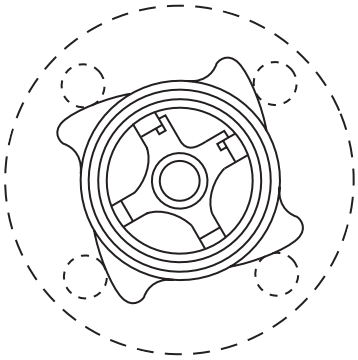
DCV3/B
Boiler Feed Check Valve
Installation and Maintenance Instructions



1. Safety information

Safe operation of this product can only be guaranteed if it is properly installed, commissioned, used and maintained by qualified personnel (see Section 1.11) 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 product listed below complies with the requirements of the European Pressure Equipment Directive 2014/68/EU and carries the CE mark when so required.

The product falls within the following Pressure Equipment Directive categories:

Product		Group 2 Gases	Group 2 Liquids
DCV3/B	DN15 - DN25	SEP	SEP
	DN32	SEP	SEP
	DN40 - DN50	1	SEP

i) **The DCV3/B has been specifically designed for use on boiler feedwater systems which are in Group 2 of the above mentioned Pressure Equipment Directive. They can 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 and protective film from all name-plates, where appropriate, before installation on steam or other high temperature applications.**

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 and consider whether protective clothing (including safety glasses) are required.

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 400 °C (752 °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 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.

Please visit the Spirax Sarco product compliance web pages
https://www.spiraxsarco.com/product-compliance
for up to date information on any substances of concern that may be contained within this product. Where no additional information is provided on the Spirax Sarco product compliance web page, this product may be safely recycled and/or disposed providing due care is taken. Always check your local recycling and disposal regulations.

1.16 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

2.1 General description

The Spirax Sarco DCV3/B boiler feed check valve is specifically designed for use on boiler feedwater systems. It is a disc check valve with a soft EPDM seat to ensure tight shut-off against boiler pressure, even under poor water conditions. The valve is fitted with a strong spring to hold back the head of water in the feedtank, preventing a shut down boiler flooding with water.

Standards

Designed and manufactured in accordance with BS 7438.

Standard shut-off

Shut-off standard meets EN 12266-1 rate A, providing a differential pressure exists.

Certification

These products are available with a Typical Test Report. The products are also available with certification to EN 10204 3.1.

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

Note: For further information, see the following Technical Information Sheet, TI-P402-121.

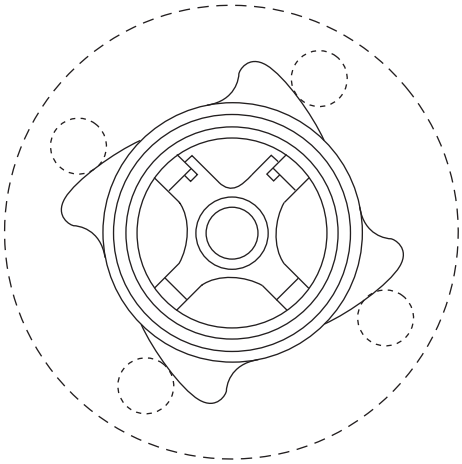
2.2 Sizes and pipe connections

DN20, DN25, DN32, DN40 and DN50.
The valves are selected to suit the feedwater line size and are suitable for installation between the following flanges: EN 1092 PN6, PN10, PN16, PN25, PN40 and BS 10 Table D, E, F, and H.

2.3 Pressure / temperature limits

Maximum body design conditions		PN40
Maximum body design temperature	400 °C	(752 °F)
Minimum ambient temperature	-10 °C	(14 °F)
Maximum boiler pressure	32 bar g	(464 psi g)
Maximum feedpump pressure	40 bar g	(580 psi g)
Maximum feedwater temperature	120 °C	(248 °F)
Maximum feedwater head	6 m	(19.68 ft)
Opening pressure (approximately)	0.7 bar g	(10 psi g)
Designed for a maximum cold hydraulic test pressure of:	60 bar g	(870 psi g)

Caution: The valve must not be used on any fluids categorised as Group 1 according to the EC directive on the classification of dangerous substances (i.e: explosive, flammable, toxic and oxidising substances).



Note: The flanges, fasteners, and gaskets are supplied by the installer.

