

## Overview

# Ball Valves



## System overview

# Meeting Every Challenge

## Ball valves from GF Piping Systems

The GF Piping Systems range of ball valves provides solutions for every application. From simple shut-off valves to fully automated valves, GF Piping Systems has it all. Even for very demanding processes, you will find the perfect valve for your requirements. User-friendly, precise, reliable, flexible and safe – these features come first for our products.

### Type 546 // The original

The 546 ball valve takes on every challenge. Whether in PVC-U, PVC-C, ABS, PP-H or PVDF – it is the ideal valve for use in any application from simple water applications to highly exacting chemical processes. Its modular design and material diversity guarantees easy operation, flexibility, universal automation options and maximum process reliability.



### Type 546 linear // Perfection in control

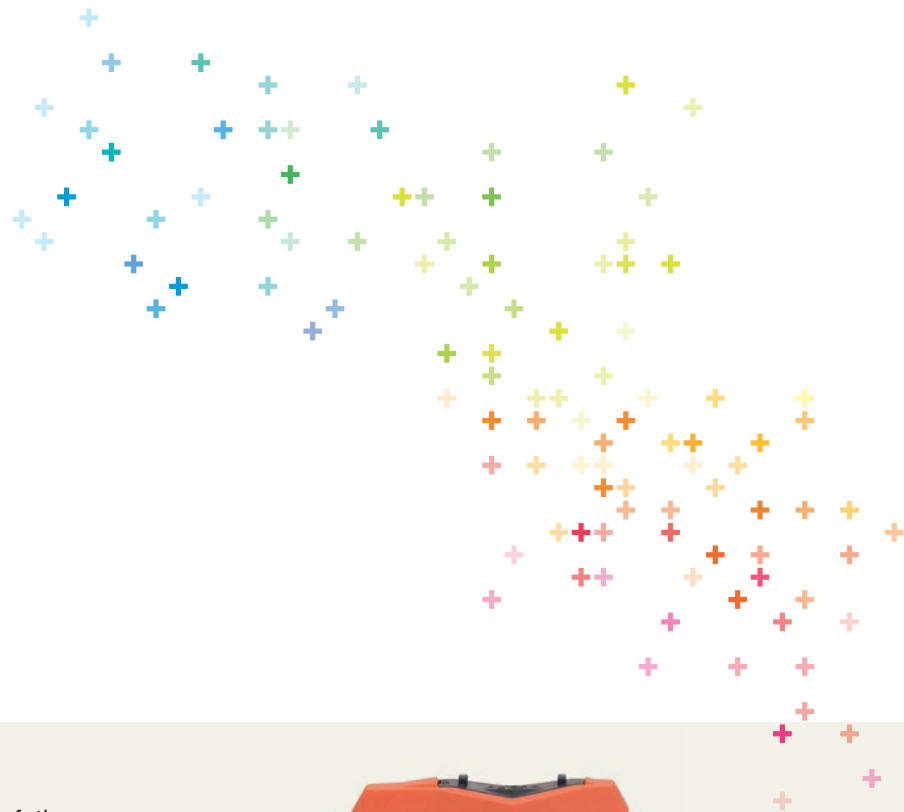
The linear ball valve type 546 enables, thanks to its linear flow characteristics, uncomplicated control, even in demanding chemical processes. The time-tested design of the 546 ball valve guarantees optimal safety. Add the material diversity to the equation and the range of applications is unlimited.



### Type 543 // Mix and distribute the easy way

The 543 ball valve is the perfect valve for all mixing and distribution processes. Horizontal versions with L or T port as well as vertical versions with L port or 3-way ball allow realizing any number of application options. Redirecting, mixing, distributing or even shutting off a medium are just some of the possibilities.





#### **Type 523 // Incredibly precise**

Exact dosing of small quantities is the strength of the 523 metering ball valve. With its new circular scale and specially shaped ball, media can be dosed with high precision.



#### **Type 375 // The affordable valve for simple applications**

The PVC-U ball valve type 375 is a cost-effective manual valve, specially developed for use in water applications or with non-critical chemicals. Its design ensures easy maintenance and therefore a long service life. Its compactness also means easy installation and removal in piping systems.



#### **Type 353-355 Coloro // Compact and versatile**

The Coloro ball valve is a compact valve for water applications. It features a monoblock construction, making it a low-maintenance valve for non-critical applications. By using standard union nuts and union ends, maximum flexibility and availability of spare parts has been achieved.



## The industrial ball valve

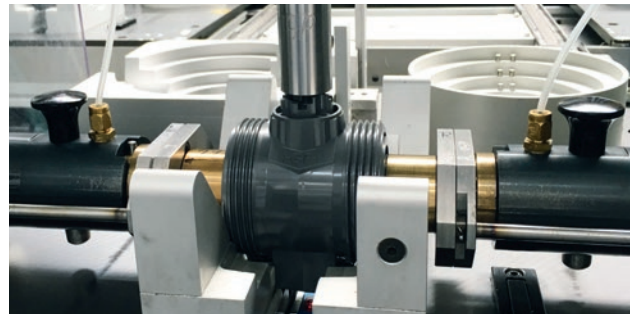
# For Applications in Industry

### Easy, efficient and reliable

The technical features of this product series have been proven in innumerable fields of application. The ball valve types 546, 546 linear, 543 and 523 enable fast and easy integration in the piping system thanks to a large choice of connection options. Integrated threaded mounting ports ensure secure valve fastening with ease. Precision engineering and high quality standards guarantee maximum operational safety and a long service life.

