



**WALWORTH**®

*Since 1842*

# CORPORATE PROFILE





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YARMOUTH RESEARCH AND TECHNOLOGY

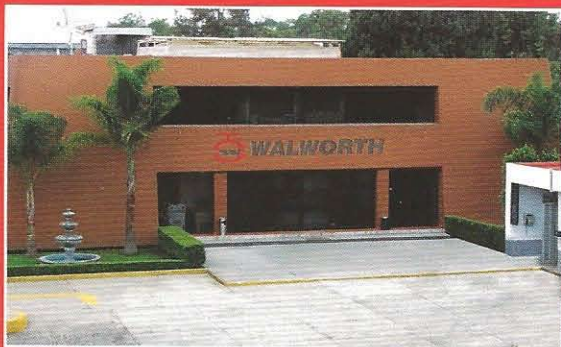
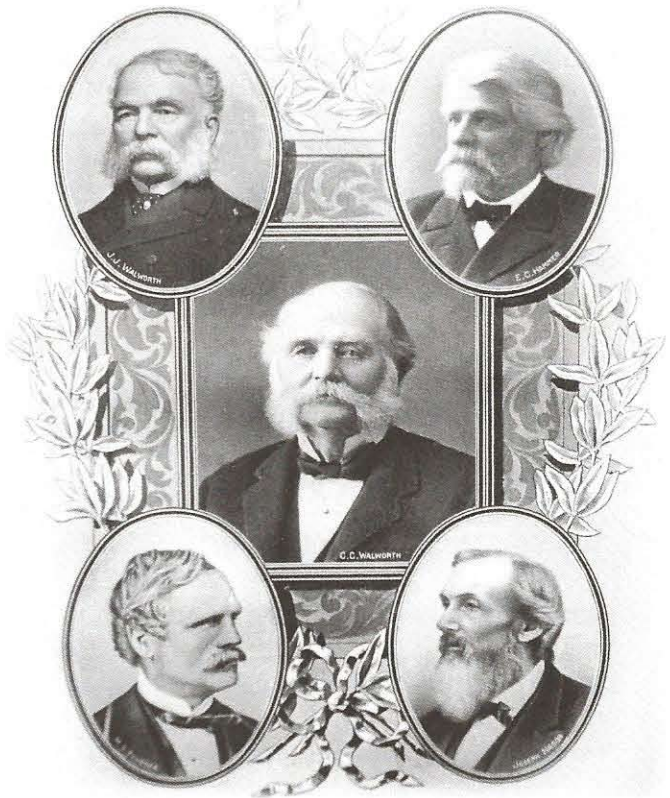


## WALWORTH COMPANY

**WALWORTH** Company is one of the world's most dominant and comprehensive global industrial valve manufacturers and marketers. Founded in 1842 by James Walworth, the Company has consistently dedicated itself to the design and manufacture 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, the Company has produced more than 40,000 different types of products and serves as a global supplier to varied markets utilizing the expertise of over 500 trained employees. **WALWORTH** retains facilities in the United States, Mexico and China for the complete range of valves and flow control instruments required.

Our manufacturing system includes utilization of Company - directed raw material warehouses, up-to-date specialized machinery, welding processes such as SMAW, GMAW, SAW, PAW; assembly testing for low pressure, high pressure, at low or high temperature, painting processes, crating and shipment. With Company-directed facilities and stocks in the United States and Mexico, **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. With Company-owned facilities in China, Walworth is serving Asia, the Middle East, Far East and Australia, today's fastest growing industrial arena in the world. Walworth is proud to meet the ultimate demands of customer satisfaction, especially in quality, cost effectiveness and services in all parts of the world.



## WALWORTH VALUES

### MISSION

To satisfy the needs of Customers in terms of quality and service and comply with expectations of employees, suppliers and share holders.

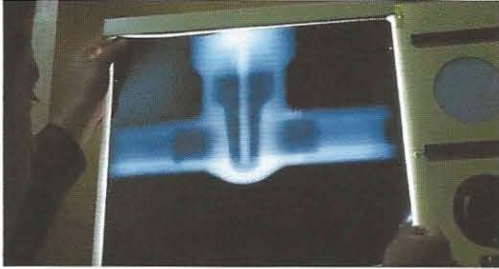
### VISION

To maintain our good reputation in terms of service, delivery and quality which has been the main goal during all these years that has positioned **WALWORTH** brand as a reliable Company for over 167 years in the market. To continue developing new products according to the needs of the market in terms of technology, environment and quality requirements.

**WALWORTH** does manufacture valves, but at the same time gives service to our Customers.

## QUALITY CONTROL EQUIPMENT

In order for **WALWORTH** to maintain the highest quality assurance level and assure the products comply with International Quality Standards, in-house equipment 15 are kept for monitoring control. Some of these equipment are:



**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 Test loop Laboratory exists for design validation of **WALWORTH** products performing the test at maximum design pressure and cycling the valves from 3000 to 5000 cycles. Some tests span more than 4 months to be completed.

**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 though we receive MTR's from our suppliers and foundries.

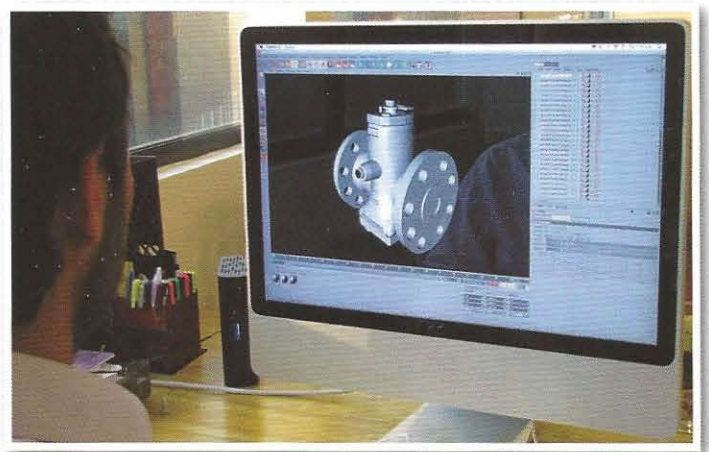
**Hardness Test Equipment.**- Either lab or shop test, Walworth use hardness tester equipments as Rockwell B, C Brinell or Vickers to check compliance against specifications.



## 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.

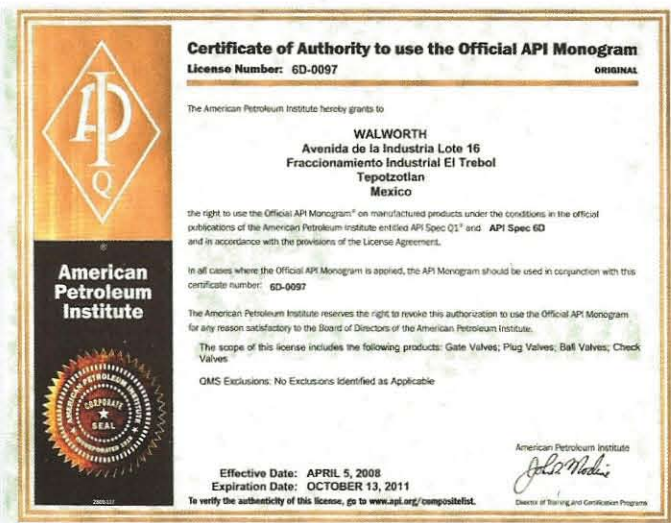
Design is made using the most advanced technology and equipment, using finite elements and CAD system programs to ensure the proper assembly and performance of products since the concept, calculation and detailed drawings for manufacturing. **WALWORTH** is a leader in the development of products according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



