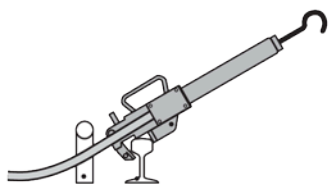
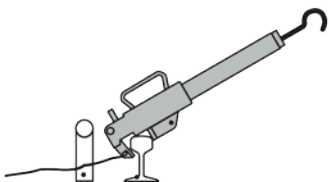


Rail Hook



**VZ 10**



**VZ 20**

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## Foreword

This Installation & Operating Manual will help ensure proper, safe and cost-efficient use of the following equipment models:

- ▶ Pneumatic rail hook VZ 10
- ▶ Mechanical rail hook VZ 20

These types will be called equipment in this document.

This installation & operating manual is intended for anyone commissioning, using, operating, servicing, cleaning or disposing of this equipment and, in particular, for professional after-sales service technicians, qualified personnel and authorised and trained staff.

All of these persons must read and understand the content of this installation & operating manual.

Following the instructions given in this installation & operating manual helps avoiding danger and increases the reliability and service life of the equipment. Please note that in addition to the instructions given in this installation & operating manual you must also observe all locally applicable rules and regulations concerning the prevention of accidents as well as approved safety guidelines for good professional practice.

## Availability

Always keep this Installation & Operating Manual together with the equipment. Make sure that the Installation & Operating Manual is available to the operator.

The Installation & Operating Manual is part of the equipment package. Hand over this Installation & Operating Manual if you sell or pass on the equipment to a third party.

You can find further information, instructions and details of equipment accessories in the respective manufacturer documentation.

These documents are regarded as belonging to this installation & operating manual. Keep these documents together with this installation & operating manual. Hand over this installation & operating manual if you sell or pass on the equipment to a third party.

## Formatting features in the document

Certain text elements of this installation & operating manual feature a specific typographic design. You can easily distinguish the following text elements:

Standard text

*Cross-reference*

- ▶ Listing
  - ▶ Sub-items in listings
- Steps for action.



Here you will find additional useful information and tips serving to assist you in using the equipment to its fullest potential.

## Safety

### Use for the intended purpose

The rail hooks below are mounted under tank cars on quick-release mechanisms:

- ▶ Pneumatic rail hook VZ 10
- ▶ Mechanical rail hook VZ 20

This equipment is used for keeping GESTRA bottom valves on tank cars open.

The equipment may only be used within the admissible pressure and temperature ratings.

Correct use includes compliance with the instructions given in this installation & operating manual, in particular obedience to all safety instructions.

Any other use of the equipment is considered to be improper.

### Basic safety notes

#### Explosion hazard

- ▶ Risk of explosion due to sparks if triggered in a potentially explosive atmosphere. The impact velocity is over 1 m/s, the impact energy is over 500 J.
  - ▶ Bear this in mind when dividing into zones for explosion protection.
- ▶ The proximity switch in type VZ 10 equipment is explosion-proof.
  - ▶ When dividing into zones for explosion protection, please also pay attention to the ATEX classification of the proximity switch.

#### Risk of severe injuries

- ▶ There is a potentially fatal risk of crushing if the tank car rolls away.
  - ▶ Make sure that the tank car is secured so it cannot roll away.
- ▶ Risk of injury due to impact when attaching the equipment under the tank car.
  - ▶ Wear a safety helmet.
  - ▶ Ensure compliance with all locally applicable safety and accident prevention regulations.
- ▶ There is a risk of fractures or bruises when the rail hook is triggered. The impact velocity when triggered is over 1 m/s. The impact energy is over 500 J.
  - ▶ Only enter the area under the tank car to attach or remove the rail hook.
  - ▶ Wear protective clothing or PPE when working on the rail hook.
  - ▶ Ensure compliance with all locally applicable safety and accident prevention regulations.

