

# Instruction Manual



## Multifunctional Module for Ball Valve Type 546

**GEORG FISCHER +GF+**

*The technical data is not binding and not an expressly warranted characteristic of the goods. It is subject to change. Please consult our General Conditions of Supply.*

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# 1. General Information

## 1.1 Hazard notices

Hazard notices are used in this manual to warn you of possible injuries or damages to property. Please read and abide by these warnings at all times!

### Warning symbols



Danger



Warning



Caution

### Meaning

#### **Imminent acute danger!**

Failure to comply could result in death or extremely serious injury.

#### **Possible acute danger!**

Failure to comply could result in serious injury.

#### **Dangerous situation!**

Failure to comply could lead to injury or damage to property.

## 1.2 Abbreviations

Type 546	Ball Valve Type 546
MF handle	Lockable multifunctional handle
MF module	Multifunctional module
PN	Nominal pressure

The Planning Fundamentals referred to in the text may be obtained from your sales company or on the Internet at [www.piping.georgfischer.com](http://www.piping.georgfischer.com)

## 2. CE Marking



According to EC Directive 97/23/EC pertaining to pressure equipment, complete valves  $\geq$  DN 25–DN 50 are CE-certified.

Attention

Single components, spare parts and complete valves  $\geq$  DN 08–DN 20 may not be CE marked. Single components and spare parts must be tested by the customer himself following completion.

## 3. EC Manufacturer's Declaration

The manufacturer: **Georg Fischer Piping Systems Ltd, 8201 Schaffhausen (Switzerland)**, declares that the **MF module** is not a ready-to-use machine in the sense of the EC Directive concerning machines and cannot therefore meet all the requirements of this directive.

**Operation of the MF module is prohibited until conformity of the entire system into which the valve with the MF module has been built is established according to the EC Directives listed below.**

Applicable EC Directives:

72/23	EEG	EC Low Voltage Directive
89/336	EEG	EC Directive on Electromagnetic Compatibility

**Modifications to the MF module which affect the technical data given in this instruction manual and its intended use, in other words any significant alterations to the MF module, render this manufacturer's declaration null and void.**



Warning

## 4. Intended Use

When mounted on the Ball Valve Type 546, the Multifunctional Module serves:

- to signal the CLOSED or OPEN position of the valve via an electric signal to a control supplied by the customer
- as a support for back wall installation of the manual ball valve
- as an interface when mounting an electric or pneumatic actuator

It is important that the given electrical data, such as voltage and current load, are strictly observed.

The MF module is not intended for uses other than those stated here. If the instructions contained in this manual are not complied with, the manufacturer is excluded from all liability for the above mentioned product.



Warning

## 5. Safety Information

Any person in the company who is involved with the assembly, disassembly, reassembly, installation, operation or maintenance (inspection, service and repair) of this MF module must have read and understood this complete instruction manual, in particular this section on safety information.

We recommend having this confirmed in writing. Remember:

- The MF module may only be installed in perfect working order and these safety guidelines must always be observed.

- Only qualified and authorized personnel may perform work on the MF module
- According to the Machine Directive 98/37/EC (formerly 89/392/EEG), this MF module is not considered a machine; it may, however, be built into an installation which is considered as such.

Making certain that these points are observed is the responsibility of the piping system engineer/installer and the operator of such systems, into which the valve is built.

## 5.1 Due Care Required of the Operator

The MF module described herein was designed and manufactured with consideration to the respective harmonized European standards. It corresponds to the latest technology and the technical data/features contained under Section 7.

Safety on the job can, however, only be realized if the operator warrants that

- the instruction manual and the manual of the corresponding valve have been read and understood and that the instructions contained therein are adhered to, and
- the necessary measures against electronic effects have been taken.



Warning

## 5.2 Special Hazards

**Under normal conditions, the MF module may only be operated with the cover closed. If work is performed on the MF module with the cover removed, the supply and control voltage must first be disconnected. Adjustments which need to be done in the energized state should be done with special insulated tools.**



Warning

**In addition, the operating instructions of the manual valve must also be observed. They are an integral component of this manual.**

If connected improperly, especially if the connection voltage is wrong, the built-in limit switches can become damaged, and if signalization of the valve fails, considerable damage can be caused to the system.