#### Absolute reliability

Every ball valve is leak-tested in production. These tests are a major factor in guaranteeing absolute process reliability. We continually invest in state-of-the-art production equipment and test facilities in order to ensure that only the highest quality valves are delivered to our customers.



#### Trust is good – Control is better

Electrical feedback allows for continuous system monitoring with accuracy and simplicity.



#### Assembly – fast and safe

It's not just the compatibility with all piping components that makes GF Piping Systems valves easy to install in your system. Quick and efficient fastening with two integrated threaded bushings also saves time.



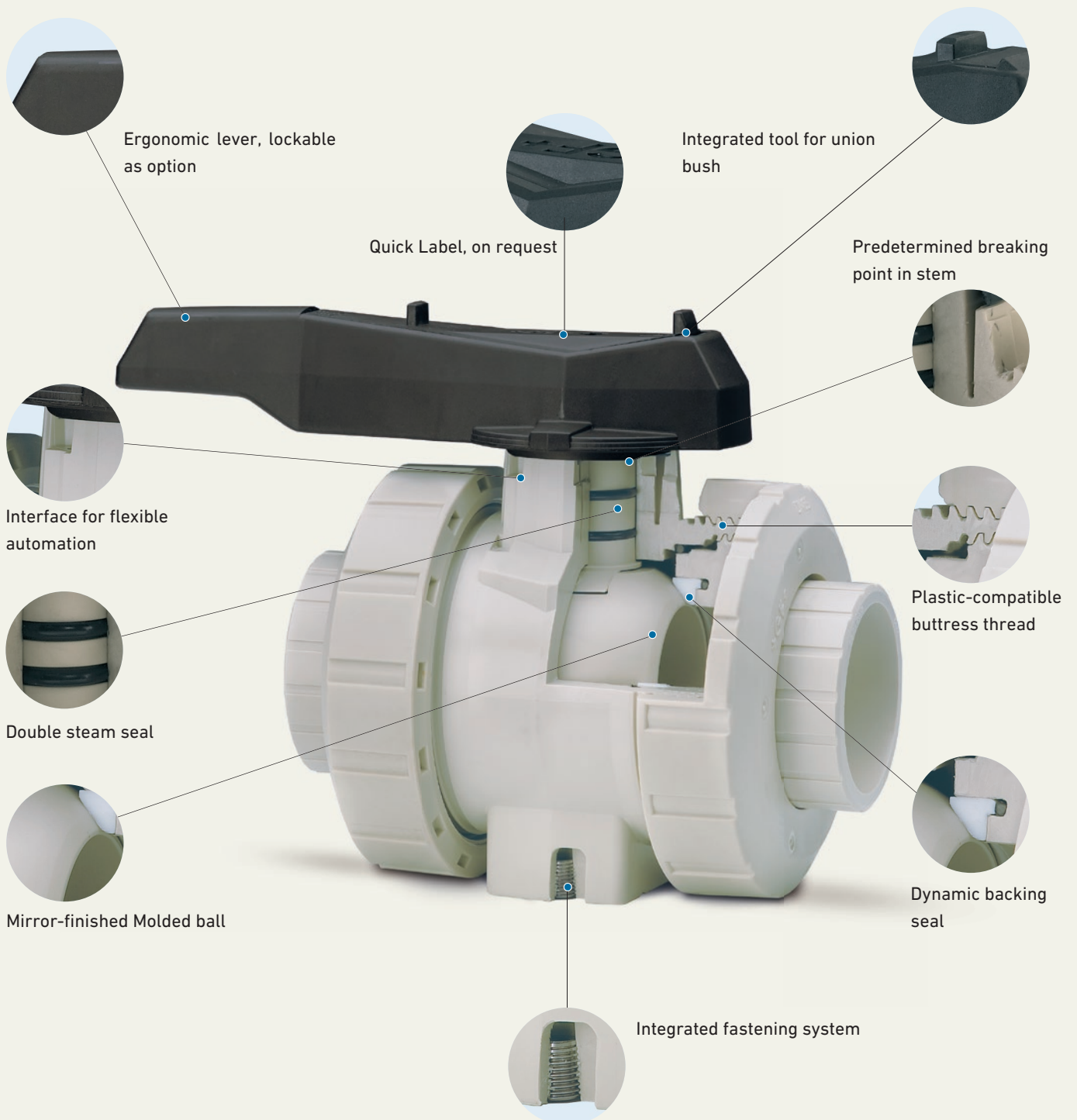
#### Ball Valve Labeling System

Identification of ball valves according to the function, valve number and fluid conveyed. Water-, corrosion and UV-resistant.



