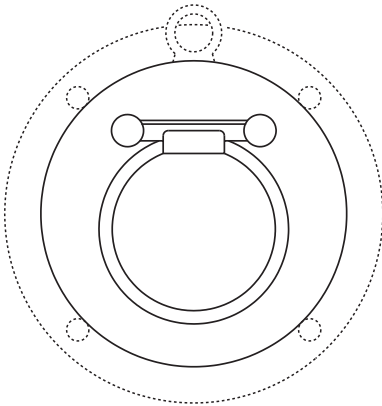


WCV1 and WCV3

Swing Type Wafer Check Valves

Installation and Maintenance Instructions



1. General safety information
2. General product information
3. Installation
4. Commissioning
5. Operation
6. Maintenance
7. Spare parts

1. General safety information

Safe operation of these products can only be guaranteed if they are properly installed, commissioned, used and maintained by qualified personnel (see Section 1.11 on this document) in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

1.1 Intended use

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended use/application.

The products listed below comply with the requirements of the European Pressure Equipment Directive (PED) and carry the  mark when so required.

The products fall within the following Pressure Equipment Directive categories:

Product	Group 1 Gases	Group 2 Gases	Group 1 Liquids	Group 2 Liquids	
WCV1	DN125	2	1	SEP	SEP
	DN150 - 200	2	1	2	SEP
	DN250 - 300	3	2	2	SEP
	DN350	2	1	1	SEP
	DN400 - 500	3	2	1	SEP
WCV3	DN125 - 200	3	2	2	SEP
	DN250 - 300	3	2	2	1
	DN350 - 500	3	3	2	1

- i) The WCV range has been specifically designed for use on propane or methane gases which are in Group 1 of the above mentioned Pressure Equipment Directive. They can also be used on steam, air or water/condensate which are in Group 2 of the Pressure Equipment Directive.
The products' use on other fluids may be possible but, if this is contemplated, Spirax Sarco should be contacted to confirm the suitability of the product for the application being considered.
- ii) Check material suitability, pressure and temperature and their maximum and minimum values. If the maximum operating limits of the product are lower than those of the system in which it is being fitted, or if malfunction of the product could result in a dangerous overpressure or overtemperature occurrence, ensure a safety device is included in the system to prevent such over-limit situations.
- iii) Determine the correct installation situation and direction of fluid flow.
- iv) Spirax Sarco products are not intended to withstand external stresses that may be induced by any system to which they are fitted. It is the responsibility of the installer to consider these stresses and take adequate precautions to minimise them.
- v) Remove protection covers from all connections before installation.

1.2 Access

Ensure safe access and if necessary a safe working platform (suitably guarded) before attempting to work on the product. Arrange suitable lifting gear if required.

1.3 Lighting

Ensure adequate lighting, particularly where detailed or intricate work is required.

1.4 Hazardous liquids or gases in the pipeline

Consider what is in the pipeline or what may have been in the pipeline at some previous time. Consider: flammable materials, substances hazardous to health, extremes of temperature.

1.5 Hazardous environment around the product

Consider: explosion risk areas, lack of oxygen (e.g. tanks, pits), dangerous gases, extremes of temperature, hot surfaces, fire hazard (e.g. during welding), excessive noise, moving machinery.

1.6 The system

Consider the effect on the complete system of the work proposed. Will any proposed action (e.g. closing isolation valves, electrical isolation) put any other part of the system or any personnel at risk?

Dangers might include isolation of vents or protective devices or the rendering ineffective of controls or alarms. Ensure isolation valves are turned on and off in a gradual way to avoid system shocks.

1.7 Pressure systems

Ensure that any pressure is isolated and safely vented to atmospheric pressure. Consider double isolation (double block and bleed) and the locking or labelling of closed valves. Do not assume that the system has depressurised even when the pressure gauge indicates zero.

1.8 Temperature

Allow time for temperature to normalise after isolation to avoid danger of burns. Valves fitted with PTFE seats must not be subjected to temperatures above 260 °C (500 °F) and valves with Viton seats 315 °C (599 °F). Above these temperatures toxic fumes may be given off. Avoid inhalation of fumes or skin contact.

1.9 Tools and consumables

Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine Spirax Sarco replacement parts.

1.10 Protective clothing

Consider whether you and/or others in the vicinity require any protective clothing to protect against the hazards of, for example, chemicals, high/low temperature, radiation, noise, falling objects, and dangers to eyes and face.

1.11 Permits to work

All work must be carried out or be supervised by a suitably competent person. Installation and operating personnel should be trained in the correct use of the product according to the Installation and Maintenance Instructions.

