

# Actuator set

## Instructions for Use



for the circulation regulation valve model 2281.15 and 2281.5

**Model**  
1013.9

**Year built:**  
from 07/2011

en\_INT

**viega**



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# 1 About these instructions for use

Trade mark rights exist for this document, further information can be found at [www.viega.com/legal-notice](http://www.viega.com/legal-notice).

## 1.1 Target groups

The information in this manual is directed at heating and sanitary professionals and trained personnel.

It is not permitted for individuals without the abovementioned training or qualification to mount, install and, if required, service this product. This restriction does not extend to possible operating instructions.

The installation of Viega products must take place in accordance with the general rules of engineering and the Viega instructions for use.

## 1.2 Labelling of notes

Warning and advisory texts are set aside from the remainder of the text and are labelled with the relevant pictographs.



### **DANGER!**

This symbol warns against possible life-threatening injury.



### **WARNING!**

This symbol warns against possible serious injury.



### **CAUTION!**

This symbol warns against possible injury.



### **NOTICE!**

This symbol warns against possible damage to property.



*Notes give you additional helpful tips.*

### **1.3 About this translated version**

This instruction for use contains important information about the choice of product or system, assembly and commissioning as well as intended use and, if required, maintenance measures. The information about the products, their properties and application technology are based on the current standards in Europe (e. g. EN) and/or in Germany (e. g. DIN/DVGW).

Some passages in the text may refer to technical codes in Europe/Germany. These should serve as recommendations in the absence of corresponding national regulations. The pertinent national laws, standards, regulations and guidelines, as well as other technical guidelines, have priority over German/European guidelines in this manual: The information is not binding for other countries and territories and should, as mentioned, be considered as support.

## 2 Product information

### 2.1 Standards and regulations

The following standards and regulations apply:

	Regulations	Scope / Notice
<b>Areas of use</b>	DIN EN 806 part 1–5	Drinking water installations
	DIN EN 1717	Drinking water installations
	DIN 1988	Drinking water installations
	VDI/DVGW 6023	Drinking water installations
	Drinking Water Ordinance (DWO)	Drinking water installations
	VDE 0100	Electrical installations
<b>Media</b>	Drinking Water Ordinance (DWO)	Drinking water installations
<b>Corrosion</b>	DIN EN 806-2	Outer corrosion protection
	DIN 1988-200	Outer corrosion protection
	DKI information publication i. 160	Outer corrosion protection
<b>Installation position and settings</b>	DVGW Worksheet W 553	
<b>Connection to the building automation</b>	EN 60335	Safety transformer
<b>Leakage test</b>	DIN EN 806–4	
	ZVSHK Data sheet	<i>"Leakage tests of drinking water installations with compressed air, inert gas or water"</i>

## Maintenance

DIN EN 806-5

Operation and maintenance of drinking water installations

## 2.2 Intended use

The actuator serves the purpose of triggering thermostatic circulation regulation valves in hot water installations.



*The use of the model for areas of use and media other than those described must be approved by the Viega Service Center.*

### 2.2.1 Areas of use

Use is possible with the following models:

- 2281.5
- 2281.15

For planning, execution, operation and maintenance of drinking water installations, observe the applicable regulations, see ↗ *Chapter 2.1 „Standards and regulations“ on page 6.*

### 2.2.2 Media

The model is also suitable for the following media, amongst others:

- Drinking water without limitations, see ↗ *Chapter 2.1 „Standards and regulations“ on page 6*
- max. chloride concentration 250 mg/l, see ↗ *Chapter 2.1 „Standards and regulations“ on page 6*

## 2.3 Product description

### 2.3.1 Overview

The model is equipped as follows:

- Actuator 24 V with valve adapter
- Easytop drainage valve
- Temperature sensor (Pt1000)
- Valve insert

## 2.3.2 Threaded connection



*Sealing of the G-threads takes place by pressing the sealing surfaces together. For this reason, no additional sealants (hemp, sealing paste / thread etc.) may be used.*

## 2.3.3 Markings on components

The model is marked as follows:

- Position indicator (valve open or closed)
- Voltage and power rating
- CE Mark

## 2.3.4 Compatible components

The actuator set is compatible with the circulation regulation valves 2281.15 and 2281.5.

