

Swing check valves beware!

Goodwin International is a UK manufacturer and worldwide supplier, through its global network of agents and distributors, of API 594 Dual Plate Wafer Check Valves.

The Goodwin Valve is extensively specified and used in the offshore industry worldwide, for high pressure flowlines to on-platform processing and utilities. The valve is specified in all its various body designs: wafer, solid lug, flanged and hub-ended, in pressure classes ANSI 150# to 2500#/API 10000, in sizes 2" to 36" and in a wide range of materials including carbon steels, stainless steels, duplex stainless steels, high nickel alloys and materials such as titanium.

Over 16 years Goodwin has established itself as a world leader in the design and manufacture of Dual Plate Check Valves, supplying to a vast number of the world's most significant offshore projects. It lists among its customers the majority of the world's oil majors and the engineering contractors that design and build offshore platforms.

The Dual Plate Check Valve is the first choice check valve with these companies in preference to the traditional full-bodied swing check. Not only for its weight and space saving benefits, but also for the significant economic and technical advantages to be gained.

Weight saving

Typically the Goodwin Wafer Check Valve is nominally less than one fifth the weight and one quarter the face to face of a traditional full-bodied swing check. An indication of the huge weight

WEIGHT COMPARISON (lb)			
GOODWIN DUAL PLATE V SWING CHECK			
VALVE SIZE/RATING	SWING CHECK	GOODWIN WAFER	GOODWIN LUG
6" 150	209	39	72
6" 300	310	55	100
6" 600	530	70	180
6" 900	660	119	255
6" 1500	1216	119	264

differentials are illustrated in the table above.

As can be seen, the weight ratio differential between the two types of valve significantly increases as the pressure class increases. In the 6" 1500#, a typical flowline valve size, the Goodwin Wafer Check is one tenth (1/10) the weight of the swing check, a saving of 1100lb (500kg) or in other words nominally 1/2 ton. Twenty flowlines – a weight saving of 10 tons!

Cost saving

The saving in weight means a very significant saving in material. This in turn translates into a valve that costs substantially less than the swing check valve. (See table below.)

From a cost viewpoint the table below illustrates the following:

- Goodwin Wafer Check Valves are considerably less expensive

to buy: with the 12" 600lb 316SS, the Goodwin Wafer Check can be some £10,000 (\$15,000) less than the swing check;

- the larger the diameter;
- the higher the pressure class;
- the higher the grade of material;
- the greater the cost saving.

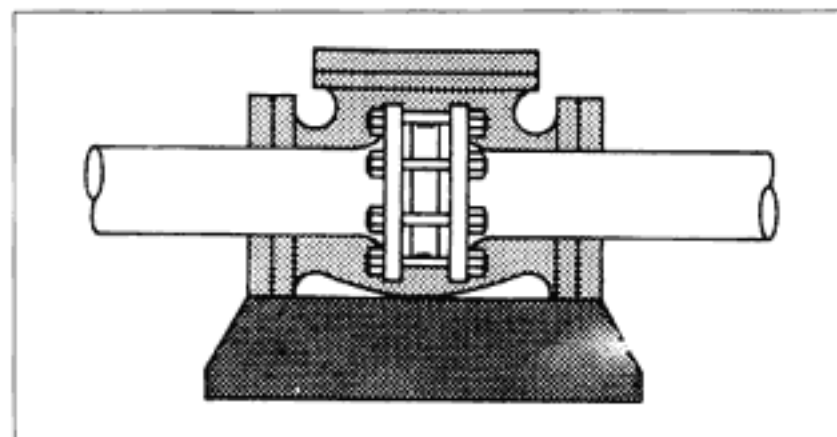
Typically, for a new construction project, check valve costs can be reduced by as much as 70 per cent or more by specifying the Goodwin Wafer Check instead of the traditional flanged full-bodied swing type.

These are just the direct cost savings. Substantial indirect savings are to be gained.

