EN

VCP
Series R03

SPRING-LOADED PRESSURE RELIEF VALVES

ASSEMBLY AND MAIN INSTRUCTIONS FOR USE AND MAINTENANCE

2



Manual No. VAL.VCP.--.M.A5.1017.EN Issue: A5 Latest Update: October 2017
ORIGINAL INSTRUCTIONS IN ENGLISH

WAMGROUP S.p.A.
Via Cavour, 338
41030 Ponte Motta
Cavezzo (MO) - ITALY

☎ + 39 / 0535 / 618111
fax + 39 / 0535 / 618226
e-mail info@wamgroup.com
internet www.wamgroup.com

WAMGROUP®

WAM®

All the products described in this catalogue are manufactured according to **WAMGROUP S.p.A. Quality System procedures**. The Company's Quality System, certified in July 1994 according to International Standards **UNI EN ISO 9002** and extended to the latest release of **UNI EN ISO 9001**, ensures that the entire production process, starting from the processing of the order to the technical service after delivery, is carried out in a controlled manner that guarantees the quality standard of the product.

This publication cancels and replaces any previous edition and revision.
We reserve the right to implement modifications without notice.
This catalogue cannot be reproduced, even partially, without prior written consent by the Manufacturer.

SUMMARY

1.0 GENERAL INFORMATION 1
1.1 Scope of the Manual 1
1.2 Symbols 2
1.3 Glossary and terminology 4
1.4 Manufacturer's data and identification of the valve 5
1.5 Request for assistance 5
1.6 Warranty 5
1.7 Exclusion of responsibility 6
2.0 INFORMATION REGARDING SAFETY 7
2.1 General safety prescriptions 7
2.2 Safety prescriptions for transport and handling 7
2.3 Safety prescriptions for installation 8
2.4 Safety prescriptions for use and operation 8
2.5 Safety prescriptions for maintenance and replacement of components 8
3.0 TECHNICAL INFORMATION 10
3.1 General description of the valve 10
3.2 Main components 10
3.3 Operating principle 11
3.4 Permitted use 11
3.5 Improper use not permitted 12
3.6 Noise level 14
3.7 Environmental operating limits 14
3.8 Overall dimensions and technical features 14
3.9 Safety and information signs 15
3.10 Safety devices 15
4.0 INFORMATION REGARDING HANDLING AND TRANSPORT 16
4.1 Type of packaging 16
4.2 Reception of goods 17
4.3 Lifting and unloading methods 18
5.0 INSTALLATION AND FIXING 19
5.1 Recommendations for installation, maintenance and cleaning 19
5.2 Storage 20
5.3 Supply 20
5.4 Calibration 20
5.5 Positioning the valve 25
5.6 Installation and fixing of the valve 26
5.7 Electrical connection 28
5.8 Inductive proximity switch 29
5.9 Compressed air connection 30
5.10 Inspection 31

6.0 INFORMATION REGARDING USE 32
6.1 Production Start-up 32
6.2 Shuttdown of the valve at the end of the work cycle 32
6.3 Long shutdowns of the valve 33
6.4 Reuse 33
7.0 INFORMATION REGARDING MAINTENANCE 35
7.1 Cleaning the valve 35
7.2 Lubrication 35
8.0 REPLACEMENT OF PARTS 36
8.1 Safety recommendations for replacement 36
8.2 Returning the valve 36
8.3 Dismantling and disposal 36
9.0 INFORMATION REGARDING FAULTS 37
9.1 Trouble-shooting 37
9.2 Check-list in case of fault 37
10.0 TECHNICAL DATA 39
A ATTACHMENTS 40
A1 Nuts and bolts tightening torque Table 40

1.1 Scope of the Manual

This Manual has been prepared by the Manufacturer to provide the operating technical information for installation, operation and maintenance of the valve concerned.

The Manual, which is an integral part of the valve concerned, must be preserved throughout the life of the valve in a known easily accessible place, available for consultation whenever required.

If the Manual is lost, damaged or becomes illegible, contact the Manufacturer for a copy specifying the serial number of the valve.

If the valve concerned changes ownership, the Manual has to be handed over to the new owner as part of the valve supply.

The Manual is meant for specialist technical personnel appointed and authorized by the Manufacturer, owner and installer to act on the valve concerned for which specific technical skills in the sector concerned are necessary (electrical, mechanical, etc.).

The illustrations may differ from the actual structure of the valve concerned but do not interfere with the explanation of the operations.
In case of doubt, contact the Manufacturer for explanations.

The Manufacturer reserves the right to make changes to the Manual without the obligation to provide prior notification, except in case of modifications concerning the safety level.

The technical information included in this Instruction Manual is the property of the Manufacturer and therefore has to be considered as confidential.

It is forbidden to use the Manual for purposes other than those strictly linked to the operation and maintenance of the valve concerned.

This information is provided by the Manufacturer in the original language (English) and can be translated into other languages to satisfy legislative and/or commercial requirements.

1.2 Symbols

To highlight certain parts of the text, for purposes of safety, or to indicate important information, certain symbols are used, the meaning of which is described below.

It is important to comply with and scrupulously follow the information highlighted by the symbols.



Danger - Warning

Indicates situations of serious danger which, if ignored, can be risky for the health and safety of persons.



Caution

Indicates that appropriate behaviour must be adopted to avoid posing risk for the health and safety of persons and avoid causing economic damage.



Important

Indicates particularly important technical information which must not be ignored.

List of safety and information symbols

Symbol representation	Symbol description
	**Danger sign:** indicates danger of electric shock caused by the presence of powered components inside the junction box or control panel.
	**Obligation:** read this Manual before carrying out any action on the valve concerned.
	**Forbidden:** indicates that it is forbidden to lubricate or adjust moving parts.
	**Danger:** indicates danger of serious injury to limbs if the internal moving parts of the valve are exposed. Before carrying out inspection operations, isolate the valve concerned from the electrical energy sources.
	**Information:** indicates the direction of rotation of the electric motor.
	**Obligation:** indicates the hooking points for lifting of the valve concerned.
	**Forbidden:** indicates it is forbidden to introduce hands into the valve.

1.3 Glossary and terminology

Operator: person appropriately trained and authorized by the Production Manager for setting up the valve concerned and carrying out routine maintenance.

Installer: organization with specialized technicians and appropriate equipment for carrying out risk-free installation and extraordinary maintenance.

Specialist technician: person responsible for and authorized by the Manufacturer, owner or installer to act on the valve; must have specific technical skills depending on the sector concerned (electrical, mechanical etc.). The specialist technician, in addition to being familiar with the working of the valve concerned, must be familiar with the working of the plant or equipment on which the valve concerned is installed.

Routine maintenance: includes all the actions necessary to keep the valve in good working conditions, to ensure greater operating durability and to keep the safety requisites constant.

Extraordinary maintenance: all the actions meant to keep the valve in perfect working order.

Setting in safety conditions: all the precautions the authorized personnel must adopt before acting on the valve concerned.

The precautions are listed below.

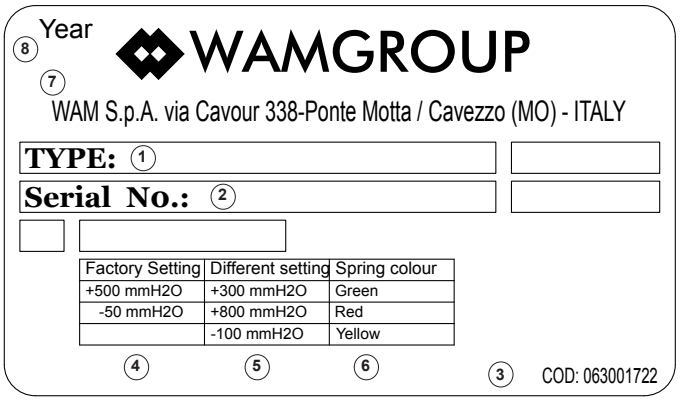
- **Ensure that the valve concerned is disconnected from all the mains and appropriate devices are used to prevent these from being reconnected accidentally.**
- **Ensure that all the moving parts of the valve have come to a complete stop.**
- **Ensure the temperature of the valve concerned is such that it does not burn.**
- **Provide appropriate lighting in the area around the operations.**
- **Wait for the material to be handled inside the valve concerned to settle down completely.**

1.4 Manufacturer's data and identification of the valve

Important

Do not change the data on the identification plate.
Keep the ID plates clean, intact and legible as regards the data they contain.
If the ID plate is damaged or is no longer legible (even just one informative element on it) contact the Manufacturer for a new ID plate and replace it.

The ID plates shown identify the valve concerned and its main components.
The plates show the reference necessary for operating safety.



1) Type of valve
2) Serial No.
3) Code
4) Factory setting
5) Standard setting
6) Characteristic colours of springs for standard settings
7) Manufacturer's name and address
8) Year of manufacture

ID plate is placed on the Excess Pressure Lid, under the Weather Protection Cover.

1.5 Request for assistance

For all technical assistance, contact the Manufacturer's service network.
For all requests, provide the valve identification data, the type of problem encountered and all other information which could be useful for identifying the problem.

1.6 Warranty

The conditions for validity and applicability of the warranty are specified in the sales contract.

