

Duo-Chek II

High Performance
Check Valves



Duo-Chek II High Performance

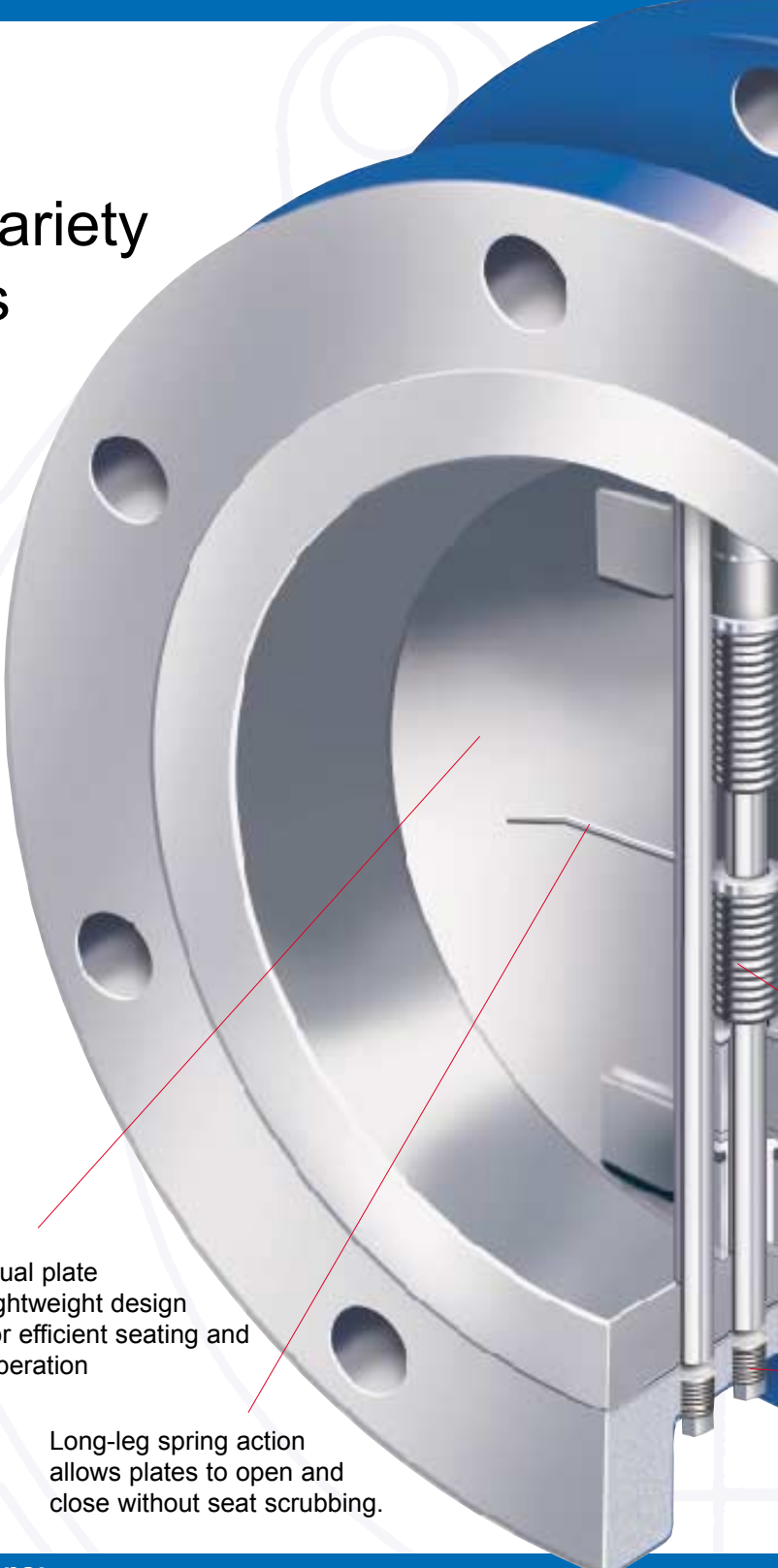
Check Valves

Easy to handle, a wide variety of body design, materials and trim

Product features:

Duo-Chek® II high performance check valve is the original Mission wafer check valve introduced to the market in the late 50's. They are available in the sizes, pressure classes and configurations you need to meet the most demanding of applications. Our product range includes, but is not limited to,

- ANSI Pressure Class 150 through 2500
- API 6A and 6D pressure classes
- DIN, JIS, BS, AS, and ISO standards are also available.
- Wafer, lug, double flanged and extended body styles
- Configurations available in retainerless style.
- Body Materials: Ductile iron, WCB cast steel, 316 stainless steel. All alloys.
- Resilient Seat Materials: EPDM, Buna-N, Neoprene, Refrigeration-grade elastomer, Viton
- Metal seals also available
- End Connections: Raised Face, Plain Face, Ring Joint, Weld-End, Hub-End.