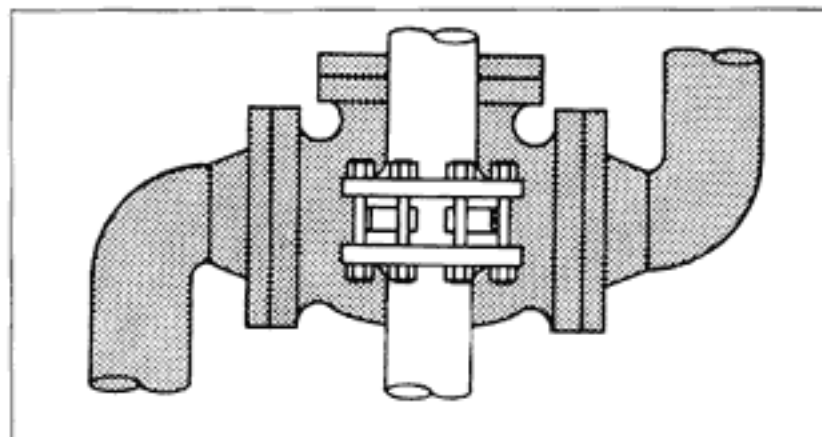
By virtue of its lightweight and compact construction, immense savings are to be obtained by the elimination, or substantial reduction, in piping support and foundation requirements

TYPICAL PRICE COMPARISON PERCENTAGE			
GOODWIN DUAL PLATE v SWING CHECK			
MATERIAL	VALVE SIZE/RATING	SWING CHECK	GOODWIN WAFER
CARBON ST	6" 150	100	45
	6" 600	100	25
316 SS	6" 150	100	42
	6" 600	100	14
CARBON ST	12" 150	100	42
	12" 600	100	23
316 SS	12" 150	100	40
	12" 600	100	12

PUMPS AND VALVES



Left:
Reduced
support
requirements.



Right:
Simplified
piping
layout.

(see diagram). Additionally, it gives the design engineer greater flexibility: the Dual Plate, unlike the swing check, can be mounted in the vertical and used for either upflow or downflow (with the latter guidance should be sought from Goodwin). Less weight means that transportation costs are also significantly lower.

Technical benefits

Economic advantages of the lower bottom line purchase price and lower installation costs are not the only ones. The Dual Plate Check Valve also offers a superior technical solution.

Swing check valves are notorious for slam and creating water hammer. To overcome this large diameter swing check valves are fitted with counterweights or dashpots. These add to what, as identified above, is already a high cost item. It also adds to the number of moving parts and components to be maintained.

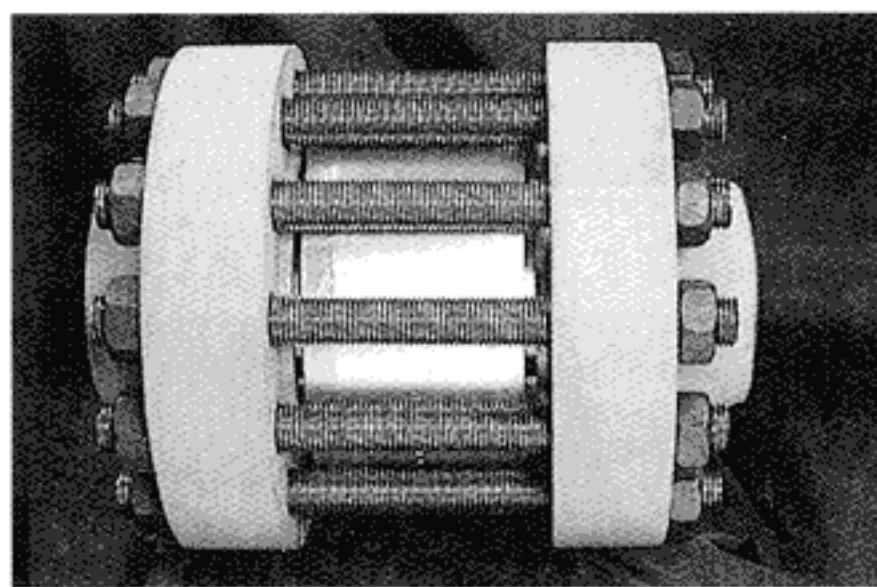
The Dual Plate Check Valve is fitted with a spring to assist closure so that slam is minimised and, in many instances, eliminated. The spring effects the closure motion as the forward flow begins to slow so that the plates

close before the direction of flow changes.

All in all, the dual plate check valves has major advantages over the traditional flanged full-bodied swing check. The swing check is a "Dinosaur" by comparison.

To summarise the advantages:

- Less expensive to buy:
Huge direct savings.
- Technically superior:
More efficient/minimises slam.
- Weight and space saving:
More indirect cost savings. □



(Above) Goodwin 6" - ANSI 1500 Wafer Check Valve.

(Below) Competitors 6" - ANSI 1500 Swing Check.