Should you have any questions on this subject, please contact the Viega Service Center.

## 2.3.5 Operating mode

### General

The adjusting mechanism of the actuator works with a PTC-heated flexible material element and a pressure spring.

The expansion material element is heated by activating the operating voltage and the integrated spindle is moved. The power created by the movement is transferred to the valve spindle and opens or closes the valve.

When the operating voltage is applied, the valve remains closed for a short while (dead time), then the valve opens evenly due to the spindle movement against the pressure of the pressure spring.

The valve is closed evenly by the closing force of the pressure spring, after the waiting time, by switching off the operating voltage.

The closing force of the pressure spring is coordinated with the closing force of conventional valves and hold the valve closed in a currentless state.



## First open function

The actuator is supplied with "first-open function", that means: Initially, it is minimally currentless open. This allows operation in the building phase, even when the electrical wiring is not yet completed. The first-open function is automatically deactivated as soon as the operating voltage has been applied for longer than 6 minutes.

## 2.3.6 Technical data

Observe the following operating conditions for the installation of the actuator set:

### Actuator

Version	Currentless closed (NC)
Voltage	24 V AC / DC + 20 % up to - 10 % 0 up to 60 Hz
Switch-on current max.	250 mA for max. 2 Min.
Operating current	75 mA
Operating capacity	2 W
Closing and opening times	Approx. 3 minutes.
Displacement	4 mm
Pulling load	100 N +/- 5 %
Media temperature	0 up to 100 °C <sup>1)</sup>
Storage temperature	-25°C up to +65 °C
Ambient temperature	0°C up to +65 °C
Degree of protection / Protection class	IP 54 <sup>2)</sup>
CE conformity in acc. with	EN 60730
Casing / Casing colour	Polyamide / grey
Weight	100 g incl. 1 m connection cable
Connection pipeline / line length	2 x 0.75 mm <sup>2</sup> PVC, grey / 11 m
Overvoltage resistance in acc. with EN 60730-1	—

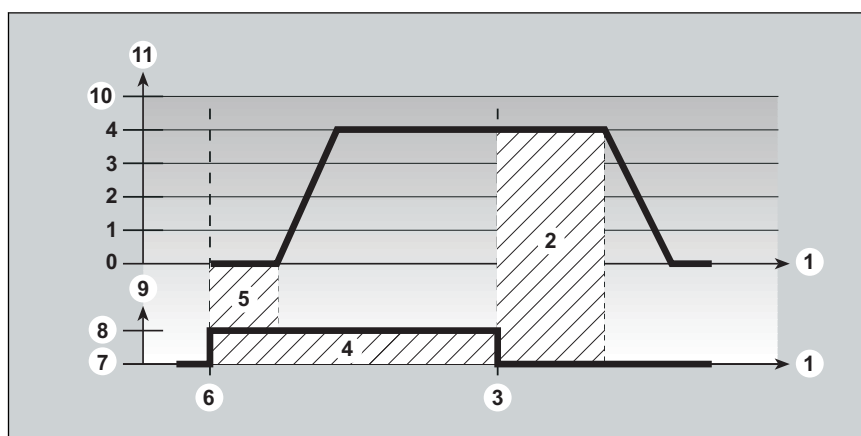
<sup>1)</sup> depending on the adapter also higher

<sup>2)</sup> in all mounting positions

## Temperature sensor

Resistance	3.85 Ω / °C
Connection cable	TF 45
Measuring range	- 20 up to + 105 °C
Measuring element	1 x Pt1000 /2 conductor / Cl. B
Protective pipe material	1.4571
Protective pipe diameter	6.0 mm
Protective pipe length	50 mm
Connection pipeline / line length	2 x 0.34 mm <sup>2</sup> PVC, grey / 2.5 m
Degree of protection	min. IP 54
Delay time	min. 20 s
permitted drop height	with and without packaging 1 m

## Switching behaviour / head line



*Fig. 1: 1013.9 Switching behaviour /Head line of the actuator*

- 1 - time
- 2 - holding time
- 3 - turn-off time
- 4 - voltage switched on
- 5 - dead time
- 6 - turn-on instant
- 7 - off
- 8 - on
- 9 - Voltage
- 10 - maximum
- 11 - hub [mm]

## 2.4 Information for use

### 2.4.1 Corrosion

Overground pipelines and fittings in rooms do not normally require external corrosion protection.

