



DUAL PLATE CHECK VALVES

INNOVATION IN THE PIPELINE



GOODWIN
INTERNATIONAL LTD

www.checkvalves.co.uk

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. With a track record of supply spanning over 30 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 50 countries. Through its network of agents and distributors, with some US\$ 7,500,000 of inventory in 16 stocking locations worldwide, Goodwin offers outstanding support to its customers listed amongst whom are many of the world's end users, oil majors 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 9001:2008.

Certifiable in compliance with European Pressure Directive (PED) 97/23/EC and/or ATEX Directive 94/9/EC to meet customer requirements when specified.

Designed and tested to API 594.

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.

Type BR



Type BFR



Type BSR



Type BWR



Type BWA



Type BHR

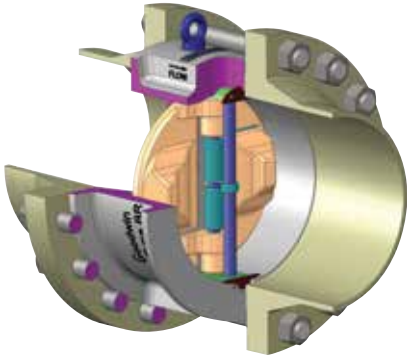


Major Project Successes

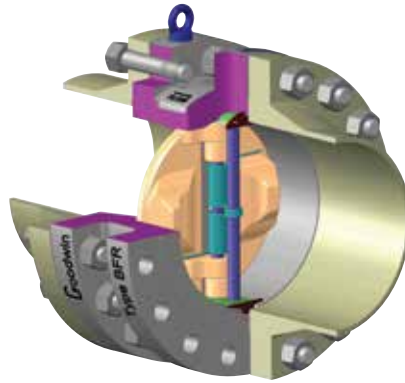
PROJECT NAME	MARKET SECTOR	LOCATION	CUSTOMER	ENGINEERING CONTRACTOR	YEAR
Golden Pass LNG	LNG	Louisiana, USA	Golden Pass LNG Co (ExxonMobil -QP)	Chicago Bridge & Iron, USA	2007
Ledong 15-1/22-1 Project	Gas	South China Sea, China	CNOOC	Offshore Oil Engineering Co, China	2007
Qatar Shell Pearl GTL	GTL	Ras Laffan, Qatar	Qatar Shell GTL Limited	Chiyoda, Japan	2007
Puguang Sour Gas Gathering	Gas	Sichuan, China	Sinopec Zhongyuan Oilfield Co	Sinopec Shengli E&C, China	2007
Gas Centre 24 (GC-24)	Gas	Kuwait	Kuwait Oil Co	SKEC, Korea	2007
Pazflor FPSO	Oil	Angola	Total Angola	DSME, Korea	2008
Petroquimica Suape	Chem	Brazil	Petroquimica Suape	Aker Kvaerner, UK	2008
Borouge II Ethylene Cracker	Petchem	Ruwais, UAE	Borouge	Linde, Germany	2008
North Belut Field	Gas	Indonesia	ConocoPhillips	PT Technip, Indonesia	2008
Kearl Oilsands	Oil	Alberta, Canada	Imperial Oil / ExxonMobil	AMEC, Canada	2009
Victoria Desalination Plant	Desal	Victoria, Australia	Aquasure Pty	Thiess Degremont JV, Australia	2009
OML 58 Upgrade	Oil	Nigeria	Total Nigeria	Saipem, France	2009
Mundra Bathinda Pipelines	Oil	India	HPCL-Mittal	EIL, India	2009