#### Risk of minor injuries

- ▶ There is a risk of crushing if you reach into moving parts of the equipment.
  - ▶ Never reach into moving parts.
  - ▶ Wear sturdy protective gloves.
- ▶ There is a risk of crushing if the cable breaks.
  - ▶ Do not use the cable if it is damaged.

## Information on property damage or malfunctions

- ▶ The VZ 10 equipment may malfunction if ice forms in the cylinder.
  - ▶ Only use the VZ 10 rail hook if the cylinder is functioning perfectly.
  - ▶ Only use the VZ 10 rail hook with dry instrument air.

## Qualification of personnel

Specialist personnel must be familiar with and have experience in the following areas:

- ▶ Locally applicable explosion & fire protection and occupational health & safety provisions
- ▶ Working on pneumatic equipment (for work on the VZ 10 rail hook)
- ▶ Working with hazardous (hot or pressurised) fluids
- ▶ Lifting and transporting loads
- ▶ All information in this Installation & Operating Manual and other applicable documentation

## Protective gear

The required protective clothing depends on the regulations at the place of work and the fluids in the tank car. Information on suitable protective clothing and PPE can be found in the safety data sheet of the fluid used.

The protective clothing basically consists of the following items:

- ▶ Safety helmet
- ▶ Safety boots
- ▶ Sturdy leather gloves

## Typographic features of warning notes



### **DANGER**

Notes with the heading DANGER warn against imminent dangerous situations that can lead to death or serious injuries.

---



### **WARNING**

Notes with the heading WARNING warn against possibly dangerous situations that could lead to death or serious injuries.

---



### **CAUTION**

Notes with the heading CAUTION warn against dangerous situations that could lead to minor or moderate injuries.

---

## Formatting features for warnings of property damage

### ***Attention!***

This information warns of a situation leading to property damage.

---

## Description

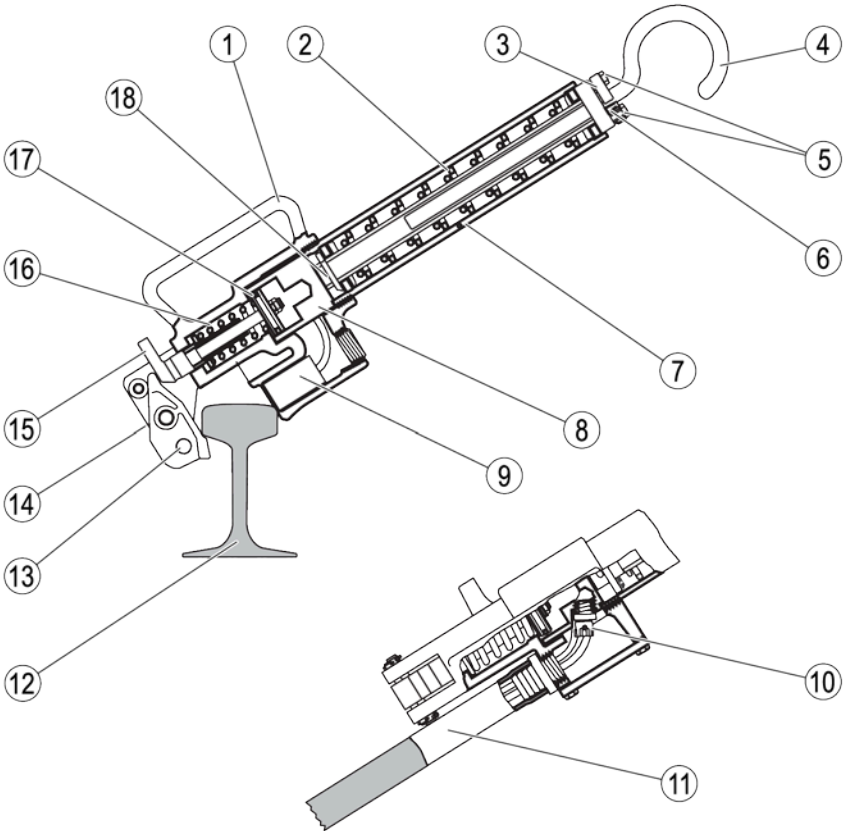
### **Scope of supply**

Delivery includes the rail hook and this Installation & Operating Manual.