1.7 Exclusion of responsibility

The valve is delivered according to the specifications indicated by the Buyer in the order and the conditions valid at the time of purchase.

The Manufacturer shall not accept responsibility for safety of persons or objects and operation failure of the valve if the loading/unloading operations from trucks, transport, positioning at the site, use, repairs, maintenance etc. have not been carried out in compliance with the warnings described in this Manual, and in accordance with the national legislation in force.

Likewise, the Manufacturer shall not accept any responsibility if the valve concerned is used:
- improperly;
- by unauthorized persons and/or persons not sufficiently trained for installation, operation and maintenance;
- with modifications made to the original configuration without the Manufacturer's permission;
- with spare parts that are not original or are not specific for the model;
- without maintenance;
- non-pursuant to the regulatory standards and national or local legislation on the matter of occupational safety;
- non-pursuant to the recommendations in this Manual or on the warning and danger plates applied on the valve.

2.1 General safety prescriptions

Read the Instruction Manual carefully and strictly follow the instructions it includes, especially those regarding safety.

Most accidents at the workplace are caused by negligence, failure to follow the most elementary safety regulations and incorrect or improper use of tools and equipment.

Accidents can be prevented and avoided by taking due care, using suitable equipment and adopting adequate preventive measures.

Apply and comply with the standards in force regarding workplace hygiene and safety.

The personnel trained for and authorized for the operations has to have the psychological/physical requisites, experience in the sector concerned and the necessary technical skills for carrying out the operations assigned to them.

All workers involved in any kind of operation must be prepared, trained and informed as regards the risks and the behaviour to be adopted.

Pay attention to the meaning of the notices applied on the valve, keep these legible and respect the information indicated.

Use instruments, equipment and tools that have been approved and are intrinsically safe, and cannot alter the safety level of the operations or damage the valve during installation, use and maintenance.

Modifications to the valve components should not be made for any reason whatsoever, without the Manufacturer's permission.

2.2 Safety prescriptions for transport and handling

Carry out all the handling and transport operations in accordance with the procedures and instructions shown on the packaging and in the Manual supplied.

All the operations must be performed by qualified authorized personnel.

Those authorized to carry out the handling operations must have the capabilities and experience required to adopt all the necessary measures to guarantee one's safety and the safety of persons directly involved in the operations.

The chosen features of the lifting and handling means (crane, bridge crane, forklift truck etc.) must take into account the weight to be handled, the dimensions and the gripping points.

During lifting use only accessories such as eyebolts, hooks, shackles, spring hooks, belts, slings, chains, ropes etc., that have been certified and are suitable for the weight to be lifted.

During handling respect the prescriptions applicable for handling loads.

Keep the position of the valve concerned and the loose components horizontal, keep the load low and make all the necessary movements gently.

Avoid sudden manoeuvres, dangerous oscillations and rotations, accompanying the movements manually and place the load gently on the ground.

2.3 Safety prescriptions for installation

Before starting with installation, a "Safety Plan" must be implemented to safeguard the personnel directly involved and those who carry out operations in the surrounding area.

All the laws must be strictly applied, especially those concerning workplace safety.

Before proceeding with installation operations, mark off the work area to prevent access by unauthorized persons.

The electrical connections must be made in compliance with the standards and laws in force.

The person in charge of making the electrical connections has to ensure that the required standards and laws are respected before testing.

2.4 Safety prescriptions for use and operation

Do not tamper with the valve concerned by using any kind of device to obtain performances different from those designed.
All unauthorized changes can affect the health of people and the integrity of the valve.

The operators have to exclusively wear protective clothing and have to be equipped with appropriate individual protection devices for carrying out the operations and as required by the safety and work accident prevention standards.

Before use, ensure that all the safety devices are installed and that they are working properly.

During operations, prevent access to the work area by unauthorized persons.

Remove all obstacles or sources of danger from the work area.

It is strictly forbidden placing any improper load on the valve.

2.5 Safety prescriptions for maintenance and replacement of components



Danger - Warning

Before carrying out any operation on the valve concerned, ensure it is switched off and disconnected from all mains and use suitable devices to prevent the possibility of the power sources being activated accidentally.

Maintain the valve concerned in the conditions of utmost efficiency compliant with the maintenance plan provided by the Manufacturer.

Good maintenance apart from preserving the functional features and essential safety features over time, will also allow extending the working life of the valve concerned and achieving the best possible performance.

Strictly follow the procedures indicated in the Manual, especially those concerning safety.

Ensure that all the safety devices are active and working properly.
Mark off the work area in such a manner as to prevent the access of unauthorized persons.

Replace the worn and damaged components exclusively with original spare parts, whose safety, reliability and interchangeability have been undoubtedly established.

Apart from invalidation of the warranty, the Manufacturer declines all responsibility for damage to objects and harm to persons deriving from the use of non-original spare parts or due to modifications made during repairs without express written authorization.

Use the oil and lubricants recommended by the Manufacturer.

Do not dump polluting material (oil, grease, paint, plastic etc.) in the environment, but carry out waste separation disposal depending on the chemical composition of the various products in compliance with the legislation in force.

On completion of maintenance or replacement operations, before resuming production, check that no foreign bodies (rags, tools etc.) have been left inside the valve concerned.

3.1 General description of the valve

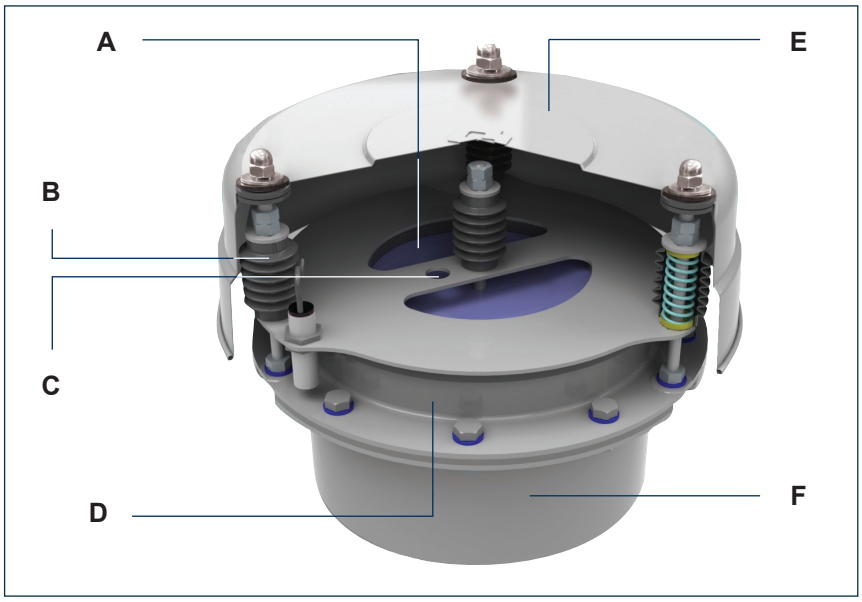
VCP Pressure Relief Valves consist of a cylindrical casing with a bottom flange to be connected with a spigot welded on the silo roof, a disc shape inner steel lid for negative pressure operation held in position by a central spring rod, an outside steel ring for excess pressure kept in position by three spring rods, gaskets, and a weather protection cover.

In the VCP Pressure Relief Valve, helical springs keep the valve lids closed when the pressure value remains within the preset limits. The three outside spring rods keep the external ring-shaped lid firmly closed as long as the force generated by the pressure inside the silo does not overcome the spring force. Once the pressure exceeds the preset value the lid is pushed up and the pressure can escape. The smaller lid covers the central circular opening of the external lid from below. It is held in the middle by a single spring rod and is pressed onto the external lid by the normal air pressure inside the silo. In the event of suction pressure, the spring is compressed and allows the lid to drop. The air entering the silo from outside ensures rapid pressure balance and pushes the central lid back up into the “closed” position

Important

The terms “equipment” and “valve” used in this manual refer to the same machine.
As components meant for installation in a plant, the valves - not fully provided with safety means - have to be considered “partly completed machinery”. Therefore, they do not bear an EC marking.
It is forbidden to start the valve unless the machine/plant in which it is to be installed has been declared compliant with the Directive 2006/42/EC and further modifications.

3.2 Main components



A) Negative pressure Lid
B) Adjustment kit (Springs)
C) Equipped for inductive proximity sensors
D) Excess pressure lid
E) Weather protection cove
F) Weld-on spigot

3.3 Operating principle

The Spring-Loaded Pressure Relief Valve are used in all plants where it is required to control excess pressures or negative pressures, if any, that may be created inside the containers, thereby preventing their breakage or deformation.

The VCP valve is not controlled by an external device.

It starts working automatically whenever there is a pressure imbalance within the silo due to filling or emptying of the silo by means of any system. (UNI ISO 8456 5.1.1.4.2 and 5.1.1.4.3).

Size 375 complies to HSE (0- 9540853-0-2).

NOTE: Appropriate maintenance as described in the relevant section of this Manual will considerably increase the life duration of the valve. This is particularly important when the material handled tends to harden or get compacted due to shut downs for a certain period of time.

