

# Fundamentals for diaphragm valves, hand operated

## New diaphragm valve types 514, 515, 517, 519

### Installation

#### General information

Diaphragm valve installation in a piping system is subject to the same regulations as other connecting elements of pipes, fittings and related piping system components. Further chapters in the Planning Fundamentals give you additional information regarding installation and jointing methods.

#### Installation process



#### WARNING

##### Use of grease on the threaded connection between housing nut and valve body

The use of grease, especially on amorphous plastics, can cause stress cracking on the valve body. Death or serious injury could occur due to contact with the medium. The function of the valve is not warranted.

- Irrespective of the valve body material, do not use grease for the threaded connection between housing nut and valve body

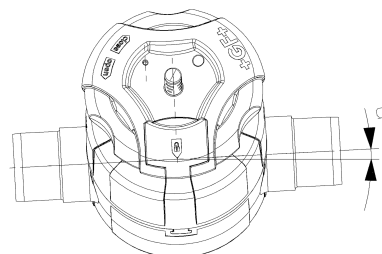
Before installation, please check the diaphragm valve accordingly to the following points:

- Inspect the diaphragm valve for transport damages. Damaged valves must not be installed!
- Only use diaphragm valves where the valve and the diaphragm correspond specifically to the materials, pressure rating, type of connection and dimensions for the particular application
- Carry out function test: open and close the diaphragm valve manually
- Diaphragms and other sealing elements should be checked before mounting to make sure there are no damages from aging. Aged parts which exhibit hardening or fissures must not be installed
- You must not install valves which do not function properly
- After installation another function test is to be carried out

#### Installation with an optimal angle to drain the valve

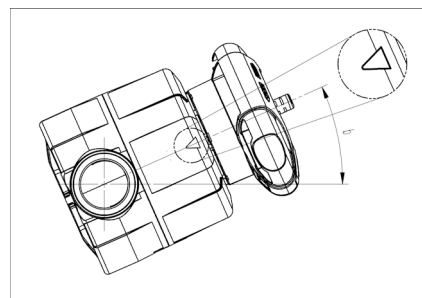
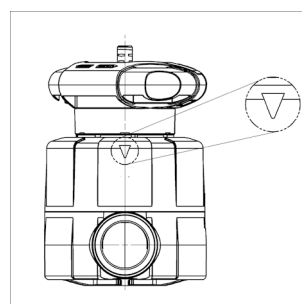
In order to achieve optimal drainage of the diaphragm valves type 514, 515, 517 and 519, +GF+ recommends installing them at the angles (a and b) which correspond to the respective dimension ranges.

An installation inclination of about 1-2° is not taken into consideration with the given angles.



Angle a for type 514...517

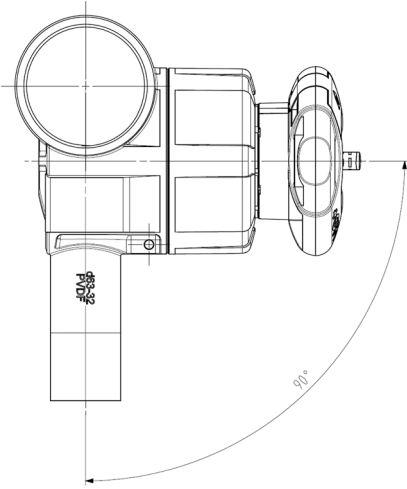
Dimension	Angle a for types 514...517
d20DN15	2
d25DN20	2
d32DN25	3
d40DN32	4
d50DN40	5
d63DN50	7



Angle b for type 514...517

Dimension	Angle b for types 514...517
d20DN15	27
d25DN20	24
d32DN25	25
d40DN32	23
d50DN40	24
d63DN50	22

**90° angle to drain the type 519, irrespective of the dimension**



Angle for type 519

**Information regarding jointing technique**

**NOTICE**

**Fixation of the diaphragm valve**

Due to temperature changes, longitudinal or lateral forces may occur if thermal expansion is constrained.

- Absorb forces via respective fixed points in front or after the valve

**NOTICE**

**Fixation of the diaphragm valve**

Operation of a valve causes reactive forces which could damage the valve

- Mount the diaphragm valve or reinforce the piping directly before and after the diaphragm valve with suitable supports

**NOTICE**

**Fixation of the diaphragm valve**

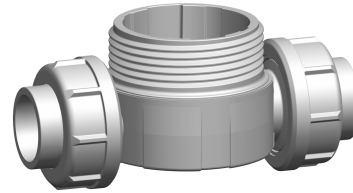
Superimposed loadings could damage the diaphragm valve

- Diaphragm valve and piping must be aligned

**True Union Design**

(Valve body type 514)

1. Loosen the union nut and push them toward the designated piping end
2. Depending on the type of piping end, connecting parts are cemented, screwed or welded. Further chapters in the Planning Fundamentals include additional information
3. Diaphragm valve is then positioned between the connecting parts
4. Manually tightened the union nuts

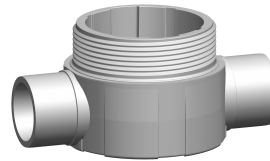


Valve body type 514

**Cement connections**

(Valve body types 514, 515)

Only identical materials may be joined together. Pipe sections with solvent cement connections should be rinsed unpressurized with water after the drying time (see chapter jointing methods).

