



Innovation by  
revolution

The new generation  
of diaphragm valves

# 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 screws, the new diaphragm valve has only a central plastic housing nut. And what is the direct advantage of this? The corrosion-free connection guarantees homogeneous expansion when exposed to temperature variations, which eliminates the need to retighten the screws. This results in uniform surface pressure that guarantees tightness up to 16 bar operating pressure.



## Simplicity

Open or closed, automatic or manual: With flicks of the wrist the new diaphragm valve can increase flow or turn everything off completely. The lockable handwheel is a standard feature, the two-coloured position indicator shows the actual position of the diaphragm at a glance. Moreover, at the same time the upper housing section is the interface for a self-adjusting electrical position indicator. All the installation dimensions of the previous model were retained so it is backward compatible.



## Efficiency

What is your definition of efficiency? 10, 15 or even 20 percent more? The new generation of diaphragm valves offers 100 percent more flow. That means doubling the flow rate at constant energy consumption. The key lies in the optimized geometry of the valve body. At the same time, the new diaphragm valve has linear flow characteristics and thus guarantees both increased efficiency and constantly stable processes. The minimized dead space also provides maximal hygiene.

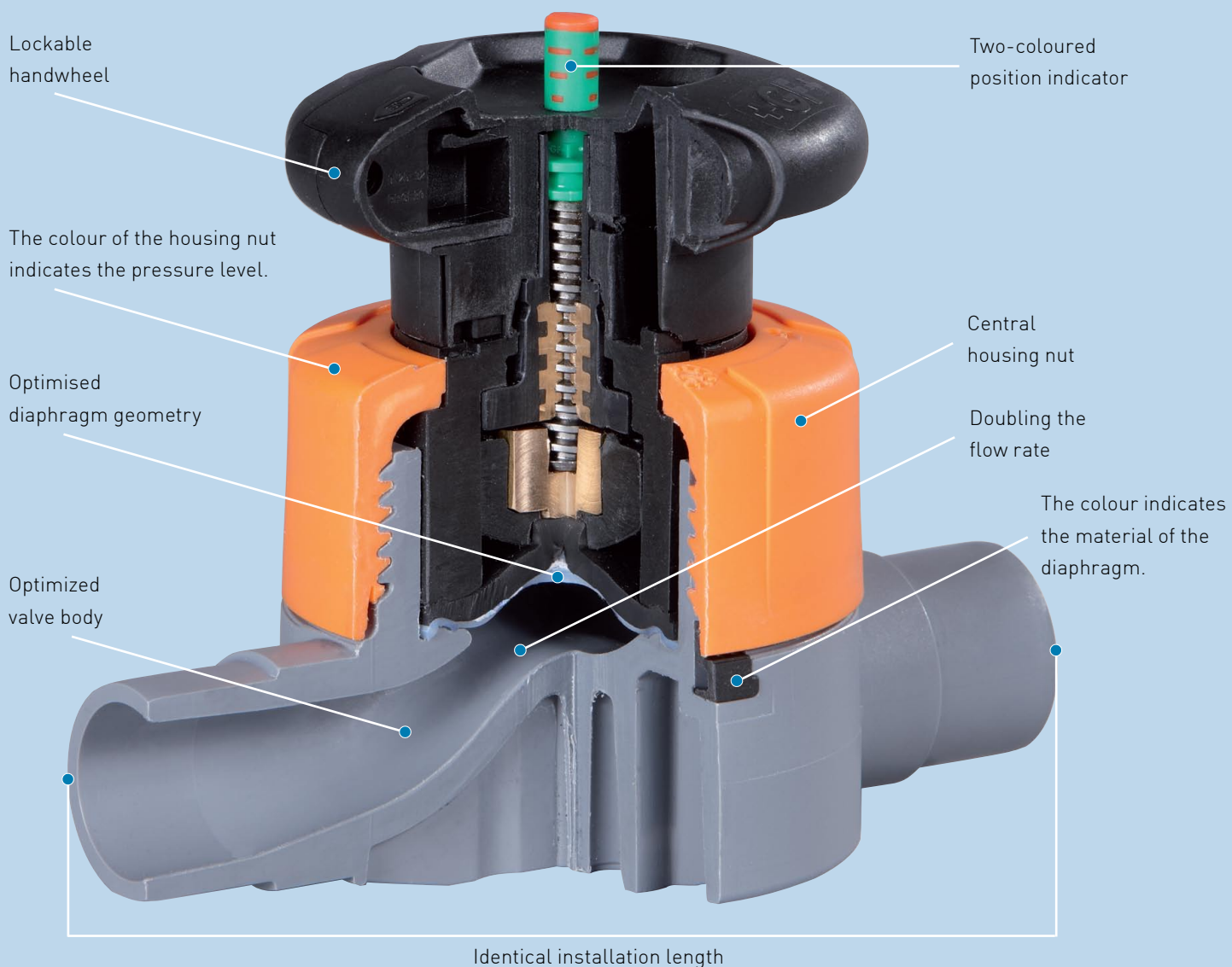
# Features

The sum of innovative developments guarantees the added value.

What is important and what isn't? GF Piping Systems asked about the requirements and that was the basis for developing the technical solutions. This way of proceeding is what makes the valve so extraordinary. In the new generation of diaphragm valves, there is something over and above

innovation in details that is crucial for success. The optimized valve body guarantees the sensational flow rate. The installation length is identical to the length in the previous model and this makes for problem-free backward-compatibility. The central housing nut holds everything together

with a new level of reliability. There are many other characteristics that make the new generation of diaphragm valves a globally successful product innovation.



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

# The system

At a glance.

There are almost no limits to the applications of the new generation of diaphragm valves. Regardless of whether it is the manual or the pneumatic 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-U, PVC-C, ABS as well as PP-H, PP-n and PVDF. With diaphragm materials available in EPDM, PTFE, FPM and NBR, the valves can be utilized with almost all chemicals.