3.4 Permitted use

These valves are specially designed for use with powder material and granules. The Manufacturer shall not be liable for any other use.

The valve is designed and manufactured so as to avoid abnormal overheating during operation. The valve must be installed with enough space around it to allow assembly/disassembly, cleaning and maintenance operations.
If the valve is to be used with very hot materials, such that the surface temperature exceeds 60°, the installer must provide for insulating of the valve or installing mechanical barriers to prevent access to very hot parts; there have to also be applied on the valve the necessary warning signs or pictograms that indicate these risks.

The VCP valve has the following features:
- The valve body can withstand an overpressure P=1bar (10000 mm H_20, 100Kpa)
- The paint coating of the valve disc (if present) is < 200 micron thick.
- The valve body is provided with a flange and it can be connected directly to the silo.
- However, a spigot is provided to be welded to the silo, where the valve will then get bolted.

Once assembled, the valve ensures sealing against dust.

The use of valves in the presence of dust with features more severe to what previously indicated or in areas with different classification, is directly and exclusively under the liability of the user.

The VCP Pressure relief valve food version (model GF), compliant to EC 1935/2004, are suitable for application with E simulant, max. temperature of 80 °C and 3 days constant in-contact time.

3.5 Improper use not permitted

Danger - Warning

Uses not permitted: the valve must be used only for the specific purpose envisaged by the Manufacturer.

Specifically:
- do not use the valves if they have not been installed correctly in accordance with the standards in force.
- do not use the valves if the gaskets are not intact.
- do not use the valve as a support even if it is not in operation. In addition to falling, there is risk of damage to the valve.

The plant installer/installation technician is responsible for providing and installing all the safety devices to avoid damage to objects or persons in case of breakage and falling of pieces.

WARNINGS

1) The Manufacturer shall not accept liabilities related to the safety of the personnel or damages to objects or valve failure unless if the operations involving loading/unloading from trucks, transport, positioning at the site, use, repairs, maintenance, etc. have be carried out in compliance with the warnings described in this Manual. Likewise, the Manufacturer shall not accept any responsibility if the valve is used:
- improperly;
- by unauthorized persons or those not suitable trained for the job;
- with modifications to the original configuration;
- with spare parts that are not original or are not specific for the model;
- non conforming to the standard and legislation currently in force;
- not conforming to the recommendations in this Manual.

2) Before carrying out any operation, the user must make sure the work area is clear of obstacles (persons or machines) which represent potential sources of danger.

3) Operations involving lifting, transport, installation at the site, commissioning, checking the stability and working, routine and extraordinary maintenance, etc. must be performed by qualified, authorized personnel who must operate in accordance with the indications given in this Manual and in compliance with the safety regulations in force.

4) When installing the valve, it must be connected to the earth wire.

5) It is forbidden to carry out maintenance, repairs or modifications while the valve is running. Before carrying out any operation, disconnect all the electrical and compressed air supplies that may be connected directly or indirectly to the valve.

6) Before installation of the VCP valve, the plant technician/installer must check the pressure and negative pressure for which the VCP valve has been calibrated (values indicated on the rating plate) to make sure these suit the limits tolerated by the container on which the valve is to be applied.

7) Installation of the VCP valve by the installer/plant technician must be done according to the indications given in this Manual. The installer/plant technician must carry out the functional check as well as the adjustment and checking of the correct positioning.

8) Disassembly/assembly operations, if any, of the valve are only performed for maintenance and/or cleaning and they must be carried out only by authorized persons qualified for such operations: the indications necessary for disassembly of some parts of the valve are enclosed to the User manual.

9) Every time the calibrated pressure value is exceeded, the valve will open and release an air-dust mixture (a dust cloud) to the outside, but only during the activation phase due to overpressure. The VCP valve is suitable for use on pressurized or vacuum containers not subjected to special testing or legislation.
The only function of the valve is to safeguard containers, filters and other equipmets from overpressures or negative pressure outside the tolerance limits.
Specific type of valves are required to safeguard the operator or the environment impact.

10) Make sure the material handled inside the container is not hazardous: according to standard UNI-EN 626-1 § 3.2, any chemical or biological agent that endangers the health is classified as being a hazardous substance, because:
- highly toxic;
- toxic;
- harmful;
- corrosive;
- irritant;
- sensitizing;
- carcinogenic;
- mutagens;
- teratogenic;
- pathogens;
- asphyxiating.

The user/plant technician must provide the necessary measures while using the VCP with hazardous substances to reduce atmospheric emissions in accordance with standard UNI-EN 626-1 Appendix A.2. This situation occurs rarely; however, the installer/plant technician must delimit an area around which personnel is not allowed during pressurized loading of the silo.

11) This Manual requires setting the entire plant in safety condition before acting on the VCP valve.

NOTE: Remember that, to avoid or reduce futile activation of the valve:
- The permitted pressures must be followed during silos loading phase. The recommended pressure values must stay lower than 1.5 bar, according to the standards in force.
- The valve maintenance shall be carried out as indicated in the User Manual.
- Install properly sized filters.
- The filters must be submitted to maintenance according to the indications given by the manufacturer.
- The VCP valve must be installed at the top of the silo.

For assembly, maintenance and cleaning, the operator/maintenance personnel must use suitable means, for example: overhead work platforms, fall preventing devices for personal protection, etc., meant to carry out the operations required in complete safety.

The VCP valves are not suitable for applications with liquids or fluid different from atmospheric air.

3.6 Noise level

The only source of noise on the valve is due to the air that passes through during operation.

The VCP valve is usually installed on the top of silos, i.e. in places where exposure of operators is limited. During maintenance, the plant must remain stationary, so there is no noise from the valve. Because of the limited frequency (occasional) of valve operation and the distance of the operators, risks due to noise are excluded.

Danger - Warning

Depending on the installation site, the installer must adopt suitable systems (barriers, etc.), if necessary, to maintain the noise levels within the legally permitted limits.

3.7 Environmental operating limits

Unless otherwise specified, the valve concerned may be used only within the limits indicated.

- Altitude: less than 1,000 m at sea level
- Environmental temperature: between - 20 °C and + 40 °C
- Cold climates: with temperature less than 5 °C use oil and lubricants suitable to the operating temperature.

3.8 Overall dimensions and technical features

For the exact identification of the valve concerned, see the identification plate.

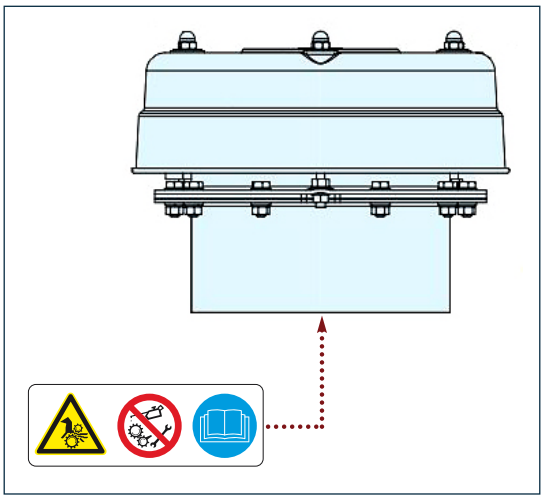
The shipping document shows the diameter of the Spring-Loaded Pressure Relief in addition to the serial number and identification codes.

Information regarding the technical features of the VCP Spring-Loaded Pressure Reliefs, such as diameter and seal and disc characteristics is given in Chapter 10.

3.9 Safety and information signs

Danger - Warning

Follow the signs on the plates.
The plates have to be readable; if they are not, clean them, replace the damaged ones and place them in their original position.



NB: See page 2, **1.2 Symbols**

3.10 Safety devices

The access to the internal parts of the valve is forbidden during operation.

Extraordinary access is provided for removing foreign bodies and material deposits from inside the valve or for extraordinary maintenance.

For accident prevention it is essential to keep the valve out of personnel reach during operation. To this purpose, the customer has to provide suitable safety devices such as grids, as well as protective inlet and outlet joints (either robust flexible sleeves or rigid pipe unions). However, the installer has to avoid that, even inadvertently, a person remains harmed (by employing suitable hopper, safety grilles,...).

When using movable safety devices, provide protection limit switches, which stop the valve instantaneously if the protection is opened or removed. Restarting of the valve must only be possible when the protection is effective again (according to EN 1088).

4.1 Type of packaging

The type of packaging is selected according to the type of valve supplied, the transport means used, the quantity of goods shipped and the destination.

To facilitate shipment, the valves may be divided into separate packages that are suitably protected. Nuts and bolts and gaskets necessary for the correct assembly are not included and supplied together with the valves.

The packages can be loaded separately on the vehicle or fixed to a pallet, protected properly, or inside a container for shipment to a far destination or for sea or air transportation.

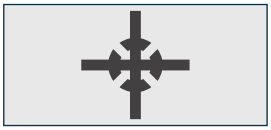
The signs for safe lifting and handling are shown on all the packages.

The list bellow provides the description and symbols envisaged on the packaging.

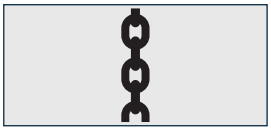
A) Fragile: indicates that the package must be handled and lifted carefully to avoid damage.



