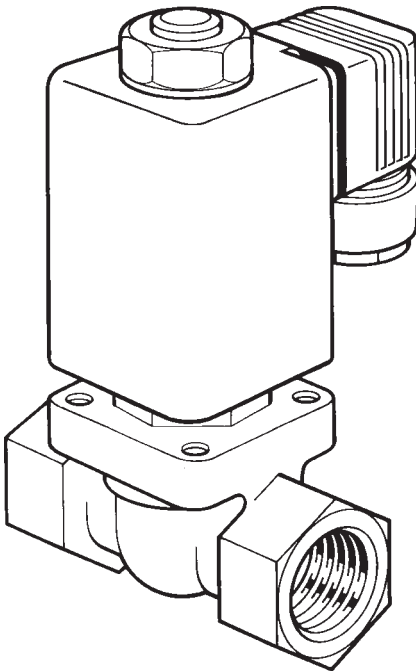


**BCV1 and BCV20
Blowdown Valves**

Installation and Maintenance Instructions



- 1. Safety information*
- 2. Description*
- 3. Technical data*
- 4. Mechanical installation*
- 5. Electrical wiring*
- 6. Maintenance*

1. Safety information

Your attention is drawn to Safety Information Leaflet IM-GCM-10, as well as to any National or Regional regulations (in the UK, IEE Regulations BS 7671).

The product is designed and constructed to withstand the forces encountered during normal use. Use of the product other than as a blowdown valve could cause damage to the product and may cause injury or fatality to personnel. This product contains materials including PTFE that can give off toxic fumes if exposed to excessive heat.

Do not install the valve outdoors without additional weather protection.

WARNING

This product complies with the requirements of Electromagnetic Compatibility Directive 89 / 336 / EEC by meeting the standards of:

- BS EN 50081-1 (Emissions) and
- BS EN 50082-2 (Industrial Immunity).

The product may be exposed to interference above the limits of BS EN 50082-2 if:

- The product or its wiring is located near a radio transmitter.
- Excessive electrical noise occurs on the mains supply.

Cellular telephones and mobile radios may cause interference if used within approximately 1 metre (39") of the product or its wiring. The actual separation distance necessary will vary according to the surroundings of the installation and the power of the transmitter.

Power line protectors (ac) should be installed if mains supply noise is likely. Protectors can combine filtering, suppression, surge and spike arrestors.

WARNING

If this product is not used in the manner specified by this IMI, then the protection provided may be impaired.

2. Description

The BCV1 and BCV20 valves are small bore, normally closed valves with a brass body and corrosion resistant internal components. They are primarily intended for low and medium pressure boiler blowdown applications.

These valves are identical apart from the orifice size, the BCV1 having a 3 mm (1/8") orifice and the BCV20 a 6 mm (1/4") orifice. Both valves are supplied complete with a mains connector, which is protected to IP65 and is suitable for 3 x 1 mm² (18 AWG) cable.

