Your Pipeline to the Future

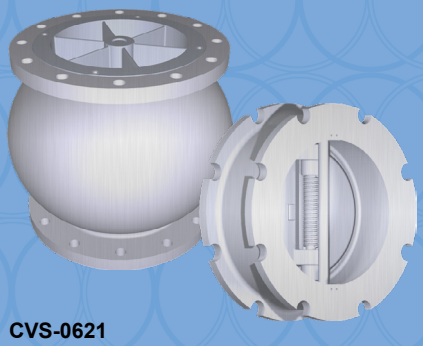
TITAN FLOW CONTROL

290 Corporate Drive • Lumberton, NC 28358

TITAN CHECK VALVES

Titan Flow Control, Inc. is a high quality manufacturer of check valves. With a dedication to great customer service, cutting edge engineering, and top quality products, Titan Flow Control's Check Valves are the preferred choice for achieving automatic shut-off and preventing backflow in piping systems.

Titan is committed to maintaining a large inventory of silent check valves, center guided check valves, double disc check valves, and single disc check valves in a variety of types, sizes, materials, and pressure classes.



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At Titan Flow Control, you get the **right check valve** *and you get it* **right away!**

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(910) 735-0000

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(910) 738-3848

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www.titanfci.com

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titan@titanfci.com

CVS-0621

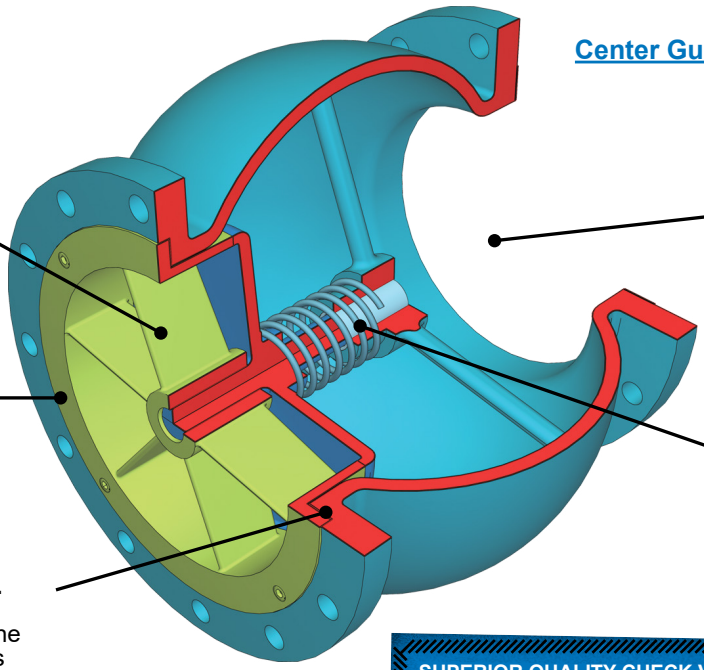
TITAN CHECK VALVE FEATURES

Check Valves are automatic shut-off valves that are commonly used for preventing backflow or drainage in a piping system. Often applied on the discharge side of pumps, check valves prevent the system from draining if the pump stops and protect against backflow, which could harm the pump or other equipment.

Titan Flow Control offers the following types of check valves to meet your specific needs:

Center-Guided Check Valves

Center Guided - Globe Style



Straightening Vanes
reduce turbulence in incoming flow, minimizing vibrations that could result in premature valve failure

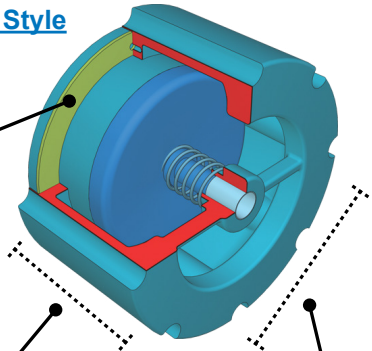
Clearance within Valve's Body
allows a butterfly valve to be installed on the outlet side without a spool piece

Interchangeable Seats and Springs
are available in a wide variety of materials

Compression Spring
coupled with a small stem guide provides less obstruction to the flow than a typical conical construction

Additional Gasket
independent of the flange gasket is assembled with the seat to improve sealing

Center Guided - Wafer Style



Soft and Metal Seats
are available to meet the sealing needs of various applications

