

An aerial photograph of a natural gas processing plant. The facility features several large, blue industrial units arranged in a row, connected by a complex network of white and yellow pipes. Tall, white cylindrical structures are visible on the left side. The plant is situated in an open area with a road and some greenery in the background.

DFT® Valves

Check Valves in the Natural Gas Industry

Millions of residential and commercial customers around the world rely on natural gas as an energy source. Effective and reliable natural gas transmission requires a complex network of interconnected metering and compressor stations, pipelines, storage facilities, and other equipment. Improperly transported gas may result in leaks, contaminated gas, fires, explosions, and more, so these systems must always prioritize safety in their design and implementation.

Proper check valves reduce the likelihood of malfunctions and potentially catastrophic side effects in your natural gas system. The experts at DFT® can help you select the best check valves for your needs.

The Role of Natural Gas in Today's World

Natural gas demand rises in tandem with economic growth. For example, in the Utica and Marcellus Shale areas, the need for metering facilities and gas compression stations has expanded rapidly in recent years. Forecasts suggest that this ongoing infrastructure expansion should continue for the foreseeable future.

Moving gas from these regions to North Carolina, South Carolina, Florida, and other East Coast destinations for processing has required the construction of extensive pipeline networks. Texas has a longer history with natural gas production, resulting in one of the nation's largest pipeline infrastructures. Pipelines run from West Texas to the Houston area where natural gas can be fractionated and distributed for use.

Natural gas demand has expanded on an international scale, as well. For instance, Australia has become a major player in the natural gas market in recent years. The existence and expansion of natural gas hubs around the world has driven demand for check valves that can prevent reverse flow in pipeline systems.



Which Check Valves Are Suitable for Natural Gas Applications?

Typically check valves are available in different body materials, end types, sizes, and pressure classes. When it comes to gas applications, check valves need to be of high integrity, have tight shutoff, and be reliable as they may need to be out in the field (for gas transmission applications), that can work for long periods of time with very little or no maintenance.

For Reciprocating Compressors

The PDC® Flanged Check Valve from DFT® was engineered to handle pulsating pressure generated when reciprocating compressors discharge. This check valve is specially fitted with a pulse dampening chamber for this purpose, which eliminates valve chatter from pressure pulsations in flow from reciprocating compressors and defends against premature seat wear.



The PDC® Flanged Check Valve is API 6D compliant and is our recommended check valve model for use in reciprocating compressor systems. Available in 2"-26" line size

We designed this valve specifically for use in the natural gas industry, offering a direct replacement for piston-type check valves that tend to underperform in reciprocating gas and pulsating air compressors.



For Centrifugal & Rotary Compressors.



The GLC® Flanged Check Valve is a globe style valve ideal for use in natural gas lines where other types of compressors are used. This is a short pattern check valve that provides minimum pressure loss along with reliable, low maintenance service.

The GLC® Flanged Check Valve is API 6D compliant. It is a dual guided globe style check valve with a tight seal to eliminate leakage. Available in 2"-42" and pressure classes up to 2500



How long Do DFT® Check Valves Last?

It's difficult to offer general predictions about the exact service life of valves used in the natural gas sector because each application has unique variables that may impact the estimate. With that said, the experts at DFT® designed both the GLC® and PDC® to resist the harmful impact of many common conditions found in natural gas applications.

Both the GLC and PDC check valves have a rugged one-piece body with a dual guided stem to provide added stability, resulting in longer service life. They provide tight shut off and are built for superior performance and high reliability.

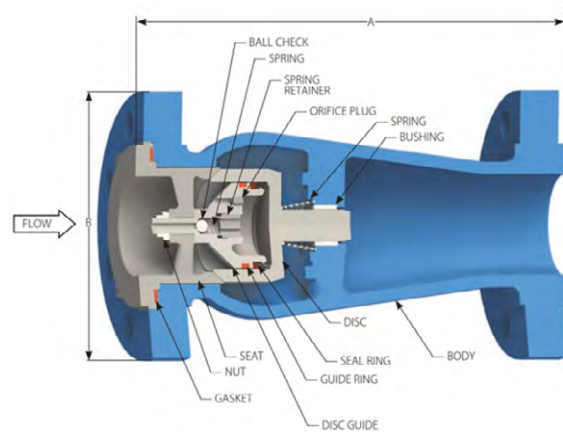
The PDC® model is self-sizing and contains a pulse dampening chamber that mitigates excessive wear and valve chatter to extend the life of the overall valve. Conversely, other valve types tend to damage themselves over extended operation in natural gas systems due to constant slamming of the disc and the seat. Though predicting an exact lifespan may be difficult, DFT® can say with confidence that our PDC® valves last noticeably longer than other check valves used in reciprocating compressor applications. We have regularly seen both GLC® and PDC® check valves last more than 10 years before requiring a rebuild.