There are exceptions in the following cases:

- Contact with aggressive building materials such as nitrite or materials containing ammonium
- in aggressive surroundings

If external corrosion protection is required, comply with the applicable directives, see ↗ *Chapter 2.1 „Standards and regulations“ on page 6.*

# 3 Handling

## 3.1 Assembly information

### 3.1.1 Mounting instructions

#### Checking system components



*Do not remove the model from the packaging until immediately before use.*

System components may, in some cases, become damaged through transportation and storage.

- Check all parts.
- Replace damaged components.
- Do not repair damaged components.
- Contaminated components may not be installed.

#### During assembly

Observe the following when mounting:

- use suitable tools



#### NOTICE!

Mount the actuator so that it is aligned horizontally or facing up.

If you align the actuator facing down, its useful life may be shorter due to contamination.

### 3.1.2 Connection to the building automation

#### Wiring / connection overview

The regulating electronics / building automation must be supplied on site.

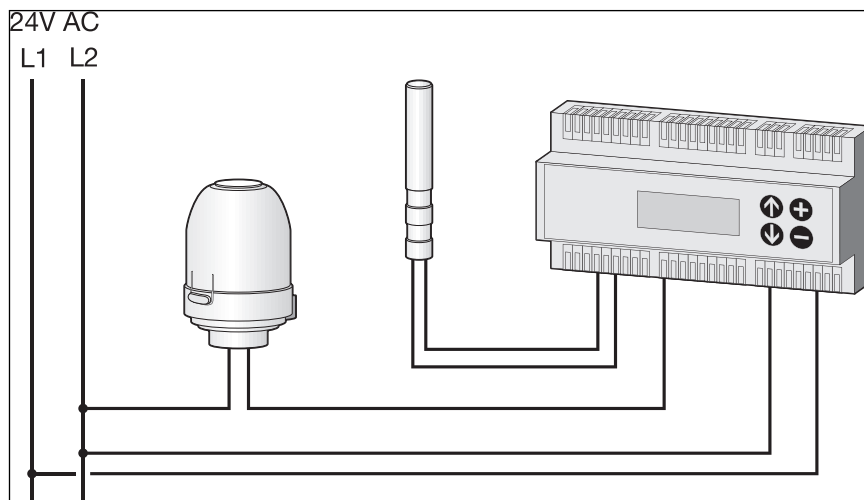


Fig. 2: Wiring

## Pipes

We require the following pipes for installation:

Type of pipe	Name	Cross section
Bell wire	Y(R)	0.8 mm <sup>2</sup>
Light plastic-sheathed cable	NYM	1.5 mm <sup>2</sup>

The following formula is used to calculate the maximum cable length (copper cable) at a nominal voltage of 24 V:

$$L = C \times A / n$$

- L = Length in m
- C = Constant (269 m/mm<sup>2</sup>)
- A = Cross section of the line in mm<sup>2</sup>
- n = Number of actuators

## Transformer (24 V)

A safety transformer in acc. with the applicable directives must be used, see [Chapter 2.1 „Standards and regulations“](#) on page 6.

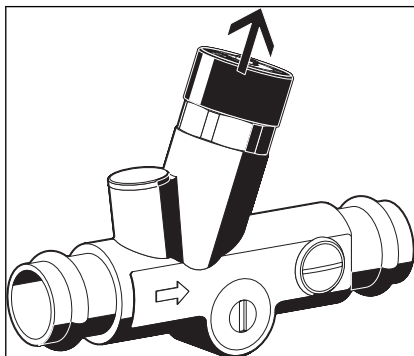
One rule of thumb for dimensioning results from the 6 Watt switch on power of the actuator.