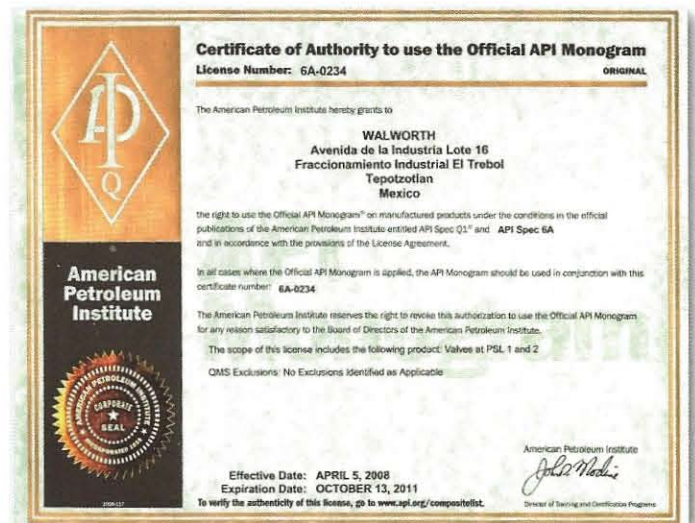
## WALWORTH QUALITY SYSTEM

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 consists of a rigorous quality control as well as the selection of raw materials from approved vendors. Control over our manufacturing process is vital. Serial numbers allow **WALWORTH** to monitor and trace fabrication processes along with the materials of components.

A summary of the main certifications achieved are:



- 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 ISO-9001 No. 038 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 Industrial de Válvulas, S.A. de C.V.**  
Av. De la Industria Lote 16,  
Fracc. Industrial El Trebol,  
Tepotzotlán, Edo. de México,  
CP 54600, Mexico

Herein 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 (Modul H)**  
(The CE-Markings E, E, D1, and D are performed by Module H1)

Audit report no.: USA/Q-10 0012

Scope: **Design and Manufacturing of industrial valves in accordance with the attached Scope of Validity.**

Manufacturing plant/supplier: **Av. de la Industria Lote 16,  
Fracc. Industrial El Trebol,  
Tepotzotlán, Edo. de México,  
CP 54600, Mexico**

Valid until: **April 07, 2013**

Cologne, April 08, 2010

TÜV Rheinland-Certification Body for Pressure Equipment  
TÜV Rheinland Industrie Service GmbH  
Notified Body, ID-No. 0020  
Am Drachen Stein, D-51105 Köln



Dr.-Ing. Wichert

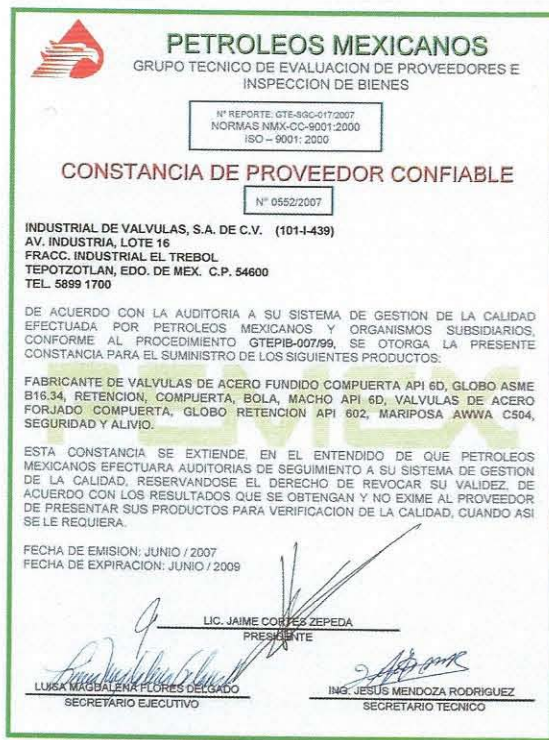
www.tuv.com

**TÜVRheinland**  
Precisely Right.

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



• Certificate of Reliable Supplier No. 199/07 issued by CFE in accordance with ISO-9001 Quality Assurance System.



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



**Besides the Quality System Certifications, WALWORTH has achieved the following specific product certifications:**

## CERTIFICATE

Certificate No.: 01 202 USA-TA-09-79768

Concerning the Agreement with the Technical Requirements in:  
**TA-Luft 2002, VDI 2440 Nov. 2000, Sec. 3.3.1.3**

Test report: 209140      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  $\leq 10^{-4}$  mbar x l/(s x m) with a helium mass spectrometer under the following conditions. The BFV Valve with the examined mechanical shaft seals fulfils the requirements of Section 5.2.8.4 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 5205F	
Sealing System:	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: (2/min):	0 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: TÜV Rheinland North America, Inc.  
Industrial Services Division, Newtown, CT, USA

YARMOUTH RESEARCH AND TECHNOLOGY  
Matthew J Wasielewski, PE  
434 Walnut Hill Road, N. Yarmouth, ME USA  
www.yarmouthresearch.com

Kasuma J. Santos, Jr. - Examiner

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

YARMOUTH RESEARCH AND TECHNOLOGY

**PROJECT SUMMARY**

Project Number: 99069

Customer: The Walworth Company

Contact: David Cornelsen

Date(s) of Test: 12/8/99 - 12/20/99

Product(s) Tested: One 6" Class 300 Gate Valve with Empak-Mex 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 645 psig. The valve was cycled with a 43 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

Phone or Fax (207) 846-3686  
92 East Elm Street - P.O. Box 519 - Yarmouth, Maine 04096-0519

- 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".

**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.

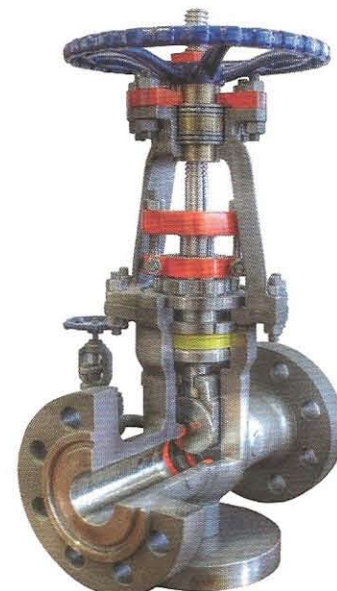
The successful test of the 12-inch Class 150 API 6D Ball Valve qualifies this design/type of valve as meeting the requirements of API Spec 6FA / API Std 607 for sizes 12-inch through 24-inch in pressure classes 150 and 300.

Sincerely,

David J. Cornelsen P.E.  
President

34802 MATHER DRIVE • KATY, TEXAS 77494  
TELEPHONE (281) 395-5071 • TELEFAX (281) 395-5013

- Fire Test Certificate No. 04/04 in accordance with API-6FA and API Standard API-607 for Trunnion Ball Valves in accordance with API-6D.



• Emissions after 500 cycles at ambient and 350 °F issued by Yarmouth Research and Technology Lab. After 500 cycles the measurement result was less than 50 ppm.