Roncador Field Development: P55 FPSO (Topside)	Oil	Brazil	Petrobras	EAS, Brazil	2009
ASAB Full Field Development	Gas	Abu Dhabi, UAE	ADCO	Petrofac, UAE	2009
BS 160 Booster Station	Gas	Kuwait	KOC	Saipem, India	2009
Sakhalin 1: Arkutun-Dagi Platform	Oil	Sakhalin Island, Russia	Exxon Neftegas	Worley Parsons, USA	2010
El Merk Field Development: Central Processing Facilities	Gas	Algeria	JV Sonatrach Anadarko	Petrofac, UAE	2010
Gorgon LNG	LNG	Barrow Island, Australia	Chevron	Kellogg JV Gorgon, UK	2010
Chirag Oil	Oil	Azerbaijan	AIOC (BP)	KBR, UK	2010
Singapore Hydro-Desulphur	Refinery	Singapore	ExxonMobil Chemical Asia Pacific	JGC Corporation, Japan	2011
Algerian Oman Fertiliser	Fertilizer	Algeria	Algeria Oman Fertiliser Co.	MHI, Japan	2011
Yanbu Export Refinery	Refinery	Yanbu, Saudi Arabia	Saudi Aramco	SKEC, Korea	2011
Al Khafji Ratawi Water Injection	Gas	Saudi Arabia	Khafji Joint Operations	J Ray McDermott, UAE	2011
Goliat FPSO	Oil	Norway	Eni Norge	HHI, Korea	2011
Borouge 3 Polyolefins Units	Petchem	Ruwais, UAE	Borouge	SEC, Korea	2011
Deen Dayal Wellhead Platform	Gas	Bay of Bengal, India	Gujarat State Petroleum Corp	L & T, India	2011
Clov FPSO	Oil	Angola	Total	DSME, Korea	2012
Boca De Jaruco CCP	Power	Cuba	Sherritt Power	Sherritt Power, Canada	2012
Barzan Onshore	Gas	Qatar	Rasgas Company Limited	JGC Corporation, Japan	2012
BP Quad 204 Topsides and Hull	Oil	North Sea, UK	BP Exp. Op. Co Ltd	HHI, Korea	2012
BP Quad 204 Turret	Oil	North Sea, UK	BP Exp. Op. Co Ltd	SBM, Monaco	2012
Shaybah Gas Treatment Facility	NGL	Saudi Arabia	Saudi Aramco	SEC, Korea	2012
Majnoon Oil Field Development	Oil	Iraq	Shell Iraq Pet. Dev.BV	Petrofac, UAE	2012
Satah Full Field Development	Oil	Abu Dhabi, UAE	ZADCO	Technip & NPCC, UAE	2012
Tangshan LNG	LNG	China	CNPC	HQC, China	2012
Montrose BLP	Oil	North Sea	Talisman Sinopec Energy (UK)	CB&I, UK	2012
Hebron GBS Topsides	Oil	Newfoundland	ExxonMobil	Worley Parsons, Canada	2012
Ichthys CPF Topsides & Hull	Gas	Australia	Inpex	SHI, Korea	2012
Ichthys FPSO Topsides & Hull	Gas	Australia	Inpex	DSME, Korea	2013
Valemon	Gas	Norway	Statoil	SHI, Korea	2012
Queensland Curtis	LNG	Australia	BG / Origin	Bechtel, USA	2012