The multifunctional module must also be protected from mechanical influences; it is not permitted to use the ball valve with or without the mounted MF module and/or actuator as a step ladder.

Permanent exposure to strong, aggressive chemical substances is prohibited.

### **5.3 Transport and Storage**

The MF module must be handled, transported and stored with care. Please note the following points:

- The MF module should be transported and/or stored in its original unopened packaging.
- The MF module must be protected from harmful physical influences such as dust, heat (humidity).
- It is important that the connections are neither damaged by mechanical nor thermal influences.
- Prior to installation, the MF module should be inspected for transport damages. Damaged MF modules must not be installed.



Warning



## 6. Mounting the Multifunctional Module on the Ball Valve

Immediately prior to installation, inspect the MF module for transport damages. We recommend leaving the MF module in its original packaging until you are ready to install it.

The MF module has been fitted ex works with the respective switches and function-tested!

It is not necessary to remove the cover when used with the hand-operated ball valve.

Design of the MF module with built-in switches

- 1 Housing
- 2 Housing cover
- 3 Switching disc\*
- 3a Switching cam
- 4 Stainless steel Torx screws
- 5 Connector plug 3P + E per DIN EN 175301-803\* (formerly DIN 43650)

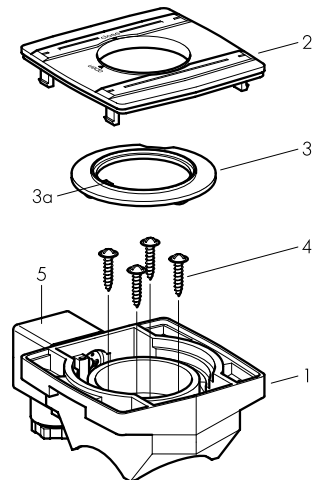
\*) for MF module versions with pre-assembled microswitches

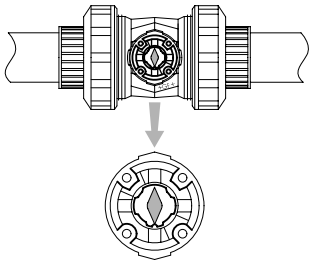
The MF module can be mounted on the ball valve type 546 in the opened or closed ball position.

**Attention! The stem is asymmetrical.**

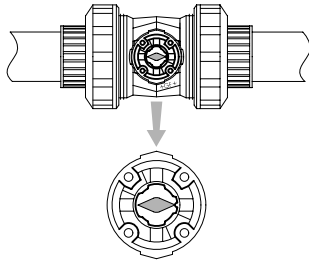
**The stem position must be identical to one of the two illustrations.**

### Exploded drawing

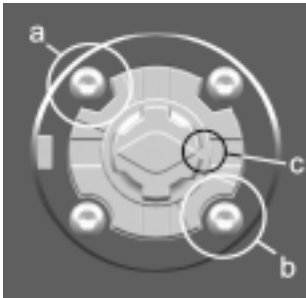




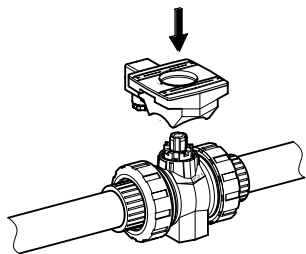
**A** Stem position for closed ball valve



**B** Stem position for open ball valve



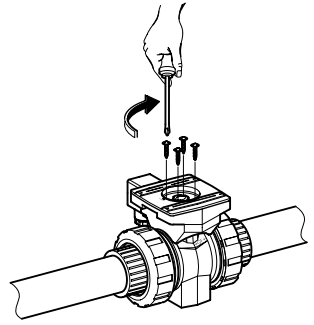
Note the square (a) and round (b) contours as well as the position of the asymmetrical recesses (c) of the stem.



Place the MF module on the ball valve

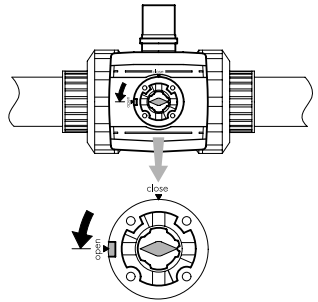
Make sure the contours of the multifunctional module and the ball valve match!

