CSA waterworks line

Direct acting downstream pressure reducer-stabilizer in stainless steel

Mod. VRCD-FF

Introduction

This manual will provide you with the information to properly install and maintain CSA direct acting pressure reducers Mod. VRCD-FF entirely made in stainless steel. The contents and the procedure are intended for technicians in charge of CSA valves only, prior to a theoretical and practical training by CSA qualified or authorized personnel.

Safety

All safety messages in the instruction manual are flagged with the following symbol meaning danger, caution and warning. This means and makes reference to procedures that may lead to equipment and system damage and to severe injury or death for the personnel involved.

WARNING!

Personnel involved in the installation or maintenance of valves should always be alert to potential emission of water and pipeline material, and take the necessary safety precautions. Always wear the suitable protection like helmets, gloves, googles, when dealing and handling hazardous pipelines and valves.

Inspection

Your valve VRCD-FF has been packaged to provide protection during shipment, however it can be damaged during transport. Please carefully inspect the unit for damages or discrepancies with the order upon arrival and report a claim immediately before unloading the goods.

Parts

Recommended spare parts are listed on the assembly drawing depicted on page 8.These parts should be stocked to minimize delays in case of malfunction. All CSA products and spare parts can be supplied by CSA official distributors or directly from CSA. When ordering spare parts please make reference to the assembly drawing on this manual and to the indentification plate with serial number present on the valve.

CSA Service

CSA service personnel are highly qualified to maintain and repair all CSA products, CSA also offers customized training program and consultation services.
For more information please contact CSA or visit the web site www.csasrl.it constantly updated.

Contents

Description

The automatic direct acting PRV Mod. VRCD-FF consists of a upstream pressure balanced single seat globe pattern valve, piston actuated, and equipped with a spring located in the cover to impart the force necessary for the proper working. By means of a compensation chamber the valve will reduce and stabilize the downstream pressure regardless of variations in demand and upstream pressure fluctuations. The operating principle is explained on the technical catalogue, for further details please contact CSA and/or its local rep. The special design of CSA with built in self cleaning piston technology guarantees long lasting performances with a dramatic reduction of the maintenance time, minimizing the risk of friction and malfunctioning.

Handling and Storage

WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to possible damages caused by an improper handling of the valve.

Lifting the valve improperly may damage it. Lift the valve with slings, chains or cables fastened around the valve body. Do never lift the valve by the adjusting screw and by the threaded connection. If installation will be delayed, place valve indoors in secure, weather tight storage. If temporary outside storage is unavoidable, make sure a vermin proof rain cover is secured around/over the valve to keep off rain and mud. Skid and set the assembly on a flat, solid, and well drained surface for protection from ground moisture, runoff and pooled rain water. Do not leave the valve exposed to high humidity and excessive temperature conditions and do not remove the plastic taps prior to the installation.

Installation

The direct acting PRV VRCD-FF should be installed in horizontal position, especially with if subject to high differential pressure values. Vertical installation if not unavoidable is accepted and won't affect the PRV performances. The valve has to be installed between two sectioning devices, one upstream and one downstream to allow for maintenance, with a filter upstream of it to prevent dirt from creating malfunctioning. For the recommended flow rate and differential pressure please refer to the sizing information displayed in the catalogue or contact CSA (or local rep) sending the project data for further assistance and valve sizing.

WARNING!

The difference in pressure generated by the valve when closed or during closing will produce a thrust proportional to the pressure itself.

Anchorage blocks and way of preventing valve's movement or shifting need to be taken into account.

- Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the pipeline.
- Prepare pipe ends and install valves in accordance with the pipe manufacture's instructions for the joint used.
- Unless otherwise stated the CSA threaded connection are always in accordance with GAS standard although it can be supplied with different specifications on request
- Place the valve in the right direction following the arrow engraved on the body
- If not included in the order install a pressure gauge upstream and downstream, to check the maximum static and differential pressure reached during closing and make sure it doesn't exceed the valve's design pressure
- **Note to Engineer:** The direct acting pressure reducing valve VRCD will regulate and maintain a downstream pressure value according to the force of the spring, located inside the cover, supplied with different regulation range according to the valve size and specified in the catalogue

  The spring range is usually indicated on the stainless steel identification plate and on the order confirmation, should the pressure needed be out of the available range contact CSA for an immediate replacement, do not exert excessive torque on the spring or relief it completely

Maintenance

The pressure reducer VRCD-FF is sturdy and reliable, entirely made in stainless steel machined from a solid bar it was designed to minimize maintenance and to tolerate high differential pressures without the risk of cavitation, material wear. A semi-annual visual inspection for the proper movement of the piston and the cleaning of the compensation chamber is recommended. A routine maintenance for gasket, control, o-rings and if needed replacements is recommended every 4 years and explained on page (9) ref picture 1 on page 7. A possible malfunction can be identified by a leakage through the seat, normally caused by dirt accumulated inside the body, seeping through the shaft and the cover, hunting and excessive variation of the downstream pressure