The slack rope is not included in delivery.

# Equipment specification

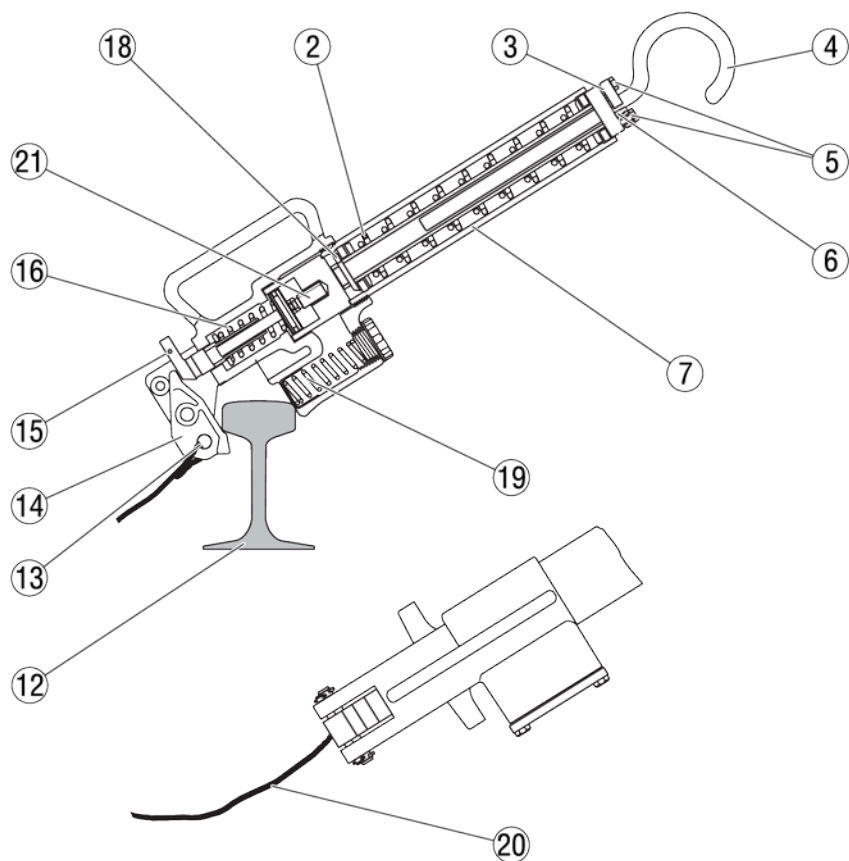
## Pneumatic rail hook VZ 10



No.	Designation
1	Housing
2	Spring for compensating height variation
3	Washer
4	Hook (for attaching the cable)
5	Hexagon screws (M 8 × 20)
6	Ring
7	Tube
8	Cylinder
9	Proximity switch
10	Compressed air hose

No.	Designation
11	Protective hose
12	Rail of railway track
13	Fixing lug for slack rope (slack rope not included in delivery)
14	Nose
15	Push rod
16	Compression spring
17	Quad ring
18	Split pin (4 × 32)

## Rail hook VZ 20



No.	Designation
18	Split pin (4 × 32)
19	Spring
20	Slack rope (not included in delivery)
21	Spacer



This model does not have component numbers 9 to 11, but the other components are identical to the VZ 10 (see previous page).

## Name plate

The following items are indicated on the name plate:

- ▶ Manufacturer
- ▶ Type designation
- ▶ CE marking
- ▶ Date of manufacturing
- ▶ ATEX classification

With type VZ 10 equipment, the admissible air pressure is stated on the rating plate.