Where a formal 'permit to work' system is in force it must be complied with. Where there is no such system, it is recommended that a responsible person should know what work is going on and, where necessary, arrange to have an assistant whose primary responsibility is safety.

Post 'warning notices' if necessary.

1.12 Handling

Manual handling of large and/or heavy products may present a risk of injury. Lifting, pushing, pulling, carrying or supporting a load by bodily force can cause injury particularly to the back. You are advised to assess the risks taking into account the

task, the individual, the load and the working environment and use the appropriate handling method depending on the circumstances of the work being done.

1.13 Residual hazards

In normal use the external surface of the product may be very hot. If used at the maximum permitted operating conditions the surface temperature of some products may reach temperatures of 300 °C (572 °F).

Many products are not self-draining. Take due care when dismantling or removing the product from an installation (refer to 'Maintenance instructions').

1.14 Freezing

Provision must be made to protect products which are not self-draining against frost damage in environments where they may be exposed to temperatures below freezing point.

1.15 Safety information - Product specific

See the relevant Section in the attached Installation and Maintenance Instructions for specific details relating to this product.

1.16 Disposal

Unless otherwise stated in the Installation and Maintenance Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken. However, if the valve is fitted with a Viton or PTFE seat, special care must be taken to avoid potential health hazards associated with decomposition/burning of these seats.

Viton:

- Can be landfilled, when in compliance with National and Local regulations
- Can be incinerated, but a scrubber must be used to remove Hydrogen Fluoride, which is evolved from the product and with compliance to National and Local regulations.
- Is insoluble in aquatic media.

PTFE:

- - Can only be disposed of by approved methods, not incineration.
- Keep PTFE waste in a separate container, do not mix it with other rubbish, and consign it to a landfill site.

1.17 Returning products

Customers and stockists are reminded that under EC Health, Safety and Environment Law, when returning products to Spirax Sarco they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental risk. This information must be provided in writing including Health and Safety data sheets relating to any substances identified as hazardous or potentially hazardous.

2. General product information

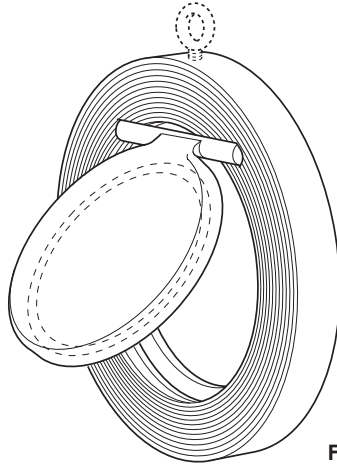


Fig. 1

2.1 General description

WCV1 and WCV3 wafer check valves are designed to be sandwiched between flanges. They are specifically designed for use on applications where there is a high proportion of particles in the liquid e.g.: sewage, paper mills, sludges etc. The standard seating ring is EPDM.

Sealing ring options : Viton - suffix 'V', PTFE - suffix 'T' and NBR - suffix 'P'.

Standards : Designed and manufactured in accordance with DIN 3202 Part 3.

Certification : These products are available with a Typical Test Report. Certification to EN 10204 3.1 is also available on request.

Note: All certification/inspection requirements must be stated at the time of order placement.

Other soft seats are available on request:

Seating options

The valves are stamped to identify the type of seat material fitted:

Standard sealing ring:	EPDM	'E'
	Viton	'V'
Optional alternatives:	PTFE	'T'
	NBR	'P'

Note: For further information see the following Technical Information Sheet, TI-P134-03, which gives full details of: Materials, sizes and pipe connections, dimensions, weights, operating ranges and capacities.

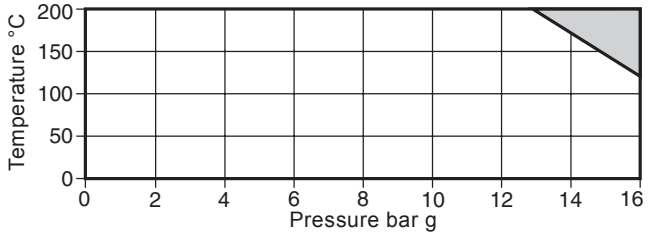
2.2 Sizes and pipe connections

DN125, 150, 200, 250, 300, 350, 400, 450 and 500 can be fitted between BS 4504 / DIN 2501 flanges PN6, 10, 16, 25, 40: ANSI 150 and ANSI 300.

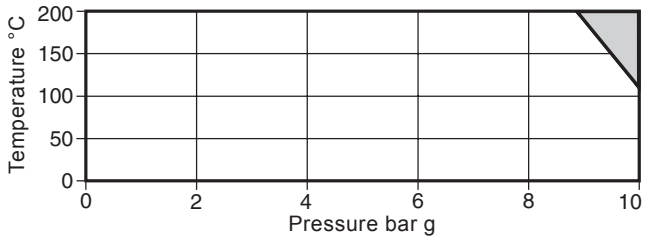
Note: Weld neck flanges must be used.

