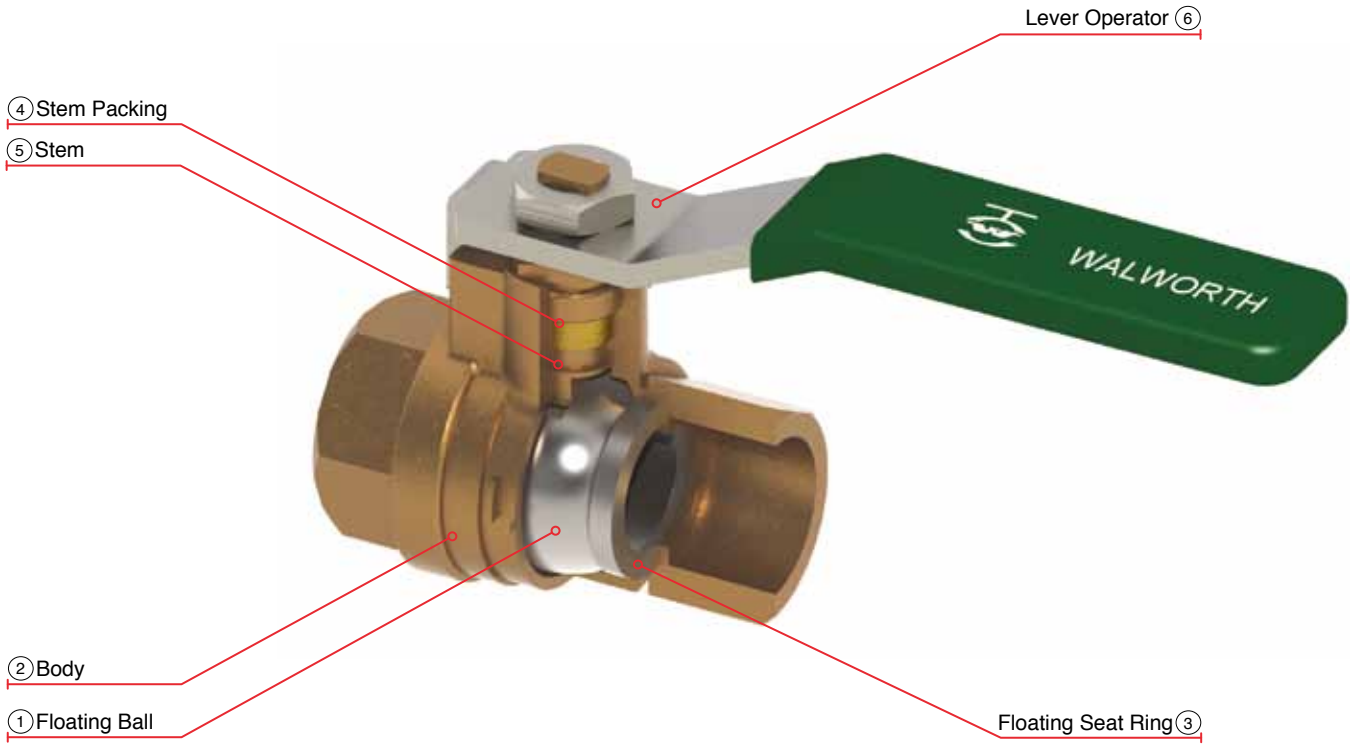
FULL PORT DESIGN

REDUCED PORT DESIGN

WALWORTH STANDARD FLOATING BALL VALVES CLASS 600 WOG

Design Features

- Design in accordance with MSS SP110
- CLASS 600 WOG
- Full Port
- Two-piece body
- Brass Construction
- Threaded Body
- Threaded ends as per ASME B1.20.1
- End to end dimensions as per WALWORTH standard



① Floating Ball. For all sizes & pressure ratings. The ball is only hold by the stem and is in movement with the direction of the fluid in order to seal with the seat rings.

② Body. Made of two pieces that includes the central body screwed with the end flanges.

③ Floating Seat Ring. Two independent dynamic soft seat rings that get in contact with the floating ball which seal in one side of the valve depending on the fluid direction.

④ Stem Packing. It is a soft seal that ensure reliable operation high levels of sealing integrity when operating the valve.

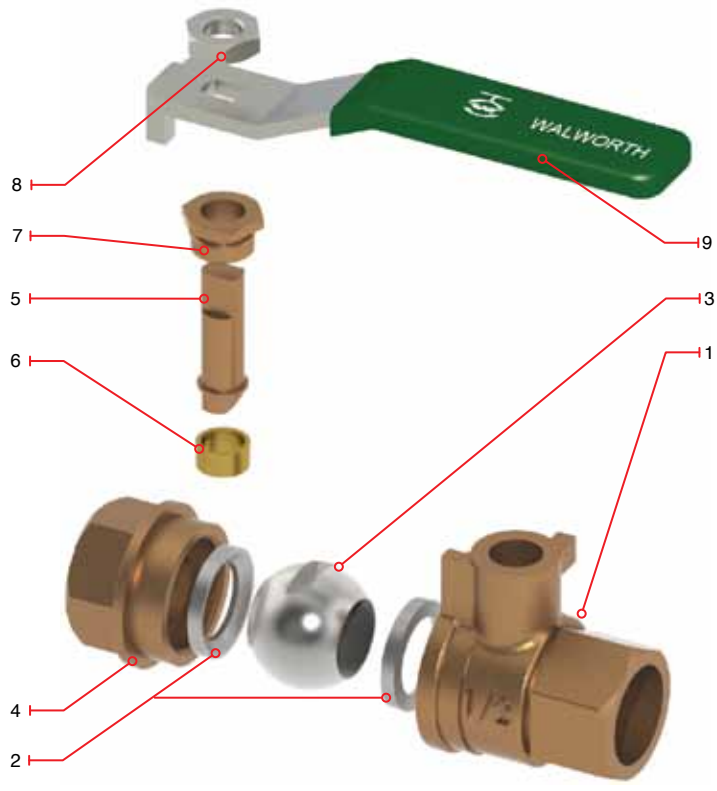
⑤ Stem. The stem design is anti blow out which is held up by the valve body and fits in the bottom with a small cavity in the top part of the floating ball.

⑥ Lever operator. It is supplied in all sizes to open and close the valve.

WALWORTH STANDARD FLOATING BALL VALVES CLASS 600 WOG

Design Features

- Design in accordance with MSS SP110
- CLASS 600 WOG
- Full Port
- Two-piece body
- Brass Construction
- Threaded Body
- Threaded ends as per ASME B1.20.1
- End to end dimensions as per WALWORTH standard



Regular Bill of Materials

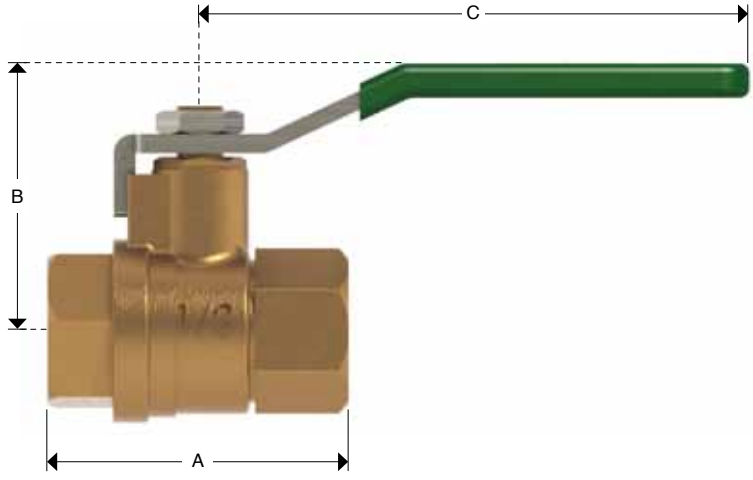
No.	Description	Brass
1	Body	Brass B283 - C37700
2	Seat Ring	PTFE
3	Ball	Brass B283 - C37700 + Chrome coating
4	End	Brass B283 - C37700
5	Stem	Brass B124 - C37700
6	Packing	PTFE
7	Gland	Brass B124 - C37700
8	Stem Bolt	Steel A-36 + Cadminized coating
9	Lever	Steel A-36 + Cadminized coating

WALWORTH STANDARD FLOATING BALL VALVES
CLASS 600 WOG

Design Features

- Design in accordance with MSS SP110
- CLASS 600 WOG
- Full Port
- Two-piece body
- Brass Construction
- Threaded Body
- Threaded ends as per ASME B1.20.1
- End to end dimensions as per WALWORTH standard

Lever Operator	
Catalog Figure No.	**Type of Ends**
7711	Threaded ends



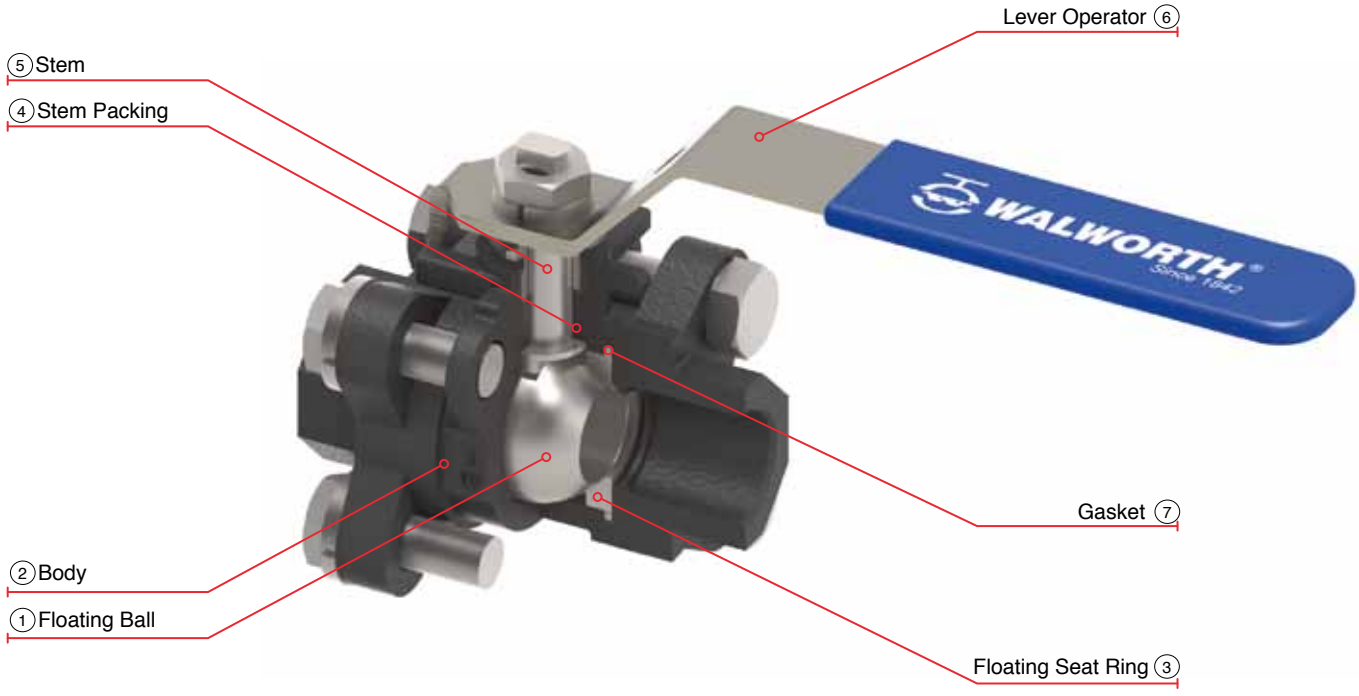
Dimensions and Weights

D Nominal Diameter	mm	15	20	25	32	40	50
	in	1/2	3/4	1	1 1/4	1 1/2	2
A	mm	57	67	77	92	103	122
	in	2.24	2.64	3.03	3.62	4.05	4.8
B	mm	39	57	65	71	140	140
	in	1.53	2.24	2.56	2.79	5.51	5.51
C	mm	90	90	125	125	140	140
	in	3.54	3.54	4.92	4.92	5.51	5.51
Weight 7711	kg	0.22	0.34	0.57	0.85	1.37	2.08
	lb	0.49	0.75	1.26	1.87	3.02	4.59

WALWORTH STANDARD FLOATING BALL VALVES
CLASS 1000 WOG & 2000 WOG

Design Features

- Design in accordance with MSS SP110
- CLASS 1000 WOG & 2000 WOG
- Full Port
- Three-piece body
- Investment Cast Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- Socket weld ends as per ASME B16.11
- End to end dimensions as per WALWORTH standard



① Floating Ball. For all sizes & pressure ratings. The ball is only hold by the stem and is in movement with the direction of the fluid in order to seal with the seat rings.

② Body. Made of three pieces that includes the central body bolted with the end flanges.

③ Floating Seat Ring. Two independent dynamic soft seat rings that get in contact with the floating ball which seal in one side of the valve depending on the fluid direction.

④ Stem Packing. It is a soft seal that ensure reliable operation high levels of sealing integrity when operating the valve.

⑤ Stem. The stem design is anti blow out which is held up by the valve body and fits in the bottom with a small cavity in the top part of the floating ball.