Dual plate lightweight design for efficient seating and operation

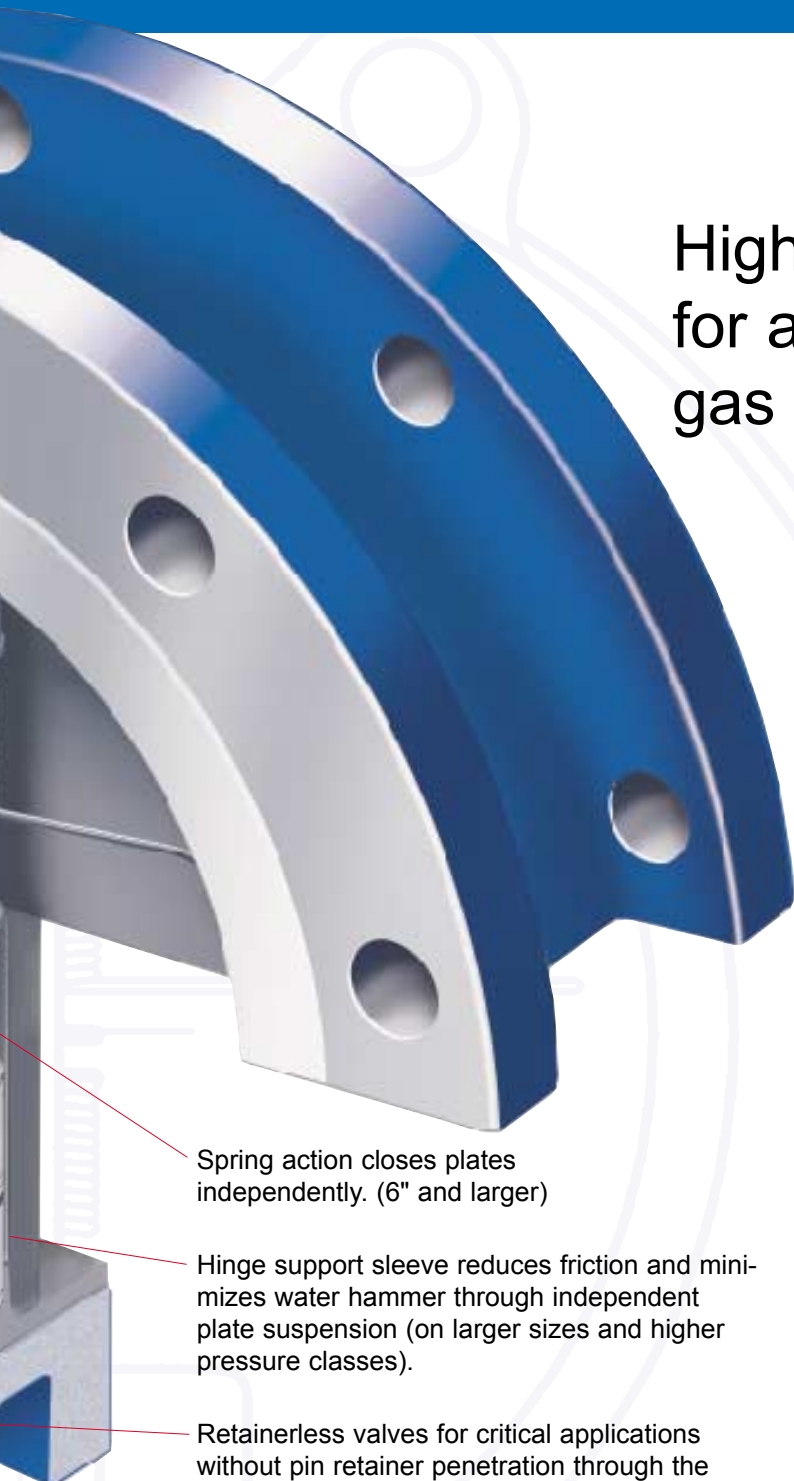
Long-leg spring action allows plates to open and close without seat scrubbing.