## Task and function

The rail hook is used for automatically closing the rapid-action bottom valve (24) of railway tank cars (22) if the tank car rolls away. Together with the rapid-action bottom valve, it forms an internal rapid-closing shutoff mechanism that acts as safety equipment during the carriage of liquefied flammable gases. This safety equipment fulfils the requirements of the RID, section 6.8.3.2.3, for filling and discharge systems for liquefied flammable or toxic gases with a capacity of over 1 m<sup>3</sup>.

The rail hook has a PTFE fire shield. The hook releases in the event of a fire.

The VZ 10 rail hook features a proximity switch that enables automatic remote triggering when connected to an I&C system.

In order to function as safety equipment, the following conditions must be satisfied:

- ▶ The bottom valve of the tank car must be equipped with a cable (25) to DIN EN 12561-3.
- ▶ The rail (12) must conform to DIN EN 13674-1 (e.g. profile 49 E 1).

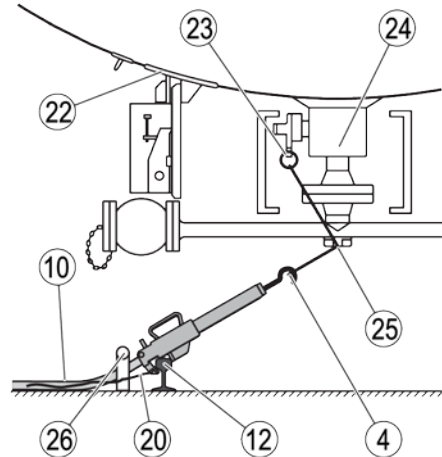
If the rail does not satisfy this condition, as an alternative the equipment may also be attached via a suitable auxiliary device (26).

The rail hook is stretched between the cable (25) and the rail (12) during filling and emptying. It keeps the actuator (23) of the bottom valve (24) in the open position. The cable is attached to the hook (4) of the rail hook.

In the VZ 10, the nose is tensioned by compressed air. In the VZ 20, the nose is tensioned by a spring.

In the event of danger, the I&C system releases the cylinder so that the pneumatic VZ 10 is detached from the rail.

The mechanical VZ 20 is pulled off the rail by pulling the slack rope in the event of danger. The slack rope is not included in delivery.





## Application of European Directives

### ATEX Directive

The equipment has classification:  
CE Ex II 2G Ex h IIC T6 Gb.

For use in potentially explosive atmospheres in zones (surrounding atmosphere to Directive 1999/92/EC) 1 and 2, please read and pay attention to the following information:

The equipment is made of non-sparking material (bronze/brass). When triggered, the equipment can produce sparks mechanically due to impacts with metal or similar. The impact velocity when triggered is over 1 m/s. The impact energy is over 500 J. The plant manufacturer or owner must take this into consideration when dividing into zones.

If used in potentially explosive atmospheres, the plant manufacturer or owner is responsible for discharging or preventing possible static charge.

The ATEX classification of the proximity switch in the VZ 10 pneumatic rail hook is included on the VZ 10 sub-assembly rating plate.

- Read and pay attention to the information in the Installation & Operating Manual of manufacturer Pepperl & Fuchs.

You can find this on the manufacturer's website ([www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)).

## Storing and transporting the equipment

### ***Attention!***

Storing or transporting the equipment incorrectly can damage it.

- Make sure the equipment remains dry and is protected against corrosive atmospheres.
- Please contact the manufacturer if you wish to transport or store the equipment in different conditions.

## Storing the equipment

- Please observe the following items when storing the equipment:
  - ▶ Do not store the equipment for more than 12 months.
  - ▶ The equipment and all components must be protected against jolts and impacts.
  - ▶ Store the equipment only in closed rooms that meet the following environmental conditions:
    - ▶ Air humidity below 50 %, not condensing
    - ▶ Indoor air: clean, salt-free and non-corrosive
    - ▶ Temperature 5–40 °C.
- Make sure that all these requirements are always met when storing the equipment.
- Please contact the manufacturer if you cannot comply with the recommended storage conditions.

