IM-P134-61
ST Issue 1

# WCV1, WCV2 and WCV3 Swing Type Wafer Check Valves

## Installation and Maintenance Instructions

## 1. General safety information

**Safe operation of these units can only be guaranteed if they are properly installed, commissioned and maintained by a qualified person (see Section 11 of the attached Supplementary Safety Information) 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.**

### Isolation

**Consider whether closing isolating valves will put any other part of the system or personnel at risk. Dangers might include; isolation of vents and protective devices or alarms. Ensure isolation valves are turned off in a gradual way to avoid system shocks.**

### Pressure

**Before attempting any maintenance consider what is or may have been in the pipeline. Ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting to maintain the product, this is easily achieved by fitting Spirax Sarco depressurisation valves type DV (see separate literature for details). Do not assume that the system is depressurised even when a pressure gauge indicates zero.**

### Temperature

**Allow time for temperature to normalise after isolation to avoid the danger of burns and consider whether protective clothing (including safety glasses) is required.**
**Valves fitted with PTFE seals must not be subjected to temperatures above 260°C (500°F) and valves with Viton seals 315°C (599°F). Above these temperatures toxic fumes may be given off.**

### Disposal

**These products are recyclable. No ecological hazard is anticipated with the disposal of these products 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 seals.**

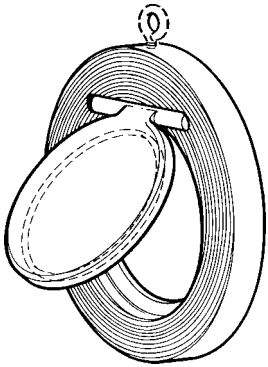
**Viton:**

- **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 insoluable 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.**

## 2. General product information



## 2.1 General description

The WCV1, WCV2 and WCV3 wafer check valves are designed and manufatcured in accordance with DIN 3202 Part 3 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.
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 Limiting conditions

### Maximum design conditions:

| | | |
|---|---|---|
| **WCV1** | PN16 (DN125 - 300) | PN10 (DN350 - 500) |
| **WCV2 / WCV3** | PN40 (DN125 - 300) | PN16 (DN350 - 500) |

### Temperature limits with sealing ring:

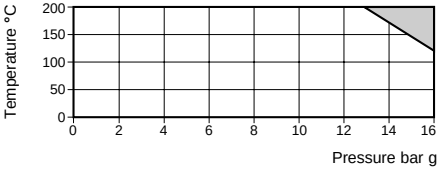
| | | | |
|---|---|---|---|
| **Standard sealing ring:** | EPDM - suffix 'E' | -50°C to +150°C | -58°F to +302°F |
| | Viton - suffix 'V' | -15°C to +250°C | +5°F to +482°F |
| **Optional alternatives:** | PTFE - suffix 'T' | -10°C to +200°C | +14°F to +392°F |
| | NBR - suffix 'P' | -20°C to +80°C |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

### Designed for a maximum cold hydraulic test pressure of:

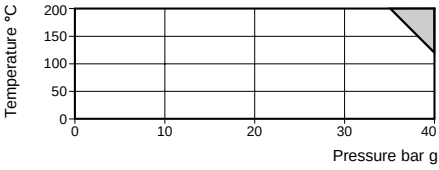
| | | |
|---|---|---|
| **WCV1** | 24 bar g 348 psi g (DN125 - 300) | 15 bar g 217.5 psi g (DN350 - 500) |
| **WCV2 / WCV3** | 60 bar g 870 psi g (DN125 - 300) | 24 bar g 348.0 psi g (DN350 - 500) |

## 2.4 Operating range

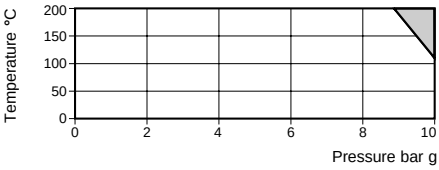
**WCV1 (DN125 - DN300)**



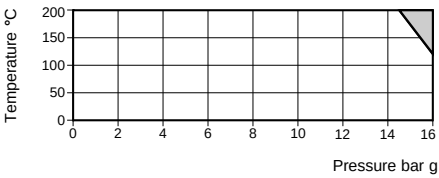

**WCV2, WCV3 (DN125 - DN300)**




**WCV1 (DN350 - DN500)**




**WCV2, WCV3 (DN350 - DN500)**




These products must not be used in this region.

## 2.5 Materials

| No. | Part | | Material | |
|---|---|---|---|---|
| 1 | Body | **WCV1** | Bronze | WS 2.1090 |
| | | **WCV2** | Austenitic stainless steel | WS 1.4301 |
| | | **WCV3** | Austenitic stainless steel | WS 1.4571 |
| 2 | Valve disc/stem | **WCV1** | Bronze (DN125 to DN200) | WS 2.1050 |
| | | | Bronze (DN250 to DN500) | WS 2.1096 |
| | | **WCV2** | Austenitic stainless steel | WS 1.4301 |
| | | **WCV3** | Austenitic stainless steel | WS 1.4571 |
| 3 | Eyebolt | | Austenitic stainless steel | WS 1.4301 |

## 2.6 Opening pressure in mbar

Differential pressures with zero flow for standard springs.

→ Flow direction

| | DN125 | DN150 | DN200 | DN250 | DN300 | DN350 | DN400 | DN450 | DN500 |
|---|---|---|---|---|---|---|---|---|---|
| ↑ | 9.40 | 12.20 | 18.40 | 16.90 | 20.60 | 22.10 | 24.00 | 24.10 | 31.10 |
| → | 0.98 | 0.98 | 1.17 | 0.98 | 1.17 | 1.17 | 1.27 | 1.27 | 1.96 |

## 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 diametes should be left downstream of the pump before the valve.

## 4. Commissioning

After installation or maintenance ensure that the system is fully functiuoning. 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.