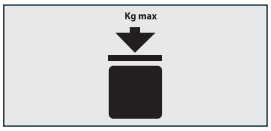
B) Centre of gravity: indicates the position of the centre of gravity of the package.



C) Harness: indicates the correct position of the harness for lifting the package.



D) Stacking limit: indicates the maximum stacking load of the packages.

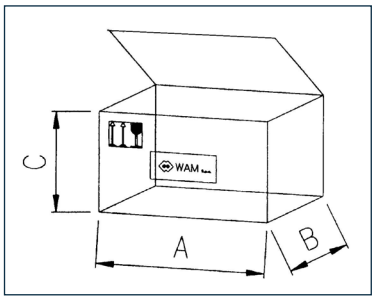


E) Weight: indicates the maximum weight of the package.



The packaging material has to be disposed off or recycled in compliance with the standards in force. The operation is in charge of the customer.

NOTE: The data given do not include the weight of a combined package (pallet or other).



Packaging - Dimensions

VCP type	A	B	C	kg
2731C	400	400	340	9.5
2732C	400	400	340	9.5
3751C	545	545	375	20
3752C	545	545	375	20
Single packaging included				

* *Weld-on spigot for connection to silo included*

dimensions in mm

If parts made of plastic are present inside the package, do not burn these as they are contaminants.

The pallet, like all wooden parts, can be reused, but cannot be returned.

NOTE: The installer is responsible for disposal of the packing material in accordance with the legislation in force regarding the matter.

The valves for food applications (model GF) with the related instructions for cleaning and sanitiziation, shall be provided individually packed in plastic bags inside the cardboard box.

4.2 Reception of goods

On receiving the goods, ensure that the type and quantity correspond to the data present on the acknowledgement of order.

Possible damage has to be immediately communicated in writing in the space provided to this purpose in the waybill.

The carrier is obliged to accept the complaint and leave the Customer a copy of the waybill.

If the supply is “free destination” a copy of the waybill and of the complaint shall be sent to the Manufacturer or to the forwarder.

If the damages are not claimed immediately on receipt of the goods, your request for compensation may not be accepted.

4.3 Lifting and unloading methods



Danger - Warning

Carry out the lifting and handling operations according to the information indicated on the valve and in the Manufacturer's Operation Manual.
The person authorized for unloading operations has to make sure all the necessary measures are adopted to ensure his or her safety and the safety of other persons directly involved.
Use means and accessories (ropes, hooks, shackles etc.) suitable for the load to be lifted.
Pay attention in the lifting phase to balance the load to avoid uncontrolled movements which could cause work injuries to persons.
Do not place other weights on the packagings.
Do not drag or push the equipment as this will damage it.
Before lifting and handling the load, read the relevant information indicated in the "Information regarding safety" Chapter.

Harness the packages according to the indications and symbols applied on them.

Unload the packages from the means of transport and place them on a flat surface which can ensure the stability.

Avoid damage to goods during unloading and handling. Always handle goods with care.

5.1 Recommendations for installation, maintenance and cleaning

Danger - Warning

The installation operations have to be carried out by a technician specialised in such activities
Provide appropriate safety measures and use suitable equipment to prevent risk of work accident to the persons involved in the operations and to those nearby.
Harness and handle the valve concerned as described and shown in the "Unloading and lifting method" paragraph.

Before starting installation, define a safety plan which complies with the legislation in force regarding workplace safety.

The specialist technician, authorized by the installer or owner, has to evaluate whether the area has been prepared properly and whether the necessary installation equipment is available (crane, etc.).

Clean the coupling surfaces thoroughly.

Setting in safety conditions
Before carrying out any operation on the valve, make sure it is set in safety condition.

Subsequently the following operations will be indicated as "setting the valve in safety condition":
- Make sure the valve and inductive sensors, if any, are disconnected from all the power supplies (if present).
- Wait for the inner and outer temperature of the valve to reach a value not dangerous to the touch.
- Make sure the area around the valve is lighted properly.
- Wait for the powder inside the valve to settle down completely.
- Before opening the valve or carrying out any action, carefully wipe the layers of dust deposited on it.

For any operation to be performed on the valve (maintenance and cleaning), the operators must use the special personal protection devices (PPD) meant for the purpose.

- Antistatic safety footwear (certified).
- Antistatic protective clothing (certified).
- Hard hats
- Antistatic cut-proof gloves.
- Protective masks
- Safety goggles (certified)

In addition, it is necessary to use all the protection devices envisaged by the safety sheet of the material handled.

NOTE: Do not handle in any manner the valve during operation of the plant (filling or emptying the silos). Do not insert your limbs inside the VCP valve; operate on the valve only when silo filling/emptying is not in progress.

If the filling/emptying operation is controlled by a main panel, this must be provided with a safety key against accidental start-up; the key must be kept by the maintenance operator in charge.

5.2 Storage

Storage prior to installation

- Avoid damp and salty atmospheres as possible.
- Position the valve on wooden platforms, or protected from unfavorable weather conditions (do not stack).
- Do not store the valve in the open or in areas where there are vapours or substances not compatible with the material used to manufacture the valve (not even slightly corrosive substances).
- Avoid storage below -20°C to maintain the features of the seals.

The valves in the food configuration (model GF) must only be stored indoor.

5.3 Supply

All valves have been preassembled and tested at the factory.

5.4 Calibration

No wrong selection of the valve type is possible, since the VCP is only available with the factory setting (overpressure 500 mm H_2O, negative pressure – 50 mm H_2O, grey coloured spring). (VDI 3673 - DIN 4119)

In any case, the user must ensure the pressure setting made by the VCP valve Manufacturer matches the maximum pressure tolerated by the silo.

Otherwise, the user will have to modify the setting and so that it suits the maximum admitted pressure for the concerned case, using the proper springs kits according to the Tables and the procedures given below. In any case, the manufacturer shall not be responsible for any faults or damage caused by incorrect use or incorrect choice of the valve type.

Installation of the springs kit allows bringing the valve switch pressure value within the activation range, i.e. between 200 mm H_2O and 999 mm H_2O for overpressure and between 30 mm H_2O and 130 mm H_2O for negative pressure.

In order to preserve the container (silo, hopper, etc..) the manufacturer recommends operation within the maximum setting threshold of 500 mm H_2O in overpressure and 50 mm H_2O in negative pressure.

NOTE: The overpressure or negative pressure values indicated on the rating plate follow the construction tolerances; it is therefore right to expect a tolerance on the value up to a maximum percentage of 30% of the given values (DIN 2095). Upon request, the manufacturer can provide the certificate of calibration of the VCPX valve.

PRESSURE SETTING **273**			
VCP2731C - VCP2732C			
Excess Pressure		**Negative pressure**	
Spring colour	**mm H_2O**	**Spring colour**	**mm H_2O**
Green	300 ± 100	STD Grey	50 ± 20
STD Grey	500 ± 100	Yellow	100 ± 30
Red	800 ± 200		

PRESSURE SETTING **375**			
VCP3751C - VCP3752C			
Excess Pressure		**Negative pressure**	
Spring colour	**mm H_2O**	**Spring colour**	**mm H_2O**
Green	300 ± 100	STD Grey	50 ± 15
STD Grey	500 ± 100	Yellow	100 ± 30
Red	800 ± 200		

NOTA: Springs used with tolerance in accordance with DIN 2095.

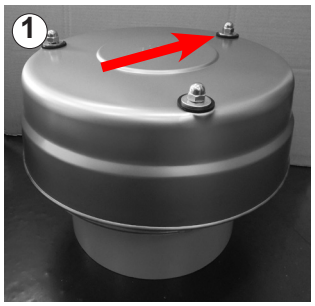
EXCESS PRESSURE

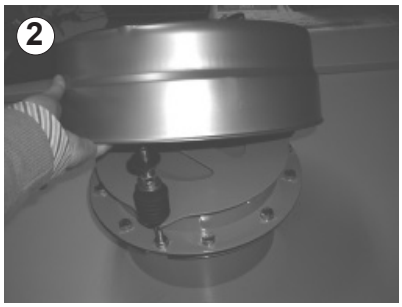
The package includes:

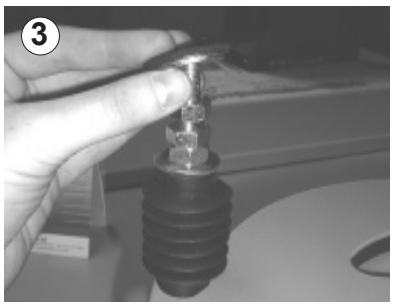
A) Three springs which colours identify excess pressure to allow setting according to the following Table:

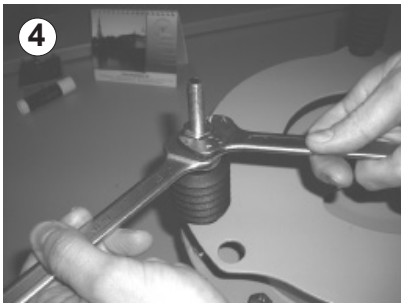
Colour	Pressure (mm H_20)
Green	300 ± 100
Red	800 ± 200
Yellow	-100 ± 30

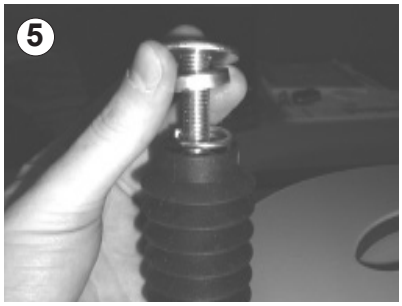
B) Assembly instructions.

