

BCS1

Pipeline Set

Installation and Maintenance Instructions

General safety information

Your attention is drawn to Safety Information Leaflet IM-GCM-10, as well as to any National or Local Regulations concerning boiler blowdown. In the UK, guidance is given in HSE Guidance Note PM60.

WARNING

This pipeline set is for use with one of several Spirax Sarco blowdown controllers. The controllers comply with various Emissions and Immunity Standards. Full information is given in the controller Installation and Maintenance Instructions supplied with each unit.

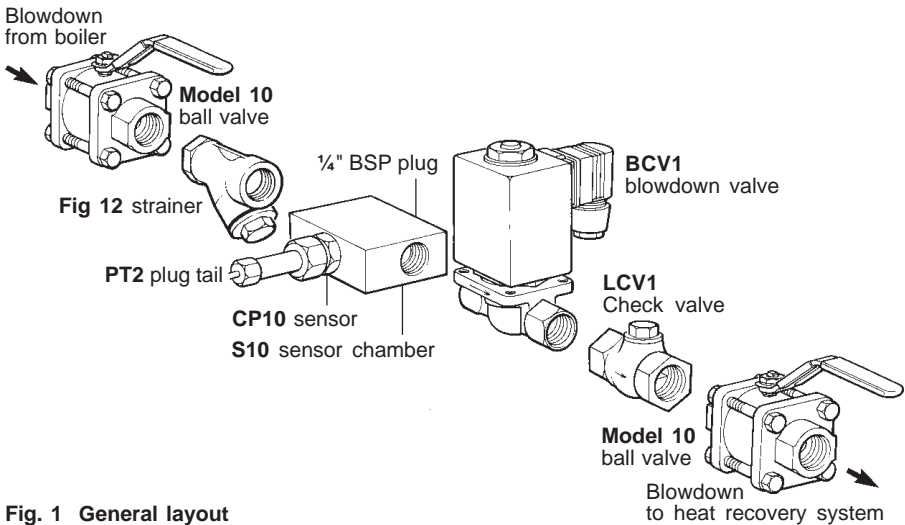


Fig. 1 General layout

Description

Components in this pipeline set have been selected to enable straightforward installation of a blowdown system where the probe is to be mounted in the pipeline.

The BCS1 pipeline set consists of the following items:-

- 1 - S10 sensor chamber ½" BSP.
- 1 - CP10 sensor and gasket.
- 1 - PT2 Plug tail.
- 1 - Sensor chamber plug ¼" BSP.
- 1 - BCV1 solenoid valve ½" BSP 230 V.
- 1 - LCV1 check valve ½" BSP
- 1 - Fig 12 SG iron strainer ½" BSP.
- 2 - Model 10 CS ball valve ½" BSP.

A controller is also required, and should be selected from the Spirax Sarco range. The controllers offer a variety of features which are described in separate literature.

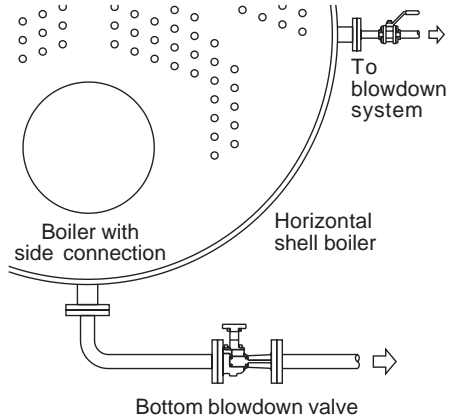


Fig. 2 Blowdown from side connection

Operation

The blowdown system works by opening the blowdown valve periodically in order to purge the system and allow a flow of boiler water past the sensor.

The controller measures the electrical conductivity of the water, which is directly related to the level of total dissolved solids, or TDS.

The measured value is compared with the set point in the controller.

If the measured value is lower than the set point the blowdown valve closes at the end of the purge time.

If the measured value is higher than the set point the controller holds the blowdown valve open, allowing the contaminated boiler water to be replaced by clean, low TDS make-up water.

The blowdown valve closes when the conductivity of the boiler water drops below the controller set point.

WARNING

With some small boilers, an excessive purge time may lower the water level significantly, and may even trigger a low water alarm.

Electrical installation

Wiring of the controller, blowdown valve, and sensor is described in the Installation and Maintenance Instructions supplied with each item. Copies are available on request.

Mechanical installation

General

Unpack the system, read and keep the Installation and Maintenance Instructions provided with the individual items. They will be needed for future maintenance.

It is strongly recommended that, wherever possible, the blowdown system is connected to a boiler side connection, well away from the boiler feedwater inlet. This minimises the chance of suspended solids entering the

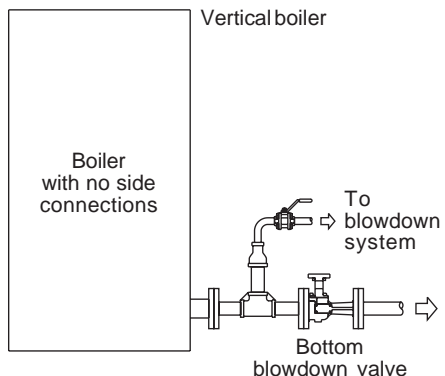
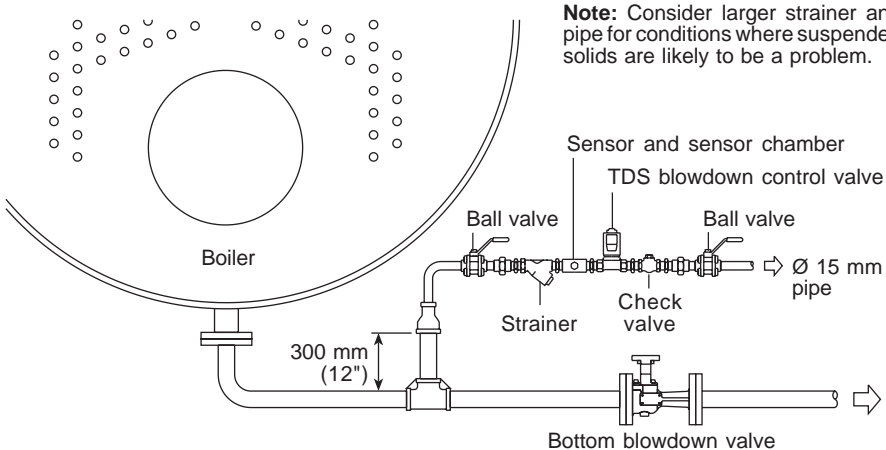