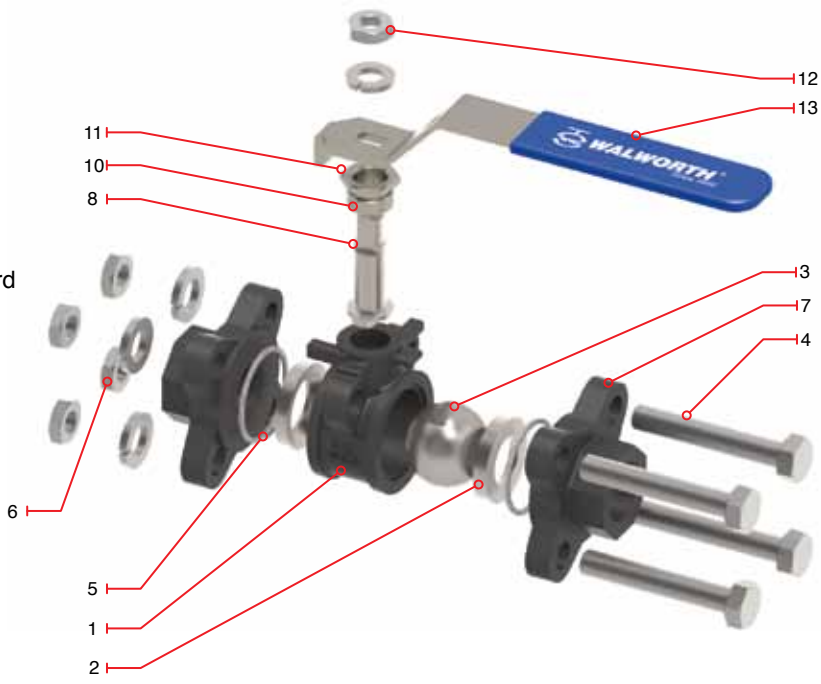
⑥ Lever operator. It is supplied in all sizes to open and close the valve.

⑦ Gasket. It is a soft seal that has a reliable operation with high levels of sealing integrity between body and ends.

WALWORTH STANDARD FLOATING BALL VALVES
CLASS 1000 WOG & 2000 WOG

Design Features

- Design in accordance with MSS SP110
- CLASS 1000 WOG & 2000 WOG
- Full Port
- Three-piece body
- Investment Cast Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- Socket weld ends as per ASME B16.11
- End to end dimensions as per WALWORTH standard



Regular Bill of Materials

No.	Description	Carbon Steel with Trim F4 (SS304)	Stainless Steel 316	Carbon Steel Trim F4 (SS304) NACE	Stainless Steel 316 with Trim F3 (SS316) NACE
1	Body	ASTM A216 GR WCB	ASTM A351 GR CF8M	ASTM A216 GR WCB	ASTM A351 GR CF8M
2	Seat Ring	PTFE + Graphite			
3	Ball	SS304	SS316	SS304	SS316
4	Stud	ASTM A193 Gr. B7	ASTM A193 Gr. B8	ASTM A193 Gr. B7M	ASTM A193 Gr. B8M
5	Gasket	PTFE			
6	Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 8	ASTM A194 Gr. 2HM	ASTM A194 Gr. 8M
7	End	ASTM A216 GR WCB	ASTM A351 GR CF8M	ASTM A216 GR WCB	ASTM A351 GR CF8M
8	Stem	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
*9	Stem Seat	PTFE			
10	Packing	PTFE			
11	Packing Gland	ASTM A216 GR WCB OR SS304	SS304	ASTM A216 GR WCB OR SS304	SS304
12	Stem Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 8	ASTM A194 Gr. 2HM	ASTM A194 Gr. 8M
13	Lever	ASTM A216 GR WCB			
*14	Identification Plate	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel

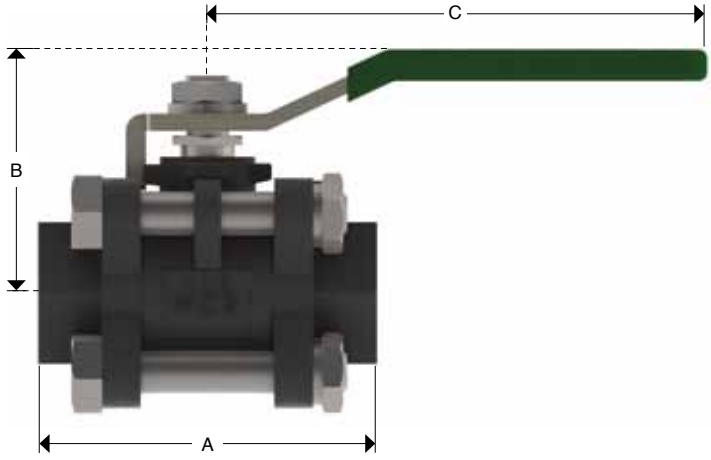
* Not Shown

WALWORTH STANDARD FLOATING BALL VALVES
CLASS 1000 WOG

Design Features

- Design in accordance with MSS SP110
- CLASS 1000 WOG
- Full Port
- Three-pieces body
- Investment Cast Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- Socket weld ends as per ASME B16.11
- End to end dimensions as per WALWORTH standard

Lever Operator	
Catalog Figure No.	**Type of Ends**
7011	Threaded (S)
7017	Socket Weld (SW)



Dimensions and Weights

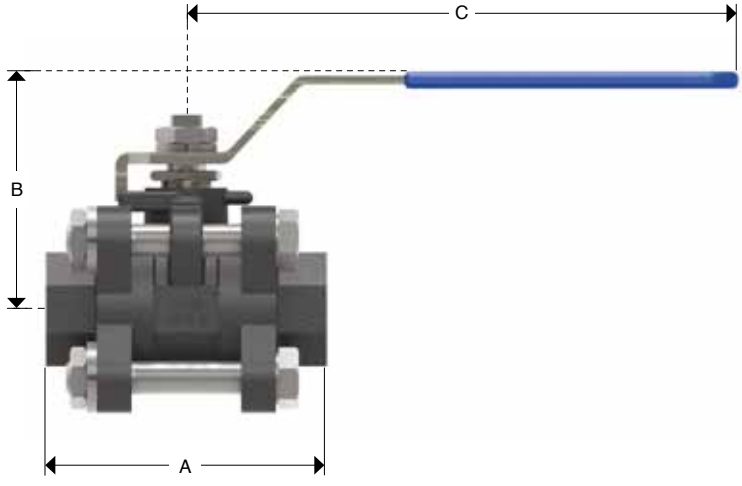
D Nominal Diameter	mm	6	10	15	20	25	32	40	50	65	80	100
	in	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
A	mm	50.4	50.4	61.4	70.2	79.6	93	102	124.2	156.2	179.2	218.4
	in	2	2	2 3/7	2 3/4	3 1/7	3 2/3	4	4 8/9	6 1/7	7	8 3/5
B	mm	42.5	42.5	49.6	58.1	61	78.3	82.5	90.9	114.5	124	176
	in	1 2/3	1 2/3	2	2 2/7	2 2/5	3	3 1/4	3 4/7	4 1/2	4 7/8	7
C	mm	101.5	101.5	101.5	124	124	152	152	190	242	242	327
	in	4	4	4	4 7/8	4 7/8	6	6	7 1/2	9 1/2	9 1/2	12 7/8
Weight 7011	kg	0.41	0.41	0.46	0.87	1.09	1.93	2.6	3.75	9.1	13.23	20.63
	lb	0.90	0.90	1.01	1.92	2.40	4.26	5.73	8.27	20.07	29.17	45.49

WALWORTH STANDARD FLOATING BALL VALVES CLASS 2000 WOG

Design Features

- Design in accordance with MSS SP110
- CLASS 2000 WOG
- Full Port
- Three-pieces body
- Investment Cast Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- Socket weld ends as per ASME B16.11
- End to end dimensions as per WALWORTH standard

Lever Operator	
Catalog Figure No.	**Type of Ends**
7411	Threaded (S)
7417	Socket Weld (SW)



Dimensions and Weights

D Nominal Diameter	mm	6	10	15	20	25	32	40	50
	in	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
A	mm	63	63	66	83	95	106.6	130	150.6
	in	2 1/2	2 1/2	2 3/5	3 1/4	3 3/4	4 1/5	5 1/8	6
B	mm	54	54	59	63	76	85	91	100
	in	2 1/8	2 1/8	2 1/3	2 1/2	3	3 1/3	3 4/7	4
C	mm	104	104	125	125	155	155	200	200
	in	4	4	5	5	6 1/9	6 1/9	7 7/8	7 7/8
Weight 7411	kg	0.47	0.45	0.64	0.89	1.27	1.99	2.91	4.39
	lb	1.04	0.99	1.41	1.96	2.80	4.39	6.42	9.68

WALWORTH STANDARD FLOATING BALL VALVES
CLASS 150, 300 & 600

Design Features

- Design in accordance with MSS SP-72, API-608 & API-6D
- CLASS 150, 300 & 600 as per ASME B16.34
- Full Port
- Two-piece body
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator (Optional)
- Valves could be supplied with ISO-5211 flange for operator installation (optional)

① Floating Ball. For all sizes & pressure ratings. The ball is only hold by the stem and is in movement with the direction of the fluid in order to seal with the seat rings.

② Body. Made of two pieces that includes the central body bolted with the end flange.

③ Floating Seat Ring. Two independent dynamic soft seat rings that get in contact with the floating ball which seal in one side of the valve depending on the fluid direction.

④ Stem Packing. It is a soft seal that ensure reliable operation high levels of sealing integrity when operating the valve.

⑤ Stem. The stem design is anti blow out and with an antistatic structure which is held up by the valve body and fits in the bottom in a small cavity in the top part of the floating ball.

⑥ Lever operator. It is supplied in all sizes to open and close the valve.

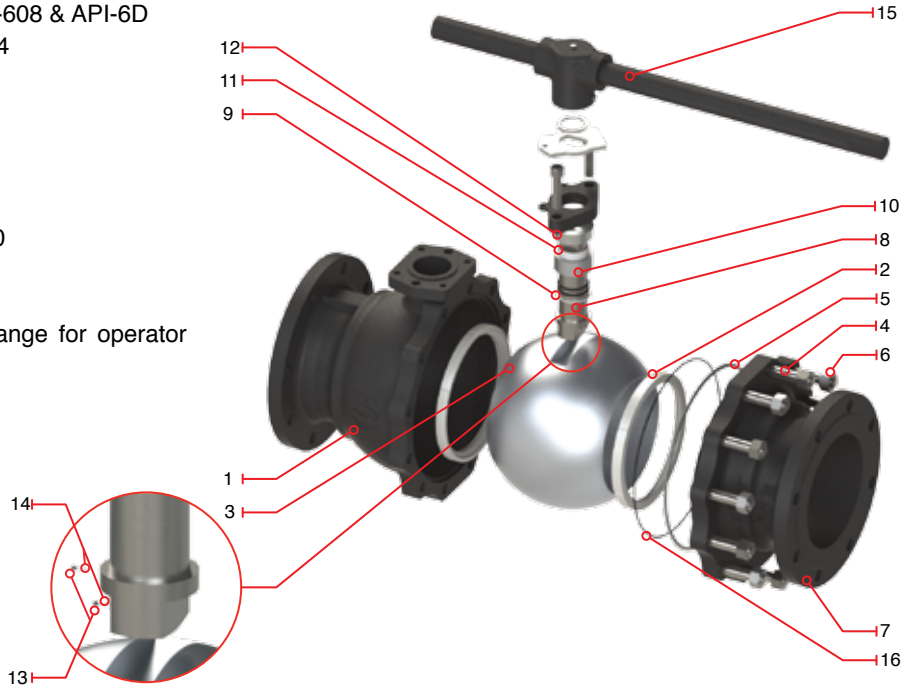
⑦ Gasket. It is a soft seal that has a reliable operation with high levels of sealing integrity between body and ends.

⑧ Antistatic device. Inconel springs with small balls are placed between stem-body and stem-floating ball to prevent static continuity.