2.3 Pressure/temperature limits

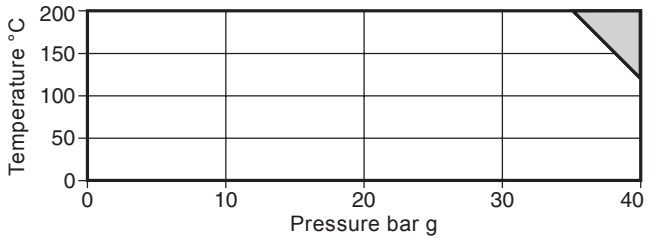
WCV1
(DN125 - DN300)



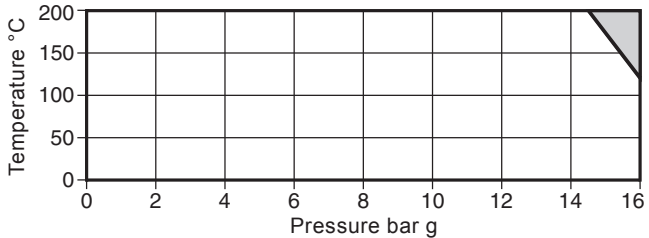
WCV1
(DN350 - DN500)



WCV3
(DN125 - DN300)



WCV3
(DN350 - DN500)



Maximum design conditions

WCV1	PN16 (DN125 - DN300)
	PN10 (DN350 - DN500)
WCV3	PN40 (DN125 - DN300)
	PN16 (DN350 - DN500)

Temperature limits with sealing ring

Standard sealing ring:	EPDM - suffix 'E'	-50 °C to +150 °C	-58 °F to +302 °F
	Viton - suffix 'V'	-15 °C to +250 °C	+5 °F to +482 °F
Optional alternatives:	PTFE - suffix 'T'	-10 °C to +200 °C	+14 °F to +392 °F
	NBR - suffix 'P'	-20 °C to +80 °C	-4 °F to +176 °F

Designed for a maximum cold hydraulic test pressure of:

WCV1	24 bar g (DN125 - DN300)
	15 bar g (DN350 - DN500)
WCV3	60 bar g (DN125 - DN300)
	24 bar g (DN350 - DN500)

2.4 Materials

No. Part	Material	
1 Body	WCV1	Bronze WS 2.1090
	WCV3	Austenitic stainless steel WS 1.4404
2 Valve disc/stem	WCV1	Bronze (DN125 to DN200) WS 2.1050
		Bronze (DN250 to DN500) WS 2.1096
	WCV3	Austenitic stainless steel WS 1.4571
3 Eyebolt	Austenitic stainless steel	WS 1.4301



Fig. 2

3. Installation

Note:

Before actioning any installation observe the 'Safety information' in Section 1.

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended installation:

- 3.1** Check materials, pressure and temperature and their maximum values. If the maximum operating limit of the product is lower than that of the system in which it is being fitted, ensure that a safety device is included in the system to prevent overpressurisation.
- 3.2** Determine the correct installation situation and the direction of fluid flow.
- 3.3** Remove protective covers from all connections.
- 3.4** Valves must only be installed where 'weld neck' flanges are used. Other flange types may restrict operation.
- 3.5** Valves should be installed either in a horizontal pipe or where the flow is vertically upwards.
- 3.6** When installing on a pump delivery side the valve must not be installed directly onto the pump. A distance of between 5 to 10 pipe diameters should be left downstream of the pump before the valve.

4. Commissioning

After installation or maintenance ensure that the system is fully functioning. Carry out tests on any alarms or protective devices.

5. Operation

The WCV operates as a check valve which allows flow of fluid in one direction but when the flow reverses the valve will shut and prevent back flow.

6. Maintenance

Note:

Before actioning any maintenance program observe the 'Safety information' in Section 1.

This product is non-maintainable.

When refitting a new valve, ensure that all joint faces are clean.

7. Spare parts

There are no spare parts available for this product.

How to order replacement unit

When ordering, please specify:-

1. Nominal pipe diameter (DN)

2. Body material

3. Flow medium

4. Maximum operating temperature

5. Nominal pressure (PN)

6. Flanging

7. Sealing ring

How to order a new product

Example: 1 - DN150 Spirax Sarco WCV1 bronze body wafer type check valve, hot water at 110 °C 6 bar g, to fit between BS 4504 PN16 flanges with standard EPDM sealing ring.