# Swiss Precision and Attention to Detail – a Guarantee of Maximum Safety

This industrial ball valve offers you unconditional safety. Special design features ensure high reliability and durability. For instance, there are no metal components that are vulnerable to medium exposure, which could corrode during use. A designed stem break point prevents catastrophic failure in the case of wear or over torquing. Two stem seals provide multiple fail safe points, providing maximum protection against valve leakage.



Type 546

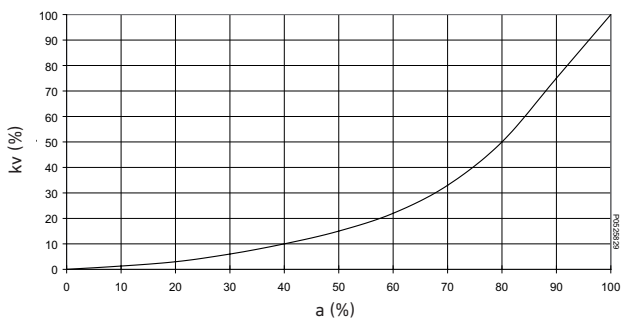
# The Original

## A ball valve for every occasion

GF Piping Systems offers you a ball valve that has stood the test of time in countless applications, and is the result of extensive industry experience and technological know-how in piping system construction. The 546 ball valve offers quality, flexibility, reliability and most notably modularity. This ball valve meets the ecological and economic industry standards while offering unmatched operational safety and engineered design features.

The 546 ball valve is particularly suitable for use as an open/close valve. However, this ball valve can be used in a variety of applications where control is critical. Excellent flow values are achieved with this design.

Flow diagram



### Application areas

- Chemical process industry
- Life science industry
- Microelectronics
- Measurement and control technology
- Water treatment
- Food and beverage industry
- Shipbuilding

### Specifications

- Dimensions DN10 to DN100 (3/8" - 4")
- Handle extension for hard-to-reach installations
- Injection-molded ball requires no machine finishing and guarantees a smooth surface and long service life
- Spacers maintain a constant level in the piping-system and simplify installation
- Individual online configuration is available
- Oil-free and silicone-free versions available
- Impressive flow capacity
- Universal interface facilitate use with most
- AS interface
- Automation



Type 546

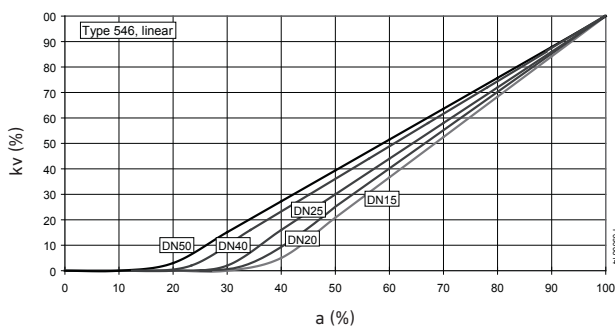
# The Linear Ball Valve

## Control made easy – even in complex applications

With the linear ball valve type 546, GF Piping Systems offers a valve that significantly facilitates control of your applications. This ball valve features all the familiar details of the 546 series, but has a specially shaped ball. The carefully engineered ball enables a linear flow, even when minimal flow rates are desired. The flow characteristic is linear for the entire opening angle and because it can be combined with an electric actuator, it is the perfect valve for use in demanding control loops.

The 546 linear ball valve is particularly suitable for use as a control valve. Processes are configured and controlled more easily with its linearly increasing flow rate.

Flow diagram



### Application areas

- Chemical process industry
- Life science industry
- Microelectronics
- Measurement and control technology
- Water treatment
- Food and beverage industry
- Shipbuilding

### Specifications

- Ideal control valve
- Dimension range DN15 to DN50 (½" - 2")
- Tool integrated in the lever
- Minimal maintenance required
- Spacer maintains a constant level in the piping-system and makes for easier installation
- Special ball design enables high flow values with linearly increasing flow performance
- Opening angle in percent imprinted on multi-functional module
- Minimal dead spaces
- Automation with electric or pneumatic actuator possible

Type 543

# The 3-Way Ball Valve

The ideal ball valve for any application

The 3-way ball valve from GF Piping Systems is the ideal valve for all mixing and distribution processes in your application. The 543 ball valve is available in a horizontal and a vertical version. The horizontal option features a ball with an L-shaped bore or a ball with a T-shaped bore. The vertical valve has a ball with an L-shaped bore or a 3-way ball.