WALWORTH STANDARD FLOATING BALL VALVES
CLASS 150, 300 & 600

Design Features

- Design in accordance with MSS SP-72, API-608 & API-6D
- CLASS 150, 300 & 600 as per ASME B16.34
- Full Port
- Two-piece body
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator (Optional)
- Valves could be supplied with ISO-5211 flange for operator installation (optional)



Regular Bill of Materials

No.	Description	Carbon Steel with Trim F4 (SS304)	Carbon Steel with Trim F3 (SS316)	Stainless Steel 316	Carbon Steel with Trim F4 (SS304) NACE	Stainless Steel 316 with Trim F3 (SS316) NACE
1	Body	ASTM A216 GR WCB	ASTM A216 GR WCB	ASTM A351 GR CF8M	ASTM A216 GR WCB	ASTM A351 GR CF8M
2	Seat Ring	RPTFE, PTFE or Nylon**				
3	Ball	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
4	Stud	ASTM A193 Gr. B7	ASTM A193 Gr. B7	ASTM A193 Gr. B8	ASTM A193 Gr. B7M	ASTM A193 Gr. B8M
5	Gasket	PTFE or Flexible Graphite + Stainless Steel				
6	Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 2H	ASTM A194 Gr. 8	ASTM A194 Gr. 2HM	ASTM A194 Gr. 8M
7	End	ASTM A216 GR WCB	ASTM A216 GR WCB	ASTM A351 GR CF8M	ASTM A216 GR WCB	ASTM A351 GR CF8M
8	Stem	ASTM A182 Gr. F304	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
9	Stem Seat	PTFE or RPTFE				
10	Packing	PTFE or Graphite				
11	Gland	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
12	Gland Flange	ASTM A216 GR WCB	ASTM A216 GR WCB	ASTM A351 GR CF8M	ASTM A216 GR WCB	ASTM A351 GR CF8M
13	Small ball	Stainless Steel				
14	Antistatic spring	Inconel 750				
15	Lever	Carbon Steel				
16	Backup O'ring	Viton				
*17	Identification Plate	Stainless Steel				

* Not Shown
** Material used as standard on Class 600

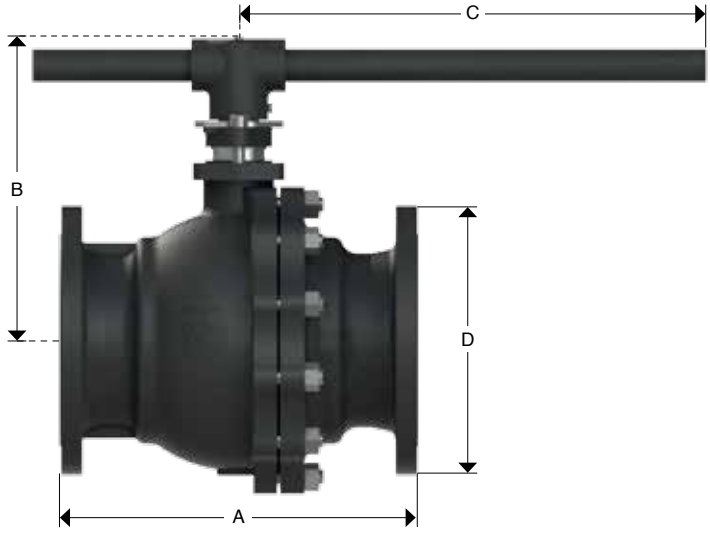
WALWORTH STANDARD FLOATING BALL VALVES CLASS 150

Design Features

- Design in accordance with MSS SP-72, API-608 & API-6D
- CLASS 150 as per ASME B16.34
- Full Port
- Two-piece body
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 6" and larger (Optional)
- Valves could be supplied with ISO-5211 flange for operator installation (optional)

Lever Operator	
Catalog Figure No.	**Type of Ends**
7112	Flanged Raised Face
7113	Flanged Ring Type Joint
7114	Butt Weld

Gear Operator	
Catalog Figure No.	**Type of Ends**
7122	Flanged Raised Face
7123	Flanged Ring Type Joint
7124	Butt Weld



Dimensions and Weights

D Nominal Diameter	mm	15	20	25	32	40	50	65	80	100	150	200
	in	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8
A (RF)	mm	108	117	127	140	165	178	190	203	229	394	457
	in	4 1/4	4 3/5	5	5 1/2	6 1/2	7	7 1/2	8	9	15 1/2	18
D	mm	89	98	108	117	127	152	178	190	229	279	343
	in	3 1/2	3 6/7	4 1/4	4 3/5	5	6	7	7 1/2	9	11	13 1/2
B	mm	73	76	86	91	119	127	136	164	178	303	352
	in	2 7/8	3	3 2/5	3 4/7	4 2/3	5	5 1/3	6 1/2	7	12	13 6/7
C	mm	130	130	160	160	200	200	200	325	325	800	800
	in	5 1/8	5 1/8	6 2/7	6 2/7	7 7/8	7 7/8	7 7/8	12 4/5	12 4/5	31 1/2	31 1/2
Weight 7112	kg	1.5	2	3	4	6	8	15	19	31	82	145
	lb	3.31	4.41	6.62	8.82	13.23	17.64	33.08	41.90	68.36	180.82	319.74

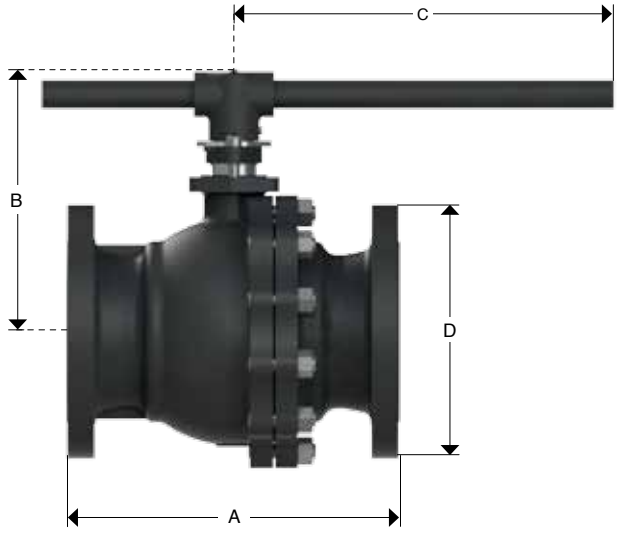
WALWORTH STANDARD FLOATING BALL VALVES CLASS 300

Design Features

- Design in accordance with MSS SP-72, API-608 & API-6D
- CLASS 300 As per ASME B16.34
- Full Port
- Two-piece body
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 6" and larger (Optional)
- Valves could be supplied with ISO-5211 flange for operator installation (optional)

Lever Operator	
Catalog Figure No.	**Type of Ends**
7312	Flanged Raised Face
7313	Flanged Ring Type Joint
7314	Butt Weld

Gear Operator	
Catalog Figure No.	**Type of Ends**
7322	Flanged Raised Face
7323	Flanged Ring Type Joint
7324	Butt Weld



Dimensions and Weights

D Nominal Diameter	mm	15	20	25	40	50	65	80	100	150	200
	in	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8
A (RF)	mm	140	152	165	191	216	241	283	305	403	502
	in	5 1/2	6	6 1/2	7 1/2	8 1/2	9 1/2	11 1/7	12	15 6/7	19 3/4
D	mm	95	117	124	156	165	190	210	254	318	381
	in	3 3/4	4 3/5	4 7/8	6 1/7	6 1/2	7 1/2	8 1/4	10	12 1/2	15
B	mm	72	92	105	125	135	153	172	210	303	357
	in	2 5/6	3 5/8	4 1/7	5	5 1/3	6	6 7/9	8 1/4	12	14
C	mm	160	160	160	180	230	400	400	400	800	1000
	in	6 2/7	6 2/7	6 2/7	7	9	15 3/4	15 3/4	15 3/4	31 1/2	39 3/8
Weight 7312	kg	3	5	6	11	16	24	34	56	125	222
	lb	6.62	11.03	13.23	24.26	35.28	52.92	74.97	123.48	275.63	489.53

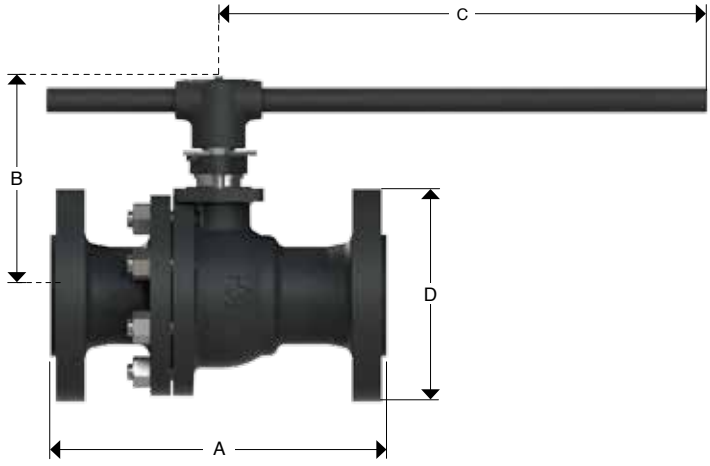
WALWORTH STANDARD FLOATING BALL VALVES CLASS 600

Design Features

- Design in accordance with MSS SP-72, API-608 & API-6D
- CLASS 600 as per ASME B16.34
- Full Port
- Two-piece body
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 4" and larger (Optional)
- Valves could be supplied with ISO-5211 flange for operator installation (optional)

Lever Operator	
Catalog Figure No.	**Type of Ends**
7612	Flanged Raised Face
7613	Flanged Ring Type Joint
7614	Butt Weld

Gear Operator	
Catalog Figure No.	**Type of Ends**
7622	Flanged Raised Face
7623	Flanged Ring Type Joint
7624	Butt Weld



Dimensions and Weights

D Nominal Diameter	mm	15	20	25	40	50	65	80	100
	in	1/2	3/4	1	1 1/2	2	2 1/2	3	4
A (RF)	mm	165	190	216	241	292	330	356	432
	in	6 1/2	7 1/2	8 1/2	9 1/2	11 1/2	13	14	17
D	mm	95	117	124	156	165	190	210	273
	in	3 3/4	4 3/5	4 7/8	6 1/7	6 1/2	7 1/2	8 1/4	10 3/4
B	mm	72	95	110	130	142	180	200	245
	in	2 5/6	3 3/4	4 1/3	5 1/8	5 3/5	7	7 7/8	9 2/3
C	mm	160	160	230	230	400	400	500	800
	in	6 2/7	6 2/7	9	9	15 3/4	15 3/4	19 2/3	31 1/2
Weight 7612	kg	5	7	9	17	25	42	56	85
	lb	11.03	15.44	19.85	37.49	55.13	92.61	123.48	187.43

WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 150, 300 & 600

Design Features

- Design in accordance with API 6D & API 608
- CLASS 150, 300 & 600 as per ASME B16.34
- Full Port
- Reduced Port (upon request)
- Two-piece body
- Fire safe design as per API 6FA, API 607
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator (Optional)
- Valves could be supplied with ISO-5211 flange for operator installation (optional)

① Floating Ball. For all sizes & pressure ratings. The ball is only hold by the stem and is in movement with the direction of the fluid in order to seal with the seat rings.

② Body. Made of two pieces that includes the central body bolted with the end flange.

③ Floating Seat Ring. Two independent dynamic soft seat rings that get in contact with the floating ball which seal in one side of the valve depending on the fluid direction.

④ Stem Packing (firesafe design). It is a graphite seal that ensure safety for fire emergency as it has a reliable operation with high levels of sealing integrity when operating the valve.

⑤ Stem. The stem design is anti blow out and with an antistatic structure which is held up by the valve body and fits in the bottom in a small cavity in the top part of the floating ball.

⑥ Lever operator. It is supplied in all sizes to open and close the valve.

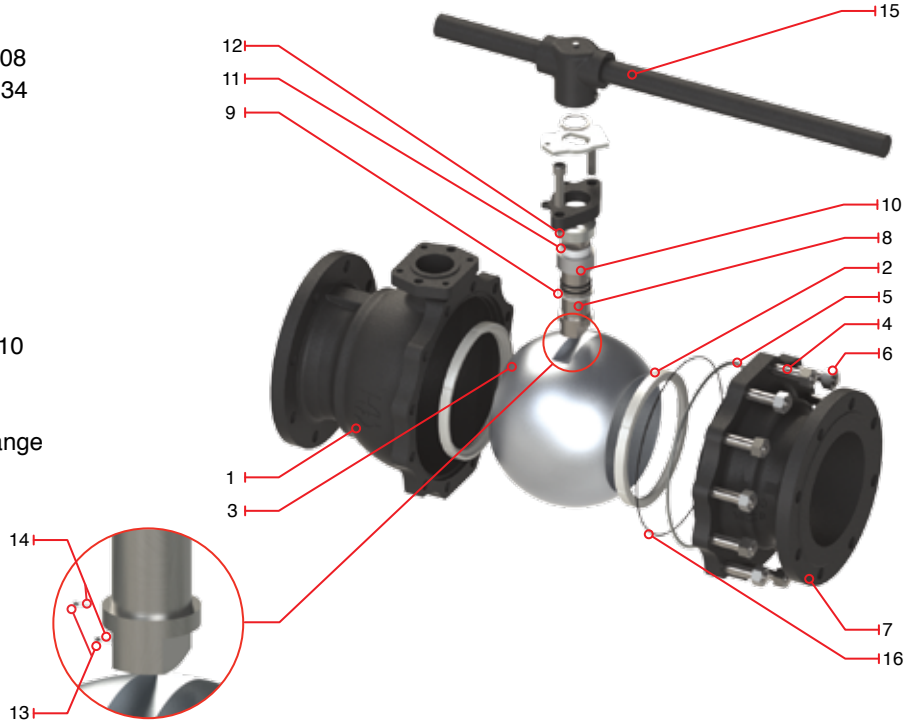
⑦ Gasket (firesafe design). It is a graphite seal that ensure safety for fire emergency as it has a reliable operation with high levels of sealing integrity between body and ends.

⑧ Antistatic device. Inconel springs with small balls are placed between stem-body and stem-floating ball to prevent static continuity.

WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 150, 300 & 600

Design Features

- Design in accordance with API-6D & API 608
- CLASS 150, 300 & 600 as per ASME B16.34
- Full Port
- Reduced Port (upon request)
- Two-piece body
- Fire safe design as per API 607
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator (Optional)
- Valves could be supplied with ISO-5211 flange for operator installation (optional)



Regular Bill of Materials

No.	Description	Carbon Steel with Trim F4 (SS304)	Carbon Steel with Trim F3 (SS316)	Stainless Steel 316	Carbon Steel with Trim F4 (SS304) NACE	Stainless Steel 316 with Trim F3 (SS316) NACE
1	Body	ASTM A216 GR WCB	ASTM A216 GR WCB	ASTM A351 GR CF8M	ASTM A216 GR WCB	ASTM A351 GR CF8M
2	Seat Ring	RPTFE, PTFE or Nylon**				
3	Ball	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
4	Stud	ASTM A193 Gr. B7	ASTM A193 Gr. B7	ASTM A193 Gr. B8	ASTM A193 Gr. B7M	ASTM A193 Gr. B8M
5	Gasket	Flexible Graphite + Stainless Steel				
6	Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 2H	ASTM A194 Gr. 8	ASTM A194 Gr. 2HM	ASTM A194 Gr. 8M
7	End	ASTM A216 GR WCB	ASTM A216 GR WCB	ASTM A351 GR CF8M	ASTM A216 GR WCB	ASTM A351 GR CF8M
8	Stem	ASTM A182 Gr. F304	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
9	Stem Seat	PTFE or RPTFE				
10	Packing	Graphite				
11	Gland	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
12	Gland Flange	ASTM A216 GR WCB	ASTM A216 GR WCB	ASTM A351 GR CF8M	ASTM A216 GR WCB	ASTM A351 GR CF8M
13	Small ball	Stainless Steel				
14	Antistatic spring	Inconel 750				
15	Lever	Carbon Steel				
16	Backup O'ring	Viton				
*17	Identification Plate	Stainless Steel				

* Not Shown
** Material used as standard on Class 600

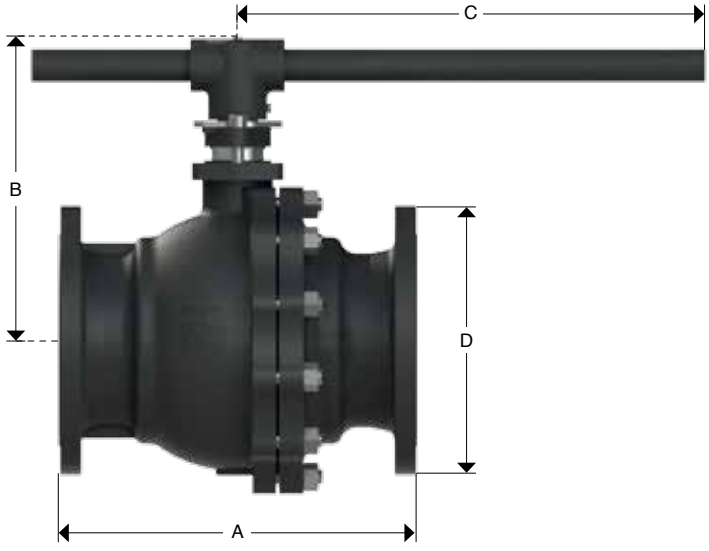
WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 150 FULL PORT

Design Features

- Design in accordance with API-6D & API 608
- CLASS 150 as per ASME B16.34
- Full Port
- Two-piece body
- Fire safe design as per API 607
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 6” and larger (Optional)

Lever Operator	
Catalog Figure No.	**Type of Ends**
7112-Z	Flanged Raised Face
7113-Z	Flanged Ring Type Joint
7114-Z	Butt Weld

Gear Operator	
Catalog Figure No.	**Type of Ends**
7122-Z	Flanged Raised Face
7123-Z	Flanged Ring Type Joint
7124-Z	Butt Weld



Dimensions and Weights

D Nominal Diameter	mm	15	20	25	32	40	50	65	80	100	150	200
	in	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8
A (RF)	mm	108	117	127	140	165	178	191	203	229	394	457
	in	4 1/4	4 3/5	5	5 1/2	6 1/2	7	7 1/2	8	9	15 1/2	18
D	mm	89	98.5	108	117	127	152	178	190	229	279	343
	in	3 1/2	3 7/8	4 1/4	4 3/5	5	6	7	7 1/2	9	11	13 1/2
B	mm	72	92	105	91	125	135	153	172	210	303	352
	in	2 5/6	3 5/8	4 1/7	3 4/7	5	5 1/3	6	6 7/9	8 1/4	12	13 6/7
C	mm	160	160	160	160	180	230	400	400	400	800	800
	in	6 2/7	6 2/7	6 2/7	6 2/7	7	9	15 3/4	15 3/4	15 3/4	31 1/2	31 1/2
Weight 7112-Z	kg	3	4	5	5	8	12	18	24	38	82	145
	lb	6.62	8.82	11.03	11.03	17.64	26.46	39.69	52.92	83.79	180.82	319.74

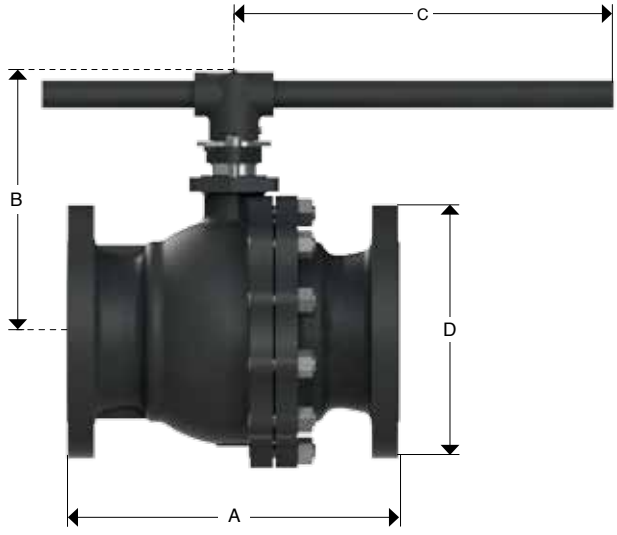
WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 300 FULL PORT

Design Features

- Design in accordance with API-6D & API 608
- CLASS 300 as per ASME B16.34
- Full Port
- Two-piece body
- Fire safe design as per API 607
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 6” and larger (Optional)

Lever Operator	
Catalog Figure No.	**Type of Ends**
7312-Z	Flanged Raised Face
7313-Z	Flanged Ring Type Joint
7314-Z	Butt Weld

Gear Operator	
Catalog Figure No.	**Type of Ends**
7322-Z	Flanged Raised Face
7323-Z	Flanged Ring Type Joint
7324-Z	Butt Weld



Dimensions and Weights

D Nominal Diameter	mm	15	20	25	40	50	65	80	100	150	200
	in	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8
A (RF)	mm	140	152	165	191	216	241	283	305	403	502
	in	5 1/2	6	6 1/2	7 1/2	8 1/2	9 1/2	11 1/7	12	15 6/7	19 3/4
D	mm	95	117	124	156	165	190	210	254	318	381
	in	3 3/4	4 3/5	4 7/8	6 1/7	6 1/2	7 1/2	8 1/4	10	12 1/2	15
B	mm	72	92	105	125	135	153	172	210	303	357
	in	2 5/6	3 5/8	4 1/7	5	5 1/3	6	6 7/9	8 1/4	12	14
C	mm	160	160	160	180	230	400	400	400	800	1000
	in	6 2/7	6 2/7	6 2/7	7	9	15 3/4	15 3/4	15 3/4	31 1/2	39 3/8
Weight 7312-Z	kg	3	5	6	11	16	24	34	56	125	222
	lb	6.62	11.03	13.23	24.26	35.28	52.92	74.97	123.48	275.63	489.53

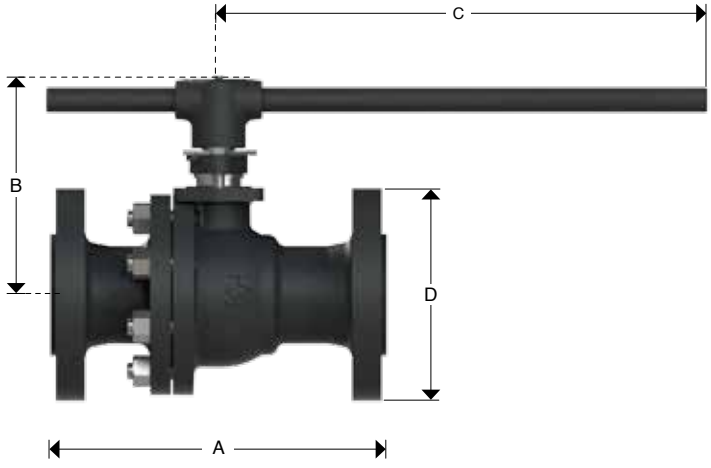
WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 600 FULL PORT

Design Features

- Design in accordance with API-6D & API 608
- CLASS 600 as per ASME B16.34
- Full Port
- Two-piece body
- Fire safe design as per API 607
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 4" and larger (Optional)
- Valves could be supplied with ISO-5211 flange for operator installation (optional)

Lever Operator	
Catalog Figure No.	**Type of Ends**
7612-Z	Flanged Raised Face
7613-Z	Flanged Ring Type Joint
7614-Z	Butt Weld

Gear Operator	
Catalog Figure No.	**Type of Ends**
7622-Z	Flanged Raised Face
7623-Z	Flanged Ring Type Joint
7624-Z	Butt Weld



Dimensions and Weights

D Nominal Diameter	mm	15	20	25	40	50	65	80	100
	in	1/2	3/4	1	1 1/2	2	2 1/2	3	4
A (RF)	mm	165	190	216	241	292	330	356	432
	in	6 1/2	7 1/2	8 1/2	9 1/2	11 1/2	13	14	17
D	mm	95	117	124	156	165	190	210	273
	in	3 3/4	4 3/5	4 7/8	6 1/7	6 1/2	7 1/2	8 1/4	10 3/4
B	mm	72	95	110	130	142	180	200	245
	in	2 5/6	3 3/4	4 1/3	5 1/8	5 3/5	7	7 7/8	9 2/3
C	mm	160	160	160	230	400	400	500	800
	in	6 2/7	6 2/7	6 2/7	9	15 3/4	15 3/4	19 2/3	31 1/2
Weight 7612-Z	kg	5	7	9	17	25	42	56	85
	lb	11.03	15.44	19.85	37.49	55.13	92.61	123.48	187.43

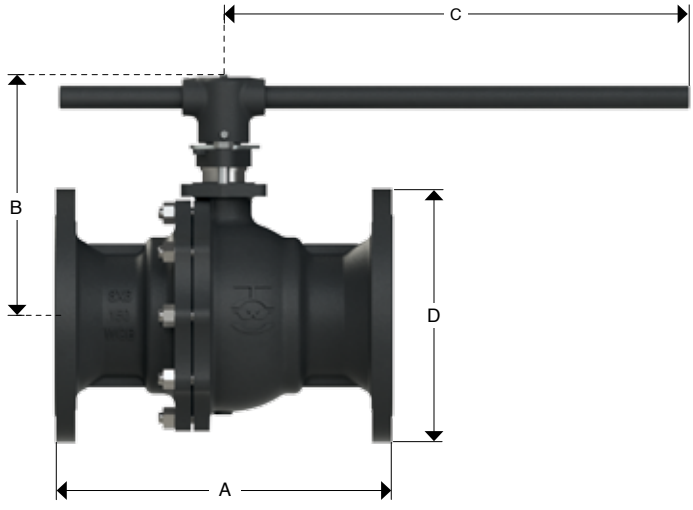
WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 150 REDUCED PORT

Design Features

- Design in accordance with API-6D & API 608
- CLASS 150 as per ASME B16.34
- Reduced Port
- Two-piece body
- Fire safe design as per API 607
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 6" X 4" and larger (Optional)

Lever Operator	
Catalog Figure No.	**Type of Ends**
7112-RZ	Flanged Raised Face
7113-RZ	Flanged Ring Type Joint
7114-RZ	Butt Weld

Gear Operator	
Catalog Figure No.	**Type of Ends**
7122-RZ	Flanged Raised Face
7123-RZ	Flanged Ring Type Joint
7124-RZ	Butt Weld



Dimensions and Weights

D Nominal Diameter	mm	15 X 10	20 X 15	25 X 20	50 X 40	80 X 50	100 X 80	150 X 100	200 X 150
	in	1/2 X 3/8	3/4 X 1/2	1 X 3/4	2 X 1 1/2	3 X 2	4 X 3	6 X 4	8 X 6
A (RF)	mm	108	117	127	178	203	229	394	457
	in	4 1/4	4 3/5	5	7	8	9	15 1/2	18
D	mm	89	98.5	108	152	190	229	279	343
	in	3 1/2	3 7/8	4 1/4	6	7 1/2	9	11	13 1/2
B	mm	72	72	92	125	135	172	210	303
	in	2 5/6	2 5/6	3 5/8	5	5 1/3	6 7/9	8 1/4	12
C	mm	160	160	160	180	230	400	400	800
	in	6 2/7	6 2/7	6 2/7	7	9	15 3/4	15 3/4	31 1/2
Weight 7112-RZ	kg	3	3.5	5	9	15	25	60	105
	lb	6.62	7.72	11.03	19.85	33.08	55.13	132.30	231.53

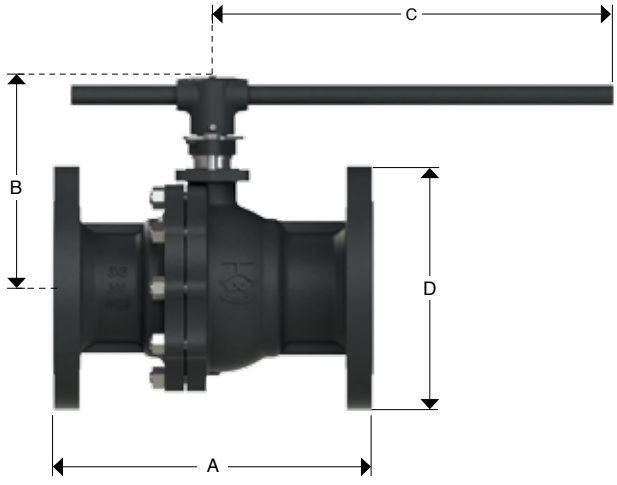
WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 300 REDUCED PORT

Design Features

- Design in accordance with API-6D & API 608
- CLASS 300 as per ASME B16.34
- Reduced Port
- Two-piece body
- Fire safe design as per API 607
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 6” X 4” and larger (Optional)

Lever Operator (Reduced Port)	
Catalog Figure No.	**Type of Ends**
7312-RZ	Flanged Raised Face
7313-RZ	Flanged Ring Type Joint
7314-RZ	Butt Weld