Construction of the PDC® and GLC® Check Valves

PDC® Design features and options include:

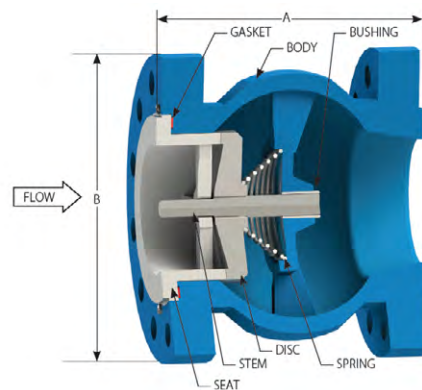
- Valve sizes from 2"-26"
- ASME pressure classes from 150-1500
- Meets API6D
- One-piece body
- ASME B16.10 Face-to-Face
- Pulse dampened design
- Center-guided trim
- Protected spring
- Allows horizontal or vertical installation
- Standard Body Materials:
 - » Carbon Steel
 - » Stainless Steel
- Spring assisted-silent closing
- Self Sizing



The key differentiator between the PDC® valve and other check valves is the pulse dampening chamber. This chamber virtually eliminates valve chatter and allows the valve to function normally from the minimal open position to 100% open. The PDC was engineered for the discharge side of reciprocating compressors.

GLC® Check Valve Design Features and Options include:

- Valve sizes from 2"-42"
- ASME pressure classes from 150-2500
- Meets API6D
- One-piece body
- Center-guided trim
- Protected spring
- Allows horizontal or vertical installation
- Spring assisted-silent closing
- Allows horizontal or vertical installation
- Standard Body Materials:
 - » Carbon Steel
 - » Stainless Steel
- Optional Body materials available
- Can be sized to your application



The use cases for DFT® Check Valves span the breadth of the natural gas industry. Common applications include:

- Compressed air applications
- Compressor stations
- Distribution pipelines
- Gas processing plants
- Metering stations
- Power plants
- Storage facilities



The Right Valve Matters

When sourcing valves for use in natural gas applications, there are numerous factors to consider. Some of the most important considerations include:

- **ROI and cost of ownership.** Quality is important, especially in natural gas applications where the risk factors run high. The return on investment and long-term expenses associated with your check valve should be front of mind when sourcing new valves. Spending more upfront for quality will provide critical savings over time.
- **Valve Sizing.** Proper valve sizing is essential for managing pressure variations, preventing leaks, and extending service life. The PDC® self-sizing valves make this critical step much easier.
- **Pressure drop.** Pressure drops constitute a major issue for engineers working with natural gas systems. The PDC® Check Valve features a higher CV value than other valves, which lends itself to lower pressure drops. In compressor stations, engineers must be able to calculate the total pressure drop across the entire system and take steps to mitigate it. Since the higher CV of PDC® valves contributes to lower overall system pressure drop, this step becomes easier for engineers.
- **Leakage/fugitive emissions.** External leaks in a compressor station or other natural gas application setting will result in costly shutdowns while the leak is identified and repaired. As such, it's critical that natural gas valves have tight shutoff and eliminate leak paths through single-piece construction. For example, standard piston check valves have a bonnet that makes them susceptible to leaks, whereas both the PDC® and GLC® valves feature a one-piece design that eliminates leak paths.
- **Compliance.** Compliance with industry standards is essential in any severe service application, including natural gas. Both PDC® and GLC® valves meets API 6D and MSS standards.



All valves manufactured at DFT® are subjected to rigorous testing to confirm compliance with all relevant industry standards.

Case Study: PDC® Check Valve Used in a Southeastern Compressor Station

Problem: High cycling piston check valves needing constant service and repair

A Large Natural Gas Company was experiencing issues with its piston check valves. They were installed at its compressor station located near the natural gas underground storage. These piston check valves at the compressor discharge cycled often, regulating the pressure of the underground storage. This high cycle application required them to have yearly service performed on them and replacement parts were installed every other year.

The Solution: The installation of PDC® Check Valves

To avoid these costly equipment replacements, DFT® instead suggested replacing the failing check valves with PDC® Check Valves. Specifically designed for reciprocating air or gas compressor systems, the PDC® Check Valve contains a pulse dampening chamber to maintain the disc in an open position during the momentary flow reductions between compressor cycles.

Their Compressor House had 6-6" 900# lines coming out 15 feet with gate valve/ check valve followed by 6 feet of pipe turn into the ground connecting into a 20" mainline underground. Six- 6" 900# WCB/SS DFT® model PDC® Check Valves were installed which provided the customer 13 years of maintenance free service.

Case Study: GLC® Check Valve Used in a Gulf Coast Petrochemical Plant

Problem: Low Flow and excessive cycling and pounding

A Major Gulf Coast Petrochemical Plant was experiencing swing check valve failures. The plant was part of an OEM turbo-expander that originally installed swing check valves. These original valves had failed quickly due to low flow and excessive cycling/pounding. DFT was called to find a solution to their problem.

The Solution: The installation of GLC® Check Valves

The DFT® model GLC® Check Valves were custom-sized for this vertical application to minimize excessive cycling and chattering problems that were seen with the previously installed swing-type check valves. Installed vertically were 16", 18" and 20" DFT GLCs with a carbon steel body and stainless steel trim.

About DFT®

DFT® Inc., formerly known as Durabla® Fluid Technology, has been manufacturing world class, problem solving silent check valves, and severe service control valves for over 75 years.

Our objective is to solve check valve problems and prevent check valve failures. We take pride in working closely with our customers to solve complicated problems. The results are valves that provide superior performance, long service life, and low maintenance costs.

DFT® manufactures a wide selection of check valves to meet your specifications. If you would like to know more about our check valve products, we would welcome the opportunity to assist you. Feel free to contact our technical team for additional information or request a quote detailing the requirements of your application.



TO DISCUSS YOUR NEEDS

with one of our valve experts,
reach out to your DFT® Inc
representative today.



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by checking out our resources,
find what you need to start your
next project



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