## L-port



Distribution function in the starting position



Mixing function with reduced flow



Distribution function

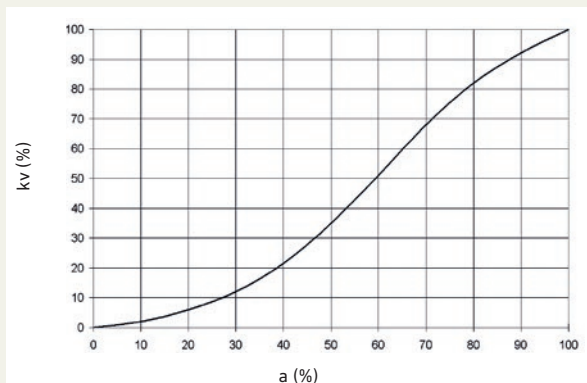
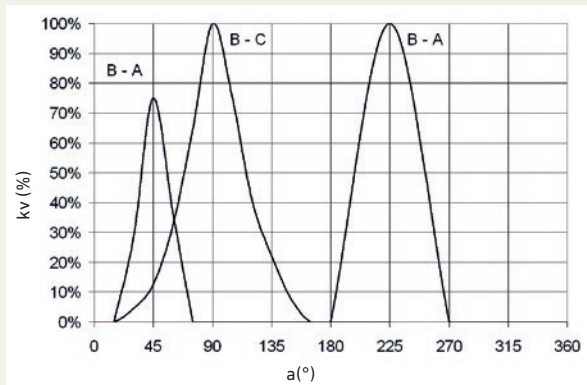


Outlet closed, passage open with reduced flow



Shut-off function

## Flow diagrams



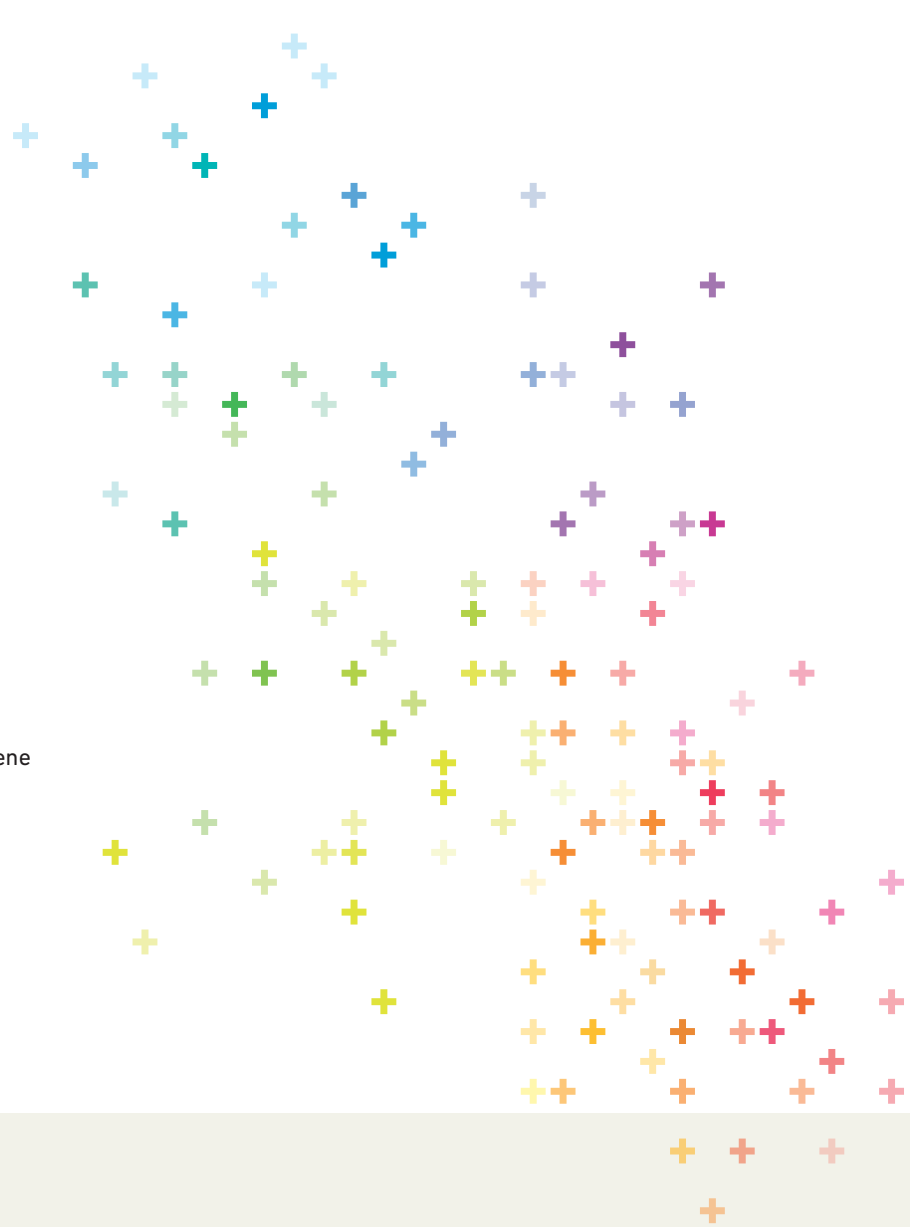


## Application areas

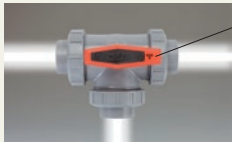
- Chemical process industry
- Desalination plants
- Life science industry
- Microelectronics
- Measurement and control technology
- Water treatment
- Distribution in shipbuilding

