

**WALWORTH**®  
Since 1842

DUAL PLATE WAFER CHECK VALVE  
**CATALOG**





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594-0007



YARMOUTH RESEARCH AND TECHNOLOGY



# WALWORTH

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

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

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

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

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



## WALWORTH VALUES

### MISSION

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



### VISION

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

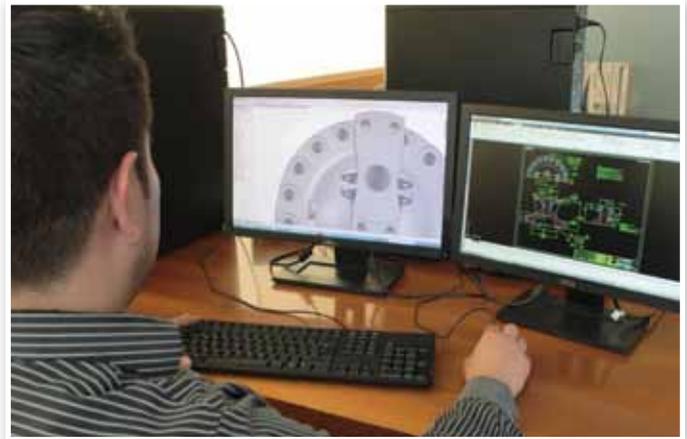
- Set the standard for product quality in the flow control industry.
- Exceed the service expectations of our customers.
- Forge enduring relationships with customers, team members, and community.
- Hire, develop, and retain experienced and dedicated team members.



# WALWORTH ENGINEERING CONTROL

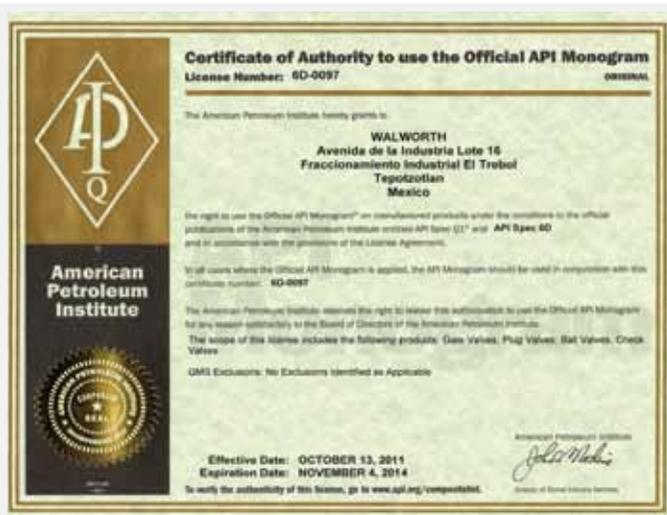
WALWORTH products are manufactured following the strict international standards recognized all over the world, such as API, ANSI, ASME, ASTM, MSS, NACE, AWWA, BSI, CSA, among others. Our Engineering team consistently monitors updates to these standards and incorporates any applicable changes that affect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

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



# WALWORTH QUALITY SYSTEM

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



### Certificate API-6D No. 6D-0097

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



### Certificate API-6A No. 6A-0234

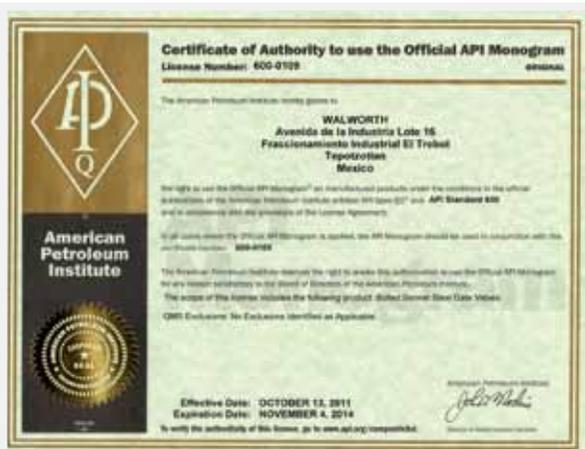
From American Petroleum Institute to apply on valves at PSI, 1 through 4.



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



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



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



**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.



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



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



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

## PRODUCT CERTIFICATIONS



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



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



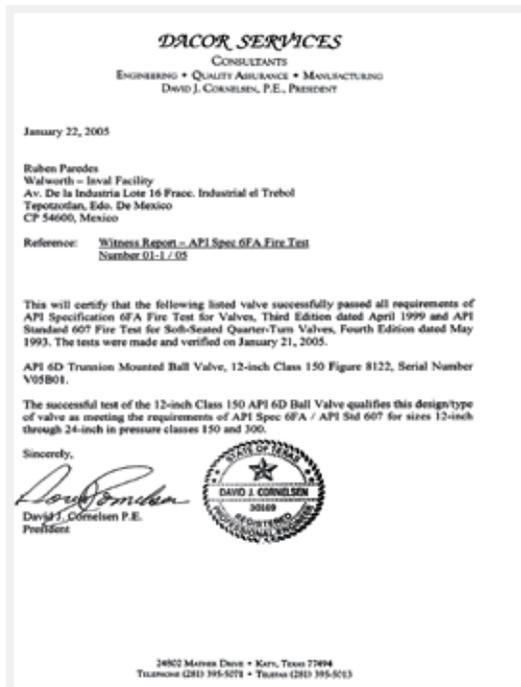
**Emissions after 500 cycles at ambient and 350 °F**  
Issued by Yarmouth Research and Technology Lab for 16 inch Class 150 Gate Valve After 500 cycles the measurement result was less than 50 ppm.





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

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

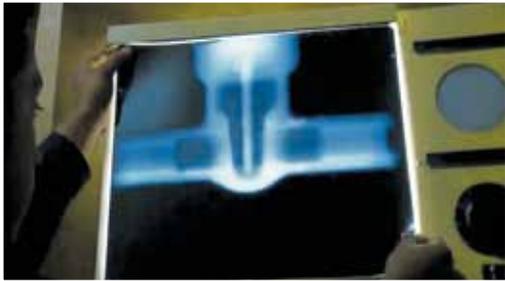


**Fire Test Certificate No. 01-1/05**  
 In accordance with API-6FA and API Standard API-607 for Trunnion Ball Valves in accordance with API-6D.

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

## QUALITY CONTROL EQUIPMENT

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



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

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



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

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



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

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





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

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



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

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



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

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



## DUAL PLATE WAFER CHECK VALVE (IRON AND CAST STEEL)

### Advantages of Design

The main purpose of the DUAL PLATE WAFER CHECK valve is to perform the work of almost any conventional valve. However, being smaller makes it lighter and, therefore, is more cost efficient to purchase, install and maintain. It is also a silent check valve; because of its innovative design, it does not slam upon closing.

The DUAL PLATE WAFER CHECK plate design and flat seat offer many advantages. The flat seat eliminates any possibility of board snaps in the seat, which snaps occur frequently in other valves. When suspended in a vertical pin, the two plates have a reduced weight which eliminates excessive wear on the plate lugs. This wear can cause the plate to collapse on the seat's open surface, causing the valve to subsequently fail.

An important feature of the DUAL PLATE WAFER CHECK valve is that it does not depend on the pressure or flow to center the plates in relation to the sealing surface in order to make the seal.

Single plate conventional designs, even those having centering guides, require a backpressure and backflow to center the plate to the seat in order to get a non leakage adjustment. This feature becomes extremely risky in the event of reduced flow and the handling of gases at low pressure.

| Size     | Pressure by class according to ASME/ANSI B16.34 | Ends       |
|----------|---|------------|
| 2" a 60" | 150, 300, 600, 900, 1500, 2500                  | RF, RTJ, P |



## DUAL PLATE WAFER CHECK VALVE LUG TYPE

### Advantages of Design

With the aid of spring DUAL PLATE WAFER CHECK valve LUG type, as Wafer type, gives a maximum resistance with the minimum opening time.

The stop pin avoids the over travel of a disc.

This design is also hermetic, which means there are no drillings in the body, and because there are now pins in a support that is attached to the body, the chance of leakage is greatly reduced.

The DUAL PLATE WAFER CHECK valve LUG type covers the bolt along the entire length of the body.

LUG type valves are supplied in scallop to keep the weight as low as possible, thereby minimizing the cost.

LUG type valves are supplied with straight-through bores according to API-594.



**Note:**

1. For more information contact the company.

## MOST COMMON MATERIAL OF THE BODY

| Material suffix      | Common designation  | Forging specification | Wrought bar specification | Service recommendations (1)   |
|----------------------|---|-----------------------|---------------------------|---|
| ASTM A216 Grade WCB  | Carbon Steel  | A105N                 | A105N                     | Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°F) and +800°F (+425°C)   |
| ASTM A216 Grade WCC  | Carbon Steel  | A105N                 | A105N                     | Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°F) and +800°F (+425°C)   |
| ASTM A217 Grade WC6  | 1 1/4% Chrome; 1/2% Moly Low Alloy Steel                            | A182 F11              | A182 F11 Class 2          | Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°C) and +1100°F(+593°C).  |
| ASTM A217 Grade WC9  | 2 1/4 % Chrome Low Alloy Steel                                      | A182 F22              | A182 F11 Class 3          | Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°C) and +1100°F(+593°C).  |
| ASTM A352 Grade LCB  | Low Temp Carbon steel   | A350 LF1              | A350 LF1                  | Low temperature applications to -50 °F (-46°C).Not for use above + 650°F(+340°C).   |
| ASTM A352 Grade LCC  | Low Temp Carbon steel   | A350 LF2              | A350 LF2                  | Low temperature applications to -50 °F (-46°C).Not for use above + 650°F(+340°C).   |
| ASTM A351 Grade CF8  | 18% Chrome; 8% Nickel; 0.08 % C Stainless Steel                     | ASTM A182 F304        | ASTM A479 304             | Corrosive or extremely high temperature non-corrosive services between -450°F (- 268°C) and +1200°F (+649°C). Above + 800°F (+ 425°C) specify carbon content of 0.04% or greater.   |
| ASTM A351 Grade CF8M | 18% Chrome; 12% Nickel; 2 % Mo; 0.08 % C Stainless Steel            | ASTM A182 F316        | ASTM A479 316             | Corrosive or either extremely low or high temperature non-corrosive services between -450°F (-268°C) and +1200°F (+649°C). Above +800°F (+425°C) specify carbon content of 0.04% or greater.  |
| ASTM A351 Grade CF3  | 18% Chrome; 8% Nickel; 0.03 % C Low Carbon Stainless Steel          | ASTM A182 304L        | ASTM A479 304L            | Brackish water, phosphate solutions, pressurized water @ 570 °F (299 °C), sea water, steam.   |
| ASTM A351 Grade CF3M | 18% Chrome; 12% Nickel; 2 % Mo; 0.03 % C Low Carbon Stainless Steel | ASTM A182 F316L       | ASTM A479 316L            | Acetic acid, calcium carbonate, calcium lactate, potable water, sea water, steam, sulfites.   |
| ASTM A351 Grade CF8C | 18% Chrome; 10% Nickel; Cb; 0.08 % C Stainless Steel                | ASTM A182 F347        | ASTM A479 347             | Primarily for high temperature, corrosive applications between -450°F (-268°C) and +1200°F (+649°C). Above +1000°F (+540°C) specify carbon content of 0.04% or greater. Hydrogen service."  |
| ASTM A351 Grade CN7M | 19% Chrome; 28% Nickel; Cu-Mo; 0.07 % C Super Stainless Steel       | ASTM B462 N08020      | ASTM B473 N08020          | Acetic acid (hot), brines, caustic solutions, (strong, hot), hydrochloric acid (dilute), hydrofluoric acid and hydrofluosilicic acid (dilute), nitric acid, (strong, hot), nitric-hydrofluoric pickling acids, sulfates and sulfites, sulfuric acid, (all concentrations to 150 °F (65.6 °C), sulfuric acid, phosphoric acid. |

(1) The above list of consuming industries and corrosive materials are useful as examples of typical applications where these materials can be used as a guide; however, the responsibility for choosing the proper alloy lies with the Engineering firm or End User.

