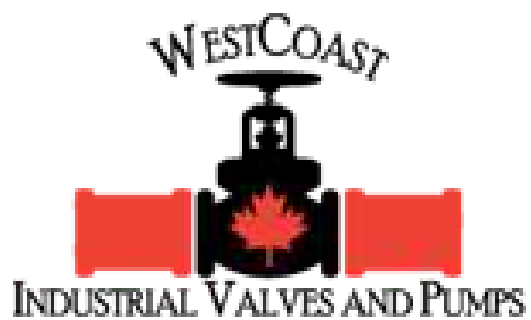




Innovation by  
revolution

The new generation  
of diaphragm valves



**+GF+**

# Benefits

You can expect a great deal more from the new generation of diaphragm valves: More safety, simplicity and efficiency.

It began with the wish for something new. Out of this came something new for the market: safer, simpler, and more efficient. Georg Fischer Piping Systems is revolutionizing your idea of a diaphragm valve.



## Safety

Where there is no metal, there is no corrosion. Just like in the new generation of diaphragm valves from GF Piping Systems. Instead of the usual four metal bolts, the new diaphragm valve has only a central plastic housing nut. And what is the advantage of this? The corrosion-free connection guarantees homogeneous expansion when exposed to temperature fluctuations, which eliminates the need to retighten the bolts. This results in uniform surface pressure that guarantees tightness up to 240 PSI operating pressure.



## Simplicity

Whether used for simple on/off or throttling, actuated or manual, the new high-flow diaphragm valve is an ideal solution. The lockable handwheel is a standard feature; the two-colored position indicator shows the actual position of the diaphragm at a glance. Moreover, the upper housing section is the interface for a self-adjusting electrical position indicator. All the installation dimensions of the previous model are the same, so it is backward compatible. This makes field upgrades simple and easy.