## Specifications

- Deal distribution and mixing valve
- Ball with L-port or T-port
- Dimension range DN10 to DN50 (3/8" – 2")
- Lever made of fiberglass-reinforced polypropylene (PPGF)
- Tool integrated in lever
- Very good flow characteristics
- Durable
- Automation possible with electric or pneumatic actuator



## T-port



Distribution function in the starting position



Distribution function



Outlet closed, passage open

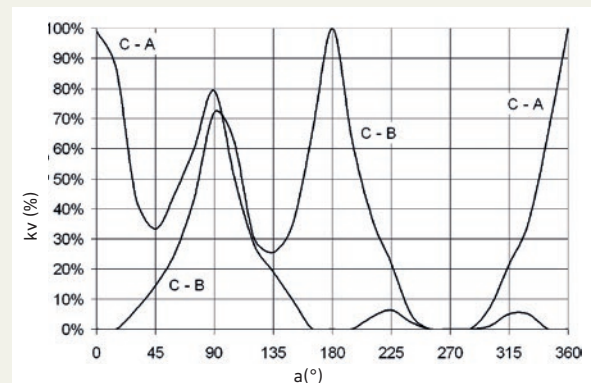
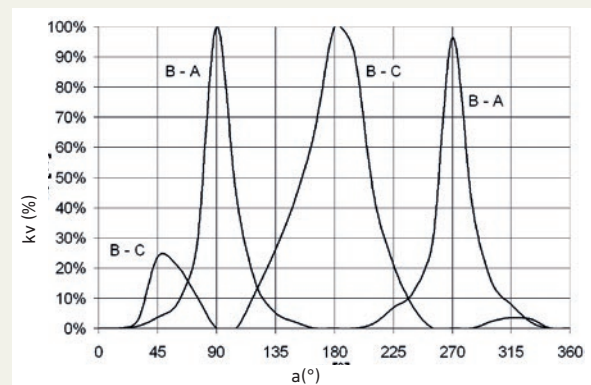


Distribution function



Shut-off function

Flow diagrams



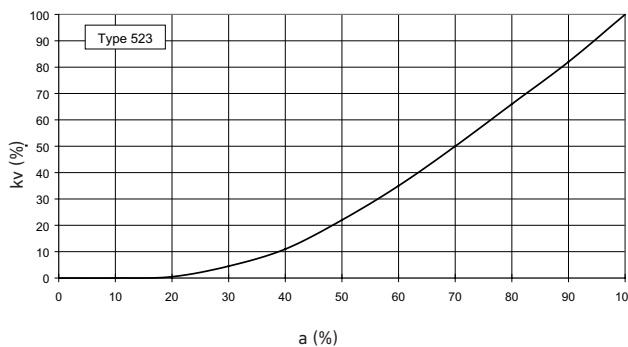
Type 523

# The Metering Ball Valve

## Unbeatable for metering small quantities

Based on a proven design, the ball valve type 523 from GF Piping Systems is the perfect valve for all metering applications. Due to the specially shaped ball, a nearly linear flow is achieved. Sudden increases in the flow rate are not an issue with this design, rendering this ball valve unbeatable in terms of precise metering of small volumes.

Flow diagram



### Application areas

- Chemical process
- Life science
- Microelectronics
- Measurement and control technology
- Water treatment
- Shipbuilding
- Food and beverage

### Specifications

- Ideal metering valve
- Precise setting of flow rate
- Flow characteristics permit sampling small amounts with great accuracy
- Dimension range DN10 and DN15 ( $\frac{3}{8}$ " and  $\frac{1}{2}$ " )
- Circular scale facilitates exact dosing
- Low maintenance
- Length same as all 5xx ball valves
- Spacers ensure the right level in the piping system and make for easy installation
- Tool integrated in lever
- Virtually linear flow thanks to the specially shaped ball
- Sudden increases in flow, as with conventional ball shapes, are almost precluded
- Can be used with nearly any media



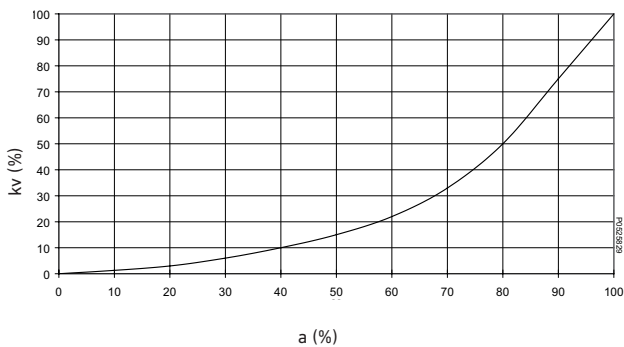
Type 375

# The Practical One

## Guaranteed easy handling in water applications

The 375 ball valve is the perfect addition to GF Piping Systems' line of ball valves. The range of uses include basic applications in water treatment as well as in simple water applications. The type 375 is available in PVC-U and PVC-C. The 375 ball valve has been designed for easy maintenance and a long service life. And because it is so compact, it is easy to install and remove from the piping system.