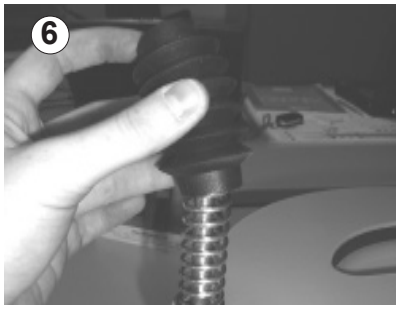


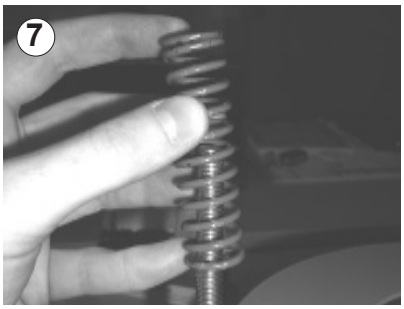




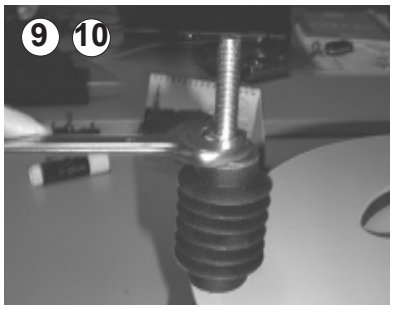














1) Remove the cap nuts and the three rubber gaskets on the upper part of the valve.

2) Remove the cap.

3) Remove the washers and rubber gaskets from the upper part of the three regulation units. Then unscrew the three nuts holding them in place.

4) For each regulation unit, use two adjustable wrenches to slacken and completely unscrew the two nuts that block the overpressure spring.

5) Remove the flat washers and the Belleville washers from the upper part of each regulation unit.

6) Remove the three bellows.

7) Replace the grey standard springs installed by the manufacturer with the coloured springs present in the kit, checking the external tag to make sure the colour of the spring corresponds to the selected setting.

8) Reposition the bellows, Belleville washers and flat washers on top of the springs, in that order.

9) Adjust each overpressure spring by screwing a nut UP TO THE END OF THE THREADING on each regulation unit. Then screw a lock nut on each regulation unit, tightening it by means of two adjustable wrenches.

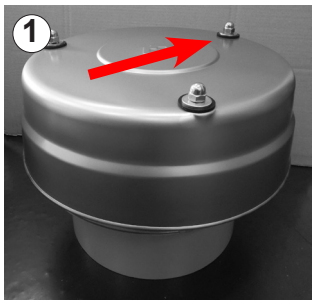
10) Complete each regulation unit by repositioning in this order, the remaining nut, flat washer and rubber gasket.

11) Fit the cap by inserting it from the top, insert the rubber gaskets and screw down the cap nuts all the way.

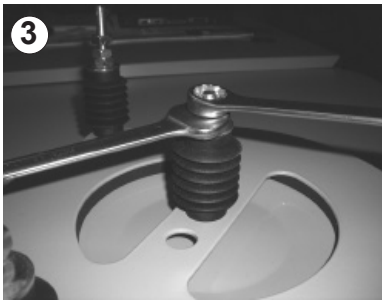
NEGATIVE PRESSURE

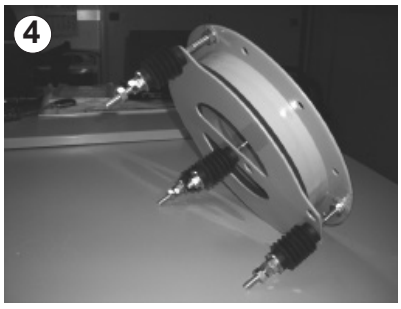
The package includes:

A) One yellow spring for setting the valve opening negative pressure at -100mm H_2O (± 30 mm H_2O).
B) One M12 x 130 UNI 5737 screw.
C) Assembly instructions.







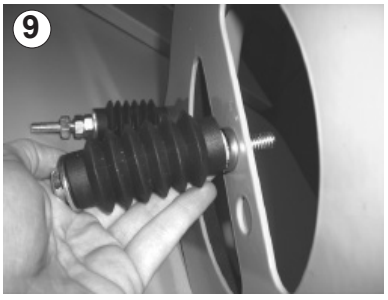


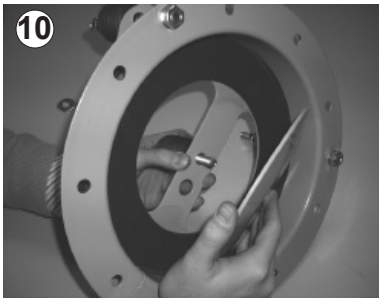


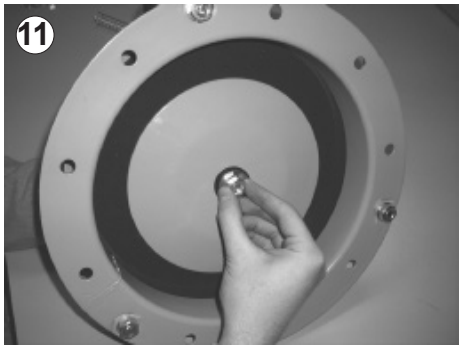














1) Remove the three cap nuts and the three rubber gaskets from the upper part of the valve.

2) Remove the cap.

3) Using two adjustable wrenches slacken the two bolts that block the negative pressure spring.

4) Position the valve on a surface as shown in the Figure.

5) Holding the screw head firm, unscrew the two nuts completely. Then remove the flat washer as well as the Belleville washer.

6) Dismantle the negative pressure unit completely, separating the bellows, grey spring, Belleville washer below, flat washer, screw and plate.

7) Insert the flat washer, then the Belleville washer and the yellow coloured spring, as shown in the Figure, on the 130 mm long screw provided with the adjustment kit.

8) Complete the adjusting unit with the bellows and the other Belleville washer.

9) Insert the assembled adjusting unit in the hole at the centre of the valve overpressure lid, with the threaded part out of the gasket side.

10) Holding the adjusting unit, insert the negative pressure plate on the screw shank with the concave part facing the valve, so that the plate comes in contact with the seal glued on the back of the disk.

11) Insert the flat washer on the screw shank and then block the adjusting unit by screwing the remaining nut ALL THE WAY TO THE END OF THE THREAD.

12) Refit the valve in horizontal position, refit the cover by inserting it from the top, insert the rubber gaskets and screw the cap nuts all the way in.

5.5 Positioning the valve

The valve must be positioned in a safe place, i.e. outdoor, where during operation, suitable warning signes must be provided; no damageable plant parts or deposits of inflammable materials must be present.

The user shall be held entirely responsible for positioning of a valve other than that indications given in the present Manual.

The valve does not require any special lighting; the installer must, however, make sure the area is uniformly lightened, according to the indications in the relevant regulations.

It is the installer’s responsibility to:
1) Check the suitability of the plant installation site.
2) Provide the necessary PPD (personal protection devices) depending on the assembly height.
3) Use lifting systems suitable for the weights, dimensions and movements to be carried out.
4) Check the tightening of the cap nut before handling the valve.

Prior to installation the valves for food applications (model GF), shall be subjected to cleaning and sanitation by means of a woven/non-woven cloth and sanitizer spray.

5.6 Installation and fixing of the valve

- Lifting the valve

Danger - Warning

Carry out the lifting and handling operations according to the information shown on the valve and in the Manufacturer's Operation Manual.
The specialist technician authorized for carrying out the installation must make sure all the necessary measures are adopted to ensure his own safety and that of other persons directly involved.
The laws regarding workplace safety must be strictly followed.
Use means and accessories (ropes, hooks, shackles, etc.) suitable for the load to be lifted.
Pay attention in the lifting phase to balance the load so as to avoid uncontrolled movements, which could cause an accident.

The valves should only be handled and lifted using the eyelets provided (for model where they are present).



Use lifting means suitable for the weight and dimensions of the device and for the lifting distances concerned. Hook the devices to the lifting means using shackle and safety hooks; do not use clamps, rings, open hooks or any other system that does not guarantee the same degree of safety as shackles and safety hooks.

The handling operations must be performed exclusively by authorized personnel equipped with suitable equipment and safety devices.

NOTE: When the equipment does not exceed the total weight of 30kg for adult male operators and 20kg for adult female operators, the load can be handled manually (L.D. 81/08 or specific laws in force).







The valves have been preassembled and tested at the factory.

INSTALLATION OF THE VALVE DIRECTLY ON THE SILO

Prior to installation the valves for food applications (model GF) shall be subjected to cleaning and sanitation by means of a woven/non-woven cloth and sanitizer spray.

1) Make sure the surface on which the valve is to be fixed (container cover) is fixed horizontally.