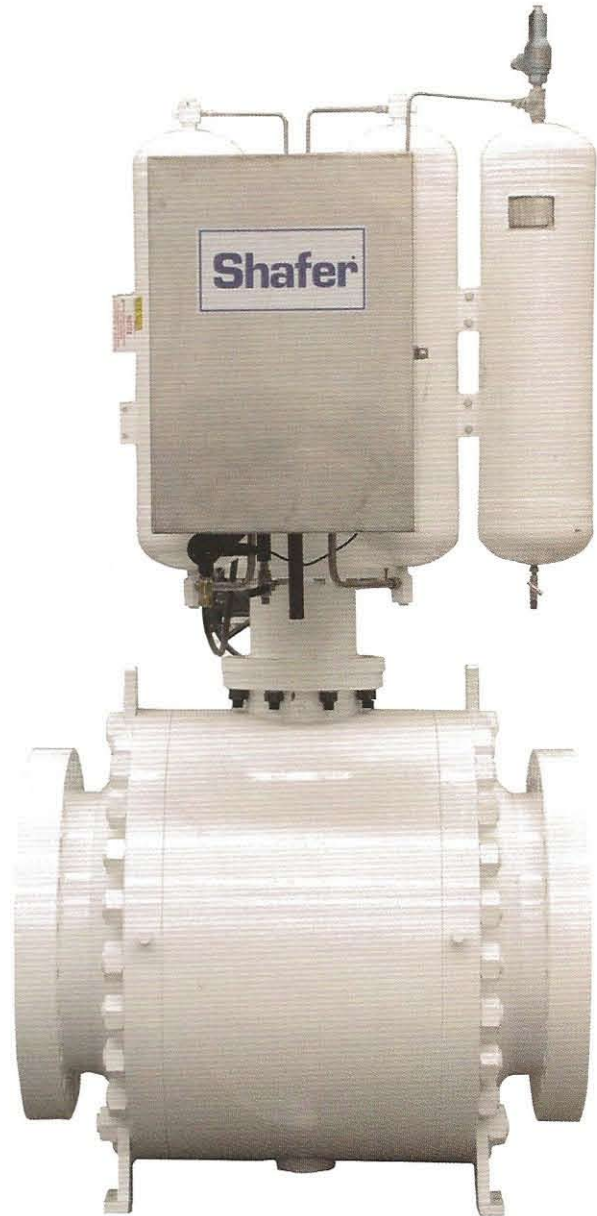
FUGITIVE EMISSION TEST CERTIFICATE	
Name of Manufacturer:	Walworth
Description of Valve:	3 inch Class 300 Gate Valve 5206F with Ultra Low Emissions Packing
Test Specification:	ISO 15848-1 (2006) -Industrial valves — Measurement, test and qualification procedures for fugitive Emissions Part 1: Classification system and qualification procedures for type testing of valves
Test Parameters:	Endurance Class   CO1 – 500 Cycles Performance Class   BH
	Temperature Classes   Ambient, 200C, 400C, -20C Pressure Class   ANSI 300
Test Date:	August 2009 Certificate Number:   20983-3
<b>RESULTS</b>	
The packing qualifies to Class B leakage levels with no readings above 3.9 e-5 atm cc/sec throughout the tests.	
This certificate refers to the above mentioned product for the test conducted. This certificate does not imply assessment of the production of the product and future performance.	
Laboratory Information	
Name:	Yarmouth Research and Technology
Address:	434 Walnut Hill Road North Yarmouth, ME 04097 USA
Tester:	Matthew Wasielewski, PE info@yarmouthresearch.com www.yarmouthresearch.com (207) 829-5359




FUGITIVE EMISSION TEST CERTIFICATE	
Name of Manufacturer:	Walworth
Description of Valve:	8 inch Class 300 Gate Valve 5206F with Ultra Low Emissions Packing
Test Specification:	ISO 15848-1 (2006) -Industrial valves — Measurement, test and qualification procedures for fugitive Emissions Part 1: Classification system and qualification procedures for type testing of valves
Test Parameters:	Endurance Class   CO1 – 500 Cycles Performance Class   BH
	Temperature Classes   Ambient, 200C, 400C, -20C Pressure Class   ANSI 300
Test Date:	August 2009 Certificate Number:   20985-8
<b>RESULTS</b>	
The packing qualifies to Class B leakage levels with no readings above 6.1 e-5 atm cc/sec throughout the tests.	
This certificate refers to the above mentioned product for the test conducted. This certificate does not imply assessment of the production of the product and future performance.	
Laboratory Information	
Name:	Yarmouth Research and Technology
Address:	434 Walnut Hill Road North Yarmouth, ME 04097 USA
Tester:	Matthew Wasielewski, PE info@yarmouthresearch.com www.yarmouthresearch.com (207) 829-5359




FUGITIVE EMISSION TEST CERTIFICATE	
Name of Manufacturer:	Walworth
Description of Valve:	16 inch Class 150 Gate Valve 5206F with Ultra Low Emissions Packing
Test Specification:	ISO 15848-1 (2006) -Industrial valves — Measurement, test and qualification procedures for fugitive Emissions Part 1: Classification system and qualification procedures for type testing of valves
Test Parameters:	Endurance Class   CO1 – 500 Cycles Performance Class   BH
	Temperature Classes   Ambient, 200C, 400C, -20C Pressure Class   ANSI 150
Test Date:	August-September 2009 Certificate Number:   20983-16
<b>RESULTS</b>	
The packing qualifies to Class B leakage levels with no readings above 7.8 e-5 atm cc/sec throughout the tests.	
This certificate refers to the above mentioned product for the test conducted. This certificate does not imply assessment of the production of the product and future performance.	
Laboratory Information	
Name:	Yarmouth Research and Technology
Address:	434 Walnut Hill Road North Yarmouth, ME 04097 USA
Tester:	Matthew Wasielewski, PE info@yarmouthresearch.com www.yarmouthresearch.com (207) 829-5359

# MANUFACTURING CAPACITY

The most advanced manufacturing techniques are employed at **WALWORTH**, which are: numerically controlled machine centers (CNC), horizontal and vertical lathes, multiple or single radial drills, threading machines, circular and horizontal grinders, milling and lapping machines, welding processes like SMAW, GMAW, PAW, SAW, heat treatment furnaces, overhead cranes, hydrostatic benches, standard and special painting installations, among others.

## PRODUCTION CAPACITY ACCORDING TO LINE

PRODUCT LINE	SIZE	PRESSURE CLASS RANGE (PSI)	UNITS PER MONTH	TONS PER MONTH
Bolted Bonnet Cast Steel Valve	2" to 72"	150# to 2500#	3,570	380
Bolted Bonnet Forged Steel Valve	1/4" to 2"	150# to 2500#	13,500	34
Welded Bonnet Forge Steel Valve	1/4" to 2"	150# to 2500#	1,500	3
Trunnion Mounted Ball Valve	2" to 60"	150# to 1500#	800	300
Bottom Entry Steel Lubricated Plug Valve	1/2" to 36"	150# to 2500#	700	52
Top Entry Steel Lubricated Plug Valve	1/2" to 36"	2000# to 5000# API	80	8
Cast Iron Lubricated Plug Valve	1/2" to 18"	175# to 500# CWP	4,000	90
Pressure Seal Cast Steel Valve	1/2" to 24"	600# to 2500#	200	145
Duo Check Valve	2" to 36"	150# to 1500#	2,000	78
Slab Gate Valve	2" to 48"	150# to 1500#	450	80
Expanding Gate Valve	2" to 48"	150# to 2500#	50	40
AWWA Butterfly Valve	3" to 72"	75# to 150# B AWWA	150	65
Floating Ball Valve	1/4" to 8"	150# to 2000#	2,000	60
Steel Safety, Relief & Safety & Relief Valve	1/2" to 10"	150# to 5000#	120	1.5
Bronze Safety & Safety & Relief Valve	1/2" to 3"	150# to 300#	500	1.2
Rising Stem Iron Valve (OS & Y)	2" to 36"	125#	1,500	90
Non Rising Stem Iron Valve (NRS)	2" to 36"	125#	600	25
Cast Industrial Bronze Valve	1/4" to 2"	125# to 150#	2,000	2