Flow diagram



### Application areas

- Irrigation
- Swimming pools
- Water treatment
- Non-critical chemicals

### Specifications

- DN10 - DN100 (½" - 4") with solvent cement and threaded sockets
- Low maintenance
- Tool integrated in lever
- Ball seal in PTFE
- Durable



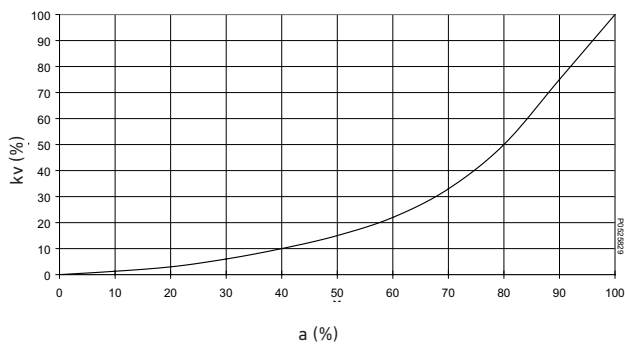
Type 353 - 355

# Coloro

## Clarity in the piping system

The ball valve type 353 – 355 (Coloro) is a compact valve for water applications. Its distinguishing feature is the monoblock construction, which makes it a low-maintenance valve ideal for non-critical application areas. For the sealing material, HD-PE is used in combination with an EPDM O-ring. By implementing standard union nuts and union ends, maximum flexibility and availability of spare parts are guaranteed.

Flow diagram



### Application areas

- Irrigation
- Greenhouses
- Feeding installations
- Fish Farming
- Swimming pools

### Specifications

- Dimensions DN15 – DN50 (½" – 2")
- Manual valve for non-critical applications
- All standards
- Low maintenance
- Radial mounting and dismounting



## Automation options

# Dependable, Precise and Efficient

## Automatic plant operation and monitoring

The ball valve series 546, 543 and 546 linear allow GF Piping Systems to provide innovative products that offer customers quality, flexibility, reliability and modularity. Whether it be manual or automated valve, we can supply a comprehensive line of accessories. With an position switch integrated into the multifunctional module, electrical feedback on valve positions "open/closed" is available. Along with multiple other monitoring and control options available to provide further automation advantages.

The GF electrically automated ball valves utilize three different actuators. The EA11 is designed for open/close operation up to dimension d63 DN50 (2"), while the electric actuator EA25 with the corresponding accessories is perfect for all automation and expansion requirements. The EA45 series is designed for dimensions d75 DN65 (2½"), EA120 for dimension d90 DN80 to d110 DN100 (4").

The pneumatically valves are equipped with our pneumatic actuators PA11, PA21, PA30. All pneumatic valves are available in FC, FO or DA functions and have an accessory interface that makes it easy to adapt the valve to the automation requirements.

### Application areas

- Chemical process industry
- Microelectronics
- Water treatment systems
- Factory automation
- Measurement & control technology

### Specifications

- Flexible assembly thanks to modular construction
- Actuator series for every situation
- Long service life thanks to robust design
- Extensive line of accessories, suitable for every-automation task
- Optional emergency manual override
- Universal use thanks to wide range power supply and standard interfaces
- Globally certified: CE, UL CSA



## System overview

# The System at a Glance

The right product for every application



Manual operation

### General

Title	Coloro	Ball valve	Metering ball valve	Industrial ball valve	3-way ball valve
Type	353-355	375	523	546	543
Basic type					
Actuator type					
Dimension DN	10-50 (3/8" – 2")	10-100 (3/8" – 4")	10-100 (3/8" – 4")	10-50 (3/8" – 2")	10-50
Nominal pressure PN	Socket: 16	DN10-50: 16	10	ABS/PP-H: 10	10
	Thread: 10	DN65-100 (2½"-4")10		PVC/PVDF: 16	10

### Materials

PVC-U	✓	✓	✓	✓	✓
PVC-C		✓	✓	✓	✓
ABS			✓	✓	✓
PP-H			✓	✓	✓
PP-N					
PE	✓	✓	✓	✓	✓
PVDF			✓	✓	

### Types

Socket	✓	✓	✓	✓	✓
Spigot	✓	✓		✓	✓
Flange				✓	✓
Threaded	✓	✓		✓	✓

### Seal

EPDM	✓	✓	✓	✓	✓
PTFE					
PTFE/FPM					
FPM		✓	✓	✓	✓
FFPM			✓	✓	✓
NBR			✓	✓	✓
Other					

### Accessories

- Lever extension
- Extra limit switch
- Mounting panel
- Multifunctional lever
- Linear flow line
- 90° and 180° stop
- Mounting panel
- Multifunctional lever



Automatic

	Electric ball valves		Pneumatic ball valves	
107	179-184	167-170	230-235	285-288
546	546	543	546	543
EA11 (soon EA15)	EA 25/45/120	EA25	PA11-45	PA11/21
10-50	10-100	10-50	10-100	10-50
10	10	10	10	10
10	10	10	10	10