Installation Between End Connections

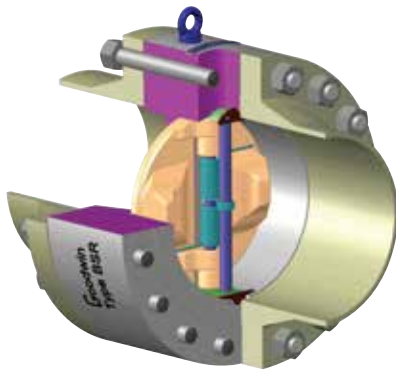
Type BR
Wafer



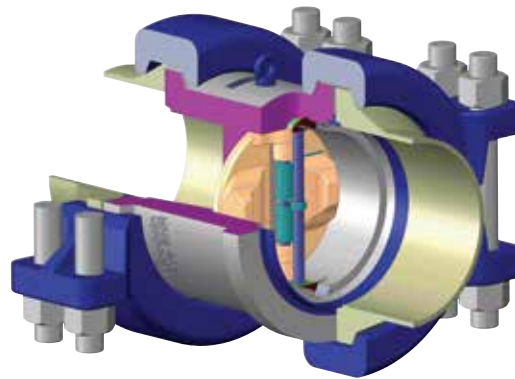
Type BFR
Flanged



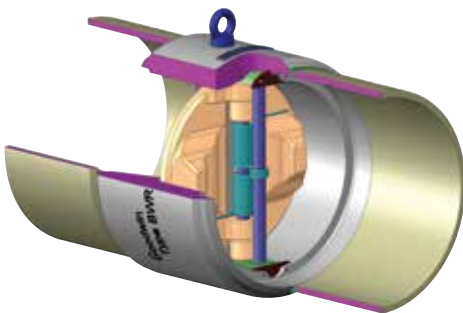
Type BSR
Solid Lug



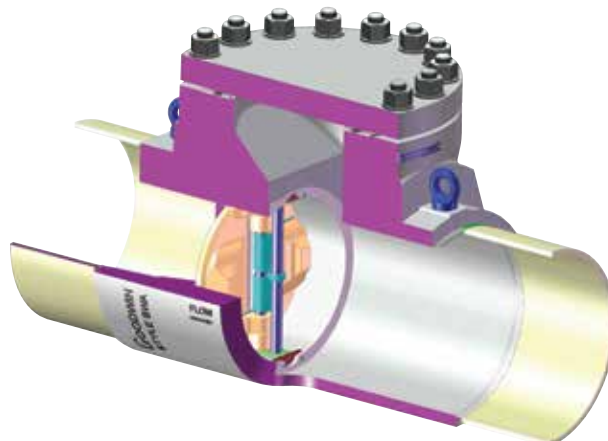
Type BHR
Hub Ended



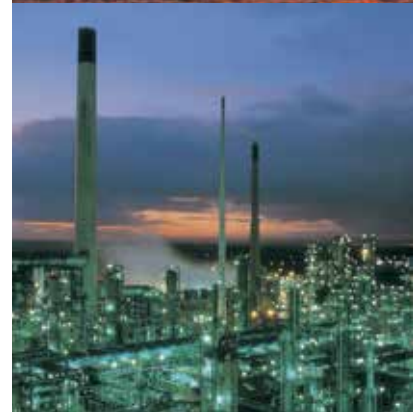
Type BWR
Buttweld End



Type BWA
Buttweld End with access



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.



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 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 22,000m² and are equipped with 36 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 9001:2008.

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

- Hydrostatic Pressure Testing (25000psig/1725barg)
- High Pressure Gas Testing (15000psig/1035barg)
- 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