## Transporting the equipment

- Meet the requirements for storage also when transporting the equipment.
- For short distances (only a few metres) you can transport the equipment unpacked.
- When transporting the equipment over larger distances use the original packaging.
- If you do not have the original packaging use a box that protects the equipment adequately against corrosion and physical damage.

## Using the equipment



### DANGER

Risk of explosion due to sparks if triggered in a potentially explosive atmosphere!

The impact velocity is over 1 m/s, the impact energy is over 500 J.

- Bear the impact velocity in mind when dividing into zones for explosion protection.
- When dividing into zones for explosion protection, please also pay attention to the ATEX classification of the proximity switch.



### DANGER

Risk of potentially fatal crushing if the tank car rolls away!

- Before commencing work in the vicinity of the tank car, make sure it is secured so it cannot roll away.



### WARNING

Risk of injury due to impact when attaching the equipment under the tank car.

- Wear a safety helmet.
- Ensure compliance with all locally applicable safety and accident prevention regulations.



### WARNING

Risk of fractures or bruises when the rail hook is triggered.

The impact velocity when triggered is over 1 m/s. The impact energy is over 500 J.

- Wear protective clothing or PPE when working on the rail hook.
- Ensure compliance with all locally applicable safety and accident prevention regulations.
- Only enter the area under the tank car to attach or remove the rail hook.

## Preparing for installation

If the rail of the railway track does not have a 49 E1 profile, you cannot attach the rail hook to this rail. In this case, you will need to provide a suitable auxiliary device, with the following features:

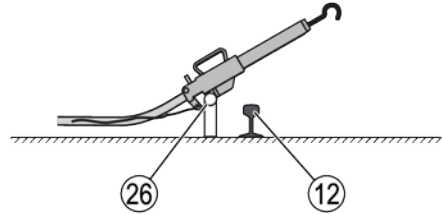
- The auxiliary device must be designed to withstand the rail hook retention force of 1,100 N.
- A tube (26) measuring 69 to 73 mm must be available for fastening the nose of the rail hook.
- The tube must be positioned parallel to the rail (12).



### WARNING

Risk of fractures or bruises if the rail hook slips.

- Ensure compliance with all locally applicable safety and accident prevention regulations.



With the VZ 10 rail hook, you need to take the following steps before attaching it:

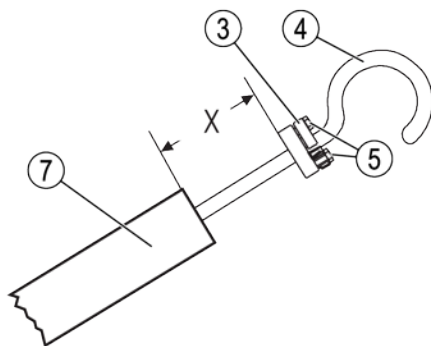
- Adapt the Festo PP-6 compressed air hose to the on-site compressed air supply.
- Connect the proximity switch cable to the on-site emergency stop system.

## Adjusting the length of the rail hook

Make sure that the rail hook has the correct length for the distance between the rail (or auxiliary device) and the tank car. After installation, dimension X between the washer (3) and tube (7) must be approximately 40–50 mm.

To adjust the distance, proceed as follows:

- Measure the distance from the cable lug to the attachment point on the rail or auxiliary device.
- Subtract dimension X from this measured distance. This is the nose - hook dimension to be set.
- Undo the two hexagon screws (5) using a size 13 open-ended spanner.
- Adjust the hook (4) to get the correct dimension.
- Tighten the two hexagon screws (5) to a torque of 4 Nm.