Set up

- Before the start-up of the valve make sure the instructions provided on the maintenance section “Installation” on page 5 were properly followed and understood.
- Operate very slowly on the following procedure to avoid stresses on the valve and unexpected pressure surges.
- The valve is initially isolated from the main line by means of the sectioning devices upstream and downstream.
- Open the upstream isolation device by 30%, then open slowly the downstream sectioning device to generate some flow through the valve. Make sure the maximum nominal pressure is not exceeded during this operation
- Unless the valve has been ordered with a specific setting turn the adjusting screw (4) anticlockwise to relief the spring (not completely), make sure VRCD will respond with a smooth modulation by reducing the downstream pressure.
- Open completely the upstream sectioning device
- Let VRCD work and modulate according to the demand, act on the adjusting screw (4) by turning it clockwise to increase the downstream pressure and check the pressure gauges.
- Allow for enough time for the system to balance.
- By means a pressure gauge upstream and downstream and a flow meter make sure that both the flow rate and difference in pressure, in dynamic condition, doesn’t go above the recommended values displayed in the catalogue.
- Be sure to allow for 5 mt increase in the set pressure occurring between dynamic and static (no flow) conditions

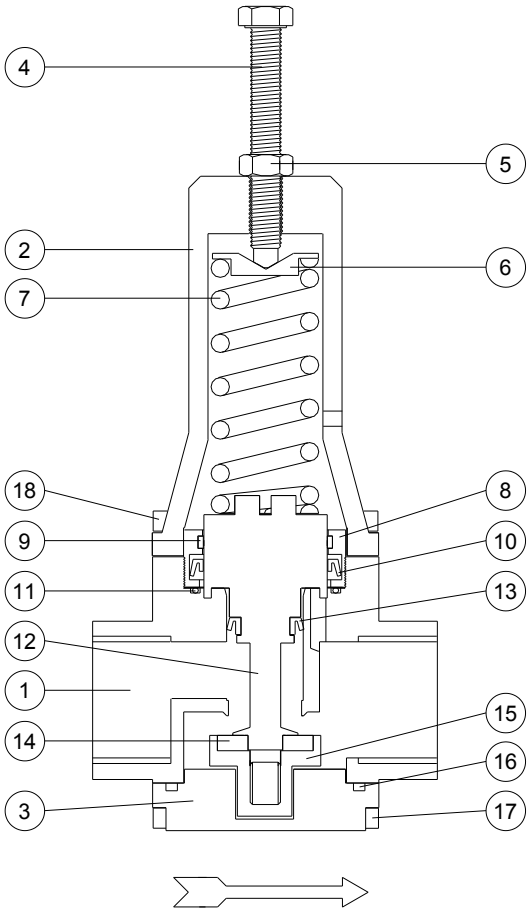
WARNING!

When the valve reacts to modulate, in reducing the downstream pressure, the effective pressure variation on the line depends on the length of the entire system and part of the network subject to the VRCD. This could take sometimes minutes, therefore allow for it before acting on the spring.

The flow rate is an effect of the pressure reduced by the VRCD for that specific system. A certain outlet pressure value, for an instance 3 bar, wouldn’t produce the same flow rate everywhere as it depends on headloss between the valve itself and the final boundary conditions.

Drawings

Picture 1 VRCD - FF



N.	Component	Standard material	Optional
1	Body	AISI 303 (DN 1"-1" 1/2), AISI 304 (DN 1/2", 2")	AISI 316
2	Cap	nickel-plated aluminium S11	AISI 316
3	Driving tap	AISI 303 (DN 1"-1" 1/2), AISI 304 (DN 1/2", 2")	AISI 316
4	Driving screw	AISI 304	AISI 316
5	Nut	AISI 304	AISI 316
6	Spring guide	AISI 304	AISI 316
7	Spring	AISI 302 (painted steel 52SiCrNi5 for DN2")	
8	Main bush	AISI 304	AISI 316
9	Sliding ring	PTFE	
10	Upper gasket	NBR	EPDM/Viton
11	O-ring	NBR	EPDM/Viton
12	Piston	AISI 303	AISI 316
13	Lower gasket	NBR	EPDM/Viton
14	Plane gasket	polyurethane	
15	Obturator guide	AISI 303	AISI 316
16	Tap o-ring	NBR	EPDM/Viton
17	Screws	AISI 304	AISI 316
18	Screws	AISI 304	AISI 316
Spare parts: 9-10-11-13-14-16			