(\*) For other materials, please contact the company.

## MOST COMMON TRIMS

| Trim No. | Parts and Materials  |
|----------|--|
| W1       | Discs made from SS A351 Gr. CF8, Pin SS A276 Gr. 410, Stop Pin A276 Gr. 410          |
| W2       | Discs made from SS A351 Gr. CF8, Pin SS A276 Gr. F304, Stop Pin A276 Gr. F304        |
| W3       | Discs made from SS A351 Gr. CF8M, Pin SS A276 Gr. F316, Stop Pin A276 Gr. F316       |
| W4       | Discs made from SS A351 Gr. CF3, Pin SS A276 Gr. F304L, Stop Pin A276 Gr. F304L      |
| W5       | Discs made from SS A351 Gr. CF3M, Pin SS A276 Gr. F316L, Stop Pin A276 Gr. F316L     |
| W6       | Discs made from Duplex SS A995 Gr. CD3MN, Pin SS A182 Gr. F51, Stop Pin A182 Gr. F51 |

(\*) For other TRIM materials, please contact the company.

## CHEMICAL COMPOSITION OF MOST COMMON MATERIALS

| Chemical composition and mechanical properties |               |        |                  |              |                 |           |                 |            |            |
|--|---------------|--------|------------------|--------------|-----------------|-----------|-----------------|------------|------------|
| Elements and properties                        | Carbon steel  |        | Low carbon steel |              | Low alloy steel |           | Stainless steel |            |            |
|  | ASTM A216     |        | ASTM A352        |              | ASTMA217        |           | ASTMA351        |            |            |
|  | WCB           | WCC    | LCB              | LCC          | WC6             | WC9       | CF8             | CF8M       | CF8C       |
| Carbon   | 0.30          | 0.25   | 0.30             | 0.25         | 0.05-0.20       | 0.05-0.18 | 0.08            | 0.08       | 0.08       |
| Manganese                                      | 1             | 1.2    | 1                | 1.2          | 0.50-0.80       | 0.40-0.70 | 1.5             | 1.5        | 1.5        |
| Phosphorus                                     | 0.04          | 0.04   | 0.04             | 0.04         | 0.04            | 0.04      | 0.04            | 0.04       | 0.04       |
| Sulphur  | 0.045         | 0.045  | 0.045            | 0.045        | 0.045           | 0.045     | 0.04            | 0.04       | 0.04       |
| Silicon  | 0.6           | 0.6    | 0.6              | 0.6          | 0.6             | 0.6       | 2               | 1.5        | 2          |
| Nickel   | 0.5           | 0.5    | 0.5              | 0.5          | -               | -         | 8.00-11.0       | 9.00-12.0  | 9.00-12.0  |
| Chromium                                       | 0.5           | 0.5    | 0.5              | 0.5          | 1.00-1.50       | 2.00-2.75 | 18.00-21.0      | 18.00-21.0 | 18.00-21.0 |
| Molybdenum                                     | 0.2           | 0.2    | 0.2              | 0.2          | 0.45-0.65       | 0.90-1.20 | 0.5             | 2.00-3.00  | 0.5        |
| Copper   | 0.3           | 0.3    | 0.3              | 0.3          | 0.5             | 0.5       | -               | -          | -          |
| Columbium                                      | -             | -      | -                | -            | -               | -         | -               | -          | (2)        |
| Vanadium                                       | 0.03          | 0.03   | 0.03             | 0.03         | -               | -         | -               | -          | -          |
| Tensile Strength PSI minimum                   | 70,000-95,000 | 70,000 | 65,000           | 70000-95,000 | 70,000          | 70,000    | 70,000          | 70,000     | 70,000     |
| Yield Strength PSI minimum                     | 36,000        | 40,000 | 35,000           | 40,000       | 40,000          | 40,000    | 30,000          | 30,000     | 30,000     |
| Elongation In 2" % minimum                     | 22            | 22     | 24               | 22           | 20              | 20        | 35              | 30         | 30         |
| Reduction Area % minimum                       | 35            | 35     | 35               | 35           | 35              | 35        | -               | -          | -          |
| Hardness (HB) maximum                          | 185           | 185    | 190              | 200          | 200             | 200       | -               | -          | -          |

**Notes:**

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

## SOFT SEATS OPERATING TEMPERATURE

| Body Seat   | Operating Temperature       |
|-------------|-----------------------------|
| Buna - N    | -60 a 250 °F (-5 a 120° C)  |
| Viton       | -10 a 400 °F (-23 a 204° C) |
| EPDM        | 0 a 300 °F (-18 a 149° C)   |
| Neoprene    | 0 a 212 °F (-18 a 100° C)   |
| Metal-Metal | In accordance with B16,34   |

(\*) We can supply another kind of seat as per customer request.

# DUAL PLATE WAFER CHECK VALVE

## Design Features

- Design in accordance with API 594
  - End to end dimension as per API 594
  - Flange dimensions in accordance with ASME B16.5, ASME B16.47
  - Inspection and Test according to API 598
  - NACE MR-0175 Service
  - Availability LUG design
  - Availability Double Flange from 12"
  - Single Spring for 2" to 6"
  - Double Spring for 8" and up
- ① Body. It's 10% lighter than a conventional flanged check valve.
  - ② Seat. Availability of soft seats and Metal-Metal.
  - ③ Disc in conjunction with springs, offers an airtight seal giving a better performance.
  - ④ Springs give a better reaction to close.
  - ⑤ Shaft keeps discs in the position and avoids vibration.
  - ⑥ Shaft and stop pin are mounted on a support rather than through holes in the body, resulting in a hermetic valve.



# DUAL PLATE WAFER CHECK VALVE CLASS 150

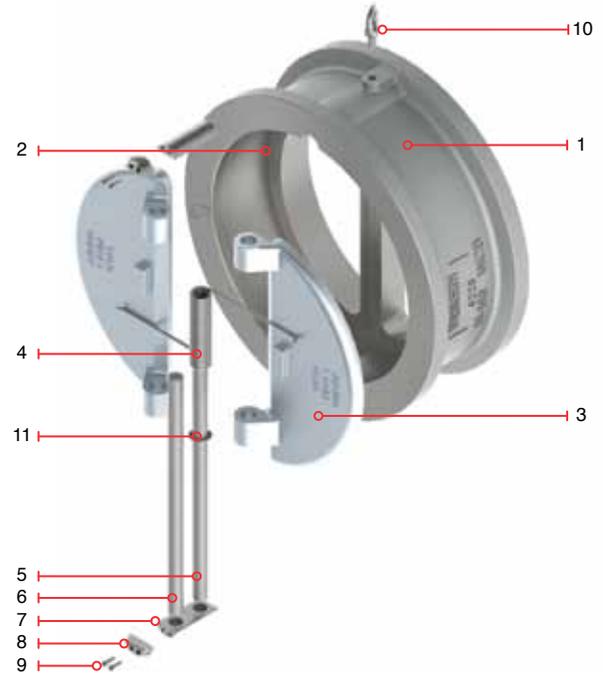
## Design Features

- Design in accordance with API 594
- End to end dimension in accordance to API 594
- Flange ends in accordance to ASME B16.5, ASME B16.47
- Inspection and Test according to API 598
- NACE MR-0175 Service
- Lifting Lug for 8" and up
- Single Spring for 2" to 6"
- Double Spring for 8" and up

## Material List for Main Parts (Single Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

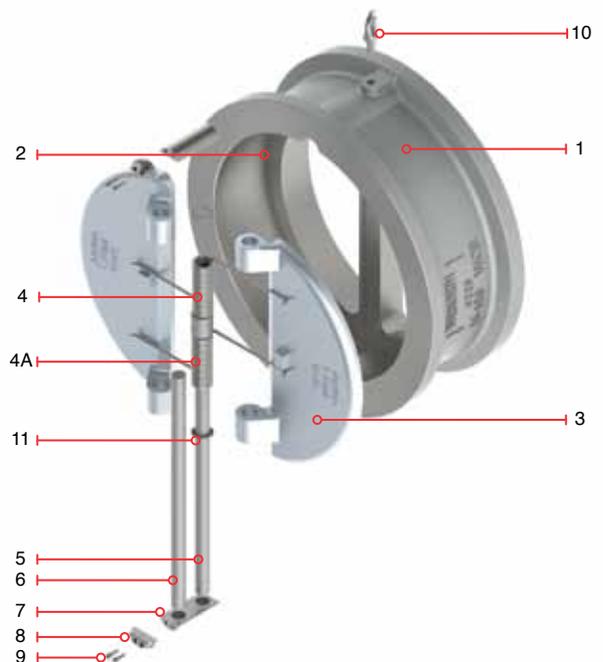
Remark: 1. Select different materials for different working temperature and media.



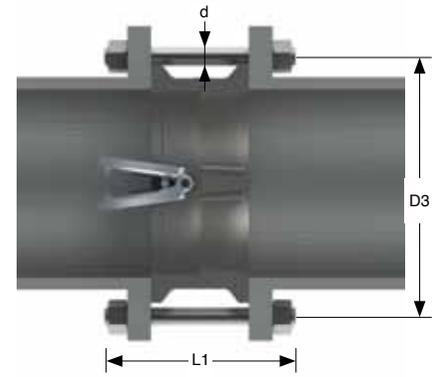
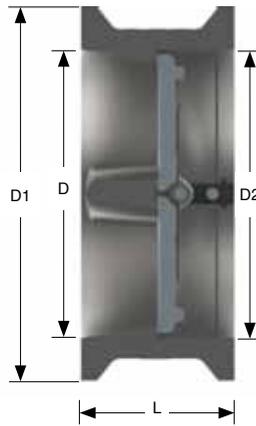
## Material List For Main Parts (Double Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 4A  | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

Remark: 1. Select different materials for different working temperature and media.