## Tensioning the nose

To tension the nose of the VZ 10, proceed as follows:

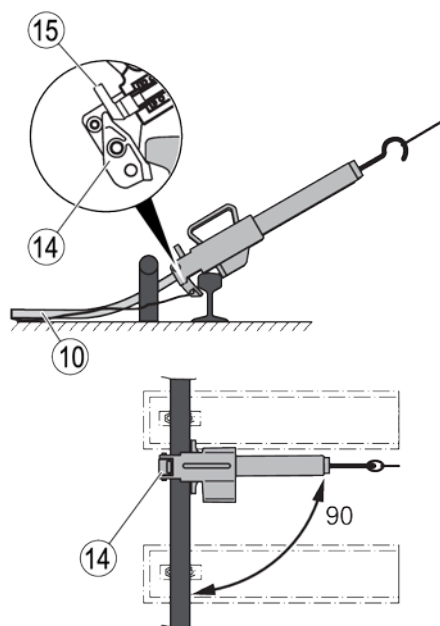
- Using the compressed air hose (10), subject the cylinder to pressure between 4.5 bar and 9 bar.
- Press the push rod (15) back and turn the nose (14) at right angles to the longitudinal axis of the rail hook.

The push rod tensions the nose.

To tension the nose of the VZ 20, proceed as follows:

- Press the push rod (15) back and turn the nose (14) at right angles to the longitudinal axis of the rail hook.

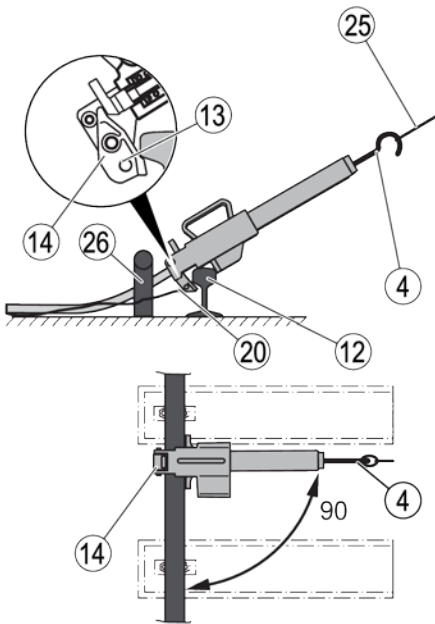
The push rod tensions the nose.



## Installing the rail hook

To install the rail hook, proceed as follows:

- For the VZ 20 rail hook, fasten the slack rope to the nose (14).
- Make sure that the slack rope (20) is in perfect condition and is securely attached in the lug (13).
- Affix the hook (4) to the cable (25).
- Pull the rail hook to the fastening point (12 or 26).
- Align the rail hook so it is at right angles to the rail (12).
- Hook the rail into the fastening.



## Removing the rail hook



### WARNING

Risk of fractures or bruises when the rail hook is triggered.

The impact velocity when triggered is over 1 m/s. The impact energy is over 500 J.

- Wear protective clothing or PPE when working on the rail hook.
  - Ensure compliance with all locally applicable safety and accident prevention regulations.
  - Only enter the area under the tank car to attach or remove the rail hook.
- 
- Remove the rail hook from the rail after loading. If you wish to empty or fill other tank cars, you can keep the VZ 10 rail hook connected to the compressed air supply.
  - If the VZ 10 rail hook will not be used for a longer period, disconnect it from the compressed air supply.

## Troubleshooting

- In the event of equipment malfunction, please contact the manufacturer.

## After operation

### Removing external dirt deposits

- Use fresh water and a cloth to remove dirt and contaminants from the equipment body.

## Maintaining the equipment

The equipment is maintenance-free.

## Servicing the equipment and installing spare parts

GESTRA offers equipment repairs in the event of wear or damage. No spare parts are supplied.

## Putting the equipment out of operation

### Returning the valve

You can return the equipment to your contractual partner.