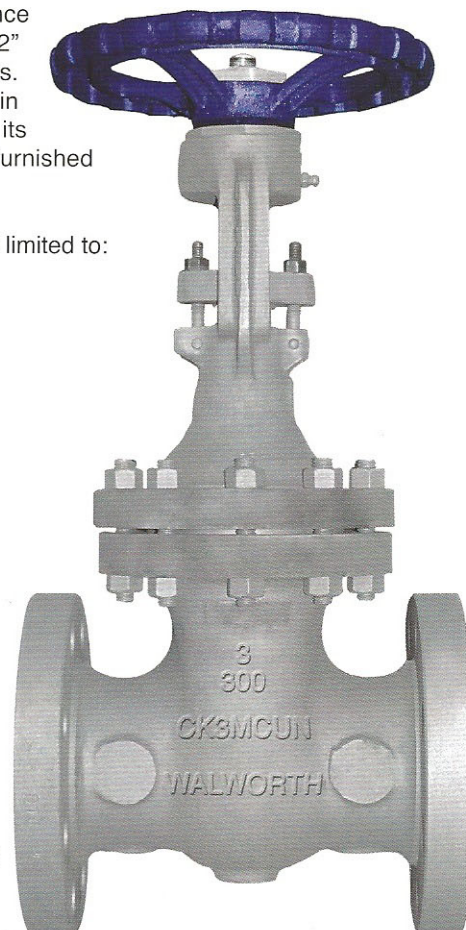


# CAST STEEL GATE, GLOBE AND CHECK VALVES

Cast Steel Valves are the primary **WALWORTH** product line, manufactured in accordance with ANSI/ASME Classes 150, 300, 600, 900, 1500 & 2500# and sizes from 2" up to 72" nominal diameter, providing the End User a wide variety of valves to satisfy its needs. **WALWORTH** always keeps these valves in stock in the most common trims used in the industry. One of the most important features of **WALWORTH** Cast Steel Valves is its guarantee to meet and exceed 50 ppm maximum low fugitive emissions leakage rate as furnished "off the shelf" without a Customer's special order requirement.

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

- a) Carbon Steels like WCA, WCB, WCC, etc.
- b) Low Carbon Steels like LCB, LCC, etc.
- c) Low Alloy Steels like WC1, WC5, WC6, WC9, etc.
- d) Low Carbon Low Alloy Steels like LC2, LC3, etc.
- e) Medium Alloy Steels like C5, C12, C12A, etc.
- f) Stainless Steels like CF8, CF8M, CF8C, CF10, CG8M, etc.
- g) Low Carbon Stainless Steels like CF3, CF3M, CG3M, etc.
- h) Super Stainless Steels like CN7M (Alloy 20), CN3M (Alloy 20 modified), CT15C, etc.
- i) Duplex Stainless Steel like CE8MN, CD6MN, CD3MN, etc.
- j) High Nickel Alloys like 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.
- k) Super Duplex Stainless Steel like CE3MN, CD3MNCuN, etc.
- l) Aluminum Bronze like 95500, 95600, 95800, etc.



## DESIGN FEATURES

- Gate Valves in accordance with API-600, solid, flexible or parallel slide wedge/disc.
- Stainless steel & nickel alloys Gate Valves can be in accordance with API-603 or API-600
- Gate and Globe Valves for Cryogenic service with gas column in accordance with BS-6364.
- Flange dimensions in accordance with ASME B16.5 for valves up to 24" nominal diameter.
- Flange dimensions as per MSS-SP-44, ASME/ANSI b16.47 Series A or B for Valves over 26" nominal diameter.
- Globe Valves in accordance with ASME/ANSI B16.34 and wall thickness per API-600
- Check Valves in accordance with ASME/ANSI B16.34, API-6D and wall thickness per API-600
- 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.
- Low fugitive emissions control.
- NACE Service either MR-01-75 or MR-01-03.
- Test in accordance with API-598.

## PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS AS PER ASME B16.34	ENDS
Gate	2" to 72"	150, 300, 600, 900, 1500 & 2500 #	RF, RTJ or BW
Globe	2" to 20"	150, 300, 600, 900, 1500 & 2500 #	RF, RTJ or BW
Swing Check	2" to 48"	150, 300, 600, 900, 1500 & 2500 #	RF, RTJ or BW

# FORGED STEEL GATE, GLOBE AND CHECK VALVES

**WALWORTH** offers this product line manufactured in accordance with API-602 and ANSI Classes 800, 1500 and 2500 # for socket weld, threaded and combined ends. Available also Integral Flanges in 150, 300, 600, 900, 1500 & 2500# either raised face or ring type joint ends.

**WALWORTH** keeps a large quantity of these valves in stock in the most common trims used by the industry. For Certain Customer applications where forged material is not available (specifically for high nickel alloys), **WALWORTH** has developed this product line but produced from sand casting. In order to keep the same quality level as forged, these castings are produced with 10 % of each lot to be subject to X-ray examination

**WALWORTH** offers the majority of materials known and used for this product line, including but not limited to:

- a) Carbon Steels like A105.
- b) Low Carbon Steels like LF2, LF3, etc.
- c) Low Alloy Steels like F1, F11, and F22, etc.
- d) Medium Alloy Steels like F5, F5a, F9, etc.
- e) Stainless Steel Valves like F304, F316, etc.
- f) Low Carbon Stainless Steel like F304L, F316L, etc.
- g) Duplex Stainless Steel like F51, F55, etc
- h) Nickel Alloys like Inconel, Incoloy, Monel, etc.

When cast steel valves are manufactured in accordance with API-602 as an acceptable option, **WALWORTH** offers this product line in the following materials either socket weld, threaded or flanged ends:

- a) Stainless Steels like CF8, CF8M, CF8C, CF10, CG8M, etc.
- b) Low Carbon Stainless Steels like CF3, CF3M, CG3M, etc.
- c) Super Stainless Steels like CN7M (Alloy 20), CN3M (Alloy 20 modified), CT15C, etc.
- d) High Nickel Alloys like 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.
- e) Duplex Stainless Steel like CE8MN, CD6MN, CD3MN, etc.
- f) Super Duplex Stainless Steel like CE3MN, CD3MNCuN, etc.
- g) Aluminum Bronze like 95500, 95600, 95800, etc.



## DESIGN FEATURES

- Gate, Globe, Piston Check, Swing Check and Ball Check Valves “T” & “Y” pattern design (for Globe and Stop Check Valves) in accordance with API-602.
- Socket Weld, Threaded, Combined or Flanged RF or RTJ ends.
- Bolted Bonnet or Welded Bonnet options.
- Renewable or integral seats.
- Fugitive emissions control.
- NACE Service either MR-01-75 or MR-01-03.
- Test in accordance with API-598

## PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS AS PER ASME/ANSI B16.34 FOR SW OR NPT ENDS	PRESSURE CLASS AS PER ASME/ANSI B16.34 FOR RF OR RTJ ENDS
Gate	1/4" to 2"	800, 1500 & 2500#	150, 300, 600, 1500 & 2500 #
Globe	1/4" to 2"	800, 1500 & 2500#	150, 300, 600, 1500 & 2500 #
Piston Check	1/4" to 2"	800, 1500 & 2500#	150, 300, 600, 1500 & 2500 #
Ball Check	1/4" to 2"	800, 1500 & 2500#	150, 300, 600, 1500 & 2500 #
Swing Check	1/4" to 2"	800, 1500 & 2500#	150, 300, 600, 1500 & 2500 #

# TRUNNION MOUNTED BALL VALVE

Trunnion Mounted Ball valves are used primarily, but not limited to, the Oil & Gas Industry. Trunnion Mounted Ball valves are offered in Pressure Classes 150, 300, 600, 900, 1500 & 2500# and sizes from 2" up to 60" nominal diameter.