Tighten the four pre-assembled screws.  
The MF module is now firmly connected with the ball valve.

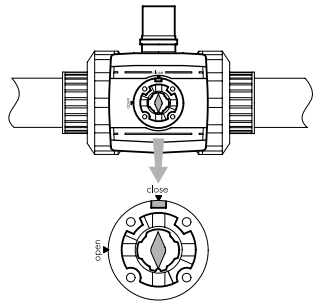


Put the switching cam (3a) in the respective position.

For open ball valve



For closed ball valve



The MF module is now ready for the assembly with the MF handle.

## Mounting the multifunctional handle

To mount the MF handle, follow these steps:

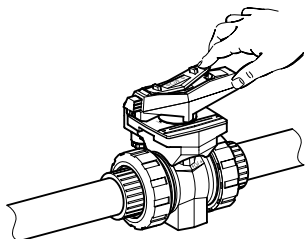
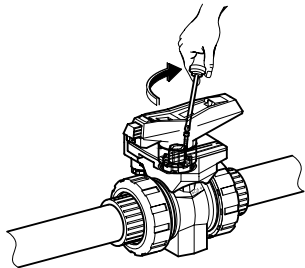
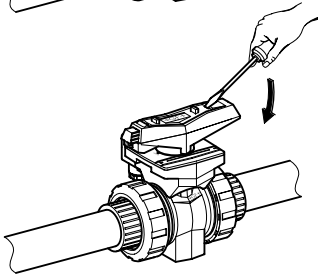
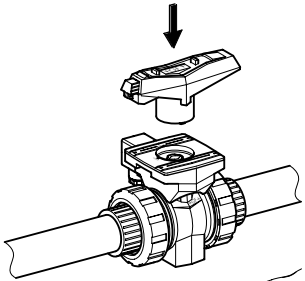
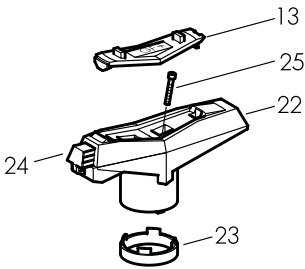
Remove the spacer ring (23).

Place the MF handle on the stem.  
(Example: open ball position)

Remove the handle clip (13) with the help  
of a screwdriver.

Fix the handle by tightening the pre-assembled  
screws (25) inside the handle.

Insert the handle clip (13) into the MF handle again.

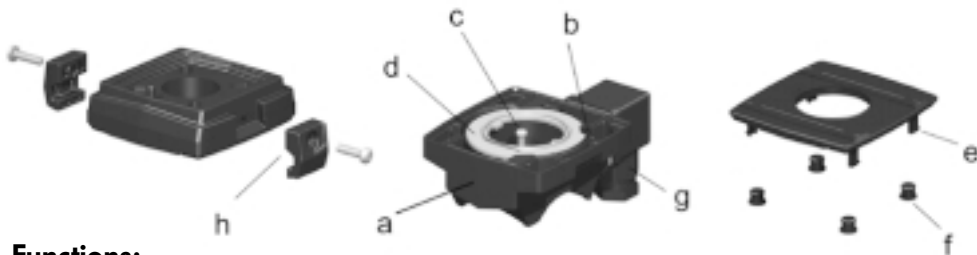


# 7. Technical Features of the Multifunctional Module

Adapter Plate for Actuators

Multifunctional Module

Cover



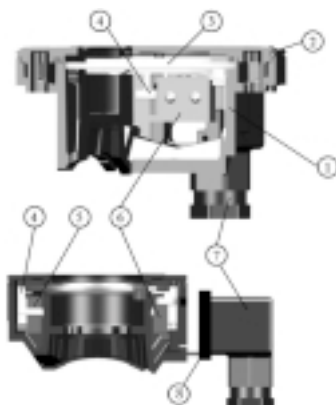
## Functions:

- Interface for mounting actuators
  - Feedback unit in combination with actuators
  - Also for manual valves – with multifunctional handle
  - Mechanical interface for back wall panel mounting
- a) The housing is made completely of polypropylene. It is screwed directly on the valve. The inner contour of the multifunctional module is asymmetrical and fits unmistakably on the respective outer contour of the ball valve housing.
  - b) Selection of 5 potted limit switches.
  - c) The multifunctional module is screwed directly on the ball valve housing with 4 stainless steel Torx screws.
  - d) The switching disc made of ABS warrants the precise switching point.
  - e) Snap-on cover.
  - f) Plugs as an additional safety device to prevent undesired opening of the cover.
  - g) Connector plug 3P+E for fast and easy cable mounting – protection rating: IP65
  - h) Clamps to fasten the adapter plate on the multifunctional module with stainless steel Torx screws.