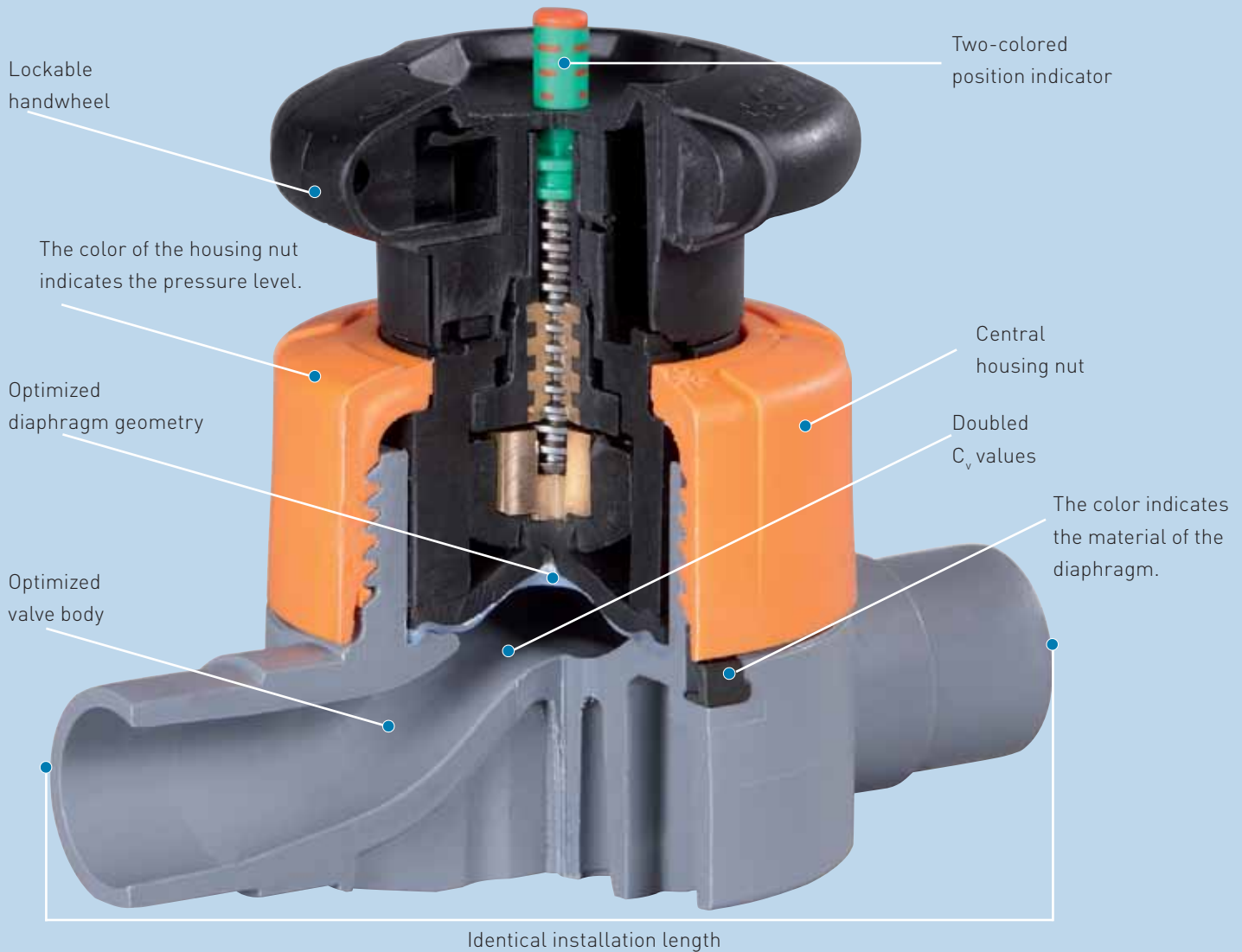
## Efficiency

What is your definition of efficiency? 10, 15 or even 20 percent more? The new generation of diaphragm valves offers at least 100 percent better  $C_v$  values on average. This means significant energy savings. The key lies in the optimized geometry of the valve body. The new design gives users a more linear, repeatable flow control. For this reason, the new diaphragm valves are more efficient overall: operating costs are reduced and media transport is more cost-effective. The self-draining flow geometry minimizes dead space in the flow areas and achieves higher purity and a better resistance to stagnate or crystallizing fluids.

# Features

What makes the new high-flow diaphragm valve so special?

- Elimination of bolt removes corrosive weak point
- 2-3 times better  $C_v$  values on average
- Modular design – easy to work on in the field
- Lock-out handle standard feature
- Two-colored position indicator
- Increased pressure rating: up to 240 PSI for some configurations
- Variety of plastic bodies available: PVC, CPVC, polypropylene, ABS, PVDF
- Variety of diaphragms available: EPDM, FPM, NBR, PTFE with EPDM backing, PTFE with FPM backing
- No need for retightening bolts
- Lack of metal fasteners; like materials virtually eliminate thermal expansion problems
- Optional feedback switches on manual valve
- Pneumatic actuation
- Electric actuation



Functions and configurations can differ from the illustration, depending on the valve type.

# The system

At a glance.

There are almost no limits to the applications of the new generation of diaphragm valves, regardless whether it is the manual or the actuated valve.



Retrofitting of the feedback unit.



## Materials

The application determines the material. Therefore, for optimal reliability, we offer you the choice of these materials: PVC, CPVC, ABS, as well as PP, PP-n and PVDF. With diaphragm materials available in EPDM, PTFE, FPM, and NBR, the valves can be utilized with almost any chemical.

## Connections

Do you need a true union valve with solvent cement socket, do you want to weld in the valve, do you have to create a threaded connection to existing components in the plant, or does the standard call for a specific flange? We help you with the right answer for a reliable connection.

## International standards

No matter where you intend to use your valves, compatibility is required. We ensure worldwide connection with international standards such as ISO, BS, ASTM, ANSI and JIS.

## Standardization

Compliance with international standards:

### prEN ISO 16138

Industrial valves –  
Diaphragm valves made of thermoplastics.