Fig. 1 DCV3/B

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.

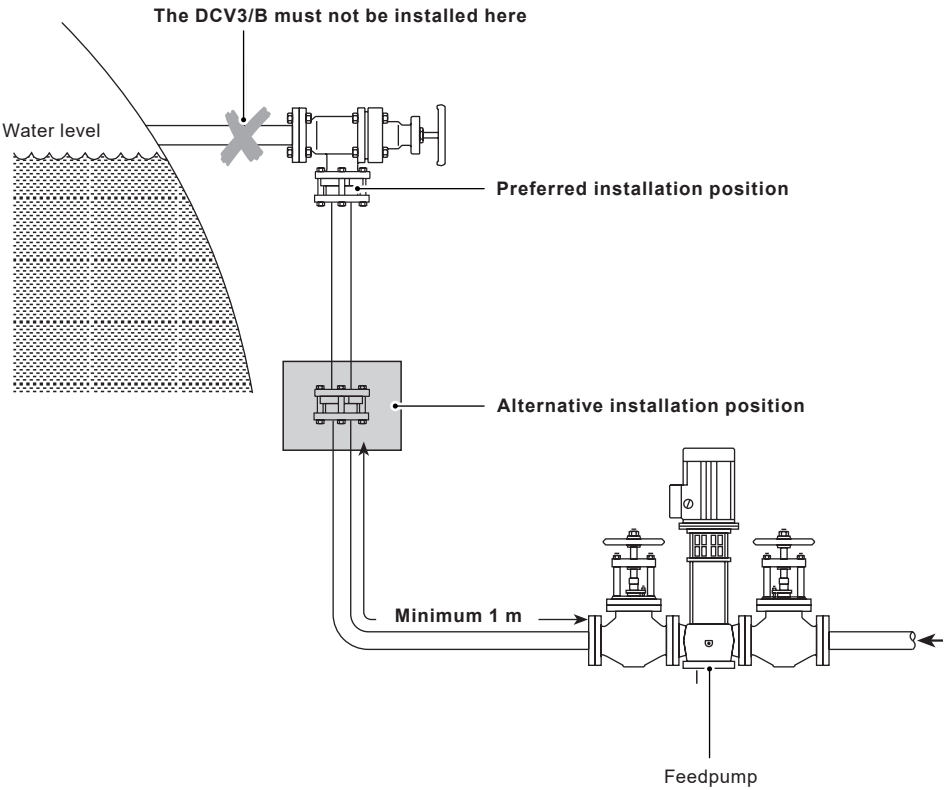
3.4 The DCV3/B must be fitted in accordance with the direction of flow arrow indicating correct fluid flow direction. The valve spring will cause a pressure drop in the feedline of between 1 and 2 bar (14.5 and 29 psi), depending on the feedwater flowrate. If in doubt about the ability of the feedpump to handle this increased pressure drop please consult the pump curve (available from the pump manufacturer).

3.5 Install the DCV3/B in the boiler feedwater line anywhere between the feedpump and the boiler, but at least 1 m (3 ft) away from the boiler feedpump to ensure that high turbulence does not cause an increased pressure drop (Figure 2).

3.6 It is essential that there is water on both sides of the valve at all times, as steam temperatures above 120 °C (248 °F) will damage the EPDM seal.

3.7 The DCV3/B may be sandwiched between flanges, using suitable gaskets, (not supplied), in any plane.

3.8 Rotate the valve body so that the lugs are touching the flange joint bolts in order to centralise the unit between the flanges.



Note: The illustration shows preferred and alternative installations for the DCV3/B boiler feed check valve (mounted between flanges).

Fig. 2 Installation example

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 valve is opened by the boiler feedwater pressure and is closed by the spring as soon as the flow ceases, preventing reverse flow.

6. Maintenance

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

Warning

Isolate the valve from the pressure source before removing or replacing.

Great care must be taken when dismantling the DCV3/B since the strength of the spring can cause the retainer to be released from the valve body with considerable force.

No routine maintenance is required, though it is recommended that the unit is cleaned and checked for wear when the boiler is serviced.

To dismantle the valve, straighten the two spring retainer lock tabs, and rotate the retainer to release the spring and disc.