Main areas of application:

- Petroleum Refining
- Petrochemicals
- Chemicals
- Oil and Gas Production
- Pulp and Paper
- Power Generation
- Steel/Primary Metals
- Marine
- Water and Wastewater

Applications:

- Hydrogen, Cracking, Steam, Crude Oil, Gasoline, Visbreaker, Sulfur
- Ethylene, Propylene, Reboilers, Gases
- Chlorine, Phosgene, Aromatics, Polymers, Acids, Air Separation
- Centrifugal Compressor, Discharge, Fire Water Lines, Steam + CO²
- Bleaching Lines, Black Liquor, Green Liquor, White Water, Chemical
- Condensate, Boiler Feed Pumps, Cooling Towers, River Water Intake,
- Quench Lines, De-Scaling, Continuous Casters, Electro-Galvanizing
- Oil Tankers, Tanker Loading Terminals, Offshore Platforms, Sub-Sea
- Distribution Lines, Pumping Stations, Chemical Treatment, Sewage



High-quality dual-plate design for a multitude of liquid and gas fluid applications

Some of the major markets and typical applications are depicted here.



Spring action closes plates independently. (6" and larger)

Hinge support sleeve reduces friction and minimizes water hammer through independent plate suspension (on larger sizes and higher pressure classes).

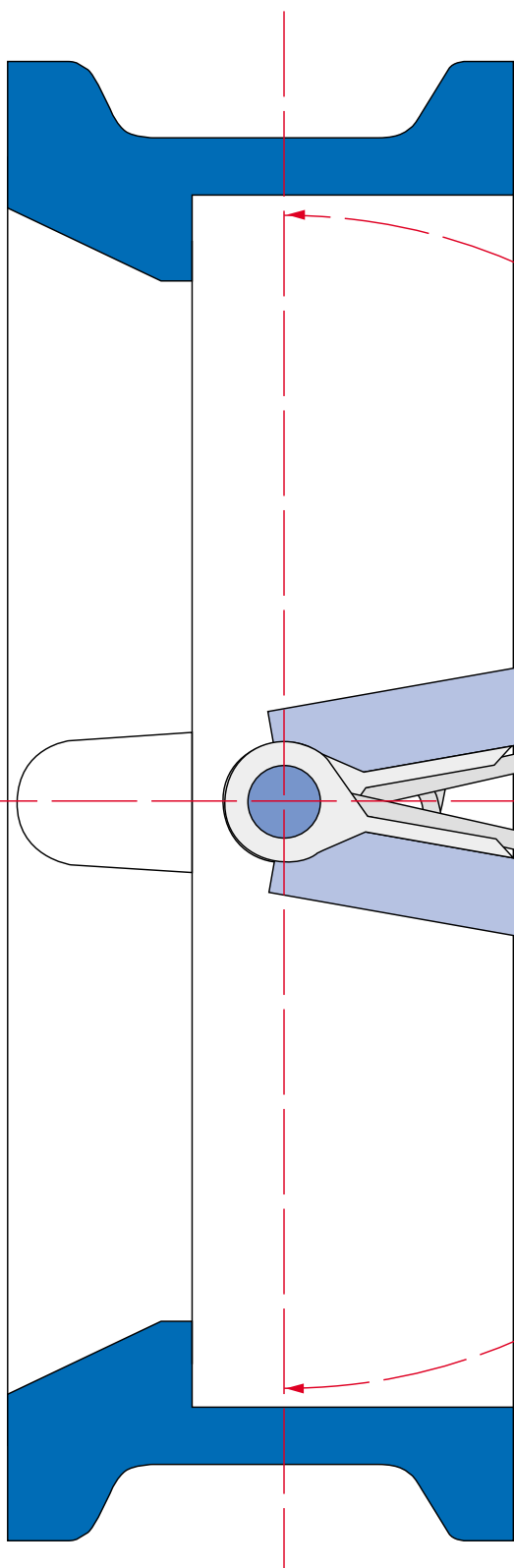
Retainerless valves for critical applications without pin retainer penetration through the body are available in Wafer and are standard in Lug and Double Flange valves.