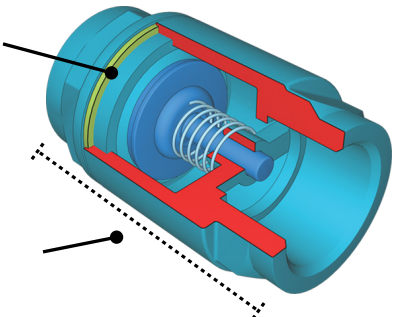
Short Disc Travel
reduces the risk of slamming and the potential for water hammer

Compact Design
is economical and takes up less space in pipeline than globe style check valves

Large Cross-Sectional Area
exceeds that of the pipeline to minimize head loss

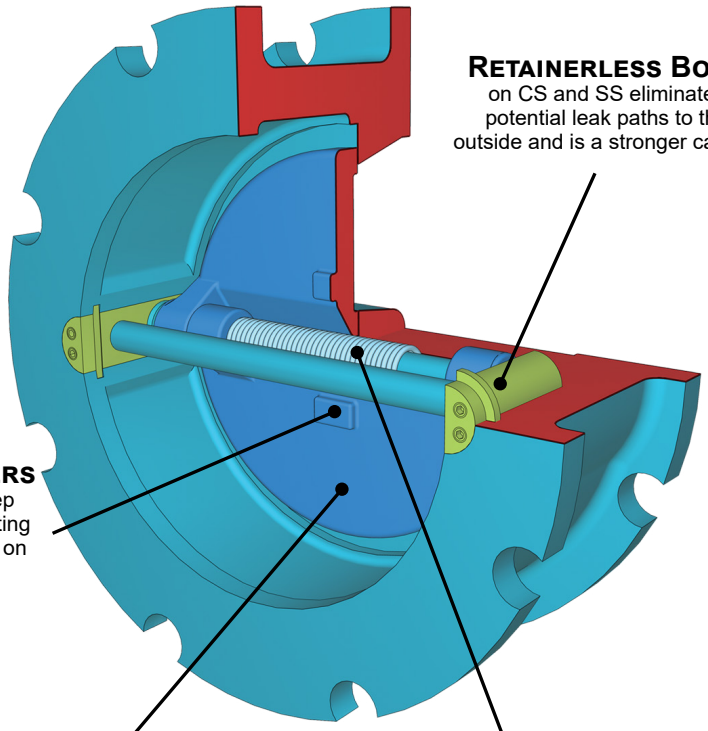
Center Guided - Threaded

Resilient Seats
with precision machined sealing surfaces maintain a bubble tight seal



Metal Seats
are available for steam and chemical applications

Dual Disc Check Valves



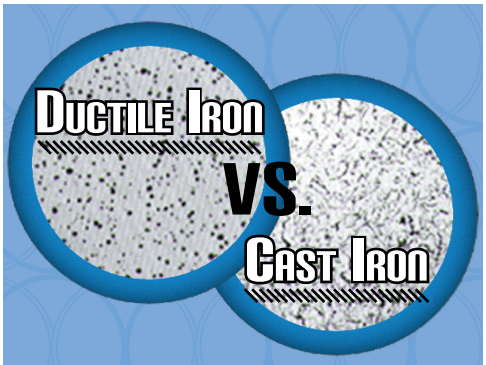
Retainerless Body
on CS and SS eliminates potential leak paths to the outside and is a stronger casting

Shock Bumpers
stop discs and keep them stabile preventing unnecessary stress on the check valve

Split Disc Design
minimizes pressure drop and shortens the distance each disc travels

Inconel X Springs
are standard on all Carbon Steel and Stainless Steel bodies

Independent Torsion Springs
on large sizes respond quickly to fluctuations in flow velocity

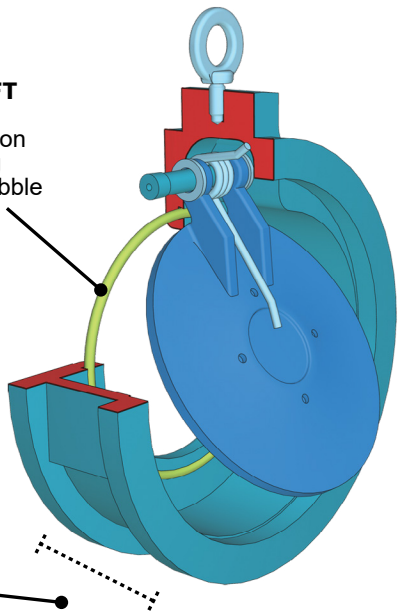


Advantages of
Ductile Iron Check Valves

Titan Check Valves are made with the alloy Ductile Iron for prices that are comparable to Cast Iron! Ductile Iron is composed of graphite in spheroidal shapes compared to Cast Iron, which has lenticular flakes that make it brittle. Not only does Ductile Iron have a yield strength comparable to Carbon Steel, but it also has the anti-corrosive properties of cast iron, making it the preferred material for iron check valves.