Gear Operator (Reduced Port)	
Catalog Figure No.	**Type of Ends**
7322-RZ	Flanged Raised Face
7323-RZ	Flanged Ring Type Joint
7324-RZ	Butt Weld



Dimensions and Weights

D Nominal Diameter	mm	15 X 10	20 X 15	25 X 20	50 X 40	80 X 50	100 X 80	150 X 100	200 X 150
	in	1/2 X 3/8	3/4 X 1/2	1 X 3/4	2 X 1 1/2	3 X 2	4 X 3	6 X 4	8 X 6
A (RF)	mm	108	117	127	178	203	229	394	457
	in	4 1/4	4 3/5	5	7	8	9	15 1/2	18
D	mm	89	98.5	108	152	190	229	279	343
	in	3 1/2	3 7/8	4 1/4	6	7 1/2	9	11	13 1/2
B	mm	72	72	92	125	135	172	210	303
	in	2 5/6	2 5/6	3 5/8	5	5 1/3	6 7/9	8 1/4	12
C	mm	160	160	160	180	230	400	400	800
	in	6 2/7	6 2/7	6 2/7	7	9	15 3/4	15 3/4	31 1/2
Weight 7312-RZ	kg	4	5	6	14	25	48	90	130
	lb	8.82	11.03	13.23	30.87	55.13	105.84	198.46	286.66

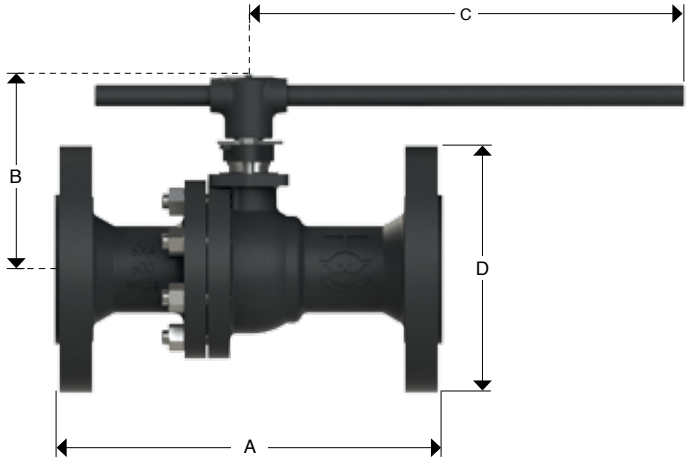
WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 600 REDUCED PORT

Design Features

- Design in accordance with API-6D & API 608
- CLASS 600 as per ASME B16.34
- Reduced Port
- Two-piece body
- Fire safe design as per API 607
- Cast Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25
- Gear Operator 4” X 3” and larger (Optional)

Lever Operator (Reduced Port)	
Catalog Figure No.	**Type of Ends**
7612-RZ	Flanged Raised Face
7613-RZ	Flanged Ring Type Joint
7614-RZ	Butt Weld

Gear Operator (Reduced Port)	
Catalog Figure No.	**Type of Ends**
7622-RZ	Flanged Raised Face
7623-RZ	Flanged Ring Type Joint
7624-RZ	Butt Weld



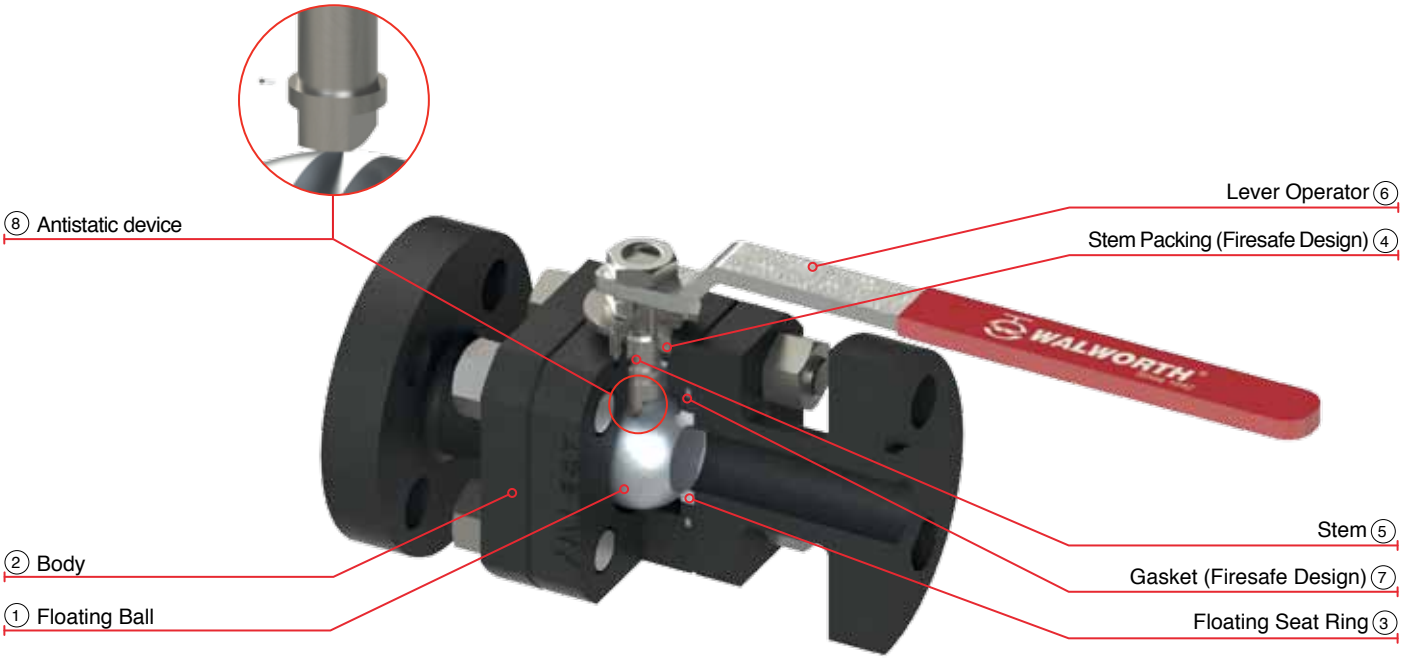
Dimensions and Weights

D Nominal Diameter	mm	15 X 10	20 X 15	25 X 20	40 X 32	50 X 40	80 X 50	100 X 80
	in	1/2 X 3/8	3/4 X 1/2	1 X 3/4	1 1/2 X 1 1/4	2 X 1 1/2	3 X 2	4 X 3
A (RF)	mm	165	190	216	241	292	356	432
	in	6 1/2	7 1/2	8 1/2	9 1/2	11 1/2	14	17
D	mm	95	117	124	156	165	210	273
	in	3 3/4	4 3/5	4 7/8	6 1/7	6 1/2	8 1/4	10 3/4
B	mm	72	72	95	113	130	142	200
	in	2 5/6	2 5/6	3 3/4	4 4/9	5 1/8	5 3/5	7 7/8
C	mm	160	160	160	200	230	400	500
	in	6 2/7	6 2/7	6 2/7	7 7/8	9	15 3/4	19 2/3
Weight 7612-RZ	kg	5	6	7	13	21	39	72
	lb	11.03	13.23	15.44	28.67	46.31	86.00	158.77

WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 1500

Design Features

- Design in accordance with API 6D
- CLASS 1500 as per ASME B16.34
- Full Port
- Reduced Port (upon request)
- Three-pieces body
- Fire safe design as per API 607
- Forged Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25



① Floating Ball. For all sizes & pressure ratings. The ball is only hold by the stem and is in movement with the direction of the fluid in order to seal with the seat rings.

② Body. Made of three pieces that includes the central body bolted with the end flanges.

③ Floating Seat Ring. Two independent dynamic soft seat rings that get in contact with the floating ball which seal in one side of the valve depending on the fluid direction.

④ Stem Packing (firesafe design). It is a graphite seal that ensure safety for fire emergency as it has a reliable operation with high levels of sealing integrity when operating the valve.

⑤ Stem. The stem design is anti blow out which is held up by the valve body and fits in the bottom with a small cavity in the top part of the floating ball.

⑥ Lever operator. It is supplied in all sizes to open and close the valve.

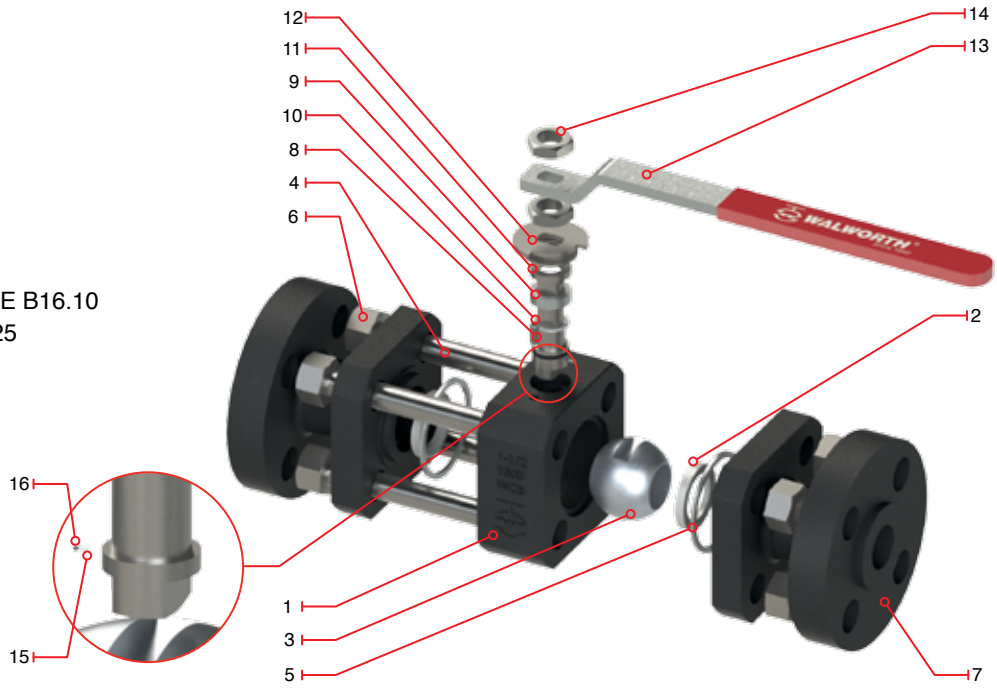
⑦ Gasket (firesafe design). It is a graphite seal that ensure safety for fire emergency as it has a reliable operation with high levels of sealing integrity between body and ends.

⑧ Antistatic device. An Inconel spring with a small ball is placed between stem-body to prevent static continuity.

WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 1500

Design Features

- Design in accordance with API 6D
- CLASS 1500 as per ASME B16.34
- Full Port
- Reduced Port (upon request)
- Three-pieces body
- Fire safe design as per API 607
- Forged Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25



Regular Bill of Materials

No.	Description	Carbon Steel with Trim F4 (SS304)	Carbon Steel with Trim F3 (SS316)	Stainless Steel 316	Carbon Steel with Trim F4 (SS304) NACE	Stainless Steel 316 with Trim F3 (SS316) NACE
1	Body	ASTM A105	ASTM A105	ASTM A182 Gr. F316	ASTM A105	ASTM A182 Gr. F316
2	Seat Ring	Nylon				
3	Ball	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
4	Stud	ASTM A193 Gr. B7	ASTM A193 Gr. B7	ASTM A193 Gr. B8	ASTM A193 Gr. B7M	ASTM A193 Gr. B8M
5	Gasket	Flexible Graphite + Stainless Steel				
6	Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 2H	ASTM A194 Gr. 8	ASTM A194 Gr. 2HM	ASTM A194 Gr. 8M
7	End	ASTM A105	ASTM A105	ASTM A182 Gr. F316	ASTM A105	ASTM A182 Gr. F316
8	Stem	ASTM A564 Gr 630 17-4PH	ASTM A564 Gr 630 17-4PH	ASTM A564 Gr 630 17-4PH	ASTM A564 Gr 630 17-4PH	ASTM A564 Gr 630 17-4PH
9	Packing	Flexible Graphite				
10	Stem Seat	RPTFE				
11	Washer	Carbon or Stainless Steel				
12	Stop Plate	Carbon or Stainless Steel				
13	Lever	Carbon Steel				
14	Stem Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 2H	ASTM A194 Gr. 8	ASTM A194 Gr. 2HM	ASTM A194 Gr. 8M
15	Antistatic Spring	Inconel 750				
16	Small ball	Stainless Steel				
*17	Identification Plate	Stainless Steel				

* Not Shown

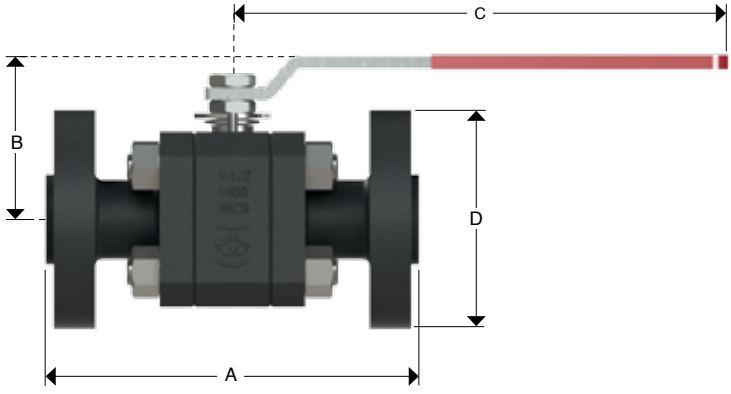
WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 1500