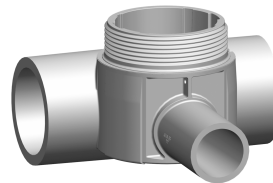


Valve body type 515

**Fusion connections**

(Valve body types 514, 515, 519)

Only identical materials may be joined together (see chapter jointing methods).

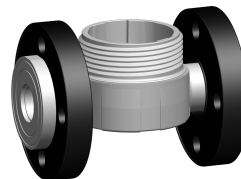


Valve body type 519

**Flange connections**

(Valve body type 517)

The tightening torque can be found in further chapters in the "Georg Fischer Planning Fundamentals".



Valve body type 517

## Integrated fastening and PP-mounting blocks

### Integrated fastening

The diaphragm valves have an integrated fastening system. Forces, which may occur under normal operation of the valve (e. g. initial breakaway torque), are absorbed with the integrated fastening. Therefore, no operating forces are transmitted to the piping system.

### PP-mounting blocks for diaphragm valves

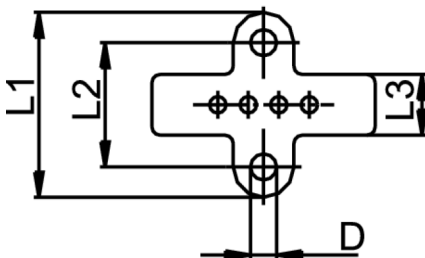
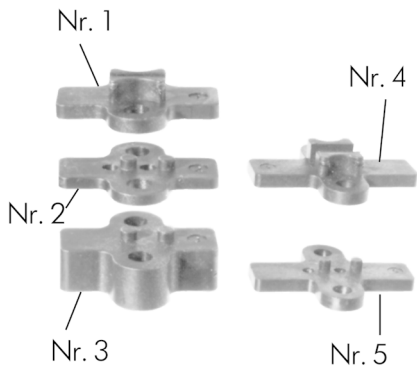
The mounting blocks are designed to allow different sized GF diaphragm valves to be aligned on the same pipe centre line by equalising the different heights from the base to the centre line of the pipe.

The blocks may be used with PVC-U, PVC-C, ABS, PP, PVDF diaphragm valve types 514, 515, 517 in sizes DN15 - DN50.

The blocks may also be used with type 514 PVC-U diaphragm valves to ensure that the union nuts clear the mounting bracket.

- Material: PP-GF 15, black
- 5 sizes, numbered 1 to 5
- Can be plugged together to achieve the desired height

### Dimensions and part numbers



Block-No.	Diaphragm valve		Dimensions [mm]							Weight	Part-No.
	Dimension	Inch	H1	H	L	L1	L2	L3	D	[kg]	
1	DN15 - 25	1/2" - 1"	4.50	11.00	46.50	42.00	25.00	17.00	7.50	0.005	167480422
2	DN15 - 25	1/2" - 1"	3.50	7.00	46.50	42.00	25.00	17.00	7.50	0.003	167480423
3	DN15 - 25	1/2" - 1"	13.50	17.00	46.50	42.00	25.00	7.00	7.50	0.012	167480424
4	DN32 - 50	1 1/4" - 2"	6.75	16.75	80.00	66.50	45.00	22.00	9.50	0.017	167480425
5	DN32 - 50	1 1/4" - 2"	6.75	13.25	80.00	66.50	45.00	22.00	9.50	0.015	167480426

### Construction dimension

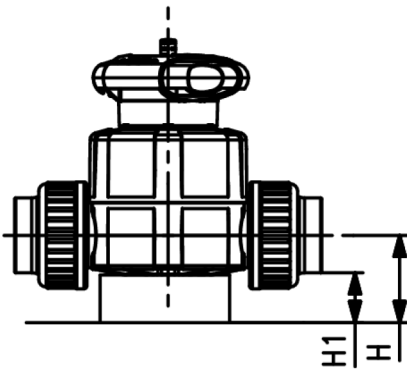
The length of the mounting bolts is calculated by adding the length of the thread in the valve base to the height of the block and the thickness of the mounting bracket. Mounting brackets no. 1 and 4 are for plugging directly into the valve base.

### Equalising height

Quantity required x block number

from DN...	...to DN						
	15	20	25	32	40	50	65
15		1 x 1	1x1 + 1x2	1 x 1 + 2 x 2	1 x 1 + 1 x 3	1 x 1 + 2 x 2 + 1 x 3	1 x 1 + 2 x 3
20			1 x 1	1 x 1 + 1 x 2	1 x 1 + 3 x 2	1 x 1 + 1 x 2 + 1 x 3	1 x 1 + 3 x 2 + 1 x 3
25				1 x 1	1 x 1 + 2 x 2	1 x 1 + 1 x 3	1 x 1 + 2 x 2 + 1 x 3
32					1 x 4	1 x 4 + 1 x 5	1 x 4 + 2 x 5
40						1 x 4	1 x 4 + 1 x 5
50							1 x 4

### Equalising the union height for type 514



DN [mm]	Quantity required x block number	H [mm]	H1 [mm]
15	1 x 1 + 2 x 2	22.50	11.50
20	1 x 1 + 2 x 2	29.00	11.50
25	1 x 1 + 2 x 2	32.50	11.50
32	1 x 4 + 1 x 5	39.00	13.50
40	1 x 4 + 1 x 5	46.00	13.50
50	1 x 4 + 1 x 5	52.50	13.50