Single Disc Check Valves

Single Disc - Wafer Style

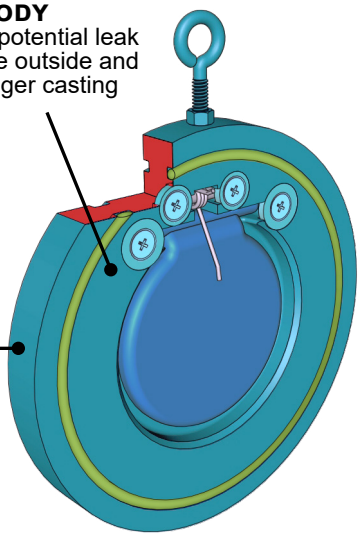


Resilient, Soft Seats
coupled with precision machined sealing surfaces ensure a bubble tight seal

Economical Design
provides a highly efficient check valve that is inexpensive and has a short laying length

Single Disc - Short Pattern

Retainerless Body
eliminates potential leak paths to the outside and is a stronger casting



Simple Design
is reliable; there are no flange gaskets to replace

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TITAN CHECK VALVES

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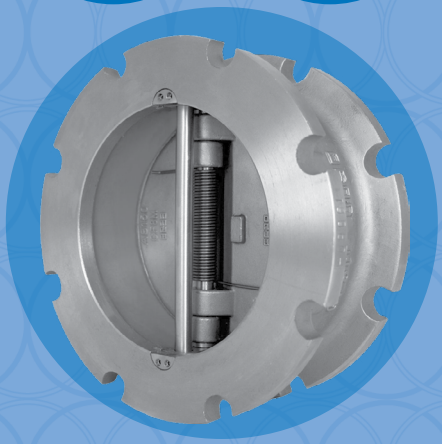

Double Disc
Wafer Style

CV 41 - DI	Wafer	Class 150	Ductile Iron	Sizes 2" - 48"
CV 42 - CS/SS	Wafer	Class 150	Carbon or Stainless	Sizes 2" - 48"
CV 42L - CS/SS	Lug	Class 150	Carbon or Stainless	Sizes 2" - 48"
CV 44 - CS/SS	Wafer	Class 300	Carbon or Stainless	Sizes 2" - 48"
CV 46 - CC/SS	Wafer	Class 600	Carbon or Stainless	Sizes 2" - 48"
CV 47 - CC/SS	Wafer	Class 900	Carbon or Stainless	Sizes 2" - 48"

Single Disc
Wafer Style

CV 31 - DI	Wafer	Class 150	Ductile Iron	Sizes 2" - 12"
CV 32 - CS/SS	Wafer	Class 150	Carbon or Stainless	Sizes 2" - 12"
CV 34 - CS/SS	Wafer	Class 300	Carbon or Stainless	Sizes 2" - 12"

Single Disc
Short Pattern Wafer

CV 12 - CS/SS	Short Wafer	Class 150	Carbon or Stainless	Sizes 2" - 24"

Key Features for Comparison

Minimal Slam	Minimal ΔP	Buried Service	Vertical - Up	Up & Down	High Pressure	High Velocities	Short Length	Low Cost
Designed to minimize slamming potential	*Designed to minimize head loss across valve*	*May be used for buried service; valve box recommended*	*May be used vertically, only in an upward position*	*May be used in downward position with non-standard spring; C/F*	*Pressures higher than 300 PSI are available*	*May be used for velocities less than 10 FPS*	*Short face-to-face takes up minimal space in pipeline*	*Relatively low initial cost*

**Recommended guidelines, contact Titan FCI for more information.*

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Single Disc
Swing Check

CV 31F/WF	Flanged	Class 125	Cast Iron	Sizes 2" - 12"

Center Guided
Globe Style

CV 50 - DI	Globe	Class 150	Ductile Iron	Sizes 2" - 36"
CV 51 - CS/SS	Globe	Class 150	Carbon or Stainless	Sizes 2" - 36"
CV 52 - DI	Globe	Class 300	Ductile Iron	Sizes 2" - 36"
CV 52 - CS/SS	Globe	Class 300	Stainless Steel	Sizes 2" - 36"