Injection, Oil/Steam Separation, Gas/Oil Gathering Systems, Flowlines, Wellheads Recovery
 Service Water Recirculators,

Manifold, Terminal Transfer Lines, Barge Unloading Lines, Shipboard Services
 Plant Blower Discharge, Fire Protection Systems, HVAC Systems

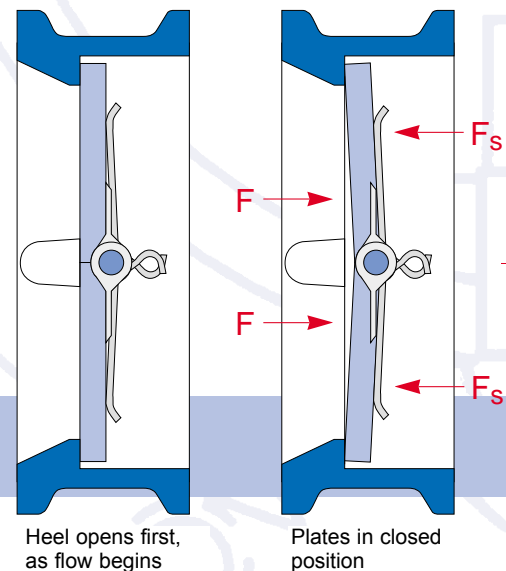
Duo-Chek II Design features



Leading engineering specifiers specify the Duo-Chek II for check valve applications because it provides high performance. Extensive research and testing with demonstrated performance has earned worldwide recognition, unmatched in the industry.

The Duo-Chek II wafer valve design is generally stronger, lighter, smaller, more efficient and less expensive than conventional swing check valves. Its design meets API 594 which is approximately one fourth the face to face dimension and 15% to 20% the weight, on most popular sizes making them less expensive than a swing check valve. It is much easier to install between Standard gaskets and line flanges. The savings compound during installation due to ease of handling and only one set of flange studs are required. Therefore, it is more cost effective to install, and also to maintain.

The Duo-Chek II also offers special design features that make it a high performance valve. These include a scrub-free opening, and in some sizes a unique independent spring design as well as an independent plate support System. These features may not be found in other check valves. Other configurations offered include lug, double flange and extended body.





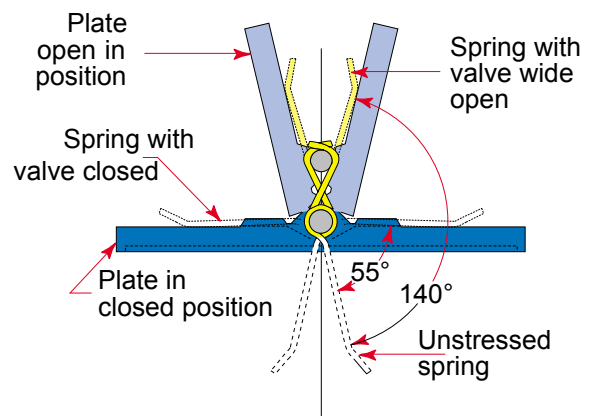
The innovative dual-plate design of the Duo-Chek II employs two spring-loaded plates (disc halves) suspended on a central vertical hinge pin. As flow

begins, the plates open in response to a resultant force (F) which acts as the center of the sealed surface area. The contact point of the reacting spring leg's force (F_s) acts beyond the center of the plate area, causing the heel to open first. This prevents rubbing of the seal surface prior to normal plate opening, eliminating wear.

As the velocity of flow decreases, torsion spring action reacts automatically. This moves the plates closer to the body seats, reducing the distance and time of travel for closure. By having the plates closer to the body seats at the time of flow reversal, the valve dynamic response is greatly accelerated. This dramatically reduces the water hammer effect.

At closing, the point of spring force cause the toe of the plates to close first. This prevents dragging of the heels of the plates and maintains seal integrity for much longer periods.

Independent Spring Design



A spring design of the Duo-Chek II (sizes 6" and larger) allows higher torque to be exerted against each plate with independent closing in response to the process stream. Testing has proved this action provides up to 25% improvement in valve life and 500% reduction in water hammer.

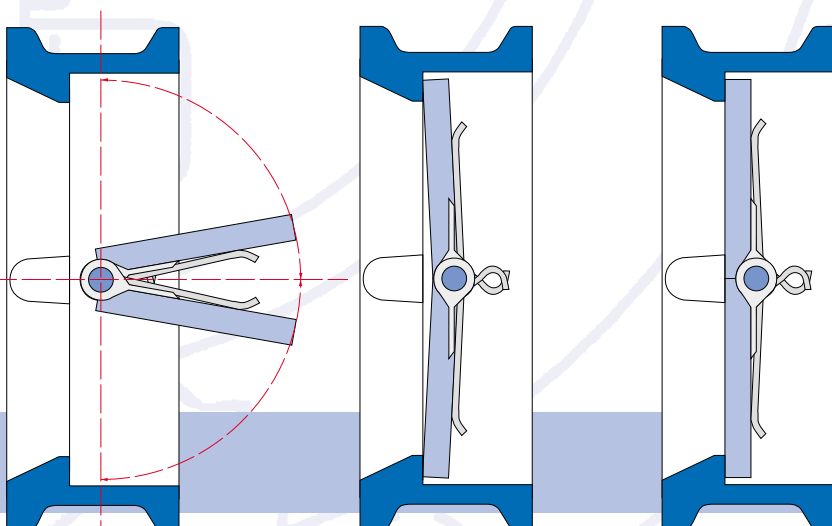
Each of the dual plates has its own spring or springs, which provide independent closing action. These independent springs undergo less angular deflection, only 140° as compared to 350° for conventional springs with two legs.