# DUAL PLATE WAFER CHECK VALVE CLASS 150



## Dimensions and Weights

| Pressure /<br>Flange standard                   | Nominal<br>pipe size |      | Dimension |      |      |      | Weight<br>(Kg) | Pipe Flange |             |                   |       |                  |     |
|---|----------------------|------|-----------|------|------|------|----------------|-------------|-------------|-------------------|-------|------------------|-----|
|   | NPS                  | CN   | L         | D1   | D2   | D    |                | D3          | Bolt<br>No. | Stud Diameter (d) |       | Stud Length (L1) |     |
|   |                      |      |           |      |      |      |                |             |             | in                | mm    | RF               | RJ  |
| Class 150 PN2,0/<br>ASME B16.5                  | 2                    | 50   | 60        | 103  | 56   | 51   | 2              | 120.5       | 4           | 5/8               | M16   | 140              | 155 |
|   | 2 1/2                | 65   | 67        | 122  | 73   | 65   | 3              | 139.5       | 4           | 5/8               | M16   | 150              | 165 |
|   | 3                    | 80   | 73        | 135  | 88   | 80   | 4              | 152.5       | 4           | 5/8               | M16   | 160              | 175 |
|   | 4                    | 100  | 73        | 173  | 108  | 102  | 6              | 190.5       | 8           | 5/8               | M16   | 170              | 185 |
|   | 5                    | 125  | 86        | 195  | 132  | 127  | 8              | 216         | 8           | 3/4               | M20   | 190              | 205 |
|   | 6                    | 150  | 98        | 220  | 160  | 152  | 13             | 241.5       | 8           | 3/4               | M20   | 205              | 220 |
|   | 8                    | 200  | 127       | 277  | 210  | 203  | 25             | 298.5       | 8           | 3/4               | M20   | 240              | 255 |
|   | 10                   | 250  | 146       | 337  | 266  | 254  | 39             | 362         | 12          | 7/8               | M24   | 270              | 285 |
|   | 12                   | 300  | 181       | 407  | 310  | 305  | 54             | 432         | 12          | 7/8               | M24   | 310              | 325 |
|   | 14                   | 350  | 184       | 448  | 355  | 350  | 80             | 476         | 12          | 1                 | M27   | 325              | 340 |
|   | 16                   | 400  | 191       | 512  | 405  | 400  | 117            | 540         | 16          | 1                 | M27   | 340              | 355 |
|   | 18                   | 450  | 203       | 547  | 455  | 450  | 138            | 478         | 16          | 1 1/8             | M30   | 365              | 380 |
| 20  | 500                  | 219  | 604       | 505  | 500  | 163  | 635            | 20          | 1 1/8       | M30               | 385   | 400              |     |
| 24  | 600                  | 222  | 715       | 605  | 600  | 331  | 749.5          | 20          | 1 1/4       | M33               | 405   | 420              |     |
| Class 150 PN2,0/<br>ASME B16.47A o<br>MSS SP-44 | 26                   | 650  | 222       | 770  | 650  | 633  | 380            | 806.5       | 24          | 1 1/4             | M33   | 450              | -   |
|   | 28                   | 700  | 305       | 827  | 700  | 700  | 400            | 863.5       | 28          | 1 1/4             | M33   | 535              | -   |
|   | 30                   | 750  | 305       | 878  | 750  | 746  | 440            | 914.5       | 28          | 1 1/4             | M33   | 545              | -   |
|   | 32                   | 800  | 305       | 935  | 800  | 796  | 580            | 978         | 28          | 1 1/2             | M39x3 | 570              | -   |
|   | 36                   | 900  | 368       | 1045 | 894  | 874  | 660            | 1086        | 32          | 1 1/2             | M39x3 | 650              | -   |
|   | 40                   | 1000 | 432       | 1167 | 985  | 976  | 890            | 1200        | 36          | 1 1/2             | M39x3 | 710              | -   |
|   | 42                   | 1050 | 432       | 1213 | 1055 | 1050 | 980            | 1257.5      | 36          | 1 1/2             | M39x3 | 730              | -   |
|   | 44                   | 1100 | 432       | 1274 | 1070 | 1070 | 1150           | 1314.5      | 40          | 1 1/2             | M39x3 | 730              | -   |
|   | 48                   | 1200 | 524       | 1397 | 1205 | 1166 | 1450           | 1422.5      | 44          | 1 1/2             | M39x3 | 840              | -   |
|   | 54                   | 1350 | 591       | 1545 | 1315 | 1312 | 2300           | 1594        | 44          | 1 3/4             | M45x3 | 950              | -   |
|   | 56                   | 1400 | 591       | 1602 | 1370 | 1360 | 2800           | 1651        | 48          | 1 3/4             | M45x3 | 955              | -   |
|   | 60                   | 1500 | 660       | 1701 | 1470 | 1458 | 3220           | 1759        | 52          | 1 3/4             | M45x3 | 1040             | -   |

# DUAL PLATE WAFER CHECK VALVE CLASS 300

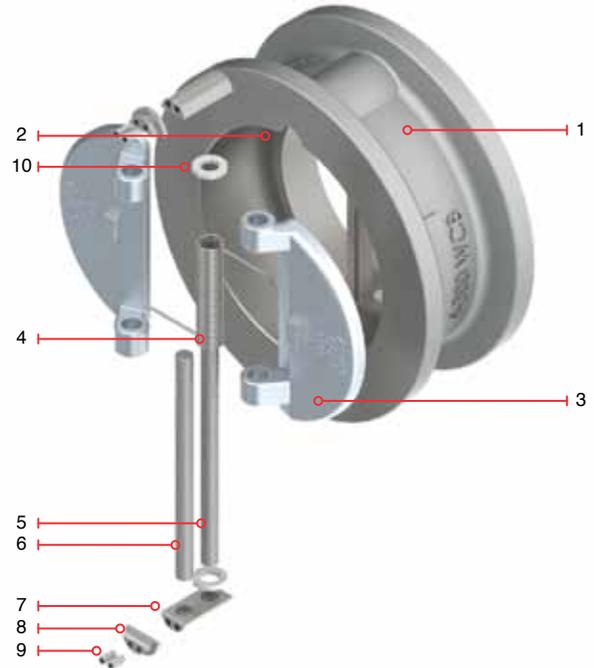
## Design Features

- Design in accordance with API 594
- End to end dimension in accordance to API 594
- Flange ends in accordance to ASME B16.5, ASME B16.47
- Inspection and Test according to API 598
- NACE MR-0175 Service
- Lifting Lug for 8" and up
- Single Spring for 2" to 6"
- Double Spring for 8" and up

## Material List for Main Parts (Single Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

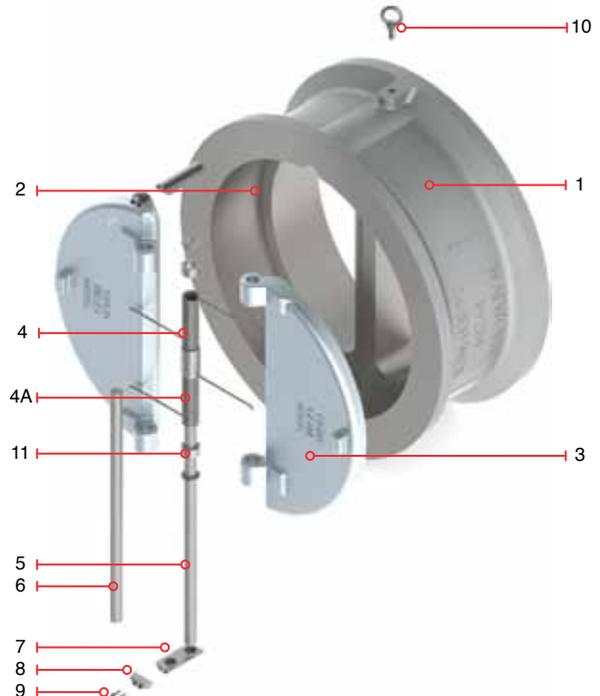
Remark: 1. Select different materials for different working temperature and media.



## Material List For Main Parts (Double Spring)

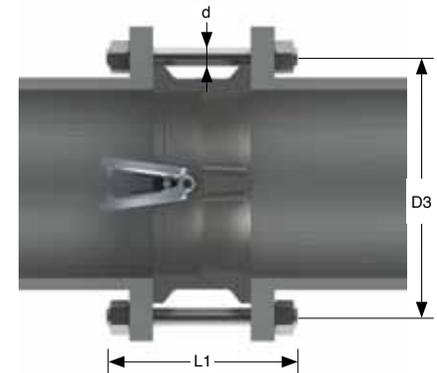
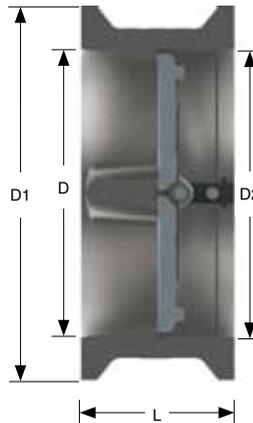
| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 4A  | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

Remark: 1. Select different materials for different working temperature and media.



# DUAL PLATE WAFER CHECK VALVE

## CLASS 300



### Dimensions and Weights

| Pressure /<br>Flange standard                   | Nominal<br>pipe size |      | Dimension |      |      |      | Weight<br>(Kg) | Pipe Flange |             |                   |       |                  |     |
|---|----------------------|------|-----------|------|------|------|----------------|-------------|-------------|-------------------|-------|------------------|-----|
|   | NPS                  | CN   | L         | D1   | D2   | D    |                | D3          | Bolt<br>No. | Stud Diameter (d) |       | Stud Length (L1) |     |
|   |                      |      |           |      |      |      |                |             |             | in                | mm    | RF               | RJ  |
| Class 300 PN5,0/<br>ASME B16.5                  | 2                    | 50   | 60        | 110  | 58   | 51   | 3              | 127         | 8           | 5/8               | M16   | 155              | 175 |
|   | 2 1/2                | 65   | 67        | 128  | 73   | 65   | 4              | 149         | 8           | 3/4               | M20   | 175              | 195 |
|   | 3                    | 80   | 73        | 147  | 88   | 80   | 6              | 168.5       | 8           | 3/4               | M20   | 190              | 210 |
|   | 4                    | 100  | 73        | 179  | 108  | 102  | 8              | 200         | 8           | 3/4               | M20   | 195              | 215 |
|   | 5                    | 125  | 86        | 214  | 132  | 127  | 15             | 235         | 8           | 3/4               | M20   | 215              | 235 |
|   | 6                    | 150  | 98        | 249  | 160  | 152  | 18             | 270         | 12          | 3/4               | M20   | 230              | 250 |
|   | 8                    | 200  | 127       | 305  | 210  | 203  | 31             | 330         | 12          | 7/8               | M24   | 280              | 300 |
|   | 10                   | 250  | 146       | 359  | 266  | 254  | 51             | 387.5       | 16          | 1                 | M27   | 315              | 335 |
|   | 12                   | 300  | 181       | 420  | 310  | 305  | 77             | 451         | 16          | 1 1/8             | M30   | 365              | 385 |
|   | 14                   | 350  | 222       | 483  | 355  | 350  | 117            | 514.5       | 20          | 1 1/8             | M30   | 410              | 430 |
|   | 16                   | 400  | 232       | 537  | 405  | 400  | 190            | 571.5       | 20          | 1 1/4             | M33   | 435              | 455 |
|   | 18                   | 450  | 264       | 594  | 455  | 450  | 200            | 628.5       | 24          | 1 1/4             | M33   | 475              | 495 |
| 20  | 500                  | 292  | 652       | 505  | 500  | 265  | 686            | 24          | 1 1/4       | M33               | 510   | 535              |     |
| 24  | 600                  | 318  | 772       | 608  | 600  | 410  | 813            | 24          | 1 1/2       | M39x3             | 560   | 585              |     |
| Class 300 PN5,0/<br>ASME B16.47B o<br>API605    | 26                   | 650  | 356       | 767  | 640  | 633  | 560            | 803         | 32          | 1 1/4             | M33   | 625              | -   |
|   | 28                   | 700  | 368       | 821  | 985  | 685  | 580            | 857         | 36          | 1 1/4             | M33   | 635              | -   |
|   | 30                   | 750  | 368       | 882  | 740  | 735  | 660            | 921         | 36          | 1 3/8             | M36x3 | 650              | -   |
|   | 32                   | 800  | 368       | 936  | 784  | 784  | 970            | 978         | 32          | 1 1/2             | M39x3 | 675              | -   |
|   | 36                   | 900  | 483       | 1044 | 880  | 873  | 1010           | 1089        | 32          | 1 5/8             | M42x3 | 800              | -   |
|   | 40                   | 1000 | 546       | 1146 | 985  | 976  | 1420           | 1191        | 40          | 1 5/8             | M42x3 | 885              | -   |
|   | 42                   | 1050 | 568       | 1196 | 1045 | 1035 | 1540           | 1244.5      | 36          | 1 3/4             | M45x3 | 920              | -   |
|   | 48                   | 1200 | 629       | 1365 | 1190 | 1166 | 2250           | 1416        | 40          | 1 7/8             | M48x3 | 1010             | -   |
| 54  | 1350                 | 718  | 1526      | 1315 | 1312 | 3100 | 1578           | 48          | 1 7/8       | M48x3             | 1140  | -                |     |
| Class 300 PN5,0/<br>ASME B16.47A o<br>MSS SP-44 | 60                   | 1400 | 838       | 1704 | 1470 | 1458 | 4310           | 1764        | 40          | 2 1/4             | M56x3 | 1280             | -   |
|   | 26                   | 650  | 356       | 831  | 640  | 633  | 580            | 876         | 28          | 1 5/8             | M42x3 | 625              | -   |
|   | 28                   | 700  | 368       | 895  | 985  | 685  | 600            | 940         | 28          | 1 5/8             | M42x3 | 650              | -   |
|   | 30                   | 750  | 368       | 949  | 740  | 735  | 680            | 997         | 28          | 1 3/4             | M45x3 | 665              | -   |
|   | 32                   | 800  | 368       | 1003 | 784  | 784  | 990            | 1054        | 28          | 1 7/8             | M48x3 | 685              | -   |
|   | 36                   | 900  | 483       | 1113 | 880  | 873  | 1050           | 1168.5      | 32          | 2                 | M52x3 | 820              | -   |
|   | 40                   | 1000 | 546       | 1110 | 985  | 976  | 1400           | 1156        | 32          | 1 5/8             | M42x3 | 885              | -   |
|   | 42                   | 1050 | 568       | 1161 | 1045 | 1035 | 1520           | 1206.5      | 32          | 1 5/8             | M42x3 | 915              | -   |
| 48  | 1200                 | 629  | 1320      | 1190 | 1166 | 2250 | 1371.5         | 32          | 1 7/8       | M48x3             | 1015  | -                |     |
| 54  | 1350                 | 718  | 1489      | 1315 | 1312 | 3050 | 1594.5         | 28          | 2 1/4       | M56x3             | 1160  | -                |     |
| 60  | 1400                 | 838  | 1642      | 1470 | 1458 | 4300 | 1702           | 32          | 2 1/4       | M56x3             | 1305  | -                |     |

