DUAL PLATE CHECK VALVES

INNOVATION
IN THE PIPELINE

GOODWIN
INTERNATIONAL LTD

www.checkvalves.co.uk

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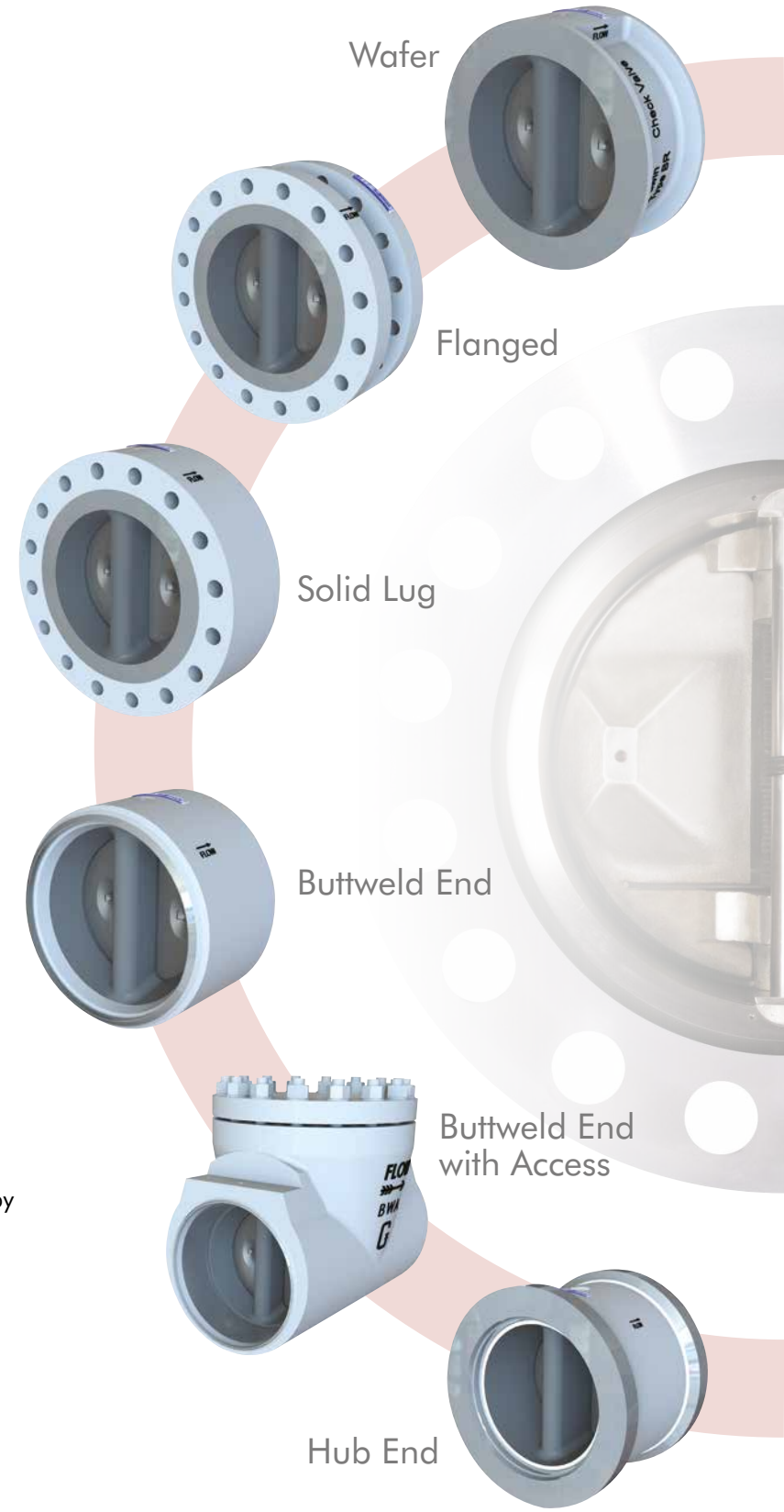
Dual Plate Check Valve Range

Goodwin International is the market leader in the design and manufacture of Dual Plate Check Valves for use in the world's hydrocarbon, energy and process industries - upstream, midstream, downstream. With a track record of supply spanning over 35 years, Goodwin has developed an enviable reputation for quality and reliability of product at internationally competitive prices.