Independent Plate Suspension Design

The Duo-Chek II unique hinge design reduces friction forces by 66%, which improves valve response significantly.

Support sleeves are inserted through the outboard hinges so that the upper hinge is independently supported by the lower sleeve during valve operation.

This allows both plates to close at the same time for quick response, and excellent dynamic performance.



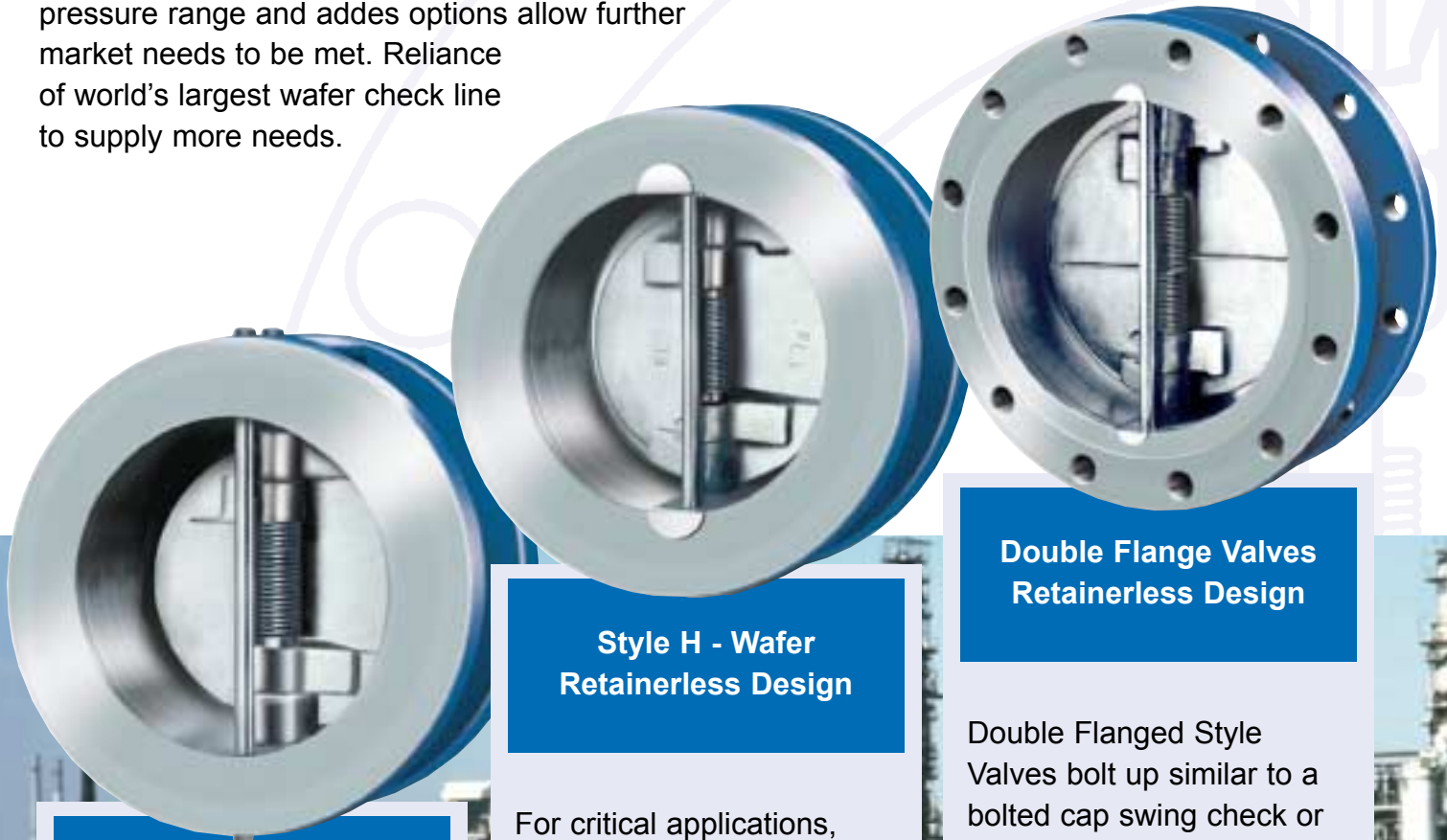
Plates fully opened (85°)