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|--|---|---|
| <ul style="list-style-type: none"> <li>• Heating element</li> <li>• Limit switch</li> <li>• Module for AS-i</li> </ul> | <ul style="list-style-type: none"> <li>• Fail-safe return unit</li> <li>• Monitoring board</li> <li>• Positioner</li> <li>• Profibus</li> </ul> | <ul style="list-style-type: none"> <li>• Manual operation</li> <li>• Limit switch box</li> <li>• Solenoid pilot valve</li> <li>• Module for AS-i</li> </ul> |
|--|---|---|

# Key Information at a Glance

You have the choice – the right ball valve for your application

## + Pneumatic ball valves

<b>Ball valve type</b>	2-way	Type 230 to 235			
	3-way	Type 280 to 285			
<b>Dimension</b>	DN	DN10 to DN25 ( $\frac{3}{8}$ " – 1")	DN32 to DN50 (1 $\frac{1}{4}$ " – 2")	DN65 (2 $\frac{1}{2}$ " )	DN80 to DN100 (3" – 4")
<b>Actuator type</b>		PA11	PA21	PA30	PA40
<b>Peak torque</b>	Mdn	10Nm	20Nm		
<b>Mode of operation</b>		FC, FO, DA	FC, FO, DA	FC, FO, DA	FC, FO, DA
<b>Actuator principle</b>		Rack & pinion		Scotch yoke	
<b>Actuator interface</b>	ISO5211	F04	F05	F03/F05	F05/F07
<b>Control port</b>		G 1/8	G 1/8	Namur R 1/8	Namur R 1/8
<b>Housing material</b>		PP GF30		Anodized aluminum	
<b>Response time</b>	24 V	1-2s, with throttle valve up to 5s		0.5-4s	
<b>Accessory interface</b>		VDI / VDE 3845			
<b>Accessory</b>		Manual override -10° to 50°C			
		Limit switch box for electric feedback			
		3-/2- way pilot valve PV94/PV95 for electric feedback			
		5-/2- way pilot valve MNL532			
		Namur mounting plate			
		Valve Valve terminal PV2000			
		Digital positioner DSR500			
		AS-interface			





The many versions of plastic ball valves from GF Piping Systems combine the unique properties of plastic in design, application and performance. Such features as the significantly lower net weight compared to other materials, corrosion resistance, and the excellent chemical resistance ensure the highest degree of efficiency and reliability. The ball valves ensure consistently high economic efficiency over the entire lifetime of the system.

## + Electric ball valves

<b>Ball valve type</b>	2-way to DN50 (2")	Type 107	Type 179 - 184	
	3-way to DN50 (2")	x	Type 167 - 170	x
	2-way to DN65 - DN100 (2½" - 4")	x	Type 179 - 184	Type 179 - 184
<b>Actuator type</b>		EA 11 (soon EA15)	EA25/45	EA 120
<b>Rated torque</b>	Mdn	10Nm	10/20Nm	60Nm
<b>Peak torque</b>	Mdn	20Nm	25/45Nm	120Nm
<b>Response time</b>		5s @ 90°	~5s @ 90°	15s @ 90°
<b>Actuating angle</b>		Max 180°	Max 180°	Max 180°
<b>Dimension actuator</b>	L/B/H	129/122/138	150/122/167	150/122/190
<b>Actuating cycle</b>	at 20°C and Mdn	150.000	250.000 / 100.000	100.000
<b>Flange type</b>		F05	F05	F07
<b>Nominal voltage</b>	AC AC/DC		100 - 230 V, 50/60 Hz ± 10% 24 V, 56/60 Hz ± 10%	
<b>Input impedance</b>	230 V 24 V	100 kΩ 4.7 kΩ		
<b>Rated output</b>	230 V 24 V	40 VA 22 VA	35/55 VA 40/60 VA	50 VA 55 VA
<b>Duty cycle</b>	at 25°C/15 min	40%	100%	50%
<b>Protection class</b>			IP 65 (IP67) <sup>2)</sup> per EN 60529 UL/USA: interior use	
<b>Ambient temperature</b>	-10° to 50°C	-10° to 50°C	-10° to 50°C	-10° to 50°C
<b>Heating element</b>		✓	✓	✓
<b>Position feedback open / close</b>		✓	✓	✓
<b>Position feedback middle</b>			✓	✓
<b>Accessory</b>	Fail-safe unit, battery	✓	✓	✓
	Monitoring board		✓	✓
	Positioner		✓	✓
	Profibus		✓	✓

<sup>2)</sup> when used with cable glands and vertical installation

## Application areas

# Your Processes – our Safety and Efficiency

## Application-oriented solutions for the highest demands

The diversity of exigent applications and media demands a consistently high level of safety, efficiency, quality and profitability for plants, systems and individual components. Equally diverse as our customers, their process environments and their requirements are our diversified and individually tailored products – and successfully so for over 50 years. In alignment with the realities of customers and markets, GF Piping Systems offers a variety of systems – in terms of valves as well. These integrate optimally in the process structure of the complete system and comply uncompromisingly with the required performance and quality standards.