**WALWORTH** Trunnion Mounted Ball valves meet API-6D full bore specifications for piggable service avoiding turbulence and fluid pressure drop through the valve. **WALWORTH** offers an array of materials used for this product line, including but not limited to:

- a) Carbon Steels like A105 or WCB.
- b) Low Carbon Steels like LF2, LF3 or LCB, LCC, etc.
- c) Stainless Steels like F316, F347 or CF8M, CF8C, etc.
- d) Duplex Stainless Steel like F51 or CD3MN.
- e) Super Duplex Stainless Steel like F55 or CD3MWCuN.

**WALWORTH** offers a variety of trim materials including but not limited to the full API-6D published trim list. Additional trims are available such as high strength steels like 17-4pH, duplex and super duplex steels (UNS S31803 or UNS S32750), high nickel alloys (Monel, Inconel, Incoloy, Hastelloy, etc), among others.



## DESIGN FEATURES

- Trunnion Mounted Ball Valves in accordance with API-6D.
- Bolted Body or Welded Body.
- Metal to Metal Tungsten Carbide and stellite 6 coatings option available.
- Carbon steel body, Inconel 625 internal cladding available.
- Meets Fire Test in accordance API-6FA, API-607.
- Full bore or reduced bore available.
- Flange dimensions in accordance ASME B16.5 for valves up to 24" nominal diameter.
- Flange dimensions in accordance MSS-SP-44, ASME/ANSI B16.47 Series A or B for valves over 26" nominal diameter.
- Wrench, Gear or Electric Operated options.
- Double Block and Bleed.
- Bi-directional flow.
- Anti-static device.
- Blow out proof system.
- NACE Service either MR-01-75 or MR-01-03.
- Test in accordance API-6D.

## PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS AS PER ASME/ANSI B16.34	ENDS
Trunnion Ball Valve Bolted Body	2" to 60"	150, 300, 600, 900, 1500 & 2500#	RF, RTJ or BW
Trunnion Ball Valve Welded	2" to 60"	150, 300, 600, 900, 1500 & 2500#	RF, RTJ or BW

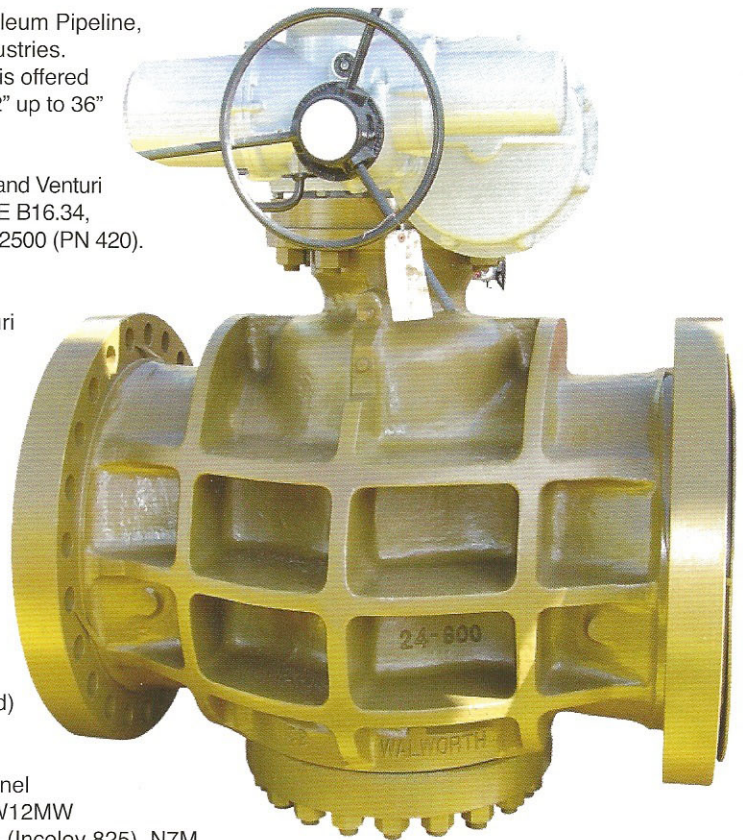
## STEEL LUBRICATED PLUG VALVES

Steel Plug valves are used primarily, but not limited to, the Gas & Petroleum Pipeline, Pulp & Paper, Refineries, Chemical / Buildings, Water & Sewerage Industries. Steel Plug valves are used to prevent internal leakage. This product line is offered in Pressure Classes 150, 300, 600, 900, 1500 & 2500 # and sizes from 2" up to 36" nominal diameter.

- Bottom Entry Compensator Plug valves in three patterns: Short, Regular and Venturi from 1/2" (8 mm) to 36" (900 mm) and pressure class in accordance ASME B16.34, 150 (PN 20), 300 (PN 50), 600 (PN 110), 900 (PN 150), 1500 (PN 260) & 2500 (PN 420).
- Top Entry Steel Lubricated Plug Valve API Classes 2000#, 3000#, & 5000# and sizes from 2 1/2" to 4 1/16" nominal diameter.
- Top Entry Steel Plug Valves in three patterns: short, regular and venturi and sizes from 2" (8 mm) to 36" (900 mm) and pressure classes in accordance ASME B16.34, 150#, 300# & 600#.
- Gas service Steel Plug Valve in regular pattern from 3/4" to 2" and 150# (200 CWP)

### Materials:

- a) Carbon Steel like WCA, WCB, WCC, etc.
- b) Low Carbon Steel like LCB, LCC, etc.
- c) Low Alloy Steel like WC1, WC5, WC6, WC9, etc.
- d) Low Carbon Low Alloy Steel like LC2, LC3, etc.
- e) Medium Alloy Steel like C5, C12, C12A, etc.
- f) Stainless Steel like CF8, CF8M, CF8C, CF10, CG8M, etc.
- g) Low Carbon Stainless Steel like CF3, CF3M, CG3M, etc.
- h) Super Stainless Steel like CN7M (Alloy 20), CN3M (Alloy 20 modified) CT15C, etc.
- i) Duplex Stainless Steel like CE8MN, CD6MN, CD3MN, etc.
- j) High Nickel Alloy like 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.
- k) Super Duplex Stainless Steel like CE3MN, CD3MNCuN, etc.



## DESIGN FEATURES

- Compensator Steel Plug Valves (bottom entry) & Lubricated Plug Valves (top entry) comply with the Specifications of API 6-D & API-599.
- Mechanical and pressure Balance fixture to avoid jamming of the plug.
- Flanged RF or RTJ ends, Threaded ends or Butt Weld ends.
- Meets Fire Test in accordance API-6FA.
- Flanges in accordance ANSI/ASME B16.5.
- Hand-wheel, Impact Hand-wheel, Chain-wheel, Gear operation, Electric, Pneumatic or Hydraulic Actuation as per Customer requirements.
- Bi-directional.

## PRODUCT RANGE

BOTTOM ENTRY COMPENSATOR STEEL PLUG VALVE	SIZE	PRESSURE CLASS AS PER ASME B16.34	ENDS
Short Pattern API-6D	2" to 12"	150, 300, 600 #	RF, RTJ or BW
Regular Pattern API-6D	1/2" to 12"	600, 900, 1500 & 2500 #	RF, RTJ or BW
Venturi Pattern API-6D	6" to 36"	150, 300, 600, 900, 1500 #	RF, RTJ or BW
TOP ENTRY COMPENSATOR STEEL PLUG VALVE	SIZE	PRESSURE CLASS AS PER API	ENDS
Regular Pattern for offshore design	2 1/16" to 4 1/16"	2000, 3000 & 5000	RF, RTJ or BW
TOP ENTRY STEEL PLUG VALVE	SIZE	PRESSURE CLASS AS PER ASME B16.34	ENDS
Short Pattern API-6D	1/2" to 8"	150, 300 #	RF, RTJ or BW
Regular Pattern API-6D	1/2" to 2"	600 #	RF, RTJ or BW
Venturi Pattern API-6D	14" to 36"	150 #	RF, RTJ or BW
GAS SERVICE STEEL PLUG VALVE	SIZE	PRESSURE CLASS AS PER ASME B16.34	ENDS
Short Pattern API-6D	3/4" to 8"	150 # ANSI, 200 CWP.	SW or BW

## CAST IRON LUBRICATED PLUG VALVES

**WALWORTH** single gland lubricated Plug valves are designed to meet the demand for an inexpensive product that incorporates the principal features of the Lubricated Plug valves.