Heel closes first, as flow decreases

Plates fully seated for bubble-tight shutoff

Duo-Chek II Configurations

The advanced design of the Duo-Chek II valves provides many operational benefits to the user, which combined with its more compact size and lower weight, make this valve types an excellent alternative to standard swing chek valves. Wide size range, pressure range and addes options allow further market needs to be met. Reliance of world's largest wafer check line to supply more needs.



Style G - Wafer Wafer Design

Wafer style body valves are designed with flangeless bodies with relatively short face to face dimensions. They are clamped between mating flanges wich are connected by studs and nuts.

Size 2" - 72"
ANSI Class 150 - 2500

Style H - Wafer Retainerless Design

For critical applications, Style H retainerless Duo-Chek valves feature a one-piece body with no pin retainer penetration through the body. These high performance valves utilize the same internal design of other Duo-Chek II valves with all the unique features and advantages build into them.

Size 2" - 72"
ANSI Class 150 - 2500

Double Flange Valves Retainerless Design

Double Flanged Style Valves bolt up similar to a bolted cap swing check or gate valve. Double flanged versions are offered as standard on larger size valves where the lay length of the body permits installation of two heavy nuts between the flanges. These valves are standard retainerless design.

Size 8" - 72"
ANSI Class 150 - 900

Specials / Standards



Lug Valves Retainerless Design

Lug Style Valves cover the bolting the entire length of the body. Lug valves are furnished whenever possible to keep weight to a minimum. These valves are standard retainless design.

Size 2" - 24"
ANSI Class 150 - 2500



Cryogenic Valves
Duo-Chek H valves may be furnished for subatmospheric to cryogenic temperatures (-50°F through -450°F). Special materials of construction such as low temperature alloy steels, austenitic stainless steel, aluminum bronze or monel are generally required.

Coated Valves

A variety of coatings may be provided on request to resist corrosion or abrasion. Some of the commonly specified coatings include epoxies, coal tar derivatives and sacrificial zinc primers. Please discuss your requirements with your sales office.

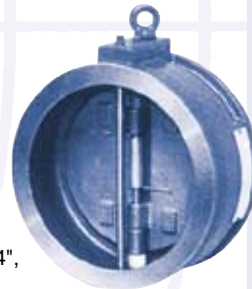
Grayloc® Hub End Valves

Valves with Grayloc ends may be furnished for use with hub end, clamp-style connections. These end connections simplify installation procedures in systems that utilize them. Please contact your sales office for information regarding sizes and pressure ratings available, and other hub end connections such as Spolock, Seaboard Lloyd, etc.



Butt Weld Valves

Valves with butt weld ends may be furnished for piping systems designed for welded system components to eliminate potential joint leak paths. See Ordering Information for proper figure number designation, so that weld-end preparations match the mating pipe schedules.



UL/FM Valves

Underwriters Laboratories, Inc. approve and list the 4", 6", 8", 10" and 12" Figure U12 HMP DuoChek 11 Valves for 250 psi service in fire protection systems. Valves are Factory Mutual Research Corporation approved.



Lined Valves

DuoChek II valves may be furnished with linings, when specified, for abrasion or corrosion resistance. Linings include Natural Rubber, Neoprene, Armorite, Polyurethane, Chlorobutyl and Ebonite. All body surfaces of lined valves are covered with the specified material, eliminating the need for gaskets. Hinge and stop pin holes are encapsulated to seal them against line fluids. Solid alloy valves are recommended for extremely corrosive applications.

Valve Design: API 594

Valve Pressure Testing & Inspection: API 598

Pressure / Temperature Ratings: ASME / ANSI B16.34

Pipeline Valves: API 6D

Production Valves: API 6A

Other Specials

Other Duo-Chek II specials furnished include:

- Valves to comply with NACE MR-01-75
- Valves cleaned for liquid oxygen (LOX) service
- Valves prepared for Food Service (austenitic stainless steel)
- Special testing for valves, including radiography, magnetic particle, dye penetrant, ultrasonic, helium leak, etc.