## 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 of 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 obligatory. 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

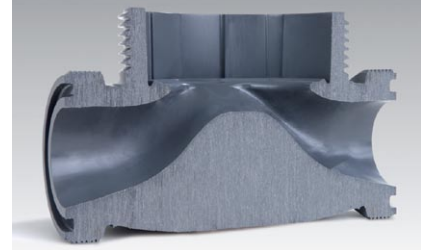
In modern plant automation, process monitoring is increasing in importance. The optional electrical feedback can be easily assembled in a few steps.

- 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 innovation was not the technical details but rather the absolute customer requirements. GF Piping Systems developed technical solutions in response to these requirements. The result can be seen in the details.



Optimised 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-coloured position indicator

How far is my valve opened?  
The clearly visible two-coloured 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 with a padlock. In normal operation,

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

## Optimised flow geometry

An optimised 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 maximal hygiene with minimized dead space. With no disruptive flow turbulence, noise and wear and tear are significantly decreased.

In addition to reduced pressure losses, an optimised 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 Six



DIASTAR Ten



DIASTAR Sixteen

## DIASTAR Six

Are you looking for a cost-effective solution with a long working life for elastomer diaphragms up to 6 bar? Then you are on the right track with DIASTAR Six. It combines high quality with the basic functions of a pneumatic actuator. Its compact construction is also an advantage.

## DIASTAR Ten

Optimally suited for all standard applications up to 10 bar requiring integration of accessories. Uncomplicated integration into the plant automation is possible through the appropriate interface. DIASTAR Ten also offers the possibility of using 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 16 bar. Are you looking for maximal 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 the appropriate variety of accessories:

- 3/2-way pilot valves for single acting valves
- 5/2-way pilot valves for double acting actuators
- Valve clusters for rational automation with interfaces for the common bus protocols
- AS interface for simple bus communication
- Stroke limiter for fine adjustment and manual override
- Electrical position indicator with self-adjusting limit switches
- Positioner for demanding regulation applications

# Details DIASTAR

The right actuator for every situation. It's quality is already well-known and now further optimised.

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.

## Appropriate 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 allows a long working life.

## Rotary air connection

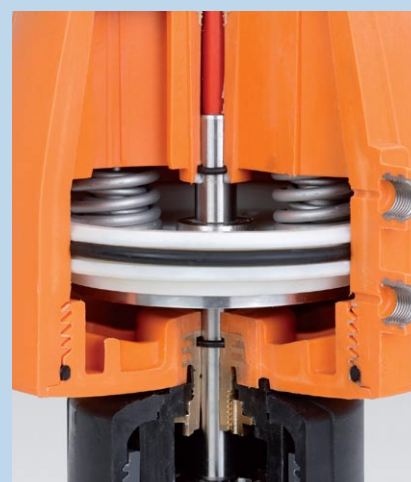
In tight installation locations the actuators may be assembled back to back. The air connection can be turned to the desired position in 90° steps in all actuators.