The Top Entry design is offered in three different patterns: Short, Regular and Venturi from 1/2" (12.7 mm) to 18" (450 mm)

- Steel Body and Iron plug in classes 150 and 200 CWP
- Iron Body and Plug Classes 175, 200 & 500 CWP.

**WALWORTH** offers the majority of materials known and used for this product line, including but not limited to:

- a) Carbon Steel body and Iron plug.
- b) Iron Body and Plug.

### DESIGN FEATURES

- Design in accordance with API-599.
- Mechanical Balance spring to avoid jamming of the plug.
- Threaded ends in accordance ASME B1.20.1.
- Flanges in accordance ASME/ANSI B16.1.
- Lever or gear operated.
- Bi-directional.
- Locking devices are available as an option
- Tamper proof bolting is available as an option
- Operating extensions and elevations.
- Additional Walseal sealants are available for different applications.
- Test in accordance API-598 & MSS-SP-78.



### PRODUCT RANGE

PATTERN	SIZE	PRESSURE CLASS AS PER API	ENDS
Short	1/2" to 12"	200 CWP	Threaded or RF
Regular	2" to 18"	200 CWP	Threaded or RF
Venturi	6" to 18"	175 CWP	Threaded or RF
Venturi	6" to 8"	500 CWP	Threaded or RF



## 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 excel in the following conditions: high pressure, high temperature, steam, oxidizing environments.

Non-cobalt based hard facing is also available. Gate valves can be equipped with flexible wedge or parallel slide disc.

One of the most important features of **WALWORTH** Pressure Seal Cast Steel Valves is the valves ability to use the line pressure 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.

**WALWORTH** Pressure Seal Valves are manufactured 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:

- a) Carbon Steel like WCB.
- b) Low Alloy Steel like WC6, WC9, etc.
- c) Medium Alloy Steel like C12, C12A, etc.
- d) Stainless Steel like CF8, CF8M, CF8C, CF10, CG8M, etc.
- e) Super Stainless Steel like CN7M (Alloy 20), CN3M (Alloy 20 modified), CT15C, etc.
- f) High Nickel Alloys like 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

- Pressure Seal valves Gate, Globe, Stop Check, Globe "Y" Pattern, Stop Check "Y" Pattern Swing Check, Tilting Disc Check, Lift Check valves in accordance ASME B16.34.
- Flexible wedge or Parallel Slide disc 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.
- 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

## DUO CHECK CAST STEEL VALVES

**WALWORTH** Duo Check valves are defined as the mechanical device which allows the flow of fluid to go in only one direction. Duo Check valves work by the differential pressure and fluid flow opening the hinged discs and compressing the spring. When the flow begins to slow down the spring gradually assists in the closing of the valve. When the flow stops the springs have already assisted in closing the valve and putting the two hinged discs in position to seal against the seat. Thus the springs begin close the valve and do not rely on a back flow to close. The spring loading effectively prevent the slamming (also know as water hammer) associated with other check valves.

**WALWORTH** Duo Check valve (Dual Plate) valve design offers many advantages compared other check valves. Its compact size allows it to be installed in areas where space is a premium.

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

- g) Carbon Steel like WCB.
- h) Low Alloy Steel like WC6, WC9, etc.
- i) Medium Alloy Steel like C5, C12, C12A, etc.
- j) Stainless Steel like CF8, CF8M, CF8C, CF10, CG8M, etc.
- k) Super Stainless Steel like CN7M (Alloy 20), CN3M (Alloy 20 modified), CT15C, etc.
- l) High Nickel Alloys like 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.

**WALWORTH** offers a variety of trim materials including but not limited to the full API-600 published trim list. Additional trims are available such as high strength steels, stainless steels, high nickel alloys (Monel, Inconel, Incoloy, Hastelloy, etc), among others.



### DESIGN FEATURES

- Design in accordance MSS-SP-594.
- Compact body, one-piece wafer design.
- Spring loaded seat allows for smooth disc closure, preventing premature wear and tear.
- Dual plates offer maximum strength with minimum opening time.
- Full contact metal to metal seats maintain positive shut-off at minimum working pressure.
- Thrust washers reduce friction and wear of valve plate hinges.
- Test in accordance API-598.

### PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS AS PER ASME/ANSI B16.34	ENDS
Duo Check Valve	2" to 36"	150, 300, 600, 900 & 1500 #	FF, RF, RTJ

## SLAB GATE VALVES

**WALWORTH** Slab Gate valves are manufactured and tested in accordance API-6D. This type of valve is very useful in transportation pipelines for gas, crude oil, and oil products. The Slab Gate valves are thru-conduit and piggable. The slab gate when opened interior has been designed to minimize pressure drop and catch foreign materials into the disc cavity and also avoid the turbulence of the fluid throughout the valve.

**WALWORTH** Slab Gate valve uses the resultant force from line pressure to help to have a Mechanical and tight sealing in downstream side when high differential pressure occurs. Low pressure sealing is achieved by internal springs assisting in pushing the seat ring against the gate to obtain the seal.

**WALWORTH** offers this product line in the following base materials:

- a) Carbon Steel such as WCB.
- b) Carbon Steel for NACE Applications like WCB with 0.25 % C maximum and 22 HRc maximum hardness.
- c) Low carbon steel for low temperature service like LCB.
- d) Stainless Steel like CF8M.

### DESIGN FEATURES

- Design in accordance API-6D.
- Full thru-conduit port to permit pass scrapers, pigs and wipers.
- Top entry for maintenance inline.
- Double block and bleed.
- Bi-directional.
- Secondary seal seat grease injectors.
- Hand-wheel, Impact Hand-wheel, Chain-wheel, Gear operation, Electric, Pneumatic or Hydraulic Actuation as per Customer requirements.
- Flanged or Butt Weld ends.
- Flanges in accordance ASME/ANSI B16.5 up to 24" nominal diameter.
- Flanges in accordance ASME/ANSI B16.47 from 26" nominal diameter and up.
- Meets Fire Test in accordance API-6FA.
- Test in accordance API-6D.



### PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS AS PER ASME/ANSI B16.34	ENDS
Slab Gate Valve	2" to 48"	150, 300, 600, 900 & 1500 #	RF, RTJ or BW

## EXPANDING GATE VALVES

**WALWORTH** Expanding Gate valves are manufactured and tested in accordance with API-6D. This type of valve is suitable for onshore and offshore applications where suspended and abrasive solids are present in the fluid or for oil and gas transportation and isolation service.

The double block and bleed design offers a proper seal in between both seats and the gate in both high and low pressure, for this reason line pressure is not needed to seal the valve. The principle of operation is based in two segmented members of a disc which at open or closed position is capable to seal in both directions.

**WALWORTH** offers this product line in the following base materials:

- a) Carbon Steel such as WCB, WCC.
- b) Carbon Steel as per ASTM A216 grade WCB for NACE MR0-175 with 0.25%C maximum and 22HRc maximum hardness.