### Chemical process industry

The aggressive environment in chemical processing plants calls for piping systems in production and transport processes that provide the highest possible degree of safety and quality. When dosing, mixing and batching chemicals, accurate flow and linear control characteristics, even under difficult conditions, are essential for efficient and safe processes. Contamination must be avoided at all costs in all process stages; this is particularly true in surface finish. The industrial ball valves in the 546, 543 and 523 series, specially developed by GF Piping Systems for the stringent requirements and regulations of this demanding industry, guarantee excellent flow performance, reliable process control and flexible installation options.

### Microelectronics

The majority of all processes in microelectronics take place under rigorously controlled clean room conditions. Particular exigency is placed on the consistent purity of the process water and the transport of ultrapure water. Moreover, aggressive chemicals are necessary for the manufacture of semiconductor products and these must be conveyed safely for the various processes. Therefore, the highest purity criteria and maximum chemical resistance are required of the products used to convey the media. The wide range of products in our 546, 543 and 523 industrial ball valve lines offers the optimal, high-quality solution for nearly every chemical and requirement. For special purity requirements, the ball valves can be obtained silicone-free cleaned as an option.

## Applications

# Universal in Character

## A modern system that serves all applications

The convincing features offered in these systems and materials enable a multitude of application options in the chemical process industry, microelectronics and water treatment. Not only the outstanding abrasion and corrosion resistance to external influences and aggressive media, as indicated in the direct comparison with metal, but also the smooth surface and the low weight of plastics provide added value in terms of system lifetime, maintenance and handling. "Total Plastic Solutions" from GF Piping Systems guarantee safety and quality, in addition to efficiency and profitability.

### Water treatment

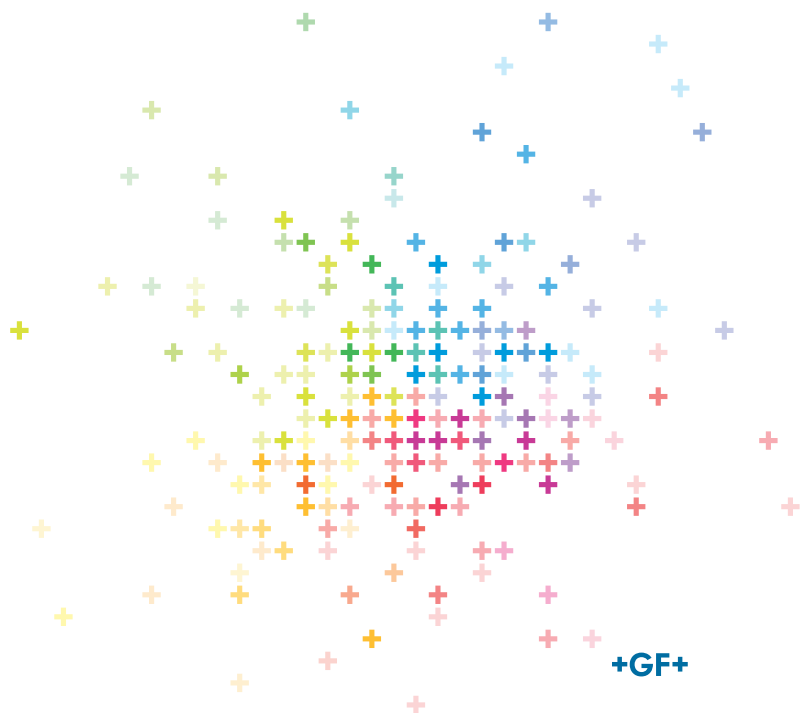
The importance of an economical and sustainable means of treating water is growing rapidly against the backdrop of resource scarcity. The ball valves from GF Piping Systems offer technical features and functionalities in keeping with global requirements. In the business of water treatment, these are especially pertinent when transporting water or when handling chemicals.

The type 353/355 is frequently implemented in simple water applications due to its compact dimensions and design. The type 375 is also suitable for simple applications with chemicals and is easily maintained thanks to its design. The 546, 543, 523 series will take on any challenge. They cover the largest spectrum of dimensions and functions, are available in all conventional piping materials and standards and offer the widest selection of connecting elements. They are designed for maximum security and longevity and can be actuated with the help of interfaces manually, electrically or pneumatically. The flexibility offered by the industrial ball valves in the series 546, 543, 523 make them the first choice in safely transporting media in water treatment applications.

### Water distribution

Besides industrial applications, ball valves are found in many other areas, whether in swimming pool applications, greenhouses, feeding installations, zoos, fish farming or irrigation. GF Piping Systems has the right valve in any situation.

A simple and compact design is a key criteria in these applications. The type 353/355, a monoblock ball valve, features compact dimensions and low maintenance. By using standard union nuts and union ends, maximum flexibility and spare parts availability are guaranteed. The type 375 is also ideal for simple applications with chemicals. The special design of the 375 ball valve allows for easy maintenance, thus ensuring a long service life. The compact design makes it easy to install and remove this valve in piping systems.



# Worldwide at home

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

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