Based in the United Kingdom, Goodwin sells internationally exporting to over 80 countries. Through its network of agents and distributors, with some US$ 10,000,000 of inventory in 16 stocking locations worldwide, Goodwin offers outstanding support to its customers listed amongst whom are the vast majority of the world's end users, both oil majors and national oil companies, and national and international engineering contractors.



Goodwin Dual Plate Check Valves

6 Different Body Styles
Wafer (BR)
Flanged (BFR)
Solid Lug (BSR)
Buttweld end (BWR)
Buttweld end with access (BWA)
Hub-ended (BHR)

Sizes
2" - 144" (50mm - 3600mm)

Pressure Classes
ASME 150 - 2500
API 2000 - 20000
PN 10 - PN 400

Materials
Ductile and Ni-Resist® Irons; Carbon Steels; Stainless Steels; Duplex and Super Duplex Stainless Steels; Aluminium Bronzes; High Nickel Alloys; Titanium.

Features
Designed, manufactured, assembled and tested in accordance with Quality Assurance System accredited by BSI to BS EN ISO 9001.

Certifiable in compliance with European Pressure Directive (PED) 2014/68/EU and/or ATEX Directive 2014/34/EU to meet customer requirements when specified.

Designed and tested to API 594 / API 6D.

All bodies and plates certified to BS EN 10204 3.1 as a minimum.

Retainerless design as standard.

No screwed body plugs - no leakpath to atmosphere - no fugitive emissions.

Firetested design. Firetest approved and certified to API 6FA, API 6FD and BS EN ISO 10497.

Installation Between End Connections

Type BR

Wafer design. Clamped between flanges with bolting around outside of valve.

Type BFR

Double Flanged wafer design. Permits installation in a piping system in same manner as any conventional double flanged valve, i.e. studs and nuts per flange.

Type BSR

Solid Lug wafer design. Clamped between flanges with bolting passing through the body of the valve.

Type BWR

Buttweld End design. For direct welding into a piping system. Can be provided with transition and/or pup pieces

Type BWA

Buttweld End design with top bonnet access for inspection purposes. For direct welding into a piping system. Can be provided with transition and/or pup pieces.

Type BHR

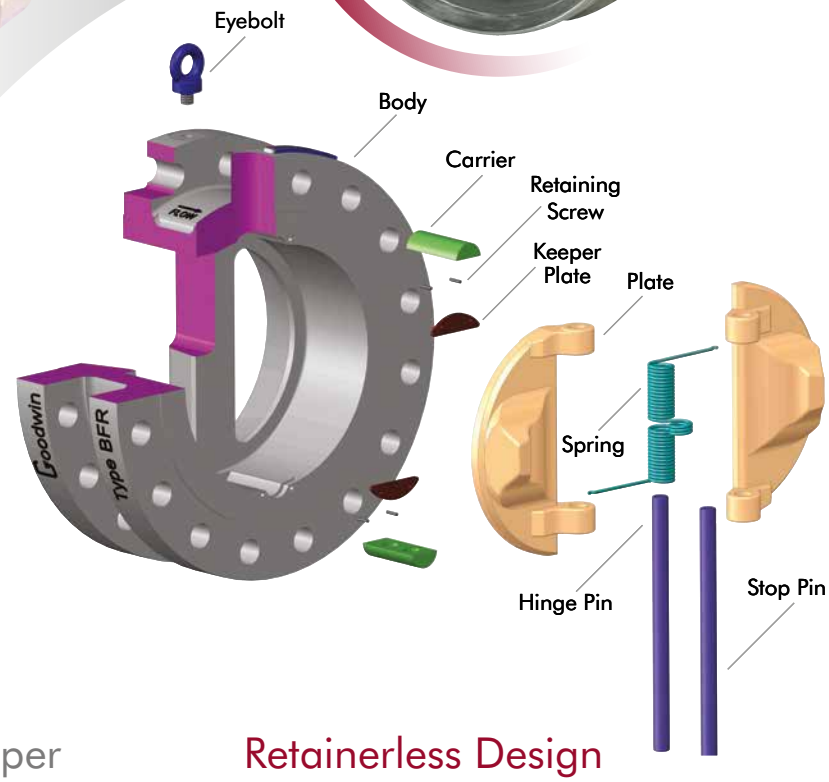
Hub End design. Clamped into a piping system using mechanical clamp connectors, eg. Grayloc®, Galperti®, Vector Techlok®.

BR, BFR & BSR face-to-face dimensions to API 594.
BH & BHR face-to-face dimensions to manufacturer's standard.
BWR & BWA face-to-face dimensions to manufacturer's standard.