Rule of thumb:  $P_{\text{Transf.}} = 6 \text{ W} \times n$  (n = Number of actuators)

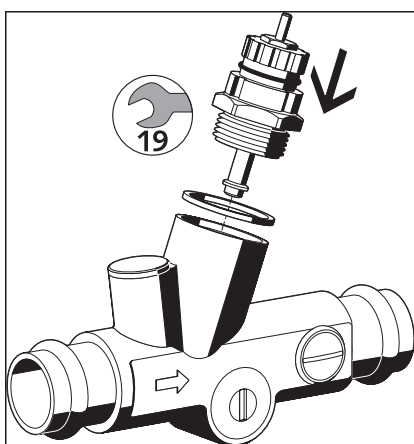
## 3.2 Assembly

### 3.2.1 Mounting the actuator set

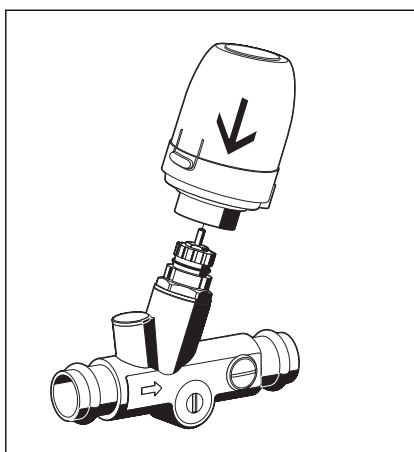
Mounting is demonstrated with the example model 2281.5.



► Remove the regulating unit.



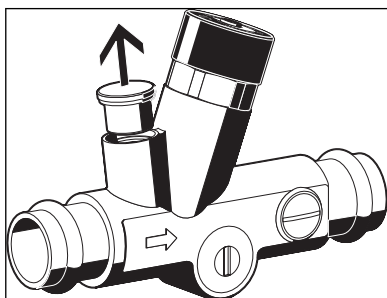
► Screw in the valve insert and tighten with a fork spanner (size 19). Sealing is achieved using an O-Ring.



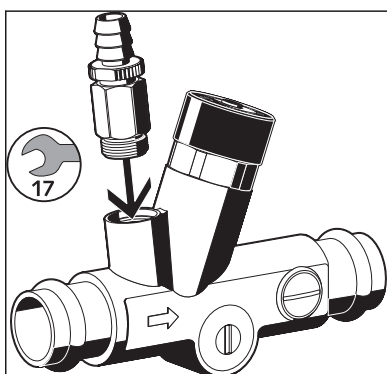
► Screw on the valve adapter and mount the actuator.

► Check for proper function.

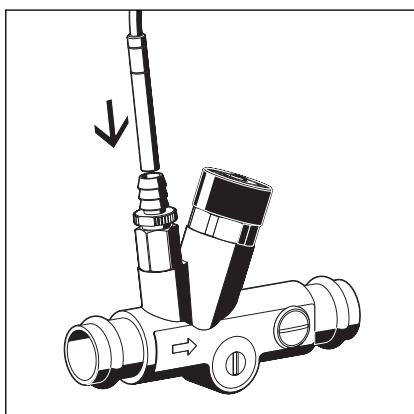
### 3.2.2 Mounting the drainage valve and temperature sensor



- Unscrew the drain plugs with an Allen key (size 5).



- Insert Easytop drainage valve and tighten using a fork spanner (size 17). Sealing is achieved using an O-Ring.



- Insert the temperature sensor into the closed Easytop drainage valve.

### 3.2.3 Leakage test

The installer must perform a leakage test before commissioning.

This test is carried out on a system that is finished but not yet covered.

Observe the applicable regulations, see [Chapter 2.1 „Standards and regulations“ on page 6](#).

Document the result.

### 3.3 Maintenance



#### NOTICE!

Inform your customer or the operator of the drinking water installation that the system has to be maintained on a regular basis.

Observe the applicable regulations for the operation and maintenance of drinking water installations, see ↗ *Chapter 2.1 „Standards and regulations“ on page 6.*

### 3.4 Disposal

Separate the product and packaging materials (e. g. paper, metal, plastic or non-ferrous metals) and dispose of in accordance with valid national legal requirements.