## Configuration of Multifunctional Modules on Ball Valve 546

Dimension DN 15	Dimension DN 20 and DN 25	Dimension DN 32 and DN 40	Dimension DN 50

## Design of the Multifunctional Module including Switches

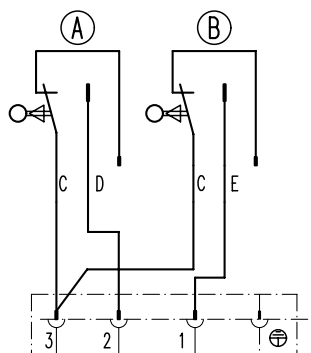


- 1 Housing
- 2 Cover
- 3 Switching disc
- 4 Switch holder
- 5 Microswitch «OPEN»
- 6 Microswitch «CLOSED»
- 7 Connector plug 3P + E per DIN EN 175301-803 (formerly DIN 43650)
- 8 Seal

## General Technical Data of the Multifunctional Module

Protection rating with DIN plug (7): IP 65  
 Protection rating with cable gland: IP 67  
 Ambient temperature:  $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$

Wiring diagram



- A closed
- B open
- C black
- D blue (short cable)
- E blue (long cable)

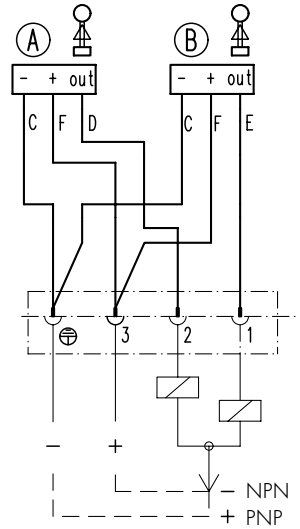
Switch type	Capacity	Code no.	
Microswitch silver nickel (Ag Ni)	250 V ~ 6 A *)	167 482 626	DN 10-15
		167 482 627	DN 20-25
		167 482 628	DN 32-40
		167 482 629	DN 50
Microswitch with gold contact (Au)	4 – 30 V= 1 – 100 mA	167 482 635	DN 10-15
		167 482 636	DN 20-25
		167 482 637	DN 32-40
		167 482 638	DN 50

\* ohm resistive load  
 For inductive load, provide for protective circuit!

Switch type	Capacity	Code no.	
Inductive switch NPN	5 – 30 V 0.1 A	167 482 653	DN 10-15
		167 482 654	DN 20-25
		167 482 655	DN 32-40
		167 482 656	DN 50
Inductive switch PNP	5 – 30 V= 0.1 A	167 482 662	DN 10-15
		167 482 663	DN 20-25
		167 482 664	DN 32-40
		167 482 665	DN 50

- A closed
- B open
- C blue
- D black
- E black
- F brown

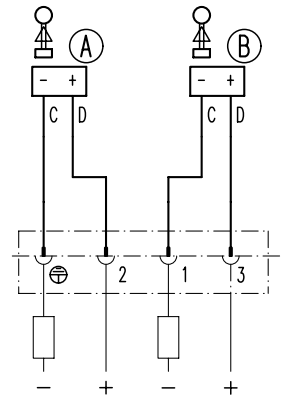
Wiring diagram



Switch type	Capacity	Code no.	
Inductive switch Namur (intrinsically safe) Approvals: ATEX 2023x, CSA EMC per EN 60947-5-2 Norm conformity EN 60947-5-6	8 V =	167 482 671	DN 10-15
		167 482 672	DN 20-25
		167 482 673	DN 32-40
		167 482 674	DN 50

- A closed
- B open
- C blue
- D brown

Wiring diagram



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