Problems solving

Problem	Cause	Solution
The valve doesn't close	There is dirt accumulated between the obturator's plane gasket (14) and the seat	Remove the valve and clean it inside to remove dirt
	The pressure downstream is below the valve set point	Check the pressure coming into the circuit, relief the spring to see whether the PRV is responding properly
	There is dirt inside causing friction to the piston (12)	Check the movement of the piston and remove dirt or foreign materials
	The plane gasket of the obturator(14) is damaged and/or the body is exposed to corrosion	Check the chemical properties of the fluid and contact CSA for further assistance
The valve doesn't open	The spring is corroded and filled with water, causing the loss of force	Check if the VRCD-FF has been submerged by water, check the spring inside the cover and replace if necessary
	There is dirt accumulated between the obturator (15) and the body	Remove the valve and clean it inside to remove dirt
	There is dirt causing friction to the piston 812) during its movement	Check the movement of the piston and remove dirt or foreign materials

1) Disassembly

In order to carry out the proper maintenance of VRCD proceed as follows, ref drawing picture 1 on page 7, for further info consult CSA technical support :

1. slowly close the upstream and downstream sectioning devices;
2. if the VRCD is installed in a location not suitable for maintenance, please remove it from the pipe ;
3. Unscrew the nut (5) and turn the screw (4) anticlockwise to relief the spring (7)
4. remove the screws holding the cover (18), pull out the cover (2) and spring (7)

> **WARNING!**
>
> **Do not remove the screws (18) holding the cover without having completely relieved the spring by turning the screw (4) anticlockwise. Inattention may cause severe damages and injuries to the personnel .**

5. be sure not to loose the spring guide (6) when the spring is removed
6. push the piston (12) downwards
7. Loosen the screws (17) and remove the driving tap (3), the hexagonal part of the obturator (15) will be visible, pay attention not to damage the o-ring (16)
8. set the hexagonal part of the obturator 815) with a wrench and keep it steady while unscrewing the piston (12) from it
9. inspect the plane gasket (14) making sure no sign of material wear and / or scratches are present
10. remove the piston (12)
11. check the status of the lip gasket (13) making sure it hasn't been torn or damaged
12. unscrew the main bush (8) and carry out a proper inspection of the sliding ring(9) and of the lip gasket (10) avoiding any scratches, accumulation of dirt or signs of wear
13. make sure the hole connecting the downstream pressure to the compensation chamber is not clogged
14. make sure the surface onto which the lip gasket (13) is acting hasn't been damaged or scratched

1) Reassembly

In order to carry out the proper reassembly of VRCD follow the instruction explained on page 10 in reverse. Pay attention to:

1) use a proper grease on the guiding bush, o-ring, lip gaskets to allow for the proper movement of the mobile block.
2) once the mobile block is assembled check for the proper movement making sure there are not sign of friction or any other element affecting it.

Contact CSA for further assistance

Guarantee

Products, auxiliaries and parts thereof of CSA srl manufacture are warranted to the original purchaser for a period of twelve (12) months from date of shipment from factory, against defective workmanship and material, but only if properly installed, operated and serviced in accordance with CSA srl recommendations. Repair or replacement, at our option, for items of CSA srl manufacture will be made free of charge, (FOB) our facility with removal, transportation and installation at your cost, if proved to be defective within such time, and this is your sole remedy with respect to such products. No claim for transportation, labor or special or consequential damages or any other loss, cost or damage shall be allowed. You shall be solely responsible for determining suitability for use and in no event shall CSA srl. be liable in this respect. CSA srl does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does CSA srl guarantee a minimum length of service. Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than CSA srl. or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by CSA srl or misuse, modification, abuse or alteration of such product, accident, fire, flood or other Act of God, or failure to pay entire contract price when due shall be a waiver by you of all rights under this warranty.

The foregoing guarantee shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to, an actuator is attached to the item by anyone other than CSA srl. factory Service personnel. All orders accepted shall be deemed accepted subject to CSA srl warranty terms and conditions.

Limitation of liability

LIMITATION OF LIABILITY: IN NO EVENT SHALL CSA srl BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND CSA srl LIABILITY, UNDER NO CIRCUMSTANCES, WILL EXCEED THE CONTRACT PRICE FOR THE GOODS AND/OR SERVICES FOR WHICH LIABILITY IS CLAIMED. ANY ACTION BY YOU FOR BREACH OF CONTRACT MUST BE COMMENCED WITHIN 12 MONTHS AFTER THE DATE OF SALE.

Sales and Service

For information about our service, approvals, certifications:

Web site: www.csasrl.it E-Mail : info@csasrl.it

CSA srl Inc. reserves the right to incorporate our latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only.