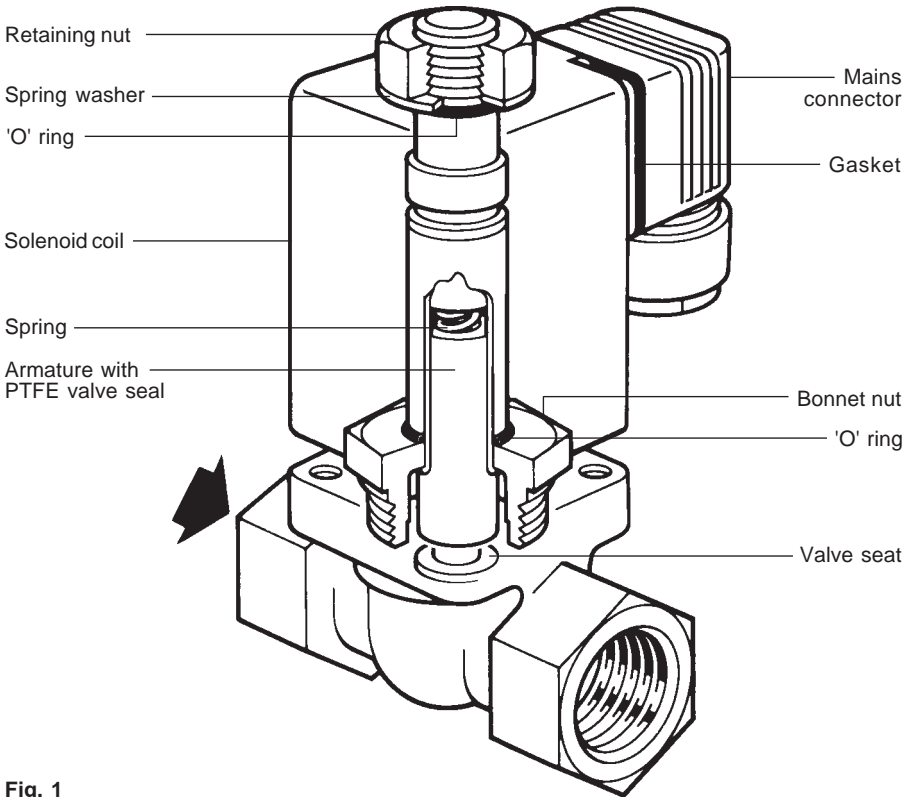


Fig. 1

3. Technical data

3.1 Available sizes and pipe connections

½" screwed BSP - 230 V version

½" screwed BSP - 110 V version

½" screwed NPT - 120 V version

½" screwed NPT - 120 V version (UL/CSA Listed, BCV1 only)

3.2 Limiting conditions

BCV1

Maximum boiler or steam pressure	14 bar g (203 psi g) (Intermittent operation)
Medium temperature range	-40 to +200°C (-40 to +392°F)
Medium	Water and steam
Maximum ambient temperature	55°C (130°F)

BCV1 (UL/CSA)

Maximum boiler or steam pressure	9 bar g (130 psi g)
Medium temperature range	-40 to +180°C (-40 to +356°F)
Medium	Water and steam
Maximum ambient temperature	55°C (130°F)

BCV20

Maximum boiler or steam pressure	4 bar g (58 psi g)
Medium temperature range	-40 to +180°C (-40 to +356°F)
Medium	Water and steam
Maximum ambient temperature	55°C (130°F)

3.3 Response times (ms)

BCV1	Opening	10 - 20
	Closing	20 - 30
BCV20	Opening	10 - 20
	Closing	20 - 30

3.4 Electrical data

230 V version	207 V to 253 V
110 V version	99 V to 121 V
120 V version	108 V to 132 V
Frequency	50 - 60 Hz
Maximum power consumption	40 VA (inrush)
	16 VA/12 W (hold)
Protection rating	IP65 (Nema 4)

3.5 Materials

Body	Brass
Soft seal	PTFE
Internal components	Stainless steel

3.6 Capacities

Model	BCV1	BCV20
Orifice size	3 mm (1/8")	6 mm (1/4")
K_v value	0.25	0.8

For conversion C_V (UK) = $K_V \times 0.97$ C_V (US) = $K_V \times 1.17$

When used for boiler blowdown purposes, the valve will be controlling a mixture of water and flash steam, so the following capacity table applies:-

Boiler pressure bar g (psi g)	Capacity kg/h (lb/h)	
	BCV1	BCV20
1 (14.5)	175 (385)	560 (1232)
2 (29)	250 (550)	790 (1738)
4 (58)	350 (770)	1120 (2464)
6 (87)	385 (847)	-
8 (116)	445 (979)	-
10 (145)	495 (1089)	-
14 (203)	590 (1298)	-

When the BCV20 valve is used as part of the BCS2 blowdown control system, downstream of a steam trap, the following capacity table applies:-

Head across valve