# DUAL PLATE WAFER CHECK VALVE CLASS 600

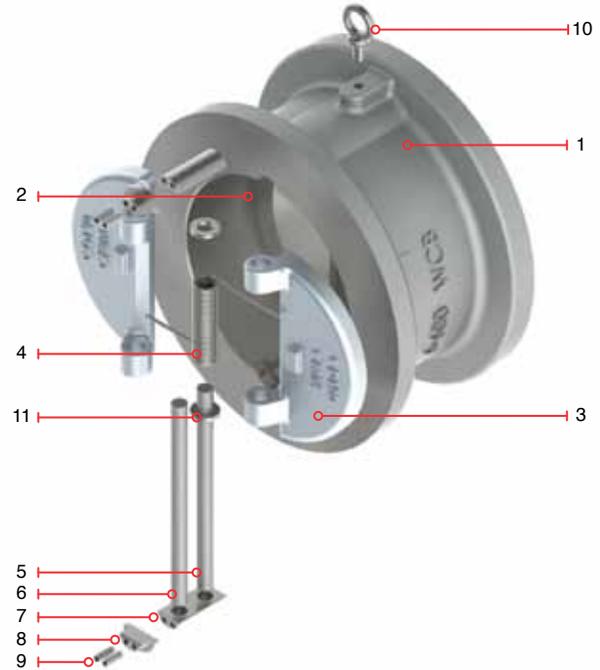
## Design Features

- Design in accordance with API 594
- End to end dimension in accordance to API 594
- Flange ends in accordance to ASME B16.5, ASME B16.47
- Inspection and Test according to API 598
- NACE MR-0175 Service
- Lifting Lug for 8" and up
- Single Spring for 2" to 6"
- Double Spring for 8" and up

## Material List for Main Parts (Single Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

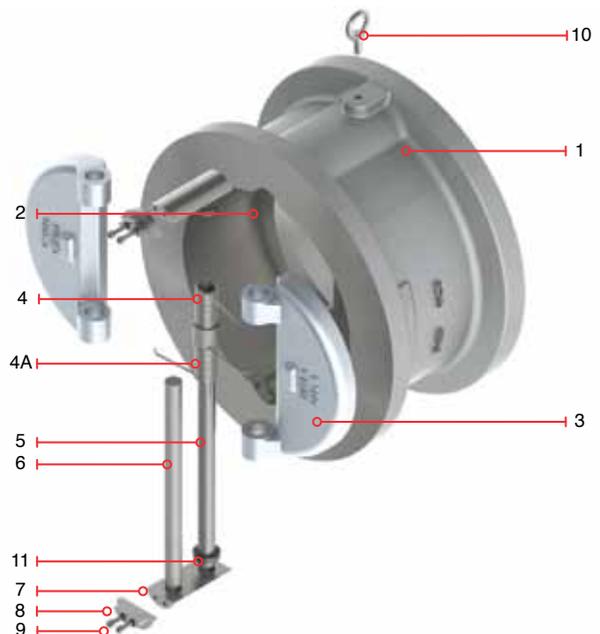
Remark: 1. Select different materials for different working temperature and media.



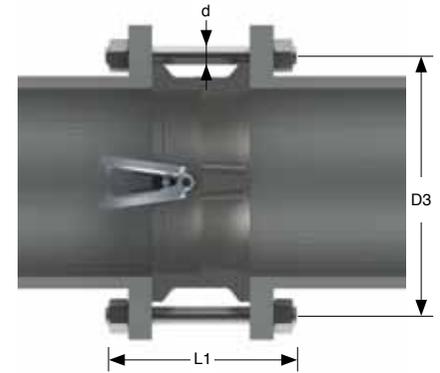
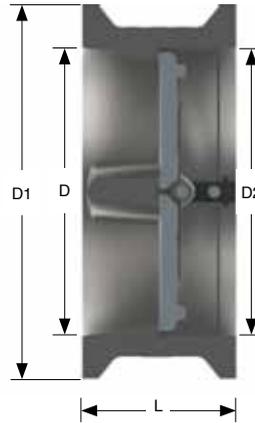
## Material List For Main Parts (Double Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 4A  | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

Remark: 1. Select different materials for different working temperature and media.



# DUAL PLATE WAFER CHECK VALVE CLASS 600



## Dimensions and Weights

| Pressure /<br>Flange standard                    | Nominal<br>pipe size |      | Dimension |      |      |      | Weight<br>(Kg) | Pipe Flange |             |                   |       |                  |      |
|--|----------------------|------|-----------|------|------|------|----------------|-------------|-------------|-------------------|-------|------------------|------|
|  | NPS                  | CN   | L         | D1   | D2   | D    |                | D3          | Bolt<br>No. | Stud Diameter (d) |       | Stud Length (L1) |      |
|  |                      |      |           |      |      |      |                |             |             | in                | mm    | RF               | RJ   |
| Class 600 PN11,0/<br>ASME B16.5                  | 2                    | 50   | 60        | 110  | 58   | 51   | 4              | 127         | 8           | 5/8               | M16   | 175              | 180  |
|  | 2 1/2                | 65   | 67        | 128  | 73   | 65   | 5              | 149         | 8           | 3/4               | M20   | 195              | 200  |
|  | 3                    | 80   | 73        | 147  | 88   | 80   | 8              | 168.5       | 8           | 3/4               | M20   | 210              | 215  |
|  | 4                    | 100  | 79        | 191  | 108  | 102  | 11             | 216         | 8           | 7/8               | M24   | 235              | 240  |
|  | 5                    | 125  | 105       | 139  | 136  | 127  | 20             | 267         | 8           | 1                 | M27   | 280              | 285  |
|  | 6                    | 150  | 136       | 264  | 162  | 152  | 26             | 292         | 12          | 1                 | M27   | 320              | 325  |
|  | 8                    | 200  | 165       | 318  | 212  | 200  | 55             | 349         | 12          | 1 1/8             | M30   | 370              | 375  |
|  | 10                   | 250  | 213       | 398  | 266  | 250  | 95             | 432         | 16          | 1 1/4             | M33   | 440              | 445  |
|  | 12                   | 300  | 229       | 455  | 312  | 305  | 140            | 489         | 20          | 1 1/4             | M33   | 460              | 465  |
|  | 14                   | 350  | 273       | 490  | 355  | 337  | 223            | 527         | 20          | 1 3/8             | M36x3 | 520              | 525  |
|  | 16                   | 400  | 305       | 562  | 400  | 387  | 360            | 603         | 20          | 1 1/2             | M39x3 | 575              | 580  |
| 18   | 450                  | 362  | 610       | 450  | 438  | 395  | 654            | 20          | 1 5/8       | M42x3             | 650   | 655              |      |
| 20   | 500                  | 368  | 680       | 500  | 489  | 518  | 724            | 24          | 1 5/8       | M42x3             | 670   | 680              |      |
| 24   | 600                  | 438  | 786       | 600  | 591  | 836  | 838            | 24          | 1 7/8       | M48x3             | 780   | 790              |      |
| Class 600 PN11,0/<br>ASME B16.47B o<br>API605    | 26                   | 650  | 457       | 761  | 640  | 633  | 950            | 806.5       | 28          | 1 5/8             | M42x3 | 790              | 805  |
|  | 28                   | 700  | 483       | 815  | 690  | 684  | 1210           | 863.5       | 28          | 1 3/4             | M45x3 | 830              | 845  |
|  | 30                   | 750  | 505       | 875  | 740  | 735  | 1370           | 927         | 28          | 1 7/8             | M48x3 | 875              | 890  |
|  | 32                   | 800  | 533       | 928  | 784  | 779  | 1640           | 984         | 28          | 2                 | M52x3 | 920              | 940  |
|  | 36                   | 900  | 635       | 1045 | 880  | 874  | 2120           | 1105        | 28          | 2 1/4             | M56x3 | 1065             | 1085 |
| Class 600 PN11,0/<br>ASME B16.47A o<br>MSS SP-44 | 26                   | 650  | 457       | 863  | 640  | 633  | 980            | 915.5       | 28          | 1 7/8             | M48x3 | 795              | 810  |
|  | 28                   | 700  | 483       | 910  | 690  | 684  | 1250           | 965         | 28          | 2                 | M52x3 | 835              | 850  |
|  | 30                   | 750  | 505       | 967  | 740  | 735  | 1420           | 1022.5      | 28          | 2                 | M52x3 | 860              | 905  |
|  | 32                   | 800  | 533       | 1020 | 784  | 779  | 1700           | 1079.5      | 28          | 2 1/4             | M56x3 | 905              | 925  |
|  | 36                   | 900  | 635       | 1126 | 880  | 874  | 2200           | 1194        | 28          | 2 1/2             | M64x3 | 1035             | 1055 |
|  | 40                   | 1000 | 660       | 1153 | 985  | 976  | 2650           | 1213        | 32          | 2 1/4             | M56x3 | 1115             | -    |
|  | 42                   | 1050 | 701       | 1215 | 1030 | 1020 | 3120           | 1283        | 28          | 2 1/2             | M64x3 | 1190             | -    |
|  | 48                   | 1200 | 787       | 1386 | 1170 | 1166 | 3720           | 1460.5      | 32          | 2                 | M70x3 | 1330             | -    |