## Housing material

The fibreglass-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 attached without difficulty. 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, valve clusters with bus communication, AS-i-control heads and more.



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

# Technical specifications

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

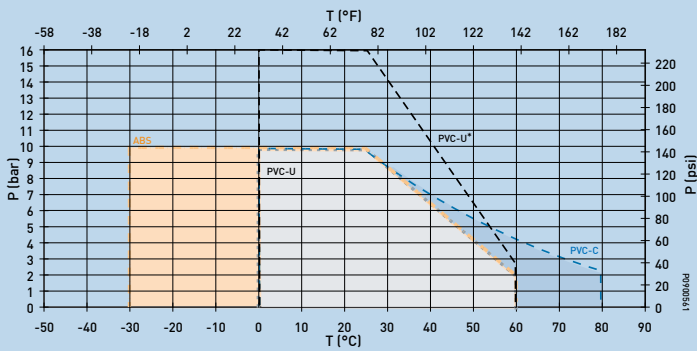
		Manual override				Pneumatically operated		
<b>General</b>	Type	514	515	517	519	DIASTAR Six	DIASTAR Ten	DIASTAR Sixteen
	Description	True union type	Spigot	Flange	Branched valve			
	Dimension DN	DN15...50						
	Pressure level	PN10 / PN 16*				PN6	PN10	PN16
<b>Functions</b>	FC					✓	✓	✓
	FO						✓	on request
	DA						✓	on request
<b>Materials</b>	PVC-U	✓	✓	✓		✓	✓	on request
	PVC-C	✓	✓	✓		✓	✓	on request
	ABS	✓	✓			✓	✓	on request
	PP-H	✓	✓	✓	✓	✓	✓	on request
	PP-n		✓				✓	on request
	PVDF	✓	✓	✓	✓		✓	✓
	PVDF-HP	✓	✓		✓		✓	✓
<b>Connection type</b>	Socket	✓				✓	✓	✓
	Spigot	✓	✓		✓	✓	✓	✓
	Flange			✓		✓	✓	✓
	Threaded socket	✓				✓	✓	✓
<b>Diaphragm materials</b>	EPDM	✓	✓	✓	✓	✓	✓	✓
	PTFE/EPDM	✓	✓	✓	✓		✓	✓
	FPM	✓	✓	✓		on request	on request	on request
	NBR	✓	✓	✓		on request	on request	on request
<b>Accessories</b>	Feedback	✓	✓	✓	✓		✓	✓
	Manual override						✓	✓
	Stroke limiter						✓	✓
	Positioner						✓	✓
	Bus connection					on request	✓	✓

\*See pressure-temperature diagram

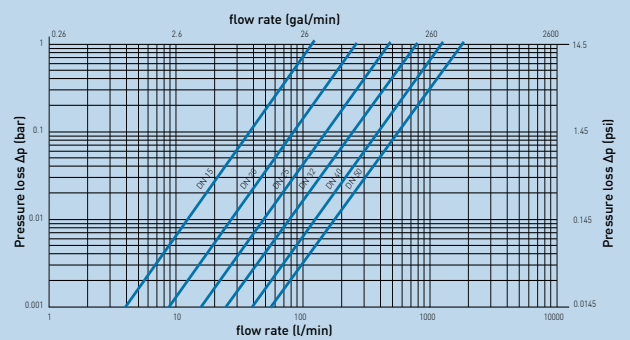
# Technical specifications

The most important data at a glance: Pressure rating up to 16 bar as well as significantly reduced pressure losses