### DESIGN FEATURES

- Design in accordance with API-6D.
- Full thru-conduit port to permit pass scrapers, pigs and wipers.
- Top entry for maintenance inline.
- Double block and bleed at open or closed position.
- Bi-directional.
- Hand-wheel, Impact Hand-wheel, Chain-wheel, Gear operation, Electric, Pneumatic or Hydraulic Actuation as per Customer requirements.
- Hard faced option is available for severe service with Tungsten carbide or stellite applied by HVOF process.
- Test in accordance with API-6D.



### PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS AS PER ASME/ANSI B16.34	ENDSL
Expanding Gate Valve	2" to 48"	150, 300, 600, 900, 1500 & 2500 #	RF, RTJ or BW

## AWWA BUTTERFLY VALVES

**WALWORTH** AWWA Butterfly valves comply with AWWA C-504 standard. This type of valve with soft rubber (Buna) seats is used in the water treatment industry.

The AWWA **WALWORTH** valves can be used for throttling as well as open/close applications. The main features are a leak proof hermetic seal, easy installation and operation at the maximum differential pressure.

The soft Buna seats run the entire 360° of the disc, thus reducing turbulence and pressure drop. Butterfly valves are used in power generation, pollution control, the pulp and paper industry, water and waste water treatment facilities worldwide.

**WALWORTH** offers this product line in the following base materials:

- a) Cast Iron ASTM A126 grade B
- b) Ductile Iron ASTM A536 grade 65-45-12
- c) Alloy Cast Iron ASTM A436 grade 2
- d) Cast Steel ASTM a 216 grade WCB
- e) Stainless Steel ASTM 351 grade CF8 M (Not listed by AWWA C-504, but available upon request).

### DESIGN FEATURES

- Design in accordance with AWWA C-504.
- Uninterrupted 360° seat.
- Underground installation.
- Manual and automated operation as per Customer requirement.
- Class A (maximum velocity at 8 feet per second).
- Class B (maximum velocity at 16 feet per second).
- Test in accordance with API-598.
- Available disc in Aluminium Bronze ASTM B148 grade
- Soft Seat in Neoprene (180°F) & EDPM (275°F) also available as per Customer request.



### PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS AS PER AWWA C-504	ENDS	FIGURE Nr.
Ductil Iron Butterfly Valve Short Body	3" to 72"	75 A and B	FF OR RF	2111 (75A); 2110 (75B)
Cast Iron Butterfly Valve Wafer Body	3" to 72"	150 B	FF OR RF	2114 (150B)
Ductile Iron Butterfly Valve Short Body	3" to 72"	150A & 150B	FF OR RF	2117 (150A); 2116 (150B)

## 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, 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.

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

- a) Ball and stem made from SS-304, PTFE seats and stem packing.
- b) Ball and stem made from SS-316, PTFE seats and stem packing.
- c) Ball and stem made from SS-316, PTFE seats and graphite stem packing suitable for fire safe design.

### DESIGN FEATURES

- Floating Ball Valves in accordance with MSS-72 & API-608
- Two or three-piece design.
- Socket weld, threaded or flanged ends.
- Lever or Gear operated as per Customer requirement.
- Fire safe design available upon request.
- ISO-5211 top flange drilled and tapped upon request.
- Locking device available as per Customer requirement.
- Test in accordance with API-6D.



### PRODUCT RANGE

TYPE	MATERIAL	SIZE	PRESSURE CLASS	ENDS	FIGURE Nr
Three-Piece Floating Ball Valve	Brass	1/4" to 2"	600#	Threaded	42L-Brass
Three-Piece Floating Ball Valve	WCB	1/4" to 4"	1000 WOG	Threaded or Socket Weld	44C-1000-WCB
Three-Piece Floating Ball Valve	WCB	1/4" to 2"	2000 WOG	Threaded or Socket Weld	44C-2000-WCB
Three-Piece Floating Ball Valve	CF8M	1/4" to 4"	1000 WOG	Threaded or Socket Weld	46I-1000-CF8M
Three-Piece Floating Ball Valve	CF8M	1/4" to 2"	2000 WOG	Threaded or Socket Weld	46I-2000-CF8M
Three-Piece Floating Ball Valve	WCB	1/4" to 8"	150#	RF	44C-150-WCB
Three-Piece Floating Ball Valve	WCB	1/4" to 4"	300#	RF	44C-300-WCB
Three-Piece Floating Ball Valve	CF8M	1/4" to 8"	150#	RF	46I-150-CF8M
Three-Piece Floating Ball Valve	CF8M	1/4" to 4"	300#	RF	46I-300-CF8M

# SAFETY VALVES, RELIEF VALVES AND SAFETY AND RELIEF VALVES

These valves work to release overpressure in a piping system. **WALWORTH** offers these kinds of valves as a solution for the automatic release of pressure from either a boiler, pressure vessel or other systems when the pressure or temperature exceeds preset limits.

**WALWORTH** offers the following types of valves:

**a) Safety Valves.**- These valves are made from Bronze and used for gas and steam only. Its main use is to relieve the pressure from the system such as boilers, autoclaves, compressors, steam generators, pressure vessels, bronze air or gas pipelines.

**b) Relief Valves.**- This type of valve is typically made from Bronze and used only for water service. Its purpose is to release of pressure acting due the static pressure of the liquid against the vessel or container, releasing the pressure accordingly with the increase of pressure over the opening pressure, protecting the equipment or system of damage. Only used for liquids it is commonly used in bronze tanks, pipelines or other vessels where is not required a big relief capacity.

**c) Safety and Relief Valves.**- This design is made from carbon steel, or stainless steel and may be used for any fluid (gas, steam or water). This is a valve which automatically releases the pressure when the over pressure is achieved and can be used as a Safety Valve or a Relief Valve depending on application.

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

- For Safety Valves and Safety and Relief Valves:
  - a) Bronze as per ASTM B62 grade 83600.
- For Safety and Relief Valves:
  - b) Carbon Steel such as WCA, WCB, WCC, etc.
  - c) Stainless Steel such as CF8, CF8M, CF8C, etc.
  - d) Low Carbon Stainless Steel such as CF3, CF3M, CG3M, etc.

We offer a variety of trim materials including but not limited to the following:

- a) Bronze trim for Bronze valves.
- b) Stainless Steel trims for carbon steel or stainless steel body.

## DESIGN FEATURES

For Safety valves (Gas or steam service).

- Lateral discharge (to the pipeline).
- NPT threads, in accordance with ANSI B1.20.1.
- Minimum calibration pressure 0.35 Kg./cm<sup>2</sup> (5 psig).
- Maximum operation pressure with steam 250 psig to 300 psig.
- Maximum operation pressure with air or gas 300 psig to 350 psig.

For Relief valves (non corrosive bronze liquid service).

- Lateral discharge (to the pipeline).
- NPT threads, in accordance with ANSI B1.20.1.
- Minimum calibration pressure 0.35 Kg./cm<sup>2</sup> (5 psig).
- Maximum operation pressure with steam 300 psig except for 3" which is 150 psig.
- Maximum operation temperature 406°F (208°C).

For Safety and Relief valves (Air, Gas or liquid service depending on application required).

- Conventional, Bellows, soft seat, open bonnet, closed bonnet designs as per Customer requirement.
- Metal to metal seat or soft seat (resilient).
- High capacity for pressure release.
- Stainless Steel trims.
- Bellow design with pressure compensator which cancel the backpressure effect.
- Flanged ends as per ASME B16.5 or threaded ends as per ASME B1.1.
- Orifices from D to T.



## PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS	ENDS
Safety Valves Bronze	1/2" to 2 1/2"	250 to 300 PSIG (Steam), 350 (Air or Gas)	Threaded
Relief Valves Bronze	1/2" to 3"	300 PSIG Except 3" which is 150 PSIG.	Threaded
Safety And Relief Valves Steel	3/4" X 2" to 8" X 10"	150 X 150, 300 X 150, 600 X 150 PSIG.	Threaded, socket weld or RF or RTJ
Safety And Relief Valves Steel *	3/4" X 1" to 2" X 2"	2000 to 5000 PSI	Threaded, socket weld or RF or RTJ

\*Only for open or closed Bonnet design.