2) Unpack the valve.

3) Check the tightening torque of the cap nuts present on the valve cover to make sure it is 19÷24 Nm.

4) Trace a circle equal to the inner diameter of the valve housing, on the top of the silo.

5) After drilling the hole, use the valve housing to trace the holes of the flange on the top of the silo.

6) Make the holes for the flanging.

NOTA: The cutting and welding operations must be carried out by qualified persons.

Suitable Hot-Works procedures (such as cutting, welding…) and LOTO – lockout/tagout: machine disconnection procedure (electrical and mechanical segregation), must be applied for safe installation of the valve.

Authorization for operations using heat MUST be given by specialist technical personnel trained in the risk of dust explosions (capable of checking the residual risk, the suitability of the tools and understanding of the procedures).

7) Apply a thin layer of liquid sealant between the surface of the silo and the valve flange.

8) Fix the valve body to the top of the silo using bolts and tighten the nuts by applying a torque of 36 ÷ 46 Nm.

INSTALLATION OF THE VALVE ON THE SILO USING THE WELD-ON SPIGOT

1) Unpack the valve.

2) Check the tightening torque of the cap nuts present on the valve cover to make sure it is 19 ÷ 24 Nm.

3) Use the ring under the valve to trace the hole to be drilled at the top of the silo.

4) After the hole is drilled, weld the spigot under the valve so that it is perfectly horizontal.

NOTA: The cutting and welding operations must be carried out by qualified persons according to the note given earlier.

5) Place the elastomer gasket supplied inside the VCP package between the flange of the bottom ring and the flange valve.

6) Fix the valve housing on the ring under the valve by means of the bolts supplied and tighten the nuts by applying a torque of 36 ÷ 46 Nm.

DISASSEMBLY OF THE VALVE FROM THE WELD-ON SPIGOT

- Remove the flange fixing nuts

DISMANTLING OF SPRINGS AND DIAPHRAGMS

1) Unscrew cap nuts and remove cover.

2) Unscrew upper nuts from 3 external screws.

3) Remove (in this order): spacers, bellows and springs.

4) Slip off the two membranes from the three external screws.

5) Unscrew the upper nuts from the central screw and remove (in this order): spacer, bellows and central spring (if replacing the central spring and/or membrane).

For food valves versions (model GF) assemble the spacers according to the instructions given on the technical sheet inside the package.

RE-ASSEMBLY

Depending on the type of action carry out the operations described earlier in reverse order by paying special attention to:

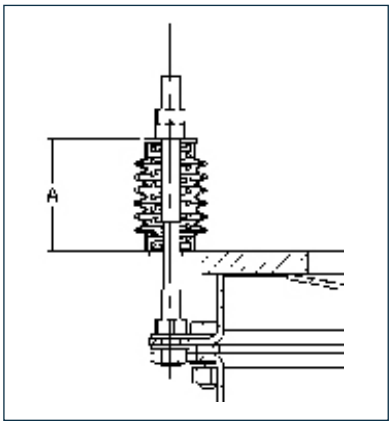
1) Position the diaphragms correctly ensuring that their gaskets adhere to the relative supporting surface.

2) Place the springs and guide washers at the centre of the threaded adjustment rods.

3) Tighten the nuts on the adjustment screws correctly to the end of the thread. The final height between plate and washer (A, see Figure) must be about 67 ± 4 mm for size 273 and about 104 ± 8 mm for size 375.

4) Fit the cover after placing the rubber washer in the correct position to prevent water seepage.

5) Tighten the cap nuts correctly.



5.7 Electrical connection

The installer must interface the valve and all parts of the plant on which the VCP is to be installed with the necessary commands for start-up/stop, emergency stop, reset after emergency, in compliance with the standards in force (CEI EN 60204-1, UNI EN 1037, UNI EN 1088, UNI EN 953).

None of the basic utilities require electrical connection.

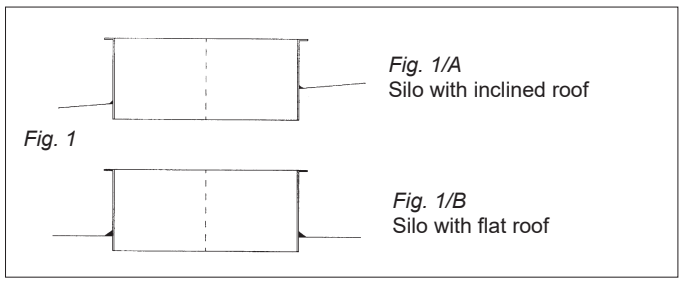
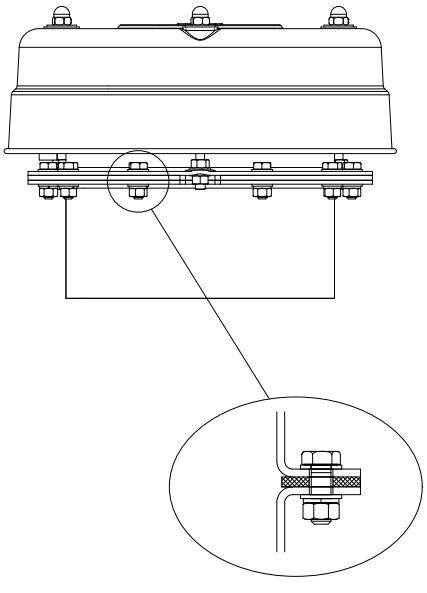


Fig. 1

Fig. 1/A
Silo with inclined roof

Fig. 1/B
Silo with flat roof



5.8 Inductive proximity switch

The VCP valve in all its sizes can be provided with an inductive signalling system.

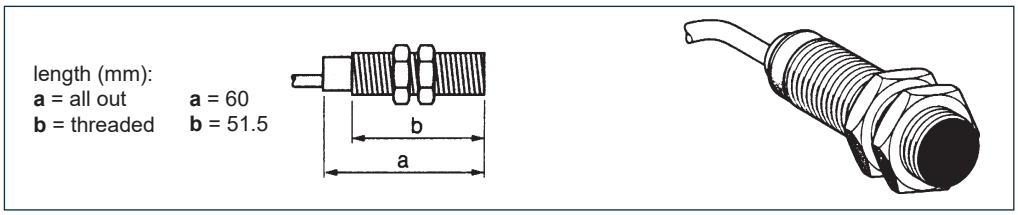
This device signals the opening of the valve in overpressure or negative pressure at the prefixed calibration value.

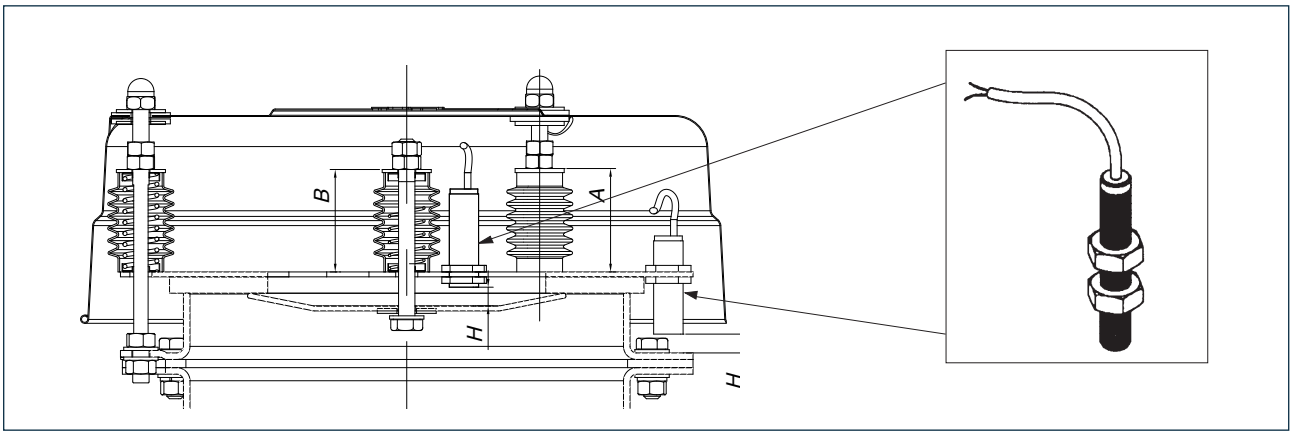
WAM® supplies the KXS1 inductive sensor (which can operate with a 24 voltage at 220V - see attached technical sheet).

During valve activation phase, the sensor generates an instantaneous signal so that the valve returns to the home position after the action. Use a control panel that maintains this signal.

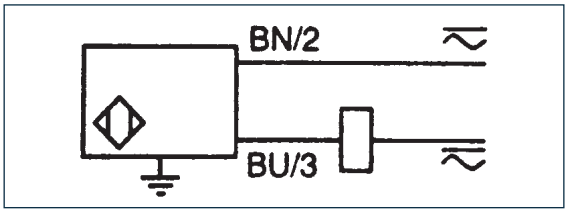
The KXS1 sensor that detects the disc opening correctly must be positioned at a distance from the metallic surface of 0 < H < 4 (mm) by means of the two nuts.