Center Guided
Wafer Style

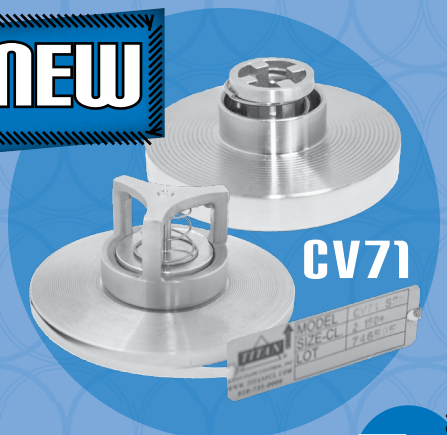
CV 90 - DI	Wafer	Class 150 / 300	Ductile Iron	Sizes 2" - 12"
CV 91 - SS	Wafer	Class 150 / 300	Stainless Steel	Sizes 2" - 12"

*As part of Titan Flow Control's dedication to cutting edge design, Titan's Engineering Department developed the **patented CV 50 series** of center guided, globe style, check valves. Only Titan's CV 50 series have **integral straightening vanes to calm turbulent flows, smaller stem guides for less flow obstruction, and extra clearance to allow direct butterfly valve installation on the outlet side.***

Center Guided
Threaded & Insert

	CV 20 - BR	Threaded	WOG	Bronze	Sizes 1/4" - 2"
	CV 80 - SS	Threaded	Class 300	Stainless Steel	Sizes 3/8" - 3"
NEW	**CV 71 - SS**	Insert Wafer	Class 150/300	Stainless Steel	Sizes 1/2" - 6"
NEW	**CV 88 - SS**	Threaded Socket Weld	Class 300	Stainless Steel	Sizes 1/2" - 3"

NEW



TECHNICAL INFORMATION

TITAN®

Design Specifications

The following specifications are referenced in the design of Titan Flow Control, Inc's Check Valves. Please contact a Titan Engineer with any questions about design requirements or specifications.

API 594	General Valve Design
API 598	Valve Pressure Testing and Inspection
API 6A	Production Valves
API 6D	Pipeline Valves
ASME B16.1	Cast Iron Pipe Flanges & Flanged Fittings
ASME B16.5	Pipe Flanges and Flanged Fittings
ASME B16.10	Face-to-Face & End-to-End Dimensions
ASME B16.24	Cast Copper Alloy Pipe Flanges
ASME B16.34	Flanged, Threaded, and Welding Ends
ASME B16.42	Ductile Iron Pipe Flanges
ASME B16.47	Large Diameter Steel Flanges
ASME B31.1	Power Piping
ASTM	Material Specifications
MSS SP-6	Finishes for Connecting End Flanges
MSS SP-25	Standard Marking System for Valves
MSS SP-55	Quality Standard for Valve Castings

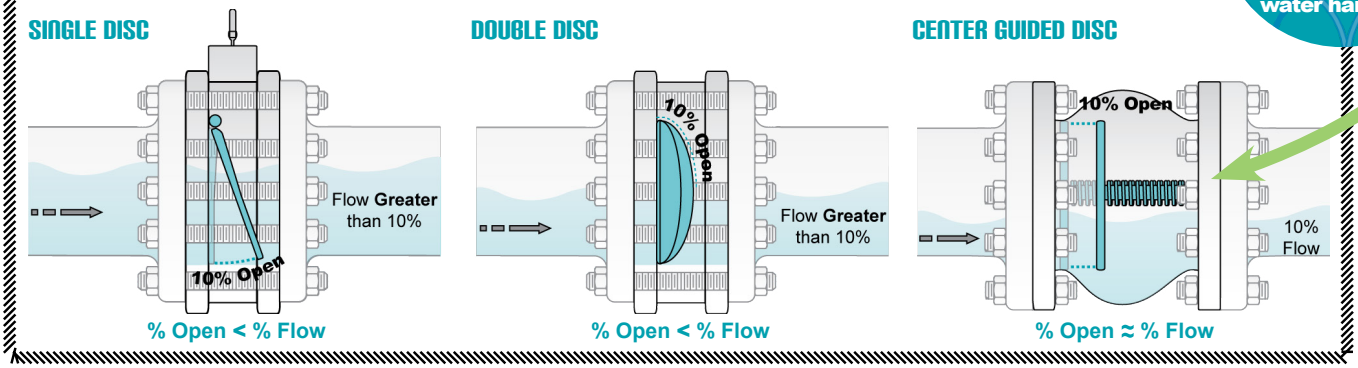
Factors For Consideration

Water Hammer

The term water hammer refers to a pressure surge in a pipeline that is created when a closing check valve stops reverse flow suddenly. This surge causes a slamming sound and it potentially can damage pipelines and buildings that house the pipelines, especially when the fluid has a high velocity or mass or when the pipeline's elevation fluctuates greatly.