DUAL PLATE CHECK VALVES



ISO 9001



Certificate No.
CE 55079



594-0005 6D-1034



Engineering Contractors

AIBEL
AIR LIQUIDE
AIR PRODUCTS
AKER SOLUTIONS
ALLIANCE
AMEC
AMEC PARAGON
ATLANTICO SUL

BANTREL
BECHTEL
BLACK & VEATCH
BOC

CB & I LUMMUS
CCC
CHIYODA
CLOUGH
COLT ENGINEERING
CTCI

DAELIM
DAEWOO
DEGREMONT
DODSAL
DOOSAN

EIL
ENPPI
ENTREPOSE

FLUOR
FOSTER WHEELER
GEC ALSTOM
GROOTINT
GS ENGINEERING

HAMWORTHY WARTSILLA
HANWHA
HITACHI ZOSEN
HYUNDAI

I V OIL & GAS
ICA FLUOR
IDE
IHC GUSTO

JACOBS
JGC
JP KENNY

KAWASAKI
KBR
KEPPEL FELS
KT KINETICS
KVAERNER STORD

LARSON & TOUBRO
LINDE
LITWIN
LURGI

MACCHI
McDERMOTT
MITSUI
MITSUBISHI
MMHE
MODEC
NIPPON STEEL
NPCC

PT TRIPATRA
PENANG SHIPBUILDING
PETROFAC
PETROJET
PROSERMAT
PT GUNANUSA
PUNJ LLOYD

QUIP

RANHILL WORLEY
ROSENBERG

SAIPEM
SAKHNEFTGAZ ENGINEERING
SAMSUNG
SBM
SEC
SEMBAWANG ENGINEERING
SHAW
SIME DARBY
SIME SEMBAWANG

SK ENGINEERING
SMOE
SNC LAVALIN
SOFEC
SOFRESID
STANTEC
STOLT OFFSHORE
SUMITOMO

TARGET E & C
TECHINT
TECHNIP
TECNICAS REUNIDAS
TECPETROL
THAI NIPPON STEEL
THYSSEN KRUPP UHDE
TOYO ENGINEERING
TRI OCEAN

UHDE SHEDDEN
UNIVERSAL PEGASUS

VEOLIA

WEIR WESTGARTH
WILBROS
WOOD GROUP PSN
WOOD GROUP MUSTANG
WORLEY PARSONS

End Users

ADCO
ADMA OPCO
ADNOC
ADWEA
AGIP
AIOC
AIR LIQUIDE
ALSTOM
AMERADA HESS
ANADARKO
APACHE
ARABIAN CHLOR VINYL

BAPETCO
BASF
BG
BHP
BOC
BOROUGE
BP

CHEVRON
CNOOC
CNPC
CNRL
CON EDISON
CONOCOPHILLIPS
CTOC

DOLPHIN ENERGY
DONG ENERGY
DOW CHEMICAL
DUKE POWER
DUPONT
EASTMAN CHEMICALS
ECOPETROL

EGAT
EGPC
EMEPMI
ENAGAS
ENBRIDGE
ENCANA
ENI
EXXON NEFTEGAS
EXXONMOBIL

FORMOSA

GAIL
GASCO
GASPROM
GAZ DE FRANCE
GDF SUEZ
GE
GENREF
GORO NICKEL

HESS CORP
HUSKY OIL

IMPERIAL OIL
INPEX
IOCL
IPCL

JUPC

KNPC
KOC
KOGAS
LASMO
MAA'DEN
MAERSK

MARATHON
METHANEX
MEW (OMAN)
MEW (KUWAIT)
MINERA ESCONDIDA
MURPHY OIL

NCPOC
NLNG
NNPC
NOVA CHEMICALS

OCCIDENTAL
OMV
ONGC
ORIGIN ENERGY
ORYX
OSX

PDO
PDVSA
PEARL OIL
PEMEX
PERTAMINA
PETROBRAS
PETROCHINA
PETRONAS
PETROVIETNAM
POSCO
PTT
PTTEP

QAFAC
QAFCO
QAPCO
QLGC (QATARGAS)

QP
QVC

RASGAS
RELIANCE
REPSOL

SABIC
SAKHALIN ENERGY
SANTOS
SASOL

SAUDI ARAMCO
SAUDI METHANOL
SEC
SEGAS
SHELL
SINOPEC
SK CORP
SONATRACH
STATOIL
SUNCOR
SYNCRUDE

TAKREER
TALISMAN
TATWEER PETROLEUM
TENGIZCHEVROIL
THAI OLEFINS
TOTAL
TRANSCANADA
TURKISH PETROLEUM

WOODSIDE

YPF

ZADCO

Industries Served

On & Offshore Oil & Gas Production
Refinery
Petrochemical
Chemical
Fertilizer
Gas Plant
GTL
LNG
Onshore LNG Plants

FLNG
FPSO
Liquid Gases
Terminals
Pipeline
Power
Desalination
Water

Typical Applications

Pump discharge
Compressor discharge
Compressor suction
Heat Exchangers
Reactors
Separators
Vessels

High / low pressure
High / low temperature
Cryogenic
Erosive
Corrosive
Flammable
Toxic

Chemicals
Petrochemicals
Hydrocarbons
Gases
Liquids
Steam
Seawater

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