Fig. 3 Blowdown from bottom connection



Note: Consider larger strainer and pipe for conditions where suspended solids are likely to be a problem.

Fig. 4 Installation where no side connection is available and suspended solids are likely

blowdown system strainer, and ensures that a representative sample of boiler water is taken. See Figure 2.

If a side connection is not possible and a 'T' connection has to be taken from the main bottom blowdown pipe, make the connection at the top of the pipe, as near as possible to the boiler, before the bottom blowdown valve. Figure 3. If a high level of suspended solids is likely, (old boiler or less than adequate water treatment) ensure the 'T' connection is the same diameter as the blowdown line for 300 mm (12"), then fit a reducer to ½" pipe.

It may also be useful to consider the use of a larger strainer than the one provided, as shown in Figure 4.

The strainer provided in the kit has 0.8 mm screen perforations. Do not fit a strainer screen finer than that provided as it may become blocked prematurely.

Install the system components in the order shown in Figure 5, using ½" BSP connectors and PTFE tape.

Union fittings are recommended to allow easy removal of the assembly.

Strainer

Install with the flow in the direction of the arrow with the end cap downwards. Do not overtighten connectors.

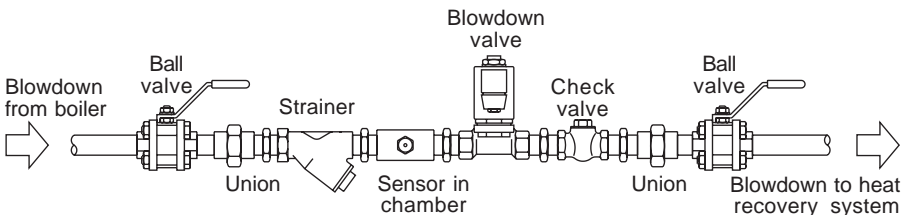


Fig. 5 Typical installation

S10 sensor chamber

Install the sensor chamber upstream of the blowdown valve, as close to the boiler as possible, either horizontally, or vertically with the flow upwards. The 3/8" BSP sensor connection should be horizontal so that the sensor may be fitted from the side.

A sample cooler may be connected to the 1/4" BSP connection on the sensor chamber for boiler water sampling. If not used, it must be plugged with the 1/4" BSP plug provided.

CP10 sensor and PT2 plug tail.

Fit the joint gasket and tighten the sensor to a torque of 50 - 56 N m (37 - 41 lbf ft).

We do not recommend the use of PTFE tape on the thread, but a graphited or copper based sealing compound may be used to aid subsequent removal. Fit the plug tail using the gasket provided. Do not overtighten the union nut. When mechanical protection of the cable is required, the end nut may be removed from the plug tail and the M16 thread used to fit a flexible conduit adaptor.

Blowdown valve

Install with the flow in the direction of the arrow, in a horizontal pipeline, with the solenoid vertically above the valve. Do not overtighten the connectors into the brass body. For ease of installation the solenoid unit may be moved through 360° by slackening the top nut. The cable socket insert can also be repositioned if required.

Lift check valve

Install with the flow in the direction of the arrow, in a horizontal pipeline with the screwed cap on top. Do not overtighten the connectors.

Ball valves

May be installed in any plane with flow in either direction. Ensure that there is space available for free movement of the lever.

WARNING

National Regulations may call for a special type of isolating valve at the boiler shell.

Discharge pipework

In the UK and many other countries, for **single boiler installations** the blowdown may discharge into the bottom blowdown line downstream of the bottom blowdown valve.

For **multi-boiler installations** the blowdown pipelines must be kept separate from the bottom blowdown lines up to the blowdown vessel. For further information in the UK see Health and Safety Executive Guidance Note PM60.

WARNING

Other regulations or Guidance Notes may apply outside the UK.

Maintenance

Controllers require no maintenance.

The blowdown system, however, should be checked as follows:-

Weekly

Take a sample of the boiler water through a sample cooler and measure its TDS, or conductivity. The Spirax Sarco MS1 is a suitable instrument for this purpose.

Carry out a manual purge of the system.

Check that blowdown is actually discharged (e.g. by temperature or sound) and that the blowdown valve shuts off fully.

Operate the stop valves to ensure they shut off and are not seized or stiff.

Annually

Isolate the system (or empty the boiler), inspect and service the system components as described in their relevant Installation and Maintenance Instructions.

Severe operating conditions

Where it is suspected that scaling may be taking place, or where water quality is suspect, it may be necessary to increase the frequency of servicing.

Inspect the strainer, valves and sensor every month initially, increasing or decreasing intervals according to the degree of contamination found.

Always consult the local competent boiler authority for advice on the frequency of boiler inspections.