Design Features

- Design in accordance with API 6D
- CLASS 1500 as per ASME B16.34
- Full Port
- Three-pieces body
- Fire safe design as per API 607
- Forged Steel Construction
- Bolted Body
- Flanged ends as per ASME B16.5
- End to end dimensions as per ASME B16.10
- Butt Weld ends as per ASME B16.25

Lever Operator	
Catalog Figure No.	**Type of Ends**
7512-Z	Flanged Raised Face
7513-Z	Flanged Ring Type Joint
7514-Z	Butt Weld

Lever Operator (Reduced Port)	
Catalog Figure No.	**Type of Ends**
7512-RZ	Flanged Raised Face
7513-RZ	Flanged Ring Type Joint
7514-RZ	Butt Weld



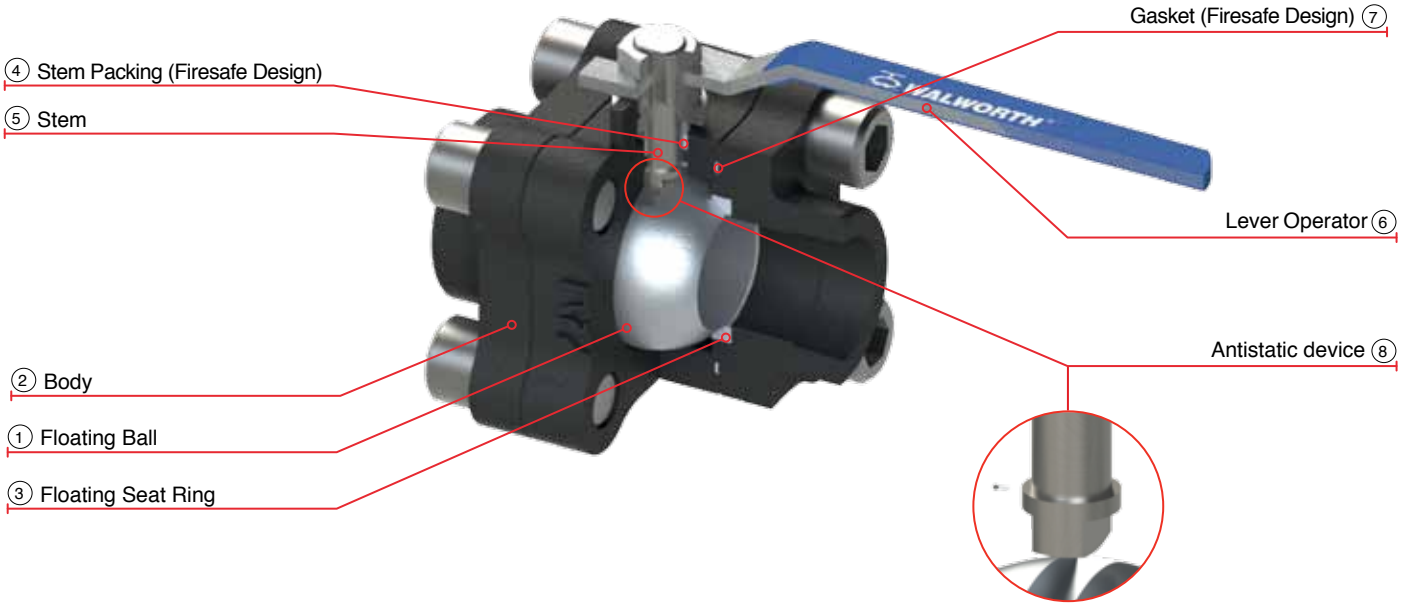
Dimensions and Weights

D Nominal Diameter	mm	15	20	25	32	40
	in	1/2	3/4	1	1 1/4	1 1/2
A (RF)	mm	216	229	254	279	305
	in	8 1/2	9	10	11	12
D	mm	121	130	149	159	178
	in	4 3/4	5 1/8	5 6/7	6 1/4	7
B	mm	75	81	105	125	150
	in	3	3 1/5	4 1/7	5	6
C	mm	180	230	230	230	400
	in	7	9	9	9	15 3/4
Weight 7512-Z	kg	9	11	17	23	29
	lb	19.85	24.26	37.49	50.72	63.95

WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 800, 1500 & 2500 (THREADED OR SOCKET WELD ENDS)

Design Features

- Design in accordance with API 608 for class 800 or as per ASME 16.34 for classes 1500 & 2500
- CLASS 800 as per API 602, 1500 & 2500 as per ASME B16.34
- Full Port
- Reduced Port (upon request)
- Three-pieces body
- Fire safe design as per API 607
- Forged Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- End to end dimensions as per WALWORTH standard
- Socket Weld ends as per ASME B16.11
- Gear Operator (Optional)



① Floating Ball. For all sizes & pressure ratings. The ball is only hold by the stem and is in movement with the direction of the fluid in order to seal with the seat rings.

② Body. Made of three pieces that includes the central body bolted with the end flanges.

③ Floating Seat Ring. Two independent dynamic soft seat rings that get in contact with the floating ball which seal in one side of the valve depending on the fluid direction.

④ Stem Packing (firesafe design). It is a graphite seal that ensure safety for fire emergency as it has a reliable operation with high levels of sealing integrity when operating the valve.

⑤ Stem. The stem design is anti blow out and with an antistatic structure which is held up by the valve body and fits in the bottom in a small cavity in the top part of the floating ball.

⑥ Lever operator. It is supplied in all sizes to open and close the valve.

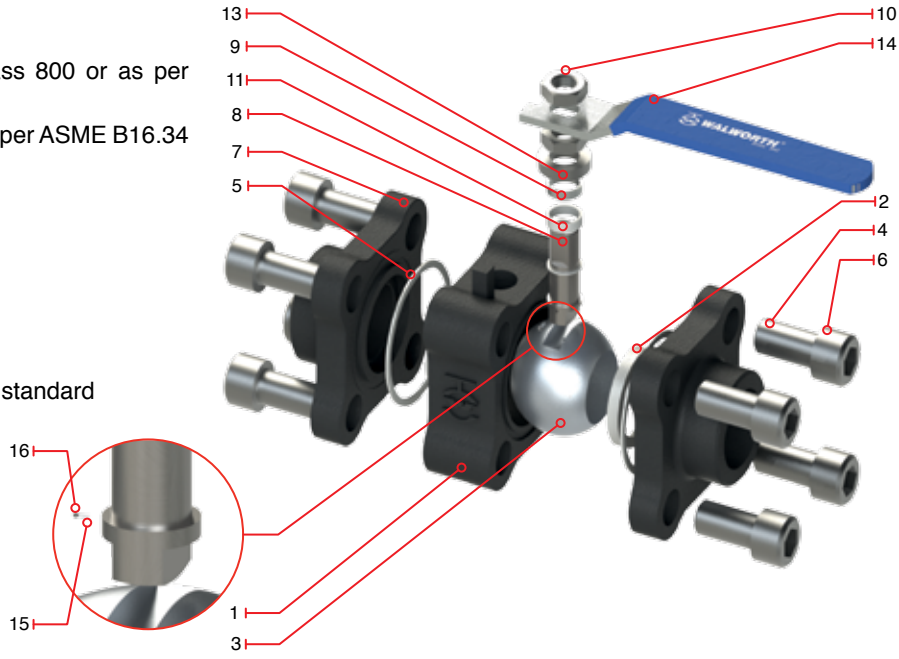
⑦ Gasket (firesafe design). It is a graphite seal that ensure safety for fire emergency as it has a reliable operation with high levels of sealing integrity between body and ends.

⑧ Antistatic device. An Inconel spring with a small ball is placed between stem-body to prevent static continuity.

WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 800, 1500 & 2500 (THD OR SW ENDS)

Design Features

- Design in accordance with API 608 for class 800 or as per ASME 16.34 for classes 1500 & 2500
- CLASS 800 as per API 602, 1500 & 2500 as per ASME B16.34
- Full Port
- Reduced Port (optional)
- Three-pieces body
- Fire safe design as per API 607
- Forged Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- End to end dimensions as per WALWORTH standard
- Socket Weld ends as per ASME B16.11
- Gear Operator (Optional)



Regular Bill of Materials

No.	Description	Carbon Steel with Trim F4 (SS304)	Carbon Steel with Trim F3 (SS316)	Stainless Steel 316	Carbon Steel with Trim F4 (SS304) NACE	Stainless Steel 316 with Trim F3 (SS316) NACE
1	Body	ASTM A105	ASTM A105	ASTM A182 Gr. F316	ASTM A105	ASTM A182 Gr. F316
2	Seat Ring	Nylon				
3	Ball	ASTM A182 Gr. F304	ASTM A182 Gr. F316	ASTM A182 Gr. F316	ASTM A182 Gr. F304	ASTM A182 Gr. F316
4	Stud	ASTM A193 Gr. B7	ASTM A193 Gr. B7	ASTM A193 Gr. B8	ASTM A193 Gr. B7M	ASTM A193 Gr. B8M
5	Gasket	Graphite				
6	Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 2H	ASTM A194 Gr. 8	ASTM A194 Gr. 2HM	ASTM A194 Gr. 8M
7	End	ASTM A105	ASTM A105	ASTM A182 Gr. F316	ASTM A105	ASTM A182 Gr. F316
8	Stem	ASTM A182 GR F304 OR 17-4PH**	ASTM A182 GR F316 OR 17-4PH**	ASTM A182 GR F316 OR 17-4PH**	ASTM A182 GR F304 OR 17-4PH**	ASTM A182 GR F316 OR 17-4PH**
9	Packing	Flexible Graphite				
10	Stem Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 2H	ASTM A193 Gr. 8	ASTM A193 Gr. 2HM	ASTM A193 Gr. 8M
11	Stem Seat	RPTFE				
*12	Stem O'ring (only for class 2500)	Viton				
13	Washer	Carbon or Stainless Steel				
14	Lever	Carbon Steel				
15	Antistatic Spring	Inconel 750				
16	Small Ball	Stainless Steel				
*17	Identification Plate	Stainless Steel				

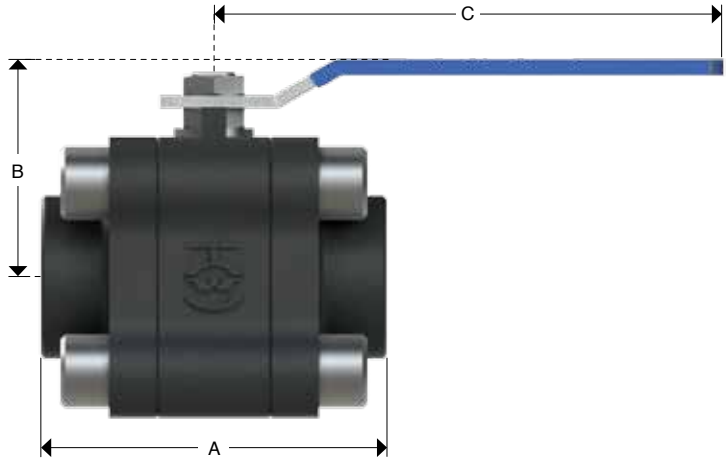
* Not Shown
** Material used as standard on class 1500 & 2500

WALWORTH FIRE SAFE FLOATING BALL VALVES CLASS 800 (THD OR SW ENDS)

- Design in accordance with API 608
- CLASS 800 as per API 602
- Full Port
- Three-pieces body
- Fire safe design as per API 607
- Forged Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- End to end dimensions as per WALWORTH standard
- Socket Weld ends as per ASME B16.11

Lever Operator	
Catalog Figure No.	**Type of Ends**
7811-Z	Threaded (S)
7817-Z	Socket Weld (SW)
7810-Z	Threaded X Socket Weld (SSW)

Lever Operator (Reduced Port)	
Catalog Figure No.	**Type of Ends**
7811-RZ	Threaded (S)
7817-RZ	Socket Weld (SW)
7810-RZ	Threaded X Socket Weld (SSW)



Dimensions and Weights

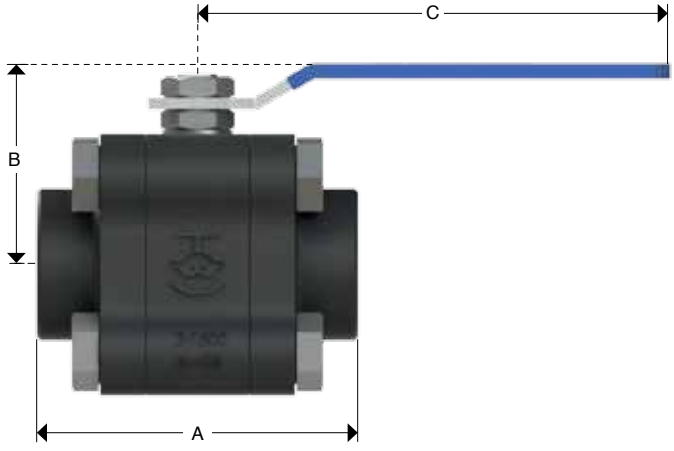
D Nominal Diameter	mm	15	20	25	40	50
	in	1/2	3/4	1	1 1/2	2
A	mm	92	108	120	145	170
	in	3 5/8	4 1/4	4 5/7	5 5/7	6 2/3
B	mm	59	68	73	90	97
	in	2 1/3	2 2/3	2 7/8	3 1/2	3 5/6
C	mm	<120	160	160	215	250
	in	4 5/7	6 2/7	6 2/7	8 1/2	9 5/6
Weight 7811-Z	kg	1	1.7	2.7	4.7	8.2
	lb	2.21	3.75	5.95	10.36	18.08