Because quick closure is the key to the prevention of water hammer, it is important to consider the speed at which the check valve will close and the distance it has to travel to close. Features like Titan's independent torsion springs on large double disk check valves allow the valves to respond quickly to fluctuations in pipeline flow. As illustrated below, because a center guided check valve that is almost closed will only have a small amount of reverse flow, water hammer is less likely in any specific application. Conversely, a single disc or double disc check valve's flow rate may be greater than its percentage open, meaning that more reverse flow is present. Consult Titan with any concerns or questions about water hammer before selecting a check valve.

Center-guided Check Valves
A.K.A "SILENT" Check Valves because they are less likely to *SLAM* as a result of water hammer!



Head Loss

Head loss can be an important factor in check valve selection because energy loss in a pipeline can increase expenses significantly over time in certain applications. The main design features that affect head loss are the internal shape of the body and obstructions to the flow. Titan's Check Valves are designed with the following features to minimize head loss:

- **Large cross-sectional area** of center-guided check valves exceed that of the adjacent pipeline
- **Specially contoured bodies** on globe check valves are designed to allow a smooth flow across the valve
- **Short, straight flow paths** on double and single disk check valves prevent unnecessary head loss
- **Compression springs with a small boss** obstruct flow less than typical conical constructions by other manufacturer's
- **Low cracking pressure** on single and double disc check valves minimally slows the pipeline flow

All Titan Check Valves meet or exceed API 598 Valve Inspection &Testing Standards

Resilient / Soft Seat Options

BUNA-N

Max Temp: 250 ˚F

Buna-N is the most widely used elastomer. It works well for most petroleum oils and fluids, silicone greases and oils, and cold water. It also has an excellent compression set, tear, and abrasion resistance, but has poor weather resistance and moderate heat resistance. Buna-N is not recommended for ozone-resistant applications.

PTFE (TEFLON)

Max Temp: 425 ˚F

PTFE works well in most chemical environments. It has excellent tear, abrasive, chemical, acid, and alkali resistance. PTFE is not recommended for high pressure steam or large temperature variations.

VITON

Max Temp: 400 ˚F

Viton offers a broad range of chemical resistance and excellent heat resistance. Viton has good mechanical properties and compression set resistance, fair low temperature resistance, and limited hot-water resistance and shrinkage. Viton seats are often used in applications where nothing else will work.

EPDM

Max Temp: 300 ˚F

EPDM is likely the most water resistant rubber available. EPDM has good resistance to mild acids, alkalis, ketones, alcohols, and other polar solvents; however, it is not recommended for use with petroleum oils, di-ester lubricants, mineral oils, non-polar solvents, or aromatic fuels.

NEOPRENE

Max Temp: 250 ˚F

Neoprene is a durable & versatile synthetic rubber that was developed as an oil-resistant replacement for natural rubber. It is also resistant to the effects of moderate chemicals and acids, ozone, fats, greases, and solvents. It displays good chemical stability and is moderately resistant to heat. Neoprene is not recommended for use with strong oxidizing acids, esters, ketones, or chlorinated, aromatic and nitro hydrocarbons oils, non-polar solvents, or aromatic fuels.

TITAN FOOT VALVES

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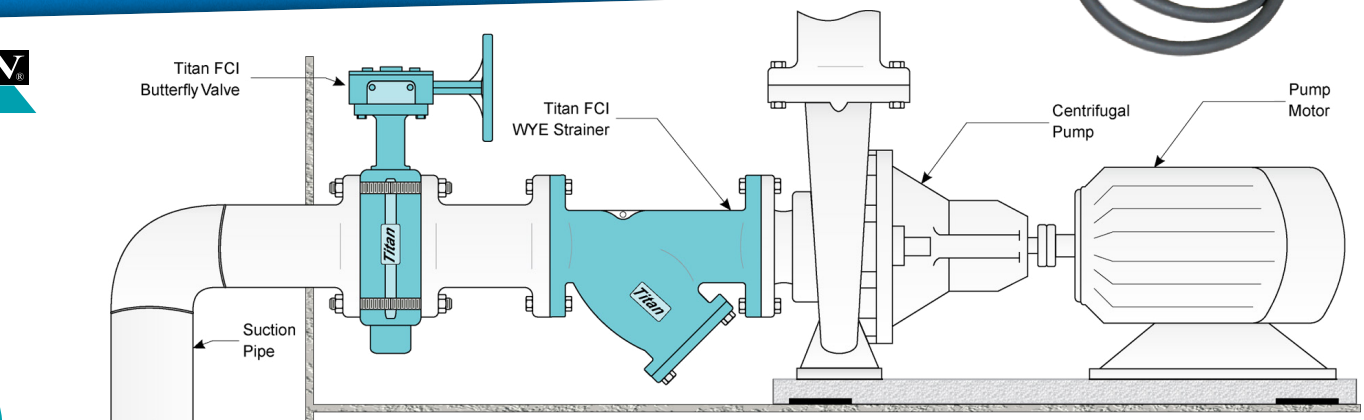