### ISO 9393

Valves made of thermoplastics.  
Pressure test and requirements.

### EN 558

Installation length of diaphragm valves corresponds to EN 558.

### Approval reported:

DIBt, W270, KTW, FDA and others.

## Electrical feedback

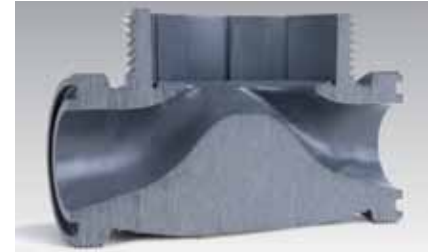
In modern plant automation, process monitoring is increasing in importance. The optional electrical feedback can be easily assembled in a few steps.

- Removal of handwheel
- Attachment of electrical position indicator
- Attachment of handwheel
- Wiring of plugs
- One-time opening/closing of the valve for calibration.

# System details

A product innovation that is more than the sum of its details.

The focus of the new design was not the technical details, but rather to supply a valve that meets or exceeds the customer's needs. GF Piping Systems developed technical innovations in response to these needs. The results are in the details.



Optimized flow geometry.

## Central housing nut

Proven for decades in threaded unions and now applied to the housing: Simple, even surface pressure, no retightening. Very important: The uniform expansion with temperature changes of the plastic-plastic connection prevents leaks.

## Uniform diaphragm interface

Simplified spare parts, easy exchange, enormous flexibility: The diaphragm interface was constructed in such a way that the threaded connection does not transfer pressure forces to the diaphragm pin.

## Two-colored position indicator

How far is my valve opened? The clearly visible two-colored position indicator shows the actual position at a glance from a distance.

## Locking

Is the process set? Secure it against undesired tampering with the integrated locking mechanism and a padlock. In normal operation, the

lock mechanism disappears in the handwheel, so that the ergonomics are not impeded.

## Optimized flow geometry

An optimized flow geometry with soft transitions and radii doubles the flow rate compared to a typical diaphragm valve. The control characteristics are almost linear.

A worldwide unique manufacturing procedure makes this possible. It also provides maximum purity with minimized dead space. With no disruptive flow turbulence, noise and wear and tear are significantly decreased.

In addition to reduced pressure losses, an optimized flow rate also means that energy is conserved, and this lowers operating costs.



Clearly visible position indicator.



Handwheel unlocked.



Handwheel locked.

# The DIASTAR system

Simple automation.

GF Piping Systems has the optimal actuator configuration for your individual needs. You can rely on the pneumatic DIASTAR valves.



DIASTAR Ten



DIASTAR Sixteen

## DIASTAR Ten

Optimally suited for all standard applications up to 150 PSI requiring integration of accessories. Uncomplicated integration into the plant automation is possible through the appropriate interface. DIASTAR Ten also offers the option of a PTFE diaphragm. The cost/benefit ratio is unbeatable.

## DIASTAR Sixteen

This is our strongest one. It guarantees reliable control of operating pressures up to 240 PSI. Are you looking for maximum reliability? And do you want an integrated accessory interface for simple system integration? Then DIASTAR Sixteen is the right choice.

## Variety of accessories

Individual solutions must also fit individual requirements; otherwise, they are not solutions. For your modern plant automation, we offer a variety of accessories:

- 3/2-way pilot valves for single acting valves
- 5/2-way pilot valves for double acting actuators
- AS interface for simple bus communication
- Stroke limiter for fine adjustment and manual override
- Electrical position indicator with self-adjusting limit switches
- Positioner for throttling/flow control applications

# Details DIASTAR

The right actuator for every situation. Its quality is already well-known and now further optimized.

Building on the design of the manual valve, the pneumatic actuators from GF Piping Systems have also been thoroughly reworked. The result of this development can also be seen in the details.



Comprehensive accessory assortment.



The rotary air connections permit compact installation of the unit.