- M18 x 1 threaded cylinders
- Standard brass metal casing
- AC or DC power supply





Description	Type
Nominal capacity	5 mm
2-wire type NC (protected against short circuits)	**XS1-M18MB250**
Weight (kg)	0.120
Features	
Type of connection	cable 2x0.5 mm² length 2.0 m (1)
Protection degree	IP 68
Operating range	0...4 mm
Repeatibility precision	3% of Sr
Operating temperature	-25... + 80°C
Indicating output status protected model	1 red LED outlet state, 1 green LED presence of feeding
Nominal feed voltage	~ 24...240V (50/60 Hz) o 24...210V
Voltage limits (including wavering)	~ o 20...264V
Commutated current	(~)5...300mA o ( ) 5...200mA (3)
Voltage drop, passing status	≤ 5.5 V
Residual current, non-passing status protected model	≤ 1.5 mA
Current absorbed without load	-
Maximum inversion frequency	(~) 25 Hz o ( ) 200Hz
Delays	On availability: ≤ 40 o ≤ 70ms (models protected against short circuit) On activation: ≤ 2ms: on release: ≤ 4ms



N.B.: For switches with different cable lengths, contact Télémécanique machine suppliers directly.

5.9 Compressed air connection

None of the basic utilities require the use of compressed air.

5.10 Inspection

Important

When installation is complete, authorized personnel must carry out a general test to make sure the safety conditions have been complied with completely.

The authorized personnel must also check:
- That no tools or other material have been left inside the valve;
- That the fixing screws have been tightened using the prescribed torque.

Before starting to operate the valve:
- Ensure that the plant in which the valve is installed complies to the Directive 2006/42/EC and the relevant directives, the safety standards in force and those specifically applicable.
- Make sure the inlet and outlet spouts of the valve are connected to the final equipment or plant in order to prevent access to hazardous areas.
- Ensure that the operating conditions are complied with.
- When sizing the valve, check for any chemical incompatibility between the material and the components of the valve.
- Make sure that the food versions (model GF) were properly cleaned and sanitized.

6.1 Production Start-up

Before carrying out any operation set the valve in safety condition.

- Start valve operation on empty. If the valve works correctly, add material and proceed with regular operation.

Especially with materials which tend to harden or become sticky through longer periods of storage ensure no material or liquid is deposited on the shaft passages. In such a case clean the area thoroughly.

At the first start up, check that the operation of the valve is suitable to the intended use. (UNSUITABLE PRESSURE SETTINGS can cause excessive pressure imbalance with consequent implosion or explosion of the silo, leakage of dust from the valve, possibly forming crusts on the valve itself and polluting the surrounding environment).

6.2 Shuttdown of the valve at the end of the work cycle

- There is no special switch-off procedure.

Set the valve in safety condition before carrying out any operation.



Danger - Warning

Do not insert the limbs inside the valve while operating. Disconnect from the power supply by means of the main switch; it is provided with a key meant to avoid accidental start ups. The key must be kept by the operator that carries out the operations.

If high parts of the valve are to be accessed, a work platform must be provided, designed so as to prevent danger of slipping, tripping or falling of operators.

Failure to follow the instructions bellow can cause problems and invalidate the warranty on the supplied valve.

Replacement of parts depends on the use of the valve and the type of material handled.

6.3 Long shutdowns of the valve

Possible reuse after long shutdowns

Set the valve in safety condition before carrying out any operation.

During valve shutdowns:

1) Avoid damp and salty atmospheres.
2) Place the valve on wooden platforms, or protected from unfavourable weather conditions.

Before starting operation:

1) Set the valve in safety condition.
2) Before starting the valve, check the electrical system, pneumatic system and all parts the working of which may be affected by long shutdowns.
3) With materials that tend to harden or become sticky because of long periods of storage, ensure there are no material residues. Otherwise clean the area thoroughly.
4) Before starting up the valve, clean it thoroughly by following the instructions given on the material safety chart.

Prior to installation the valves for food applications (model GF) shall be subjected to cleaning and sanitation by means of a woven/non-woven cloth and sanitizer spray.

When the valve remains unused for long periods, proceed as described below.

1) Check the main nuts and bolts to make sure they are tightened properly.

2) Set the valve in safety conditions before starting operation and make sure the valve is completely empty.

3) Check the connections to the electrical and pneumatic supply and all parts the working of which may be affected by long shutdowns.

4) Clean the valve thoroughly by following the instructions given on the material safety chart.

5) If the valve operates in different conditions, or using materials different from the previous application, ensure this use complies the INDICATIONS FOR USE section.

6) Start up the valve (see “Production Start-up”).

6.4 Reuse

Important

If the valve is to be used in different conditions and with materials other than the previous application, ensure the “Permitted use” indications are complied with.

When reusing a valve, follow the steps mentioned in part 6.3.

Danger - Warning

Before carrying out any maintenance operation, activate all the safety devices for the safety of the persons involved in the operations and those nearby.
Set the valve concerned in safety condition.
Wear suitable personal protection devices; in this regard, consult the person in charge of safety of production activities.

Important

Failure to strictly follow the instructions can cause problems and invalidate the warranty on the valves supplied.

PERIODIC INSPECTIONS REQUIRED

Before any kind of operation, set the valve in safety condition.

To avoid crusts formation, damages or clogging of the valves installed on silos, first clean them inside and then the surrounding area, taking care to avoid dust dispersal.

The following indications must be strictly followed:

On a weekly basis:

- Check for dust in the area around the valve, remove the cover to clean encrustation that may be present, make sure the two membranes move freely.
- Make sure the outlet is clear of material residues: if necessary, remove all obstruction in the material passage.

Monthly basis:

- Check the gasket for wear, especially with granular materials which can be the cause of rapid wear. In such cases, contact the Manufacturer.

Every six months:

- Ensure perfect legibility and good condition of the rating plate. In case of obvious deterioration contact the Manufacturer for a copy.

Yearly:

- Carry out complete revision of the valve (see disassembly/reassembly) with replacement of the membranes and thorough cleaning of all the elements after revision.

Every 2 years:

- In any case, replace the springs, bellows and all the gaskets present.

Important

Part replacement depends on the use of the valve and type of material handled.

7.1 Cleaning the valve

Before carrying out any operation, set the valve in safety condition.

While removing dust from the valve, avoid spreading it in the surrounding area.

The user must use suitable cleaning materials depending on the type of plant and the material handled; avoid using toxic or inflammable materials.

If the valve is used to handle food products, use non-toxic detergents suitable for the application.

The frequency of cleaning operations depends on the nature of the material to be metered and on the plant type.

In case of harmful, toxic materials, the waste resulting from cleaning must be conveyed into a closed tank and disposed off in accordance with the instructions in the material safety chart.

Do not point water jets directly on electrical components.

REMARKS REGARDING VALVES FOR FOOD PRODUCTS

- Wash the valve periodically with water.
- Clean the valve disc and seal with particular care.
- Check first with the supplier before using any cleaning product.
- Remove the deposits of material inside and outside the valve after each intervention.

Prior to use the valves for food applications (model GF) shall be subjected to cleaning and sanitation by means of a woven/non-woven cloth and sanitizer spray.

7.2 Lubrication

No lubrication operation is scheduled.

8.1 Safety recommendations for replacement

Danger - Warning

The replacement operations must be carried out by a specialist authorized technician with specific skills in the sector concerned (mechanical, electrical etc).
Before carrying out any operation, provide suitable safety measures and use the appropriate equipment to prevent risk of work injuries to persons involved in the operations and those nearby.
Activate all the safety devices envisaged and prevent access to controls which, if activated, could cause work injuries to the persons involved in the operations.

REPLACEMENT OF WEAR PARTS

- Gasket applied on closure disc.

REPLACEMENT OF PARTS SUBJECT TO FATIGUE STRESS

- Overpressure spring
- Negative pressure spring
- Bellows
- Gaskets

Refer to Spare parts catalogue for the specific codes.

8.2 Returning the valve

When returning the valve use the original packaging if it has been preserved, otherwise fix the it on a pallet and cover it with nylon shrink-wrap, to protect it as best as possible from impact during transport. In any event, make sure there is no residue material inside the valve.

8.3 Dismantling and disposal

Dismantling of the valve must be entrusted to personnel specialized in these activities and equipped with adequate skills.

Dismantle the components of the valve concerned; if necessary contact the Manufacturer for further information.

The components dismantled have to be separated on the basis of the nature of the materials of which they consist, in compliance with the laws on the matter of “differential collection and disposal of wastes”.

With reference to the WEEE Directives, electrical and electronic components, marked with a special symbol, have to be disposed off in authorized collection centres meant for the purpose.

Unauthorized disposal of “Waste Electrical and Electronic Equipment” (WEEE) is punishable with fines governed by the laws concerning the matter.

9.1 Trouble-shooting

Minor problems can be solved without consulting a specialist.

The following Table contains a list of the most common problems, the possible causes and possible remedies.

For particularly difficult actions which are not mentioned in the Table, contact the Manufacturer's Customer Service Department.

Danger - Warning

Before carrying out any operation "set the valve concerned in safety" (see "Glossary and terminology"), operate according to the indications on the "Operation and Maintenance Manual" and in accordance with and in compliance with the standards in force as regards health and safety.