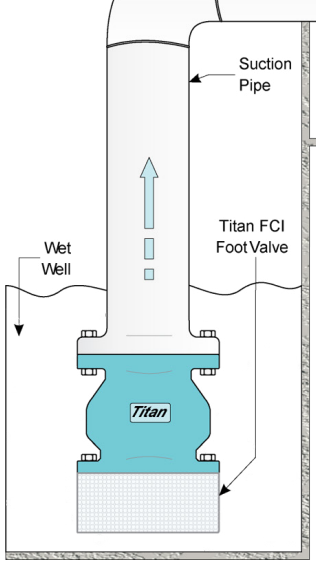

Titan Flow Control, Inc. also offers foot valves, unique check valves with straining elements on the check valves' inlet sides. Check Valve Series 20, 80, and 50 are all available as foot valves.

SAVE TIME! In a piping situation as pictured here, a check valve closes when the flow stops, preventing a pump from losing its prime and enabling the pump to function properly as flow returns and the check valve re-opens.

PROTECT YOUR EQUIPMENT! Because foot valves have built in strainers, the pump and other pipeline components are protected from debris that may cause damage.

Contact the Titan factory for more information and options available for Titan Foot Valves.

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TITAN ORDERING CODES

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Below are the typical ordering constructions for Titan Flow Control, Inc.'s **Dual Disc Check Valves, Center Guided Check Valves, and Single Disc Check Valves**. Please call Titan Flow Control or your nearest sales representative with any questions about Titan Check Valves related to ordering, availability, etc.

Dual Disc Check Valves

Series	Body	Disc	Shaft	Seat	Spring
CV 42	- CS	- S	- S	- 1	- X

Description: *Dual Disc Wafer Type Check Valve (Class 150), Carbon Steel Body, Stainless Steel Disc, Stainless Steel Shaft, Buna Seat, and Inconel-X Spring*

Series	**CV 41** (ASME 150)	**CV 42** (ASME 150)	**CV 42L** (ASME 150)
	CV 44 (ASME 300	**CV 46** (ASME 600)	**CV 47** (ASME 900)
Body	**DI** (Ductile Iron)	**CS** (Carbon Steel)	**SS** (Stainless Steel)
Disc	**S** (Stainless Steel)	**B** (Aluminum Bronze)	
Shaft	**S** (Stainless Steel)		
Seat	**1** (Buna-N)	**3** (Viton)	**5** (Neoprene)
	2 (EPDM)	**4** (PTFE/Teflon)	**6** (Metal to Metal, Stainless Steel)
Spring	**S** (Stainless Steel)	**R** (Inconel)	**X** (Inconel-X)

Center Guided and Single Disc Valves

Series	Body	Disc	Seat
CV 91	- SS	- S	- 3

Description: *Wafer Type, Center Guided, Check Valve (Class 150/300) Stainless Steel Body, Stainless Steel Disc, Viton Seat*

Series	**CV 12** (ASME 150)	**CV 20** (WOG 400)	**CV 90** (150 / 300)	**CV 91** (150 / 300)
	CV 32 (ASME 150)	**CV 51** (ASME 150)	**CV 52** (ASME 300)	**CV 50** (ASME 150)
	CV 34 (ASME 300)	**CV 80** (ASME 300)	**CV 31** (ASME 150)	**CV 71** (150 / 300)
Body	**DI** (Ductile Iron)	**CS** (Carbon Steel)	**SS** (Stainless Steel)	**B** (Bronze)
Disc	**S** (Stainless Steel)	**B** (Aluminum Bronze)		
Seat	**1** (Buna-N)	**2** (EPDM)	**3** (Viton)	**4** (PTFE/Teflon)
	S (Metal to Metal, Stainless Steel)			

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