## The right actuator and accessories

A long diaphragm working life is fundamental for the reliability of your application. That is why we offer you the right DIASTAR to correspond to your application with the use of 3, 4, or 6 spring assemblies for high closing forces and with integrated fixed stop in the actuator to avoid overloading the diaphragm. The low maintenance piston actuators with double spindle guide allow a long working life.

## Rotary air connection

In tight installation locations, the actuators may be assembled back to back. The air connection can be turned to the desired position in 90° steps in all actuators.

## Housing material

The fiberglass-reinforced PP housing material ensures that your actuator will withstand aggressive environmental conditions. Extensive use of plastics and stainless steel protects the interior of the valve.

## Mechanical interface

The DIASTAR Ten and Sixteen both have a mechanical interface to which accessories can be easily attached. This is essential, since the actuation technology is an integral component of the total plant control. Our accessory program offers you a number of options for equipment that responds to your requirements: self-adjusting limit switches, positioner, solenoid pilot valves, AS-i-control heads and more.



Fixed stop and spring assemblies for a longer valve working life.

# System overview

We have the right configuration of the new generation diaphragm valve for your individual needs.

		Manual				Pneumatic	
<b>General</b>	Type	514	515	517	519	DIASTAR Ten	DIASTAR Sixteen
	Description	True union type	Spigot	Flanged	Zero static		
	Dimension DN	1/2"-2"					
	Pressure level	150/240 PSI*				150 PSI	240 PSI
<b>Functions</b>	FC					✓	✓
	FO					✓	on request
	DA					✓	on request
<b>Materials</b>	PVC	✓	✓	✓		✓	on request
	CPVC	✓	✓	✓		✓	on request
	ABS	✓	✓			✓	on request
	PP	✓	✓	✓	✓	✓	on request
	PP-n		✓			✓	on request
	PVDF	✓	✓	✓	✓	✓	✓
	PVDF-HP	✓	✓		✓	✓	✓
<b>Connection type</b>	Socket	✓				✓	✓
	Spigot	✓	✓		✓	✓	✓
	Flanged			✓		✓	✓
	Threaded socket	✓				✓	✓
<b>Diaphragm materials</b>	EPDM	✓	✓	✓	✓	✓	✓
	PTFE/EPDM	✓	✓	✓	✓	✓	✓
	FPM	✓	✓	✓		on request	on request
	NBR	✓	✓	✓		on request	on request
<b>Accessories</b>	Feedback	✓	✓	✓	✓	✓	✓
	Manual override					✓	✓
	Stroke limiter					✓	✓
	Positioner					✓	✓
	Bus connection					✓	✓

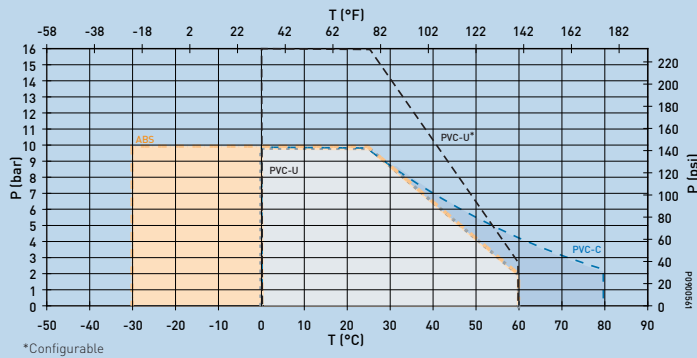
\*See pressure-temperature diagram



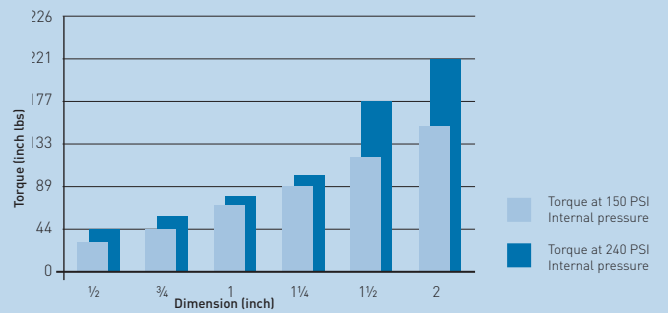
# Technical specifications

The most important data at a glance: Pressure rating up to 240 PSI as well as significantly reduced pressure losses