# DUAL PLATE WAFER CHECK VALVE CLASS 900

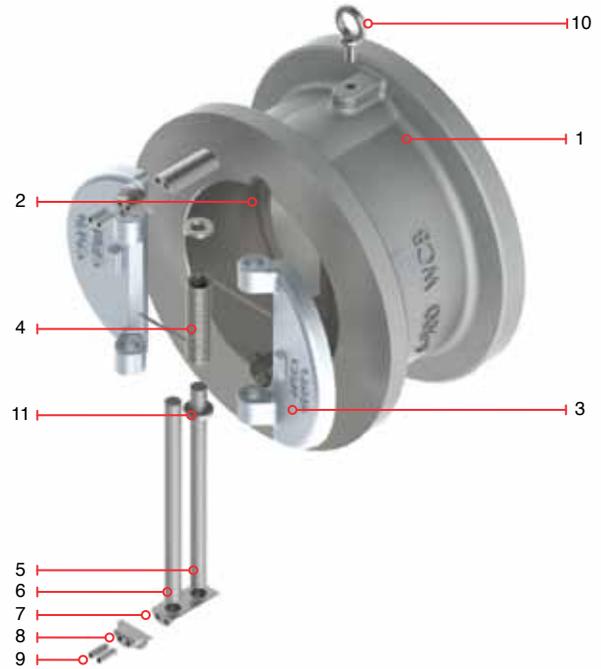
## Design Features

- Design in accordance with API 594
- End to end dimension in accordance to API 594
- Flange ends in accordance to ASME B16.5, ASME B16.47
- Inspection and Test according to API 598
- NACE MR-0175 Service
- Lifting Lug for 8" and up
- Single Spring for 2" to 6"
- Double Spring for 8" and up

## Material List for Main Parts (Single Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

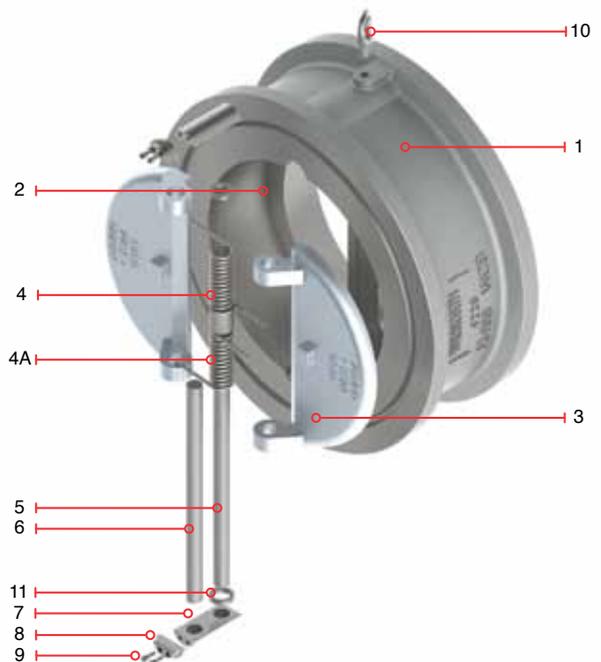
Remark: 1. Select different materials for different working temperature and media.



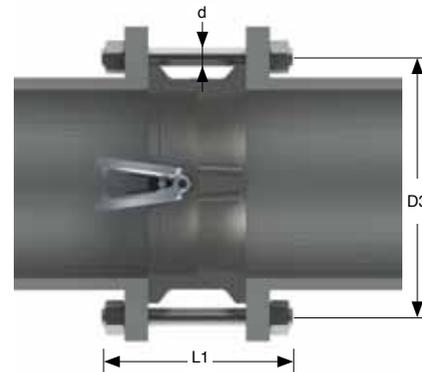
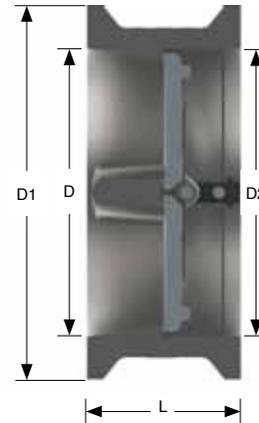
## Material List For Main Parts (Double Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 4A  | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

Remark: 1. Select different materials for different working temperature and media.



# DUAL PLATE WAFER CHECK VALVE CLASS 900



## Dimensions and Weights

| Pressure /<br>Flange standard   | Nominal<br>pipe size |     | Dimension |     |     |      | Weight<br>(Kg) | Pipe Flange |             |                   |       |                  |     |
|---------------------------------|----------------------|-----|-----------|-----|-----|------|----------------|-------------|-------------|-------------------|-------|------------------|-----|
|                                 | NPS                  | CN  | L         | D1  | D2  | D    |                | D3          | Bolt<br>No. | Stud Diameter (d) |       | Stud Length (L1) |     |
|                                 |                      |     |           |     |     |      |                |             |             | in                | mm    | RF               | RJ  |
| Class 900 PN15,0/<br>ASME B16.5 | 2                    | 50  | 70        | 140 | 58  | 51   | 8              | 165         | 8           | 7/8               | M24   | 225              | 230 |
|                                 | 2 1/2                | 65  | 83        | 162 | 73  | 65   | 11             | 190.5       | 8           | 1                 | M27   | 250              | 255 |
|                                 | 3                    | 80  | 83        | 165 | 90  | 80   | 14             | 190.5       | 8           | 7/8               | M24   | 240              | 245 |
|                                 | 4                    | 100 | 102       | 204 | 108 | 102  | 20             | 235         | 8           | 1 1/8             | M30   | 285              | 290 |
|                                 | 5                    | 125 | 110       | 245 | 136 | 127  | 30             | 278.5       | 8           | 1 1/4             | M33   | 310              | 315 |
|                                 | 6                    | 150 | 159       | 286 | 162 | 150  | 42             | 317.5       | 12          | 1 1/8             | M30   | 365              | 370 |
|                                 | 8                    | 200 | 206       | 356 | 212 | 200  | 84             | 393.5       | 12          | 1 3/8             | M36x3 | 440              | 445 |
|                                 | 10                   | 250 | 241       | 432 | 266 | 250  | 145            | 470         | 16          | 1 3/8             | M36x3 | 490              | 495 |
|                                 | 12                   | 300 | 292       | 495 | 312 | 305  | 220            | 533.5       | 20          | 1 3/8             | M36x3 | 560              | 565 |
|                                 | 14                   | 350 | 356       | 518 | 355 | 337  | 350            | 559         | 20          | 1 1/2             | M39x3 | 645              | 655 |
|                                 | 16                   | 400 | 384       | 572 | 400 | 387  | 470            | 616         | 20          | 1 5/8             | M42x3 | 685              | 695 |
|                                 | 18                   | 450 | 451       | 635 | 450 | 438  | 605            | 686         | 20          | 1 7/8             | M48x3 | 790              | 805 |
| 20                              | 500                  | 451 | 695       | 496 | 487 | 820  | 749.5          | 20          | 2           | M52x3             | 810   | 825              |     |
| 24                              | 600                  | 495 | 835       | 600 | 591 | 1050 | 901.5          | 20          | 7/8         | M64x3             | 945   | 965              |     |

# DUAL PLATE WAFER CHECK VALVE CLASS 1500

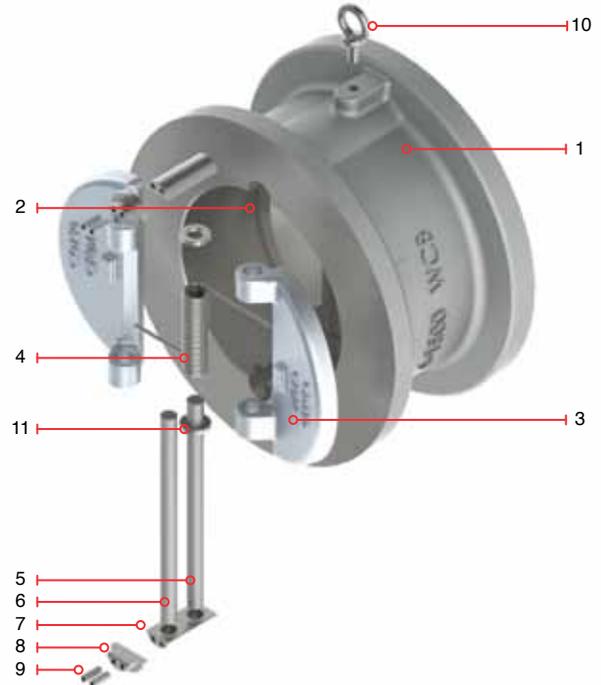
## Design Features

- Design in accordance with API 594
- End to end dimension in accordance to API 594
- Flange ends in accordance to ASME B16.5, ASME B16.47
- Inspection and Test according to API 598
- NACE MR-0175 Service
- Lifting Lug for 8" and up
- Single Spring for 2" to 6"
- Double Spring for 8" and up

## Material List for Main Parts (Single Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

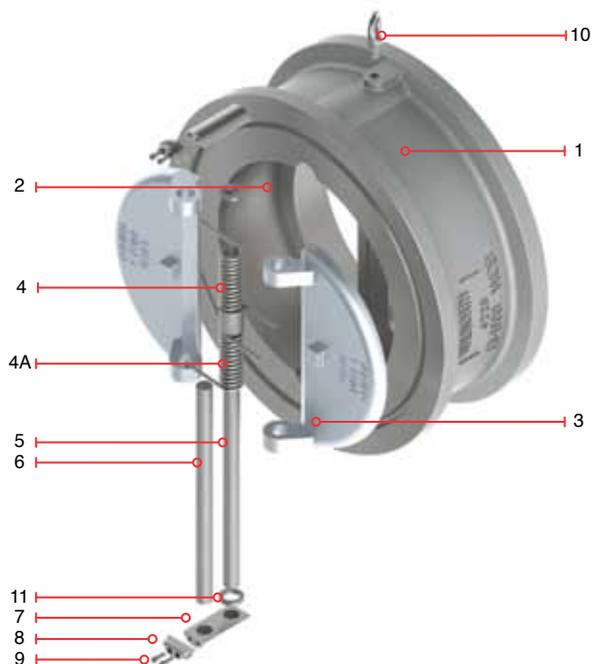
Remark: 1. Select different materials for different working temperature and media.



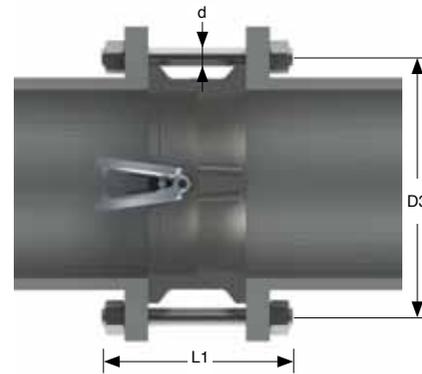
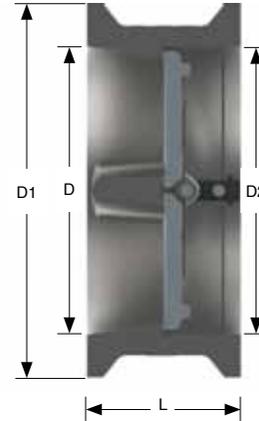
## Material List For Main Parts (Double Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 4A  | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

Remark: 1. Select different materials for different working temperature and media.