WALWORTH FIRE SAFE FLOATING BALL VALVES
CLASS 1500 (THREADED OR SOCKET WELD ENDS)

- Design in accordance with ASME 16.34
- CLASS 800 as per API 602
- Full Port
- Three-pieces body
- Fire safe design as per API 607
- Forged Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- End to end dimensions as per WALWORTH standard
- Socket Weld ends as per ASME B16.11

Lever Operator	
Catalog Figure No.	**Type of Ends**
7511-Z	Threaded (S)
7517-Z	Socket Weld (SW)
7510-Z	Threaded X Socket Weld (SSW)

Lever Operator (Reduced Port)	
Catalog Figure No.	**Type of Ends**
7511-RZ	Threaded (S)
7517-RZ	Socket Weld (SW)
7510-RZ	Threaded X Socket Weld (SSW)



Dimensions and Weights

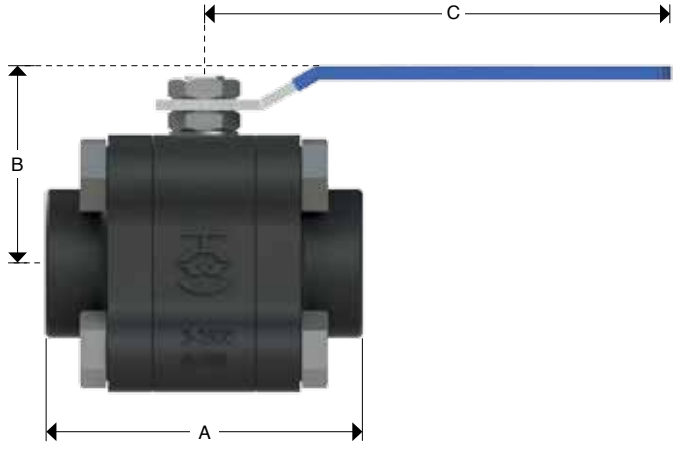
D Nominal Diameter	mm	15	20	25	40	50
	in	1/2	3/4	1	1 1/2	2
A	mm	92	108	120	145	170
	in	3 5/8	4 1/4	4 5/7	5 5/7	6 2/3
B	mm	59	68	73	90	97
	in	2 1/3	2 2/3	2 7/8	3 1/2	3 5/6
C	mm	120	160	160	215	250
	in	4 5/7	6 2/7	6 2/7	8 1/2	9 5/6
Weight 7511-Z	kg	1.2	2	3.5	6	9.5
	lb	2.65	4.41	7.72	13.23	20.95

WALWORTH FIRE SAFE FLOATING BALL VALVES
CLASS 2500 (THREADED OR SOCKET WELD ENDS)

- Design in accordance with ASME 16.34
- CLASS 2500 as per ASME B16.34
- Full Port
- Three-pieces body
- Fire safe design as per API 607
- Forged Steel Construction
- Bolted Body
- Threaded ends as per ASME B1.20.1
- End to end dimensions as per WALWORTH standard
- Socket Weld ends as per ASME B16.11

Lever Operator	
Catalog Figure No.	**Type of Ends**
7211-Z	Threaded (S)
7217-Z	Socket Weld (SW)
7210-Z	Threaded X Socket Weld (SSW)

Lever Operator (Reduced Port)	
Catalog Figure No.	**Type of Ends**
7211-RZ	Threaded (S)
7217-RZ	Socket Weld (SW)
7210-RZ	Threaded X Socket Weld (SSW)



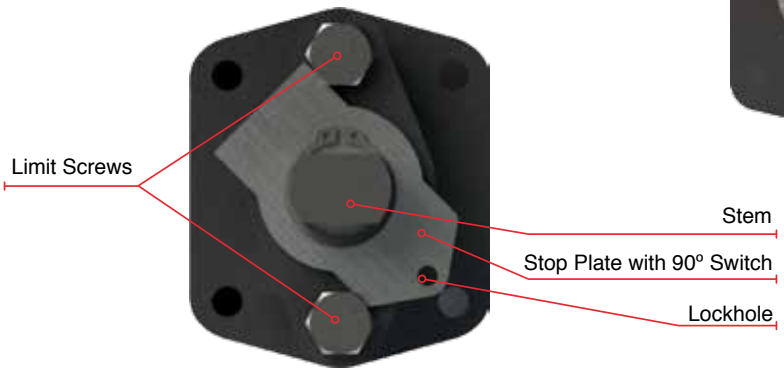
Dimensions and Weights

D Nominal Diameter	mm	15	20	25	40
	in	1/2	3/4	1	1 1/2
A	mm	170	190	205	260
	in	6 2/3	7 1/2	8	10 1/4
B	mm	62	75	80	111
	in	2 4/9	3	3 1/7	4 3/8
C	mm	220	250	250	400
	in	8 2/3	9 5/6	9 5/6	15 3/4
Weight 7211-Z	kg	2.8	4.5	7	15
	lb	6.17	9.92	15.44	33.08

ACCESSORIES FOR OPERATION

Locking Device

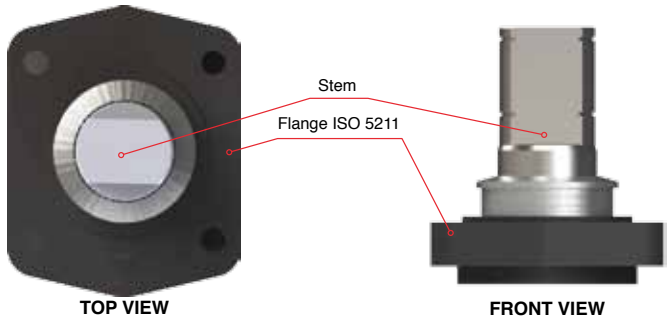
Valves are designed with locking devices as per request, just to put a lock in the lockholes to prevent misoperation in the fully opened or closed position of people not authorized to use them, specially when the valves are mounted outdoors or when the valves are not allowed to be opened or closed by technical process. This locking device is designed for standard lock usage, valves are not supplied with the lock.



Locking device for flanged valves

Flange ISO 5211

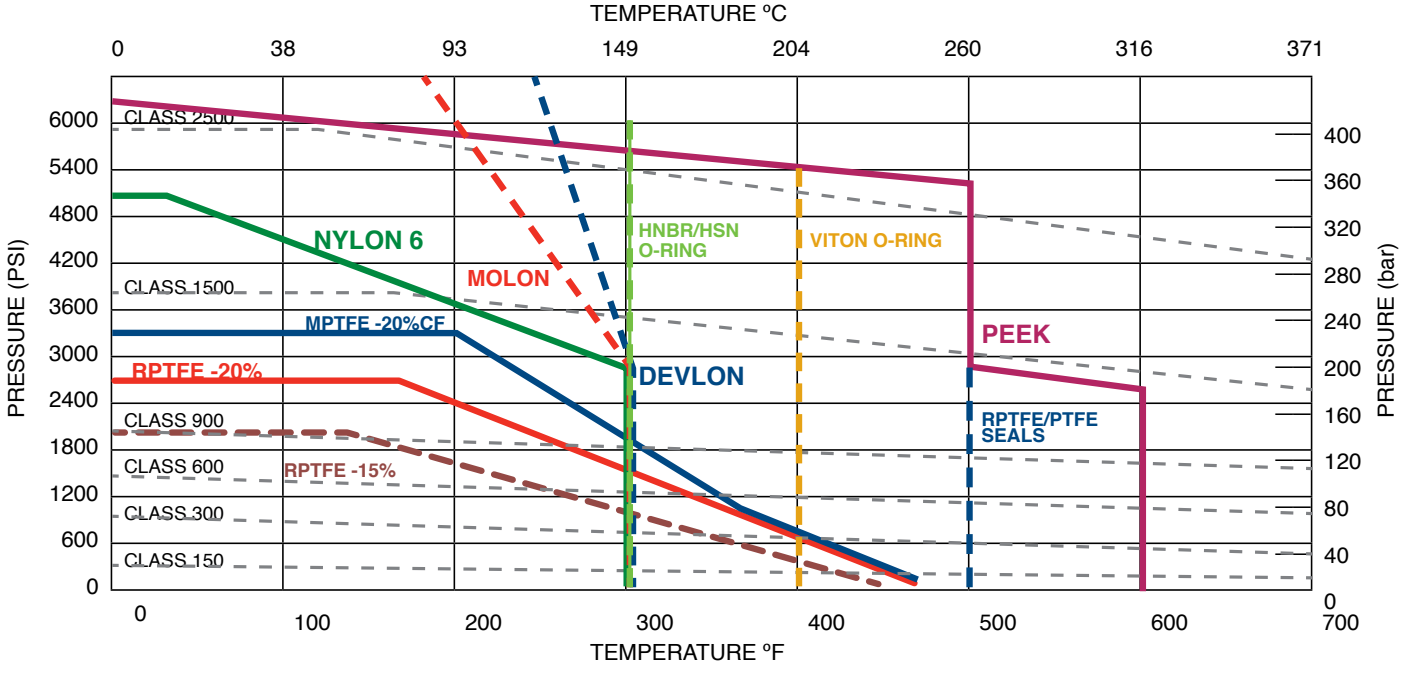
This flange connection could be provided in the top of the valve to install an operator device by removing the lever.



PRESSURE-TEMPERATURE RATINGS

PRESSURE-TEMPERATURE GRAPH FOR SOFT SEALS

The following graph shows the soft seals service performance curves at different temperatures and pressures as a reference.



PRESSURE-TEMPERATURE RATINGS

SOFT SEAT INSERT MATERIALS (PRESSURE-TEMPERATURE)

CLASS	TEMPERATURE ˚F (˚C)					
	100 (38)	200 (93)	300 (149)	400 (204)	500 (260)	600 (316)
150	RPTFE-15%	RPTFE-15%	RPTFE-15%	RPTFE-15%	RPTFE-15%	RPTFE-15%
300	RPTFE-15%	RPTFE-15%	MOLON	PEEK	PEEK	PEEK
600	RPTFE-15%	RPTFE-15%	MOLON	PEEK	PEEK	PEEK
900	NYLON 6	NYLON 6	MOLON	PEEK	PEEK	PEEK
1500	NYLON 6	NYLON 6	PEEK	PEEK	PEEK	PEEK

"O"-Ring HNBR (AED) must be used as secondary seal
"O"-Ring VITON A&B FKM (AED) must be used as secondary seal
PEEK/RPTFE seals must be used as secondary seal

FORGED CARBON STEEL ASTM A105(1)(2), ASTM A182 Gr. LF2(1) & CAST STEEL A216 Gr. WCB(1)

Temperature		Working class pressure					
°F	°C	150	300	600	800	1500	2500
- 20 to 100	-29 to 38	285	740	1480	1975	3705	6170
200	93	260	680	1360	1810	3395	5655
300	149	230	655	1310	1745	3270	5450
400	204	200	635	1265	1690	3170	5280
500	260	170	605	1205	1610	3015	5025
600	316	140	570	1135	1515	2840	4730
650	343	125	550	1100	1465	2745	4575
700	371	110	530	1060	1415	2665	4425
750	399	98	505	1015	1350	2535	4230
800	427	80	410	825	1100	2055	3430
850	454	65	320	640	850	1595	2655
900	482	50	230	460	615	1150	1915
950	510	35	135	275	365	685	1145
1000	538	20	85	170	225	430	715

(1) Not recommended to temperatures above 800°F, the carbide phase of steel may be converted to graphite. Permissible but not recommended for prolonged use above 800ºF.
(2) Only killed steel shall be used above 850°F.

FORGED STAINLESS STEEL ASTM A182 Gr. F304(1) & ASTM A351 Gr. CF8(1)

Temperature		Working class pressure					
°F	°C	150	300	600	800	1500	2500
- 20 to 100	-29 to 38	275	720	1440	1920	3600	6000
200	93	230	600	1200	1600	3000	5000
300	149	205	540	1075	1435	2690	4480
400	204	190	495	995	1325	2485	4140
500	260	170	465	9320	1240	2330	3880
600	316	140	440	885	1180	2210	3680
650	343	125	430	865	1150	2160	3600
700	371	110	420	845	1125	2110	3520
750	399	95	415	825	1100	2065	3440
800	427	80	405	710	1080	2030	3380
850	454	65	395	790	1055	1980	3300
900	482	50	390	780	1035	1945	3240
950	510	35	380	765	1020	1910	3180
1000	538	20	355	710	945	1770	2950
1050	566	20(*)	325	650	865	1630	2715
1100	593	20(*)	255	515	685	1285	2145
1150	621	20(*)	205	410	545	1030	1715
1200	649	20(*)	165	330	440	825	1370
1250	677	20(*)	135	265	355	970	1115
1300	704	20(*)	115	225	300	565	945
1350	732	20(*)	95	185	250	465	770
1400	760	20(*)	75	150	200	380	630
1450	788	20(*)	60	115	155	290	485
1500	816	15(*)	40	85	110	205	345

(1) At temperatures over 1,000°F, use only when the carbon content is 0.04% or higher.
(*) Flanged end valve ratings terminate at 1,000°F

PRESSURE-TEMPERATURE RATINGS

FORGED STAINLESS STEEL ASTM A182 Gr. F316(1) & ASTM A351 Gr. CF8M(1)