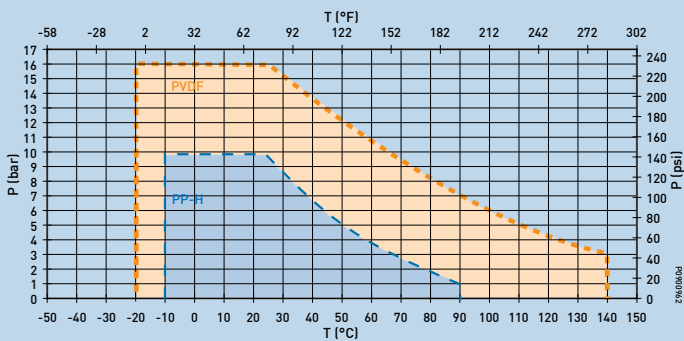
Pressure-temperature diagram  
ABS, PVC, CPVC (Water, 25 years)



Operation moment  
manual valve



Pressure-temperature diagram  
PVDF, PP-H (Water, 25 years)



# Application range

There are applications in which safety, simplicity and efficiency are simply indispensable.

In short, almost anything is possible, from High Purity to particulate media. The new generation of diaphragm valves from GF Piping Systems always offers the optimal solution, whether you must control and regulate extremely dirty, solid-containing, or highly purified media. We are specialists in plastic piping systems and can offer the optimal combination of piping, gasket, and joining technique.



## Chemical process industry

Aggressive environments can be found everywhere in the CPI. So it is important to know that the right plant components have been built in. The principle of the central thread eliminates completely the metal bolts and thus eliminates the risk of corrosion. Good flow and linear regulation characteristics are basic requirements for efficient and reliable processes in dosing, mixing, filling and bottling of chemicals.

## Microelectronics

Most processes in ME are carried out in a cleanroom. The requirements for water purity and the transport of UPW (Ultra Pure Water) are particularly high. The new generation of diaphragm valves has minimal dead space and greatly improved purity levels. Even heat expansion is not a problem, increasing reliability and reducing costly maintenance.

## Water treatment

Water must be available cost-effectively everywhere at specified qualities. The revolutionary higher flow rate of the new diaphragm valve permits a significantly smaller pump design and therefore decreases costs. The pressure level up to 240 PSI also permits integration of the diaphragm valve in reverse osmosis units and here too reduces operating costs.

# Applications

Modern diaphragm valve technology for reliable process automation based on highly convincing features.

The new generation of diaphragm valves from GF Piping Systems is free of dead space, self-draining, rugged, and not sensitive to crystallizing media. Flow rate characteristic values and regulating characteristics are comparable to those of an angle seat valve. These impressive features allow a series of application options.



solutions by means of accessory packages. The air connection is rotatable, and thus all the advantages are effective even in tight spaces. The valve geometry and flow efficiency of the new generation of diaphragm valves open countless possibilities for applications. Technical data and regulating characteristics correspond to those of an angle seat valve, without having to deal with its disadvantages.

## Cooling applications

Simple and reliable regulation of the cooling temperature and the cooling chain is becoming increasingly important in cooling applications. Minimizing cooling agents that are harmful to the environment is a priority in this process. Increasingly, secondary cooling loops are being set up, making special ABS valves necessary. The new generation of diaphragm valves is suitable for effective and high precision

cooling because of the optimal flow and the regulating characteristics. Simple operation, guaranteed ruggedness, and lack of sensitivity to crystallization are also important benefits.

## Regulation applications

Today, numerous applications are highly automated, with compact construction. The DIASTAR pneumatic actuators can be integrated into modern automation



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[www.piping.georgfischer.com](http://www.piping.georgfischer.com)



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