# DUAL PLATE WAFER CHECK VALVE CLASS 1500



## Dimensions and Weights

| Pressure /<br>Flange standard    | Nominal<br>pipe size |     | Dimension |     |     |     | Weight<br>(Kg) | Pipe Flange |             |                   |     |                  |     |
|----------------------------------|----------------------|-----|-----------|-----|-----|-----|----------------|-------------|-------------|-------------------|-----|------------------|-----|
|                                  | NPS                  | CN  | L         | D1  | D2  | D   |                | D3          | Bolt<br>No. | Stud Diameter (d) |     | Stud Length (L1) |     |
|                                  |                      |     |           |     |     |     |                |             |             | in                | mm  | RF               | RJ  |
| Class 1500 PN26,0/<br>ASME B16.5 | 2                    | 50  | 70        | 140 | 58  | 51  | 8              | 165         | 8           | 1                 | M24 | 225              | 230 |
|                                  | 2 1/2                | 65  | 83        | 162 | 73  | 65  | 11             | 190.5       | 8           | 1 1/8             | M27 | 250              | 255 |
|                                  | 3                    | 80  | 83        | 172 | 90  | 80  | 19             | 203         | 8           | 1 1/4             | M30 | 270              | 275 |
|                                  | 4                    | 100 | 102       | 207 | 108 | 102 | 26             | 241.5       | 8           | 1 1/2             | M33 | 310              | 315 |
|                                  | 5                    | 125 | 110       | 252 | 136 | 127 | 51             | 292         | 8           | 1 3/8             | M39 | 370              | 375 |
|                                  | 6                    | 150 | 159       | 280 | 162 | 150 | 68             | 317.5       | 12          | 1 3/8             | M36 | 430              | 440 |
|                                  | 8                    | 200 | 206       | 350 | 212 | 200 | 130            | 393.5       | 12          | 1 5/8             | M42 | 510              | 520 |
|                                  | 10                   | 250 | 248       | 433 | 266 | 254 | 210            | 482.5       | 12          | 1 7/8             | M48 | 600              | 610 |
|                                  | 12                   | 300 | 305       | 518 | 312 | 305 | 384            | 517.5       | 16          | 2                 | M52 | 695              | 715 |
|                                  | 14                   | 350 | 356       | 576 | 355 | 337 | 550            | 635         | 16          | 2 1/4             | M56 | 775              | 800 |
| 16                               | 400                  | 384 | 639       | 400 | 387 | 635 | 705            | 16          | 2 1/2       | M64               | 950 | 880              |     |

# DUAL PLATE WAFER CHECK VALVE CLASS 2500

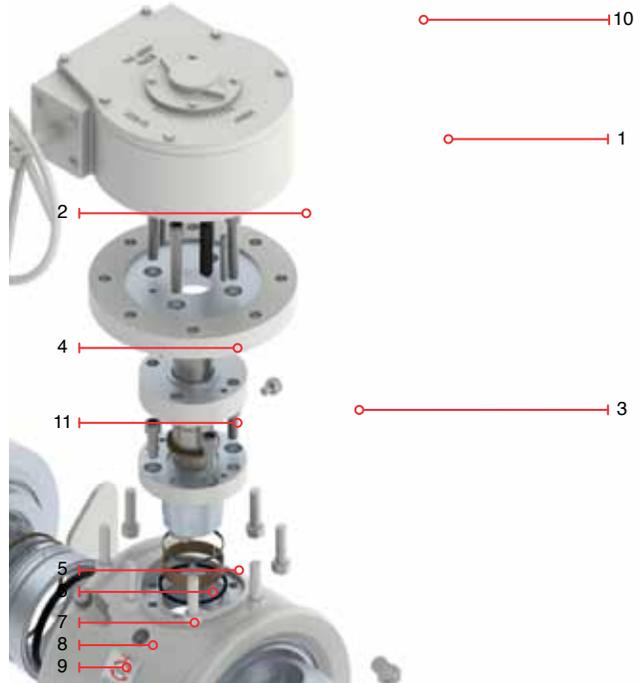
## Design Features

- Design in accordance with API 594
- End to end dimension in accordance to API 594
- Flange ends in accordance to ASME B16.5, ASME B16.47
- Inspection and Test according to API 598
- NACE MR-0175 Service
- Lifting Lug for 8" and up
- Single Spring for 2" to 6"
- Double Spring for 8" and up

## Material List for Main Parts (Single Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

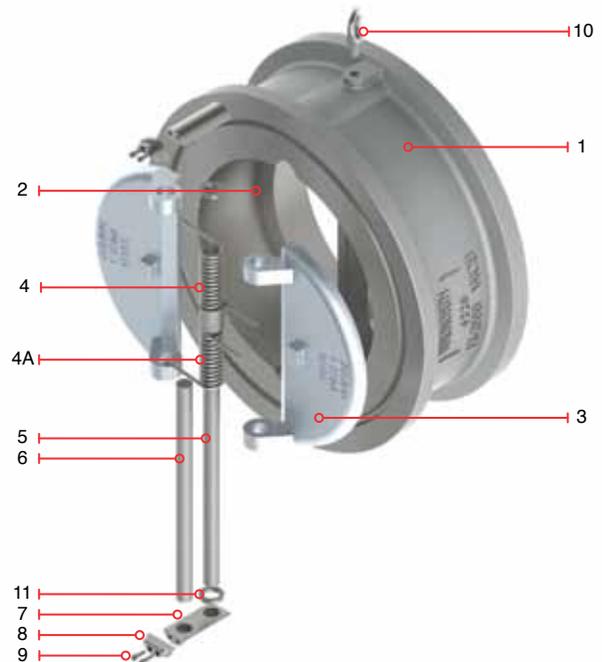
Remark: 1. Select different materials for different working temperature and media.



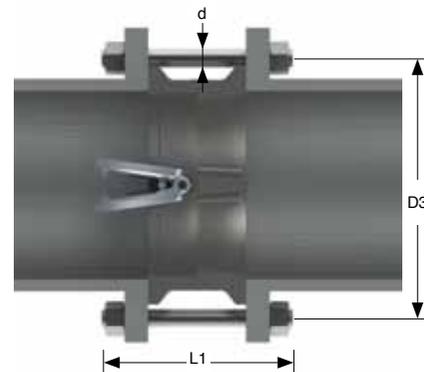
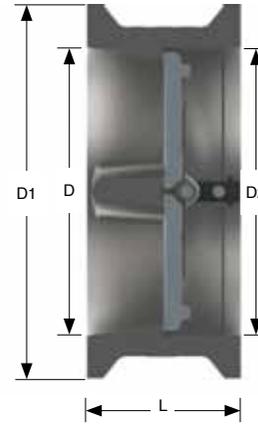
## Material List For Main Parts (Double Spring)

| No. | Part Name     | ASTM                     |
|-----|---------------|--------------------------|
|     |               | Carbon Steel             |
| 1   | Body          | A216 WCB                 |
| 2   | Seat Seal     | A216 WCB + SS410 Overlay |
| 3   | Disc          | A351 CF8                 |
| 4   | Spring        | Inconel X-750            |
| 4A  | Spring        | Inconel X-750            |
| 5   | Shaft         | A276 Gr. 410             |
| 6   | Stop Pin      | A276 Gr. 410             |
| 7   | Shaft Support | A276 Gr. 410             |
| 8   | Retainer      | A276 Gr. 410             |
| 9   | Bolting       | Commercial Steel         |
| 10  | Lifting Lug   | Commercial Steel         |
| 11  | Bearing       | A276 Gr. 410             |

Remark: 1. Select different materials for different working temperature and media.



# DUAL PLATE WAFER CHECK VALVE CLASS 2500



## Dimensions and Weights

| Pressure /<br>Flange standard    | Nominal<br>pipe size |     | Dimension |     |     |     | Weight<br>(Kg) | Pipe Flange |             |                   |       |                  |     |
|----------------------------------|----------------------|-----|-----------|-----|-----|-----|----------------|-------------|-------------|-------------------|-------|------------------|-----|
|                                  | NPS                  | CN  | L         | D1  | D2  | D   |                | D3          | Bolt<br>No. | Stud Diameter (d) |       | Stud Length (L1) |     |
|                                  |                      |     |           |     |     |     |                |             |             | in                | mm    | RF               | RJ  |
| Class 2500 PN42,0/<br>ASME B16.5 | 2                    | 50  | 70        | 143 | 48  | 42  | 10             | 171.4       | 8           | 1                 | M27   | 260              | 260 |
|                                  | 2 1/2                | 65  | 83        | 166 | 58  | 52  | 18             | 196.8       | 8           | 1 1/8             | M30   | 290              | 300 |
|                                  | 3                    | 80  | 86        | 194 | 68  | 62  | 26             | 228.6       | 8           | 1 1/4             | M33   | 315              | 325 |
|                                  | 4                    | 100 | 105       | 232 | 94  | 88  | 40             | 273         | 8           | 1 1/2             | M39x3 | 370              | 375 |
|                                  | 5                    | 125 | 110       | 277 | 106 | 100 | 59             | 323.8       | 8           | 1 3/4             | M45x3 | 420              | 430 |
|                                  | 6                    | 150 | 159       | 315 | 162 | 150 | 90             | 368.3       | 8           | 2                 | M52x3 | 515              | 525 |
|                                  | 8                    | 200 | 206       | 385 | 186 | 180 | 150            | 438.2       | 12          | 2                 | M52x3 | 600              | 615 |
|                                  | 10                   | 250 | 254       | 474 | 232 | 225 | 240            | 593.8       | 12          | 2 1/2             | M64x3 | 760              | 780 |
| 12                               | 300                  | 305 | 547       | 272 | 266 | 440 | 619.1          | 12          | 2 3/4       | M70x3             | 860   | 880              |     |

## TECHNICAL INFORMATION

### Easy Installation

The DUAL PLATE WAFER CHECK valve end to end dimensions allow an easy installation on standard flanges. Only one set of proper length bolts is needed to cover the space of the DUAL PLATE WAFER CHECK valve. Since the valve is more rigid than an equivalent length of heavy wall pipe, supports or special expansion joints are not required for installation.