- Make sure that all harmful substances are removed from the equipment.
- Pay attention to the instructions in section "Transporting the equipment" from page 9.
- Pack the equipment in its original packaging or in suitable transport packaging.

The transport packaging must protect the equipment from damage in the same way as the original packaging.

- Send the completed and signed decontamination declaration with the equipment. The decontamination declaration must be attached to the packaging so that it is accessible from outside.
- Register the return delivery with your contractual partner before returning the equipment.

## Disposing of the equipment



### CAUTION

Environmental damage may be caused by poisonous fluid residues.

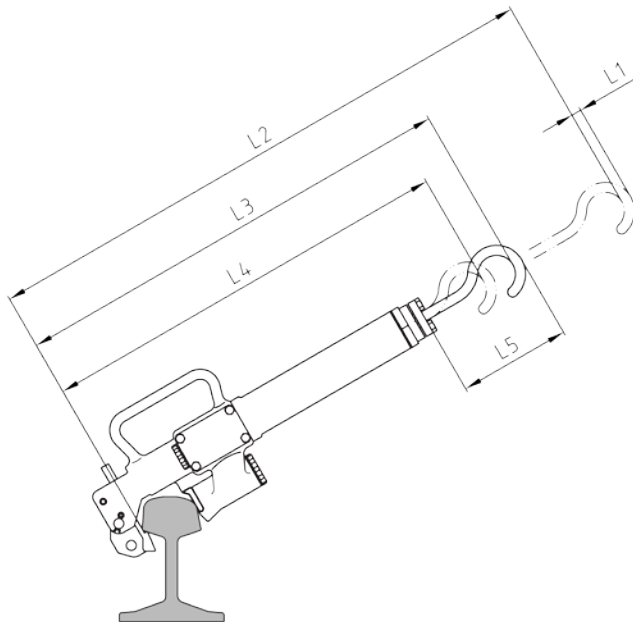
- Before disposing of the equipment make sure that it is clean and free of fluid residues.
- For the disposal of all materials observe the pertinent legal regulations concerning waste disposal.

The equipment is made from the following materials:

Component	VZ 10, VZ 20
Housing	CC333G (2.0975.01)
Push rod	CW614N-M (2.401)
Nose	CC333G (2.0975.01)
Tube	CW614N-M (2.401)
Hook	CW614N-M (2.401)

## Technical data

### Dimensions and weights



Dimension	VZ 10	VZ 20
L1 [mm]	12	12
L2 [mm]	690	690
L3 [mm]	540	540
L4 [mm]	500	500
L5 [mm]	135	135
W [mm]	100	100
Weight [kg]	see table below	5.7

#### Weight of VZ 10, depending on hose length

Hose length [m]	Weight [kg]
6	7.9
10	9.4
15	11.2

## Operating data

Retention force	350–1,100 N
-----------------	-------------

### Compressed air supply of VZ 10

Minimum	4.5 bar
Maximum	9 bar

### Proximity switch (Pepperl & Fuchs) characteristics, VZ 10

Type	NJ 10-30 GK-N	NJ 10-30 GK-SN	NJ 5-30 GK-S1N
Rated voltage [V]	8	8	8.2
Power consumption [mA]			
Active surface not covered	≥ 3	≥ 3	≤ 1
Active surface covered	≤ 1	≤ 1	≥ 3
Admissible ambient temperature [°C]	-25 / +100	-50 / +100	-25 / +100
IP rating	IP66/IP68	IP68	IP68

## Pressure & temperature ratings

You can find the values for your equipment on the rating plate.

## Manufacturer's declaration

For more information on the Conformity Assessment according to European rules refer to our Declaration of Conformity or our Declaration by Manufacturer.

To download the current Declaration of Conformity or Declaration by Manufacturer go to [www.gestra.com/documents](http://www.gestra.com/documents) or contact:

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This declaration is no longer valid if modifications are made to the equipment without consultation with us.



Agencies all over the world: [www.gestra.de](http://www.gestra.de)

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