Before any kind of operation, set the valve in safety condition.

Minor problems can be resolved without consulting a specialist. Here are a few examples of possibles causes and solutions.

FAULT	POSSIBLE REASON	SOLUTION
1) Pressure in silo remains higher than the overpressure value set, after loading.	Membrane encrusted.	Take off cover and remove crust.
2) Pressure in silo remains lower than the negative pressure value set, after emptying	Membrane encrusted.	Take off cover and remove crust.

9.2 Check-list in case of fault

If you have been unable to solve the problem on the valve even after having carried out the operations suggested in paragraph "Trouble-shooting" please contact the plant technician/installer/or the Manufacturer.

If technical assistance is required, in addition to the valve data, the plant technician/installer or Manufacturer will also need information concerning the plant in which the valve is installed, its installation and its working, for better identification of the problem that has occurred.

Obviously many of the checking operations which are requested have already been performed in the various steps during installation, testing and start-up of the valve concerned.

Danger - Warning

Before carrying out any operation "set the valve concerned in safety" (see "Glossary and terminology"), operate according to the indications on the "Operation and Maintenance Manual" and in accordance with and in compliance with the standards in force as regards health and safety.

1) Information necessary

a) Description of problem;

b) Photo showing the entire valve and how it is installed;

c) Valve type;

d) Does the valve start up without any problem after long shutdowns?

e) Is the outlet spout free of encrustations which could reduce the cross-section?

f) Does the weather conditions have a negative influence on the operation of the valve?

2) Checking the silo

a) Is silo pneumatically filled with > 1.5 bar?

b) In case of more silos, are all of them provided with a separate spring-loaded pressure relief valves?

c) Are the silos connected to each other?

d) Does each silo have its own dust filter?

3) Valve check

a) Is valve installed perfectly vertically?

b) Check diaphragm on regular basis.

4) Material check

a) Material description?

b) Bulk density? (kg/dm^3)

c) Particle size? (µm/mm)

d) Moisture? (%)

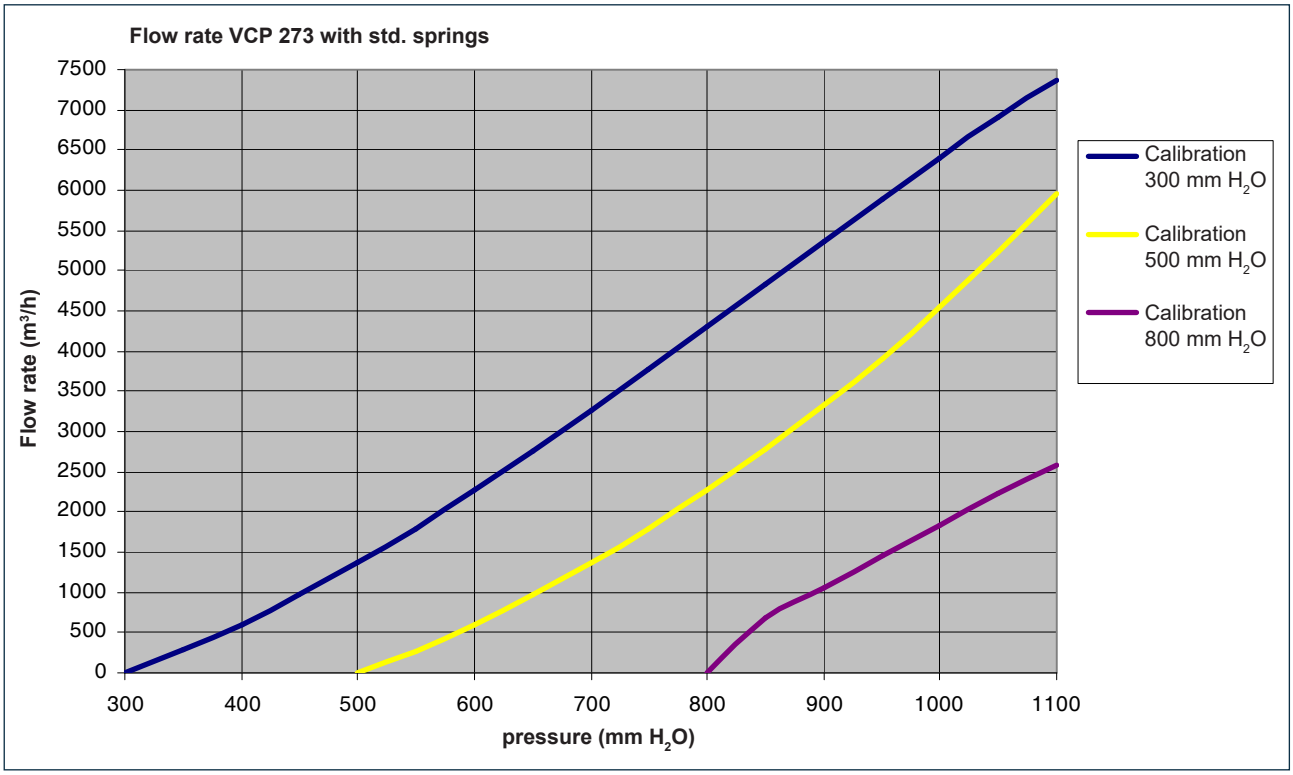
e) Flowability? (flow the material down on a metal plate by varying the angle from low to steep)

f) Compressibility? (can you make a “snowball”?)

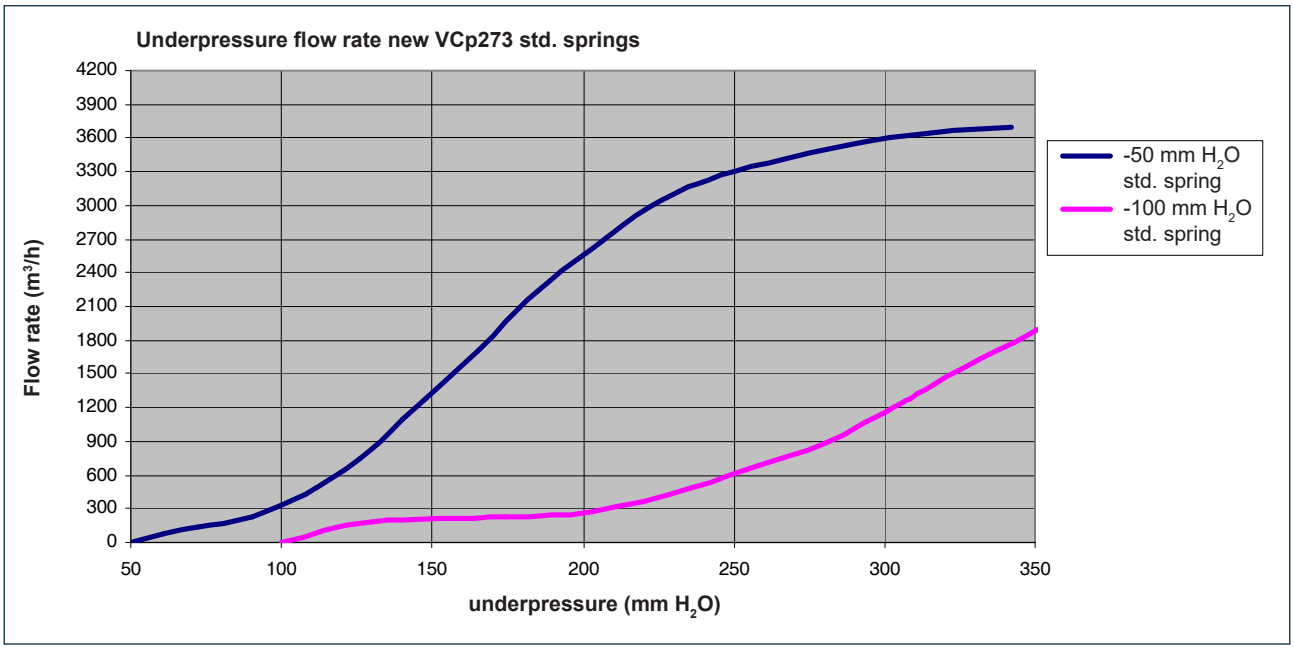
g) Abrasive material? (does it hurt when rubbing it between fingers?)

FLOW RATE VCP 273

OVERPRESSURE GRAPH



UNDERPRESSURE GRAPH



A1 Nuts and bolts tightening torque Table

Thread diameter	Tightening torque [Nm]		
	Resistance Class **8.8**	Resistance Class **10.9**	Resistance Class **12.9**
M6	9.5	13.0	16.0
M8	23.0	32.0	39.0
M10	46.0	64.0	77.0
M12	80.0	110.0	135.0
M14	125.0	180.0	215.0
M16	195.0	275.0	330.0
M18	270.0	390.0	455.0
M20	385.0	540.0	650.0
M22	510.0	720.0	670.0
M24	660.0	930.0	1100.0
M27	980.0	1400.0	1650.0
M30	1350.0	1850.0	2250.0

Oil filler, drainage, venting, and level plugs in gear reducers	Tightening torque 16 ÷ 18 [Nm]