### Simplified Pipe Network

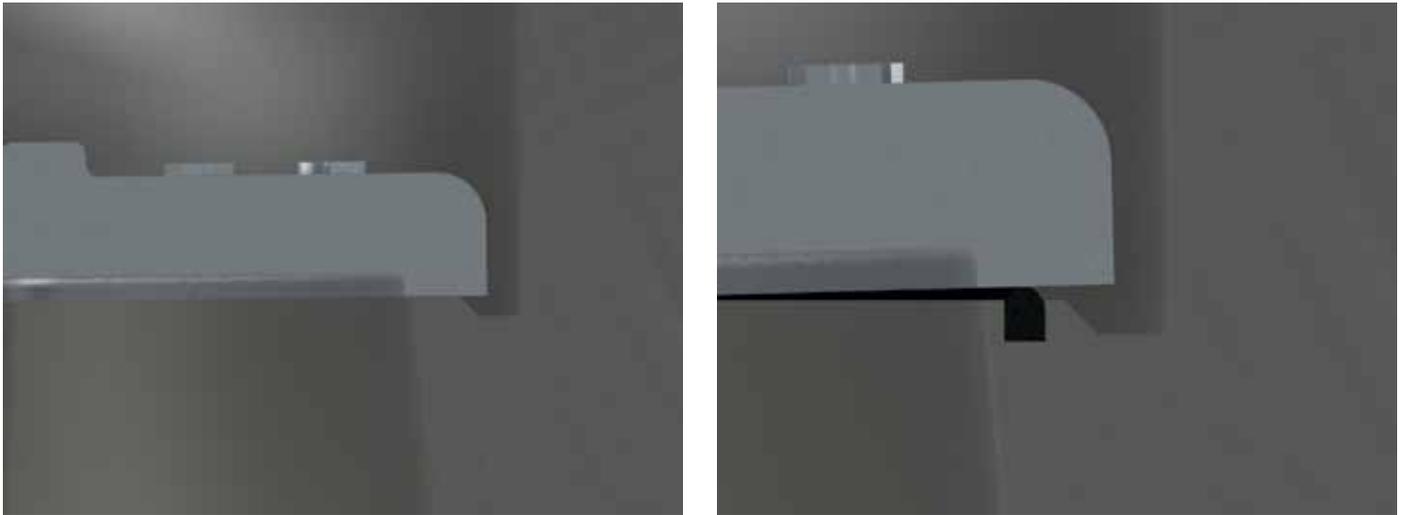
DUAL PLATE WAFER CHECK lightweight plates work in almost any position because of the spring action, allowing a greater versatility and simple installation of the pipe. In some sizes, installation can be done even in vertical lines with flow down.



## TECHNICAL INFORMATION

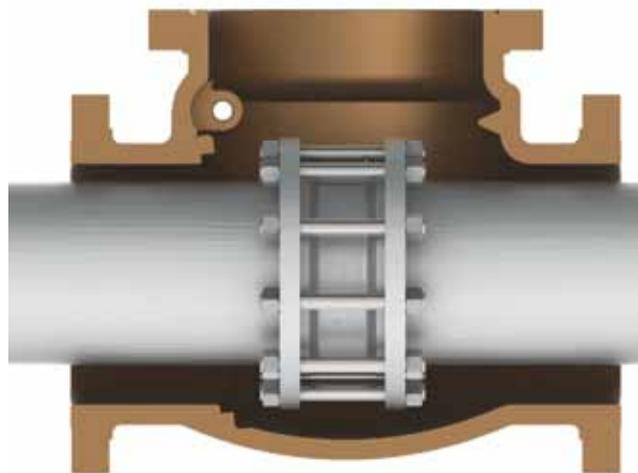
### Effective Sealing Action

The DUAL PLATE WAFER CHECK valve's resilient seal withstands high pressures without leak, distortion or damage. As shown in the figure below, the sealing element is vulcanized into a slot on the body. This sealing element forms an "O" ring which is distorted due to the pressure until metal to metal contact between the plate and the seal of the body occurs as shown in the figure below. The seal is fully guarded to prevent damage under the pressure effect.



### No Costly Foundations Required

Since the DUAL PLATE WAFER CHECK valve is placed between the pipe flanges, it does not need its own flanges; hence, the secret of its low weight. For example, a steel valve ANSI 300 series 152.4 mm., (6"), weight is only 18.5 kg (41 lbs.) and can be installed without special tools or equipment. It does not need expensive brackets or bases because the average weight of a DUAL PLATE WAFER CHECK valve is less than 10% of a conventional flanged check valve.



# TECHNICAL INFORMATION

## Easy Maintenance

The DUAL PLATE WAFER CHECK valve consists of seven assembled parts, without fasteners or joints of any kind. All of these parts are completely floating, without load on the pin, which is also fully floating. The new design eliminates blast-holes and allows total hermeticity; because the pins are located in a support inside the valve, no drilling to the body is necessary.

The DUAL PLATE WAFER CHECK valve is much lighter and stronger than conventional valves.

When the opening is split in two, the thickness of the plates is reduced. The DUAL PLATE WAFER CHECK requires only one-eighth the weight required of a conventional valve to bear an equivalent pressure.

The narrow compact body itself is stronger and more rigid than a short length of heavy wall pipe.

A simple heat-resistant stainless steel spring creates a positive seal, and rapid closure is made possible by lightweight plates. The spring is specially designed for each valve and the low effort that is submitted, give high resistance to fatigue. The fast action of the spring closes the valve before return flow can occur, thereby reducing the possibility of damage to water hammer.

## Coefficients

| Nominal pipe size |       | Liquid resistance coefficient of the valves fully open | Water flowing coefficient of the valves fully open under nominal temperature |          |          | Flowing direction                    |              |
|-------------------|-------|--|--|----------|----------|--------------------------------------|--------------|
| DN                | NPS   |  | Kv(m <sup>3</sup> /h)  | Cv (U.S) | Cv (U.K) | Vertical ↑                           | Horizontal → |
|                   |       |  |  |          |          | Opening pressure approximation (Kpa) |              |
| 50                | 2     | 2.6  | 63   | 74       | 62       | 2                                    | 1            |
| 65                | 2 1/2 | 2.4  | 109  | 128      | 107      | 2                                    | 1            |
| 80                | 3     | 2.3  | 172  | 201      | 169      | 2                                    | 1            |
| 100               | 4     | 2  | 289  | 338      | 283      | 2                                    | 1            |
| 125               | 5     | 1.8  | 476  | 557      | 466      | 2                                    | 1            |
| 150               | 6     | 1.5  | 750  | 878      | 735      | 2                                    | 1            |
| 200               | 8     | 1.3  | 1432   | 1675     | 1403     | 2                                    | 1            |
| 250               | 10    | 1.2  | 2330   | 2726     | 2283     | 2                                    | 1            |
| 300               | 12    | 1  | 3676   | 4301     | 3602     | 2                                    | 1            |
| 350               | 14    | 0.9  | 5274   | 6171     | 5169     | 2                                    | 1            |
| 400               | 16    | 0.8  | 7306   | 8548     | 7160     | 3                                    | 1            |
| 450               | 18    | 0.8  | 9246   | 10818    | 9061     | 3                                    | 1            |
| 500               | 20    | 0.8  | 11415  | 13356    | 11187    | 3                                    | 1            |
| 600               | 24    | 0.7  | 17573  | 20560    | 17222    | 3                                    | 1            |
| 700               | 28    | 0.7  | 23919  | 27985    | 23441    | 4                                    | 1            |
| 750               | 30    | 0.7  | 27458  | 32126    | 26909    | 4                                    | 1            |
| 800               | 32    | 0.7  | 31241  | 36552    | 30616    | 4                                    | 1            |
| 900               | 36    | 0.7  | 39539  | 46261    | 37848    | 4                                    | 1            |
| 1000              | 40    | 0.7  | 48814  | 57112    | 47838    | 4                                    | 1            |
| 1050              | 42    | 0.7  | 53817  | 62966    | 52741    | 4                                    | 1            |
| 1100              | 44    | 0.7  | —  | —        | —        | 4                                    | 1            |
| 1200              | 48    | 0.7  | 70292  | 82242    | 68886    | 4                                    | 1            |
| 1350              | 54    | 0.7  | —  | —        | —        | 4                                    | 1            |
| 1400              | 56    | 0.7  | —  | —        | —        | 4                                    | 1            |
| 1500              | 60    | 0.7  | —  | —        | —        | 4                                    | 1            |

# TECHNICAL INFORMATION

## Production Line DUAL PLATE WAFER CHECK valve

| Size |       | Pressure (CLASS) |     |     |     |      |      |
|------|-------|------------------|-----|-----|-----|------|------|
| DN   | NPS   | 150              | 300 | 600 | 900 | 1500 | 2500 |
| 50   | 2     | .                | .   | .   | .   | .    | .    |
| 65   | 2 1/2 | .                | .   | .   | .   | .    | .    |
| 80   | 3     | .                | .   | .   | .   | .    | .    |
| 100  | 4     | .                | .   | .   | .   | .    | .    |
| 125  | 5     | .                | .   | .   | .   | .    | .    |
| 150  | 6     | .                | .   | .   | .   | .    | .    |
| 200  | 8     | .                | .   | .   | .   | .    | .    |
| 250  | 10    | .                | .   | .   | .   | .    | .    |
| 300  | 12    | .                | .   | .   | .   | .    | .    |
| 350  | 14    | .                | .   | .   | .   | .    | .    |
| 400  | 16    | .                | .   | .   | .   | .    | .    |
| 450  | 18    | .                | .   | .   | .   | .    | .    |
| 500  | 20    | .                | .   | .   | .   | .    | .    |
| 600  | 24    | .                | .   | .   | .   | .    | .    |
| 650  | 26    | .                | .   | .   | .   | .    | .    |
| 700  | 28    | .                | .   | .   | .   | .    | .    |
| 750  | 30    | .                | .   | .   | .   | .    | .    |
| 800  | 32    | .                | .   | .   | .   | .    | .    |
| 900  | 36    | .                | .   | .   | .   | .    | .    |
| 1000 | 40    | .                | .   | .   | .   | .    | .    |
| 1050 | 42    | .                | .   | .   | .   | .    | .    |
| 1100 | 44    | .                | .   | .   | .   | .    | .    |
| 1200 | 48    | .                | .   | .   | .   | .    | .    |
| 1350 | 54    | .                | .   | .   | .   | .    | .    |
| 1400 | 56    | .                | .   | .   | .   | .    | .    |
| 1500 | 60    | .                | .   | .   | .   | .    | .    |

# PRESSURE-TEMPERATURE RATINGS

## CAST STEEL ASTM A 216 GR WCB

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

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

# PRESSURE-TEMPERATURE RATINGS

## CAST STEEL ASTM A 217 GR WC6

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

Notes:

- Use normalized and tempered material only.
- Not to be used over 1,100°F.
- The deliberate addition of any element not listed in ASTM A 217, Table 1 is prohibited, except that Ca and Mg may be added for deoxidation.

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

## CAST STEEL ASTM A 217 GR WC9

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

Notes:

- Use normalized and tempered material only.
- Not to be used over 1,100°F.
- The deliberate addition of any element not listed in ASTM A 217, Table 1 is prohibited, except that Ca and Mg may be added for deoxidation.

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

## CAST STEEL ASTM A 352 GR LCB

| °F Temperature °C |           | Maximum allowable non-shock working pressure in PSIG by class |     |       |       |       |       |
|-------------------|-----------|---|-----|-------|-------|-------|-------|
|                   |           | 150   | 300 | 600   | 900   | 1500  | 2500  |
| -20 to 100        | -29 to 38 | 265   | 695 | 1,395 | 2,090 | 3,480 | 5,805 |
| 200               | 93        | 255   | 660 | 1,320 | 1,980 | 3,300 | 5,505 |
| 300               | 149       | 230   | 640 | 1,275 | 1,915 | 3,190 | 5,315 |
| 400               | 204       | 200   | 615 | 1,230 | 1,845 | 3,075 | 5,125 |
| 500               | 260       | 170   | 585 | 1,175 | 1,760 | 2,930 | 4,885 |
| 600               | 316       | 140   | 550 | 1,105 | 1,655 | 2,755 | 4,595 |
| 650               | 343       | 125   | 535 | 1,065 | 1,600 | 2,665 | 4,440 |
| 700               | 371       | 110   | 510 | 1,025 | 1,535 | 2,560 | 4,270 |
| 750               | 399       | 95  | 475 | 955   | 1,430 | 2,385 | 3,970 |
| 800               | 427       | 80  | 390 | 780   | 1,175 | 1,955 | 3,255 |
| 850               | 454       | 65  | 300 | 595   | 895   | 1,490 | 2,485 |
| 900               | 482       | 50  | 200 | 405   | 605   | 1,010 | 1,685 |
| 950               | 510       | 35  | 135 | 275   | 410   | 685   | 1,145 |
| 1000              | 538       | 20  | 85  | 170   | 255   | 430   | 715   |

Notes:

Not to be used over 650°F.