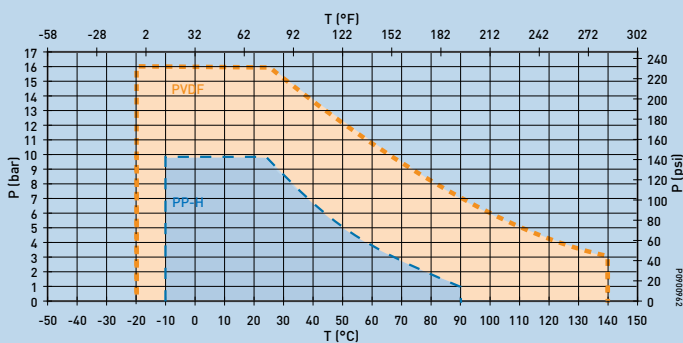
**Pressure-temperature diagram**  
ABS, PVC-U, PVC-C (Water, 25 years)



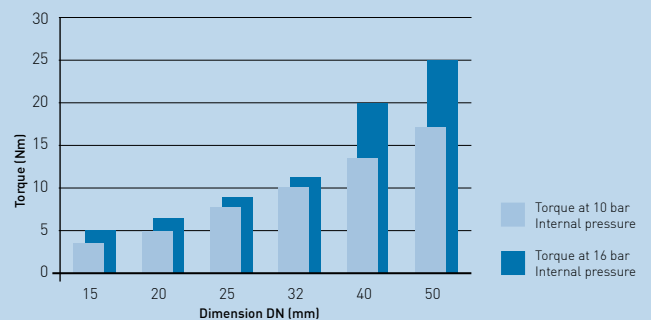
**Pressure loss diagram**  
DN15-50 - Type 514, 515, 517 (Water 20 °C)



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



**Operation moment**  
hand operated valve



# Application range

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

In short, everything is possible, from High Purity to particulate media. The new generation of diaphragm valves from GF Piping Systems always offers the optimal solution. No matter whether you must control and regulate extremely dirty, solid-containing or highly purified media. We are specialists in plastic piping systems and therefore we can offer the optimal combination of piping, gasket and jointing 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 screws 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 hygiene 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 clearly decreases costs. The pressure level up to 16 bar 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-emptying, 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 make possible a series of application options.



solutions by means of accessory packages. The air connection is rotatable, and thus all the advantages are even effective in tight spaces. The valve geometry and the 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 for which special valves made of ABS are 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 relevant benefits.

## Regulation applications

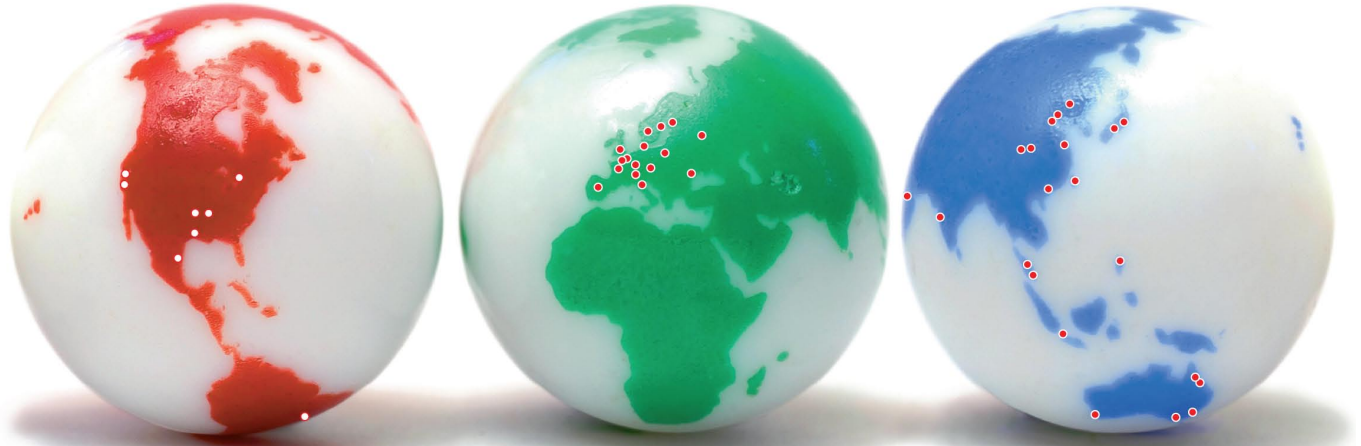
Today, numerous applications are highly automated, with compact construction. The DIASTAR pneumatic actuators can be integrated into modern automation



# GF Piping Systems → worldwide at home

Our sales companies and representatives ensure local customer support in over 100 countries.

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



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