Temperature		Working class pressure					
°F	°C	150	300	600	800	1500	2500
- 20 to 100	-29 to 38	275	720	1440	1920	3600	6000
200	93	235	620	1240	1655	3095	5160
300	149	215	560	1120	1495	2795	4660
400	204	195	515	1025	1370	2570	4280
500	260	170	480	955	1275	2390	3980
600	316	140	450	900	1205	2255	3760
650	343	125	440	885	1180	2210	3680
700	371	110	435	870	1160	2170	3620
750	399	95	425	855	1140	2135	3560
800	427	80	420	745	1125	2110	3520
850	454	65	420	735	1115	2090	3480
900	482	50	415	730	1105	2075	3460
950	510	35	385	775	1030	1930	3220
1000	538	20	365	725	970	1820	3030
1050	566	20	360	720	960	1800	3000
1100	593	20(*)	305	610	815	1525	2545
1150	621	20(*)	235	475	630	1185	1970
1200	649	20(*)	185	370	495	925	1545
1250	677	20(*)	145	295	390	735	1230
1300	704	20(*)	115	235	310	585	970
1350	732	20(*)	95	190	255	480	800
1400	760	20(*)	75	150	200	380	630
1450	788	20(*)	60	115	155	290	475
1500	816	15(*)	40	85	110	205	345

(1) At temperatures over 1,000°F, use only when the carbon content is 0.04% or higher.
(*) Flanged end valve ratings terminate at 1,000°F

CAST LOW TEMPERATURE CARBON STEEL ASTM A350 Gr. LCC(1)

Temperature		Working class pressure					
°F	°C	150	300	600	800	1500	2500
- 20 to 100	-29 to 38	290	750	1,500	2,000	3,750	6,250
200	93	260	750	1,500	2,000	3,750	6,250
300	149	230	730	1,455	1,940	3,640	6,070
400	204	200	705	1,405	1,875	3,520	5,865
500	260	170	665	1,330	1,775	3,325	5,540
600	316	140	605	1,210	1,615	3,025	5,040
650	343	125	590	1,175	1,570	2,940	4,905
700	371	110	555	1,110	1,480	2,775	4,630
750	399	95	505	1,015	1,350	2,535	4,230
800	427	80	410	825	1,100	2,055	3,430
850	454	65	320	640	850	1,595	2,655
900	482	50	225	445	595	1,115	1,855
950	510	35	135	275	365	685	1,145
1000	538	20	85	170	225	430	715

(1) Not to be used over 650°F.

WALWORTH BODY AND TRIM MATERIALS

WALWORTH offers as standard the floating ball valves trim and body arrangements mentioned below, which configuration is suitable for the recommended service described in each of the materials. Any other trim or body material could be supplied upon request.

Body	WALWORTH Trim	Components		Recommended Service
		Ball	Stem	
BRASS	F1	SS-304 or Brass Chromium plated	Brass	Light commercial and residential applications including water and gas services
ASTM A216 GR. WCB OR ASTM A105	F2	Stainless Steel 410	Stainless Steel 410 or 17-4PH	Non-corrosive applications or general services including water, oil, steam and gases
ASTM A216 GR. WCB OR ASTM A105	F3	Stainless Steel 316	Stainless Steel 316 or 17-4PH	Non-corrosive applications or general services including water, oil, steam and gases
ASTM A216 GR. WCB OR ASTM A105	F4	Stainless Steel 304	Stainless Steel 304 or 17-4PH	Non-corrosive applications or general services including water, oil, steam and gases
ASTM A350 Gr. LCC OR ASTM A182 Gr. LF2	F3	Stainless Steel 316	Stainless Steel 316 or 17-4PH	Low Temperature applications
ASTM A351 Gr. CF8M OR ASTM A182 Gr. F316	F3	Stainless Steel 316	Stainless Steel 316 or 17-4PH	Corrosive systems as it has superior resistance to corrosive at high and low temperatures

TORQUE AND CV FLOW RATES FOR FLOATING BALL VALVES

The torques and CV flow rates mentioned in the table below are for reference. The torque data already includes a safety factor of 30%, in case that is needed an actuator shall be added another 20% to 30% safety factor.

The torques are calculated only for RPTFE seat inserts.

Torque and CV data of floating ball valves																		
Size	150Lb						300Lb						600Lb					
	Torque		Stem Diameter		ISO	CV	Torque		Stem Diameter		ISO	CV	Torque		Stem Diameter		ISO	CV
	lb.ft	N.m	in	mm			lb.ft	N.m	in	mm			lb.ft	N.m	in	mm		
1/2”	14.8	20	1/2	12	F04	25	22.1	30	1/2	12	F04	25	29.5	40	1/2	12	F04	25
3/4”	18.4	25	1/2	12	F04	50	25.8	35	1/2	12	F04	50	33.2	45	1/2	12	F04	50
1”	25.8	35	5/9	14	F05	100	29.5	40	5/9	14	F05	100	66.4	90	5/9	14	F05	100
1 1/4”	36.9	50	5/9	14	F05		44.3	60	5/9	14	F05		88.5	120	5/9	14	F05	
1 1/2”	44.3	60	5/6	21	F07	270	59.0	80	5/6	21	F07	270	95.9	130	5/6	21	F07	270
2”	51.6	70	5/6	21	F07	490	81.1	110	5/6	21	F07	490	140.1	190	1	26	F07	490
2 1/2”	84.8	115	1	26	F07	950	136.4	185	1	26	F07	950	265.5	360	1	26	F10	950
3”	110.6	150	1	26	F07	1160	166.0	225	1	26	F07	1160	339.3	460	1 1/9	28	F10	1160
4”	180.7	245	1 1/4	32	F10	2200	302.4	410	1 1/4	32	F10	2200	567.9	770	1 4/7	40	F12	2200
5”	350.3	475	1 1/4	32	F12	3800	704.4	955	1 1/4	32	F12	3800						
6”	461.0	625	1 4/7	40	F12	5100	1003.1	1360	1 4/7	40	F12	5100						
8”	1003.1	1360	1 8/9	48	F12	9300	1696.4	2300	1 8/9	48	F14	9300						
10”	1622.6	2200	2 1/6	55	F16													

WALWORTH FLOATING BALL VALVES FIGURES

Model		Class		Operation		Ends	
7	Floating Ball Valve	1	150 ANSI	1	Lever	1	Threaded (S)
		2	2500 ANSI	2	Gear Operator	2	Raised Face (RF)
		3	300 ANSI	3	Actuator	3	Ring Type Joint (RTJ)
		4	2000 WOG	5	Bare Stem prepared to receive actuator	4	Butt Weld (WE)
		5	1500 ANSI			7	Socket Weld (SW)
		6	600 ANSI			0	Threaded X Socket Weld (SSW)
		7	600 WOG				
		8	800 API				
		9	900 ANSI				
		0	1000 WOG				

Modifier Suffixes for Floating Ball Valves	
R	Reduced port
Z	Fire Safe valve

Examples:

7312-RZ	"Fire safe floating ball valve, class 300, wrench operated, reduced port with raised face ends"
7817-Z	"Fire safe floating ball valve, class 800, wrench operated with socket weld ends"
7410	"Floating ball valve class 2000 WOG, wrench operated with threaded by socket weld ends"

HOW TO ORDER

WALWORTH Valves are identified by a figure number which describes main features. Identification procedure is intended to assist customers to specify the sort of valve required according to a specific need.

Size	WALWORTH Figure	Type of Port	Design	Trim	Base Material ASTM	Supplementary Requirements
3/8"	7010	R= Reduced	Z= Firesafe	F1=Brass	Carbon Steel	GO= Gear Operator
1/4"	7011	In Blank= Full	In Blank= Non Firesafe	F2=SS410	A105	MOV= Motor Operated Valve
1/2"	7017			F3=SS316	WCB	POV= Pneumatic Operated Valve
3/4"	7410			F4=SS304	Low Carbon Steel	LD= Locking Device
1"	7411				LF2	NACE MR0175
1 1/4"	7417				LCC	NACE MR0103
1 1/2"	7112				Stainless Steel	SP= Special Paint
2"	7113				F316	SG= Special Gasket
2 1/2"	7114				F304	SPK= Special Packing
3"	7122				CF8	VOC= Certification of Volatile organic compounds
4"	7123				CF8M	
6"	7124					XX= Additional requirements
8"	7312					
10"	7313					
12"	7314					
	7322					
	7323					
	7324					
	7612					
	7613					
	7614					
	7622					
	7623					
	7624					
	7512					
	7513					
	7514					
	7810					
	7811					
	7817					
	7510					
	7511					
	7517					
	7210					
	7211					
	7217					
	7711					

Examples:	
3/4"-7011-F4-A105	3/4" Floating ball 1000 WOG Threaded ends Full Port Non Firesafe Design Trim F4 (SS304) Body A105
2"-7312-RZ-F3-CF8M-NACE MR0175	2" Floating ball class 300 Raised Face ends Reduced Port Firesafe Design Trim F3 (SS316) Body CF8M as per NACE MR0175

DESIGN BASIS

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

API — American Petroleum Institute:

API 598	Valve Inspection and Testing
API 6D	Pipeline Valves (Gate, Ball and Check)
API 602	Pressure rating for class 800
API 607	Fire Test for 1/4 Turn Soft-Seated Valves
API 608	Metal Ball Valves-Flanged, Threaded and Welding ends

ANSI Standards — National Standards Institute:

ANSI B1.20.1	NPT General Purpose Pipe Threads (Inches)
ANSI B16.5	Pipeline Flanges and Flanged Fittings
ANSI B16.10	Face to Face and End to End Valve Dimensions
ANSI B16.11	Socket Weld General Purpose Dimensions
ANSI B16.25	Butt Weld Ends

MSS Standards — Manufacturer's Standardization Society

MSS SP-25	Standard Marking System for Valves, Fittings, Flanges and Unions
MSS SP-55	Quality Standard for Steel Castings for Valves, Flanges, Fittings and Other Piping Components/Visual Method for Evaluation of Surface Irregularities
MSS SP-72	Ball Valves with Flanged or Butt-Welding Ends for General Service
MSS SP-110	Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends

ASTM Standars — American Society for Testing and Materials:

ASTM A-105	Standard Specification for Carbon Steel Forgings for Piping Applications
ASTM A-182	Standard Specification for Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings and Valves and Parts for High Temperature Service
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 High Pressure and High Temperature Service
ASTM A-216	Standard Specification for Carbon Steel Castings, Suitable for Fusion Welding and High Temperature Service
ASTM A-276	Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes
ASTM A-320	Standard Specification for Alloy Steel Bolting Materials for Low Temperature Service
ASTM A-350	Standard Specification for Carbon and Low Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components
ASTM A-351	Standard Specification for Steel Austenitic and Austenitic-Ferritic (Duplex) Castings for Pressure Containing Parts
ASTM A-352	Standard Specification for Steel, Ferritic and Martensitic Castings for Pressure Containing Parts, Suitable for Low Temperature Service
ASTM A-515	Standard Specification for Carbon Steel Pressure Vessel Plates for Intermediate and High Temperature Service
ASTM A-564	Standard Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes
ASTM B-124	Standard Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes
ASTM B-283	Standard Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed)

NACE Standard — National Association of Corrosion Engineers

NACE MR0175	Sulfide Stress Corrosion Cracking Resistant Metallic Materials for Oil Field Equipment

DESIGN BASIS

ASME Code	American Society of Mechanical Engineers	
	ANSI/ASME B16.34	Valves—Flanged, Threaded, and Welding End (Pressure-temperature ratings)
	ANSI/ASME B31.1	Power Piping
	ANSI/ASME B31.2	Fuel Gas Piping
	ASME/ANSI B31.3	Process Piping
BS Code	British Standard Institution	
	BS 5351	Specification for steel ball valves for the petroleum, petrochemical and allied industries

Boiler 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 of Surface Irregularities

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 FOB 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) covered 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 supplier price in effect at time of quotation. Actual invoice Price will be adjusted in accordance with the supplier's escalation policy.

DEFERRED SHIPMENTS: If for any reason the customer desires to delay shipments more than 30 days after manufacturing is complete or to place a 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 bellow.

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 (5%) percent of prices of stock items.
- Ten (10%) percent of price of stock items ordered in quantities which exceed normal inventory levels.
- Five (5%) percent 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 overdure will be subject to a service charge of 11/2 % 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 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 manufacture 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 acceptance. 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 CERTIFICATE: WALWORTH, exhibits this product Warranty, for a 12 month period in operation or 18 months in storage, whatever comes firs as of the date of product delivery.

WALWORTH, guarantees that products are fabricated according to quality, design and manufacturing standards and customer requirements as well. When the buyer expressly and in written confirms the non-compliance of such standards, WALWORTH is forced to comply with the repair, replacement or to issue the written authorization for the buyer or another agent, to replace or repair at no cost for the buyer, at WALWORTH fabrication costs, those parts confirmed as defective.

This warranty is valid when the material selection by the customer for the design, material arrangement (TRIM, bodies, ends, operation devices, etc.) internal and/ or external overlays had been the proper ones for the operation fluid.
This warranty is applicable if operation and service conditions are maintained as per the requirements of the product.

To validate the Warranty, the user is responsible of performing the proper maintenance according to what is stated in the Operation and Maintenance Manual applicable to the product. WALWORTH, reserves the right to request the records (evidence) to confirm the correct maintenance.

WALWORTH obligations are limited and will be released of any responsibility when the products are altered, repaired or replaced without WALWORTH' s written authorization.

Except of what is stated in this document WALWORTH waives and excludes any other warranty expressed or implied, for loss, direct damage, indirect damage or consequential of other products, processes, installations or equipment of the buyer or end user, either partial or total, due to material defects and/or work and/or WALWORTH product design.

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 USD net will be billed at a minimum charge of $100.00 USD. Repair parts will be billed at a minimum charge of $50.00 USD.

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

WALWORTH®

Since 1842

www.walworth.com

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