# PRESSURE-TEMPERATURE RATINGS

## CAST STEEL ASTM A 351 GR CF8

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

Notes: At temperatures over 1,000°F, use only when the carbon content is 0.04% or higher. (a) Flanged ends ratings terminate at 1000°F (538°C).

## CAST STEEL ASTM A 351 GR CF8M

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

Notes: At temperatures over 1,000°F, use only when the carbon content is 0.04% or higher. (a) Flanged ends ratings terminate at 1000°F (538°C).

## DUAL PLATE WAFER CHECK VALVE

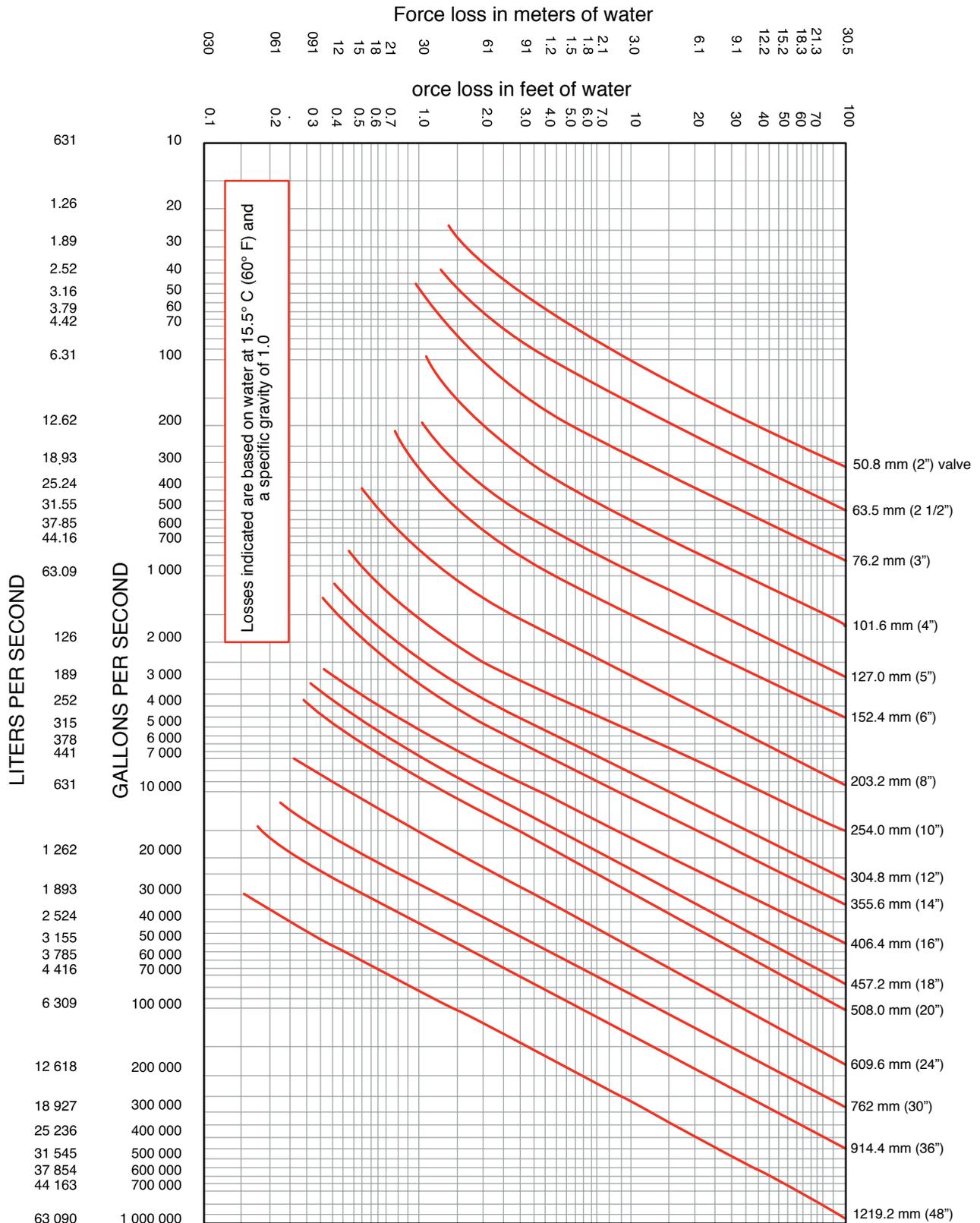
### PRESSURE DROP OR FORCE LOSS THROUGH THE VALVE AT A FLOW RATE OF 3.048 M/SEC (10 FT/SEC) OF WATER AT 155°C (60°F)

| Tamaño de la válvula |       | Gasto   |       | Pérdida de presión |                       | Pérdida de carga |      | Equivalencia tubería C-100 P |      |
|----------------------|-------|---------|-------|--------------------|-----------------------|------------------|------|------------------------------|------|
| mm                   | pulg. | lt/seg  | GPM   | Kg/cm <sup>2</sup> | lb/pulg. <sup>2</sup> | mts              | pies | mts                          | pies |
| 50.8                 | 2     | 6.50    | 103   | 0.320              | 4.55                  | 3.2              | 10.5 | 9.4                          | 31   |
| 65                   | 2 1/2 | 9.40    | 149   | 0.246              | 3.76                  | 2.7              | 8.7  | 10.1                         | 33   |
| 75                   | 3     | 14.51   | 230   | 0.213              | 3.03                  | 2.1              | 7.0  | 10.7                         | 35   |
| 100                  | 4     | 25.49   | 404   | 0.165              | 2.34                  | 1.6              | 5.4  | 11.3                         | 37   |
| 125                  | 5     | 39.31   | 623   | 0.134              | 1.90                  | 1.3              | 4.4  | 11.3                         | 37   |
| 150                  | 6     | 56.78   | 900   | 0.110              | 1.56                  | 1.1              | 3.6  | 11.6                         | 38   |
| 200                  | 8     | 97.79   | 1550  | 0.085              | 1.21                  | 0.85             | 2.8  | 12.5                         | 41   |
| 250                  | 10    | 160.20  | 2540  | 0.067              | 0.95                  | 0.67             | 2.2  | 12.8                         | 42   |
| 300                  | 12    | 220.80  | 3500  | 0.058              | 0.825                 | 0.58             | 1.9  | 13.7                         | 45   |
| 350                  | 14    | 270.00  | 4280  | 0.052              | 0.740                 | 0.52             | 1.7  | 14.3                         | 47   |
| 400                  | 16    | 359.60  | 5700  | 0.043              | 0.611                 | 0.43             | 1.4  | 14.3                         | 47   |
| 450                  | 18    | 499.70  | 7920  | 0.040              | 0.569                 | 0.40             | 1.3  | 14.6                         | 48   |
| 500                  | 20    | 567.80  | 9000  | 0.037              | 0.526                 | 0.37             | 1.2  | 15.2                         | 50   |
| 600                  | 24    | 946.20  | 15000 | 0.030              | 0.424                 | 0.30             | 0.98 | 15.8                         | 52   |
| 900                  | 36    | 2000.00 | 31700 | 0.020              | 0.284                 | 0.20             | 0.65 | 16.5                         | 54   |
| 1200                 | 48    | 3558.00 | 56400 | 0.015              | 0.216                 | 0.15             | 0.50 | 18.3                         | 60   |

\* This table is valid for API and ANSI valves.

# DUAL PLATE WAFER CHECK VALVE

## DROP PRESSURE OR FORCE LOSS GRAPHIC



\* This table is valid for API and ANSI valves.

## DESIGN BASIS

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

- API** American Petroleum Institute:  
**API 594** Check Valves: Flanged, Lug, Wafer and Butt-welding.  
**API 598** Valve Inspection and Testing.
- ASME/ANSI** American National Standard Institute:  
**B16.34** Pressure-Temperature Range.  
**B16.10** Length of Ferrous Flanged and Welding end valve.  
**B16.5** Steel pipe Flanges and Flanged Fittings.  
**B16.47** Large Diameter Steel Flanges.
- ASTM** American Society for Testing and Materials:  
**A-216** Standard specification for steel casting, carbon, suitable for fusion welding, for high temperature service.  
**A-351** Standard specification for casting, austenitic, austenitic-ferritic (duplex), for pressure containing parts.  
**A-352** Standard specification for steel casting, ferritic and martensitic, for pressure-containing parts, suitable for low temperature service.
- NACE** National Association of Corrosion Engineers:  
**MR 0175** Standard material requirements sulfide stress cracking resistant metallic materials for oilfield equipment.
- MSS** Manufactures Standardization Society of the Valve and Fittings:  
**SP-25** Standard marking system for valves, fittings, flanges and unions.  
**SP-44** Steel pipeline flanges.



# HOW TO ORDER

The figure of Example 24" H6SPF W1 describes a valve 24" nominal diameter, style H (standard design), ANSI class 600#, with carbon steel body (WCB), metal to metal seal, serrated face, W1 describes discs made of SS Gr. CF8, shaft SS Gr. 410 and stop pin SS Gr. 410.



## Base Figure

| Model |                       | Class |      | Body |             | Body seat |                  | Ends |                           |
|-------|-----------------------|-------|------|------|-------------|-----------|------------------|------|---------------------------|
| D     | Double Flange         | 1     | 150  | B    | Al-Bronze   | E         | EPDM             | F    | Serrated Face             |
|       |                       |       |      | C    | CF8M/SS316  |           |                  |      |                           |
| H     | Wafer Standard Design | 3     | 300  | D    | CF8/SS304   | M         | Buna-N           | R    | Ring Type Joint           |
|       |                       |       |      | G    | LCB         |           |                  |      |                           |
| L     | Lug                   | 6     | 600  | I    | CF3/SS304L  | P         | Metal-Metal Seal | P    | Plain Face (non serrated) |
|       |                       |       |      | J    | LC3         |           |                  |      |                           |
|       |                       | 9     | 900  | K    | CF3M/SS316L | V         | Viton            |      |                           |
|       |                       | 5     | 1500 | M    | Monel       | N         | Neoprene         |      |                           |
|       |                       |       |      | N    | CD3MN       |           |                  |      |                           |
|       |                       | 2     | 2500 | S    | WCB         |           |                  |      |                           |

# 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 quote 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 below.

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

- Five (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 overdue 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 first 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.

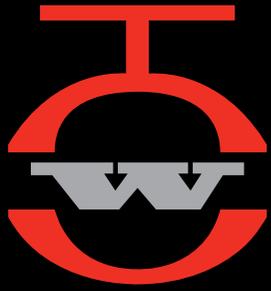
Except of what is stated in this document WALWORTH waives and excludes any other warranty expressed or implied, for loss, direct damage, indirect damage or consequential of other products, processes, installations or equipment of the buyer or end user, either partial or total, due to material defects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





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Industria Lote 16 Sin Número, Fracc. Industrial El Trébol De Tepetzotlán, Tepetzotlán Estado de México C.P. 54610  
Phone: (52 55) 5899 1700 Fax: (52 55) 5876 0156 | e-mail: [info@walworth.com.mx](mailto:info@walworth.com.mx)

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