## IRON VALVES

**WALWORTH** Iron valves are manufactured in accordance with MSS standards. The primary use of this type of valve is the water industry. However, demands are coming more and more from Petroleum Refineries, Chemical plants, Sewage Treatment Plants and Municipalities.

**WALWORTH** offers this product line in the following base materials:

- a) Cast Iron in accordance ASTM A126 Class B.

**WALWORTH** offers this product line in the following standard trim:

- a) Bronze trim in accordance with ASTM B62 grade C83600.
- b) Iron trim in accordance with

### DESIGN FEATURES

- Design in accordance with MSS-SP-70 for gate valves.
- Design in accordance with MSS-SP-85 for globe valves.
- Design in accordance with MSS-SP-71 for swing check valves.
- Rising stem and Non Rising Stem Options.
- Hand-wheel, Chain-wheel, Gear operation as per Customer requirements.
- Stem extensions or floor stands.
- Lever and counterweight options (only for check valves).
- Test as per API-598.



### PRODUCT RANGE

TYPE	SIZE	TRIM	PRESSURE CLASS	ENDS	FIGURE Nr.
Iron Gate Valve Rising Stem (OS & Y)	2" to 36"	Bronze Mounted	125#	FF	W726 F
Iron Globe Valve Rising Stem (OS& Y)	2" to 12"	Bronze Mounted	125#	FF	W906 F
Iron Swing Check Valve	2" to 24"	Bronze Mounted	125#	FF	W928 F
Iron Gate Valve Non Rising Stem	2" to 36"	Bronze Mounted	125#	FF	W719 F
Iron Gate Valve Non Rising Stem	2" to 36"	All Iron	125#	FF	W720 F
Iron Gate Valve Rising Stem (OS & Y)	2" to 36"	All Iron	125#	FF	W727 F
Iron Globe Valve Rising Stem (OS & Y)	2" to 36"	All iron	125#	FF	W906 1/2 F
Iron Swing Check Valve with lever & weight	2" to 24"	Bronze Mounted	125#	FF	W932 F



## CAST INDUSTRIAL BRONZE GATE, GLOBE AND SWING CHECK VALVES

**WALWORTH** Cast bronze valves are manufactured in accordance with MSS-SP-80. The excellent performance of these valves for many years in commercial and industrial facilities, construction industries, chemical and petrochemical processes and in marine service make this product line the preferred brand all around the world.

**WALWORTH** offers this product line in the following base material:

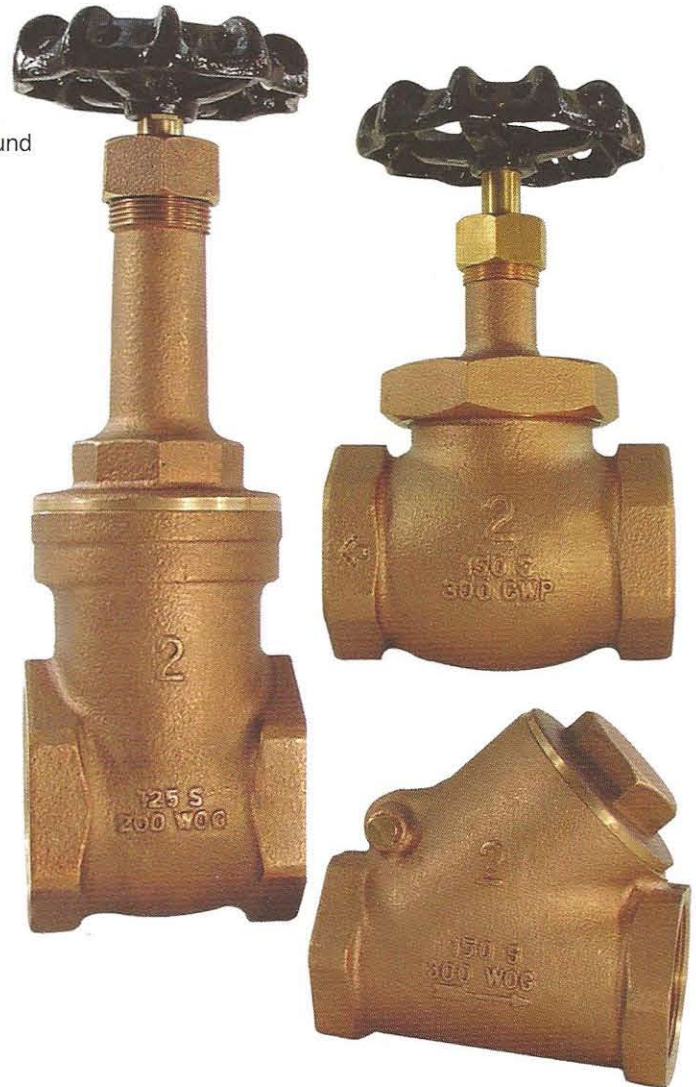
a) Bronze in accordance ASTM B62 grade C83600.

**WALWORTH** offers this product line in the following standard trim:

a) Bronze trim in accordance with ASTM B62 grade C83600.

### DESIGN FEATURES

- Design in accordance with MSS-SP-80.
- Screwed or Union bonnet design.
- Rising Stem and Non Rising Stem options.
- Threaded or weld end joint available.
- Integral seats.
- Hand-wheel operated.



### PRODUCT RANGE

TYPE	SIZE	PRESSURE CLASS ASME/ANSI B16.34	ENDS
Bronze Gate Valve	1/4" to 2"	125, 150#	Threaded, weld end
Bronze Globe Valve	1/4" to 2"	125, 150#	Threaded, weld end
Bronze Swing Check Valve Horizontal Pattern	1/4" to 2"	125, 150#	Threaded, weld end
Bronze Swing Check Valve "Y" Pattern	1/4" to 2"	125, 150#	Threaded, weld end

## APPROVALS

COMPANY	COUNTRY	INDUSTRY
Abu Dhabi Oil Refining Company (TAKREER)	U.A.E.	Refining & Distribution
Dubai Petroleum	U.A.E.	Oil & Energy
Oxy	Oman / Qatar	Oil & Gas
SABIC	Saudi Arabia	Chemical & Fertilizer
National Iranian Oil Company	Iran	Oil & Energy
Chevron Corporation	United States of America	Oil & Energy
ConocoPhillips	United States of America	Oil & Energy
Fluor Corp.	United States of America	EPC
Marathon Oil Corp.	United States of America	Oil & Gas
Chicago Bridge & Iron Company	United States of America	EPC
Petro Canada	Canada	Oil & Energy
British Petroleum	UK	Oil & Energy
Sinclair Oil Corp.	United States of America	Oil & Gas
Citgo Petroleum Corporation	United States of America	Oil & Gas
Petroleo Brasileiro S.A.	Brazil	Oil & Energy
Empresa Colombiana de Petr�leos	Colombia	Oil & Energy
Waha Oil Co.	Libya	Oil & Natural Gas
KBR Piping Components	United States of America	Energy
PDVSA	Venezuela	Refining & Distribution
Energy Northwest	United States of America	Nuclear Plant
BP	Alaska	Exploration & Production
Delek Refining LTD	United States of America	Refining & Distribution
Occidental of Oman	Oman	Refining & Distribution
SUNOCO	United States of America	Refining & Distribution
Con Edison	United States of America	Energy
Foster Wheeler	United States of America	Oil & Energy





# WALWORTH®

Since 1842



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[www.walworthmx.com](http://www.walworthmx.com)

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