Innovative Features

Slim Plate Design

Goodwin International's unique slim plate design gives improved flow efficiencies, lower seat leakage rates and faster response than are achievable with the traditional "flat" plate design employed by Goodwin's competitors.



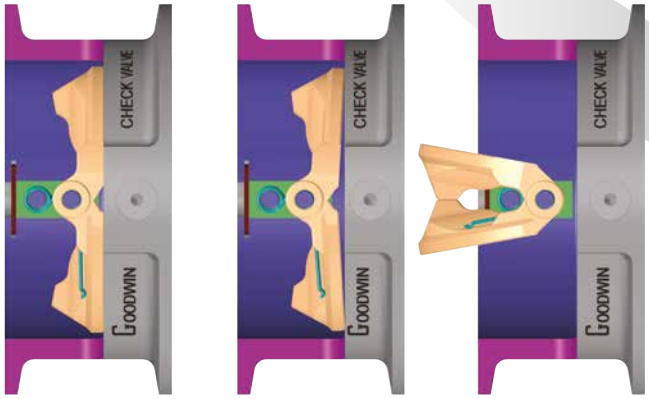
Independent Plate Closing Action

With coils around the hinge pin, the Goodwin spring acts as two independent springs. The spring action optimises the equal closing rates of each plate especially when friction coefficients are uneven due to one plate resting upon another.

Seat Life / Plate Shock Bumper

Seat Life is increased in the Goodwin valve by eliminating the plates dragging on and scuffing the body seat. The heels of the plates lift prior to the plates rotating to the open position.

Valve life is further prolonged by the integral plate shock bumpers. On opening the plates collide at the bumpers thereby preventing significant bending moments on the hinge pin.



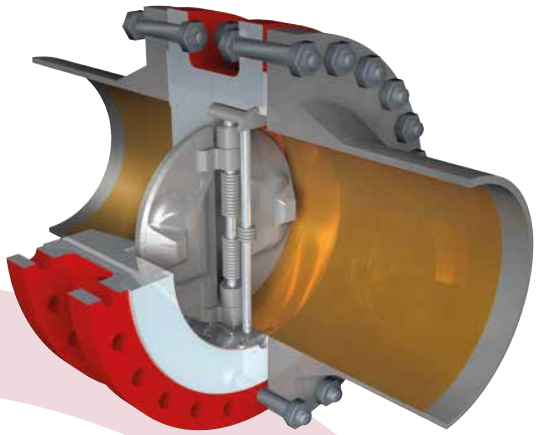
Plates closed

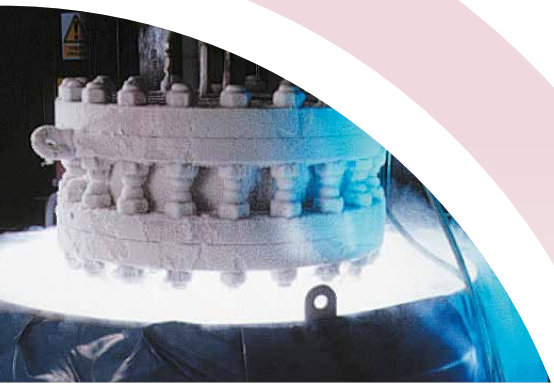
Heel lift prior to plate rotation

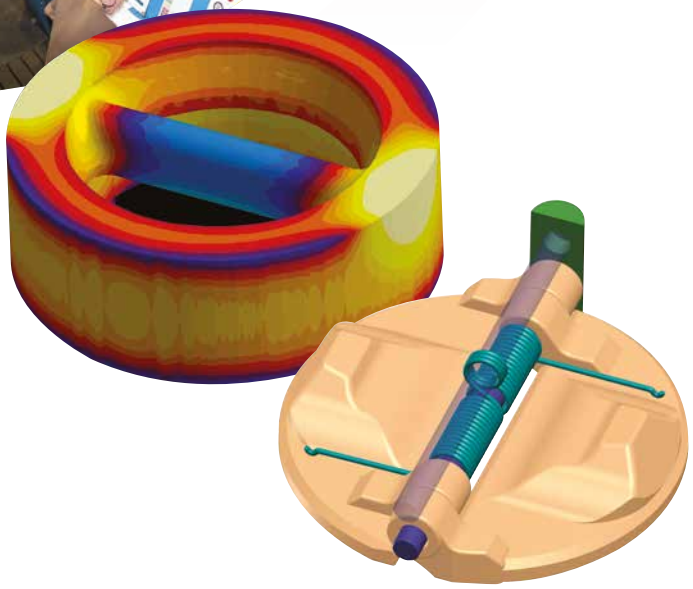
Fully open - shock bumpers meet

Retainerless Design

Goodwin International first offered a retainerless design in the mid-1980s . "Retainerless" has subsequently become an industry standard for dual plate check valves throughout the hydrocarbon, energy and process industries.







Facilities & Resources

Goodwin's Check Valve manufacturing facilities in Stoke-on-Trent, England, comprises of a Steel and Super Nickel alloy foundry (Goodwin Steel Castings) and a well equipped CNC machine shop with full design, fabrication, inspection and test facilities (Goodwin International).

The BS EN ISO 9001 foundry specialises in producing high integrity, pressure vessel castings from a few kilos to 18,000 kg in weight. The materials cast by the foundry include ductile and Ni-Resist® irons, carbon and low alloy steels, stainless steels, duplex stainless steels and super nickel alloys such as Hastelloy® and Alloy 625. Goodwin's ability to produce the special alloys is enhanced by its in-house 10 tonne AOD refining furnace.

The design, machine and assembly shops cover some 30,000m^2 and are equipped with 46 modern CNC machine tools that are the core of the production and are supplemented by many conventional machine tools.

The test facilities include six hydraulic hydrostatic test rigs, the largest of which has a 2500 tonne hydraulic ram, and two pneumatic test rigs. Cryogenic testing is also carried out on site where valves are cooled by liquid nitrogen at -196°C and leak tested with helium gas.

Valve design is carried out using 3D CAD and is verified on computers utilising finite element analysis and Flow Simulation programs. Both the foundry and the design, machining, assembly and test facilities are audited and accredited to BS EN ISO 9001, BS EN ISO 14001 and OHSAS 18001.

Extensive in-house testing and laboratory facilities are available including:-

- Hydrostatic Pressure Testing (25000psig/1725barg)
- High Pressure Gas Testing (20000psig/1380barg)
- Low Temperature (-46°C) and Cryogenic Temperature (-196°C) Pressure Testing
- High Temperature Pressure Testing to 550°C
- Helium Leak Testing (Mass Spectrometer)
- Tensile / Bend / Impact / Hardness / Testing
- Corrosion Testing
- Metallography
- Magnetic Particle
- Dye Penetrant
- Ultrasonic Examination
- Radiography
- Chemical Analysis
- Alloy Verification / Positive Material Identification (PMI)
- Feritscope Verification
- CMM Measurement
- Laser Measurement
- Testing to API 6A all PSL levels
- Finite Element Analysis
- Computational Fluid Dynamics
- Scanning Electron Microscope

DUAL PLATE CHECK VALVES

bsi. ISO 9001 Quality Management
FM 00343

bsi. ISO 14001 Environmental Management
EMS 600979

bsi. OHSAS 18001 Occupational Health & Safety Management
OHS 600980

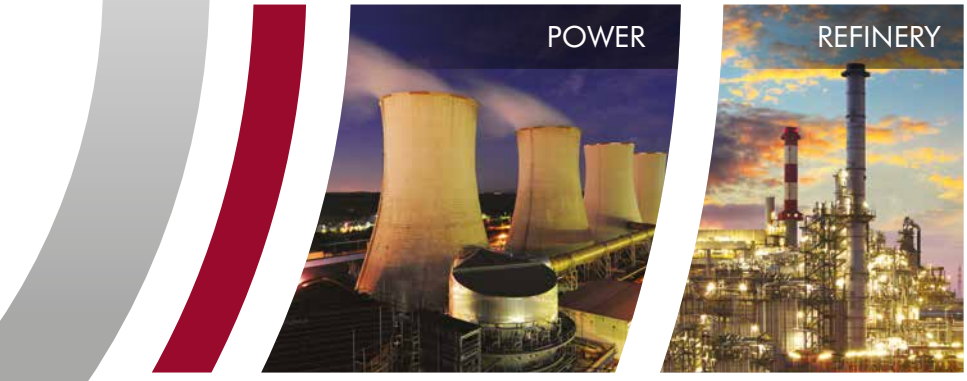
bsi. PAS 99 Integrated Management Systems
IMR 613512

CE
Certificate No.
CE 55079

FPAL empowered by Achilles
Registered
Supplier No. 42851

UVDB empowered by Achilles
Registered
Supplier No. 206106

API 6FA - API 6FD
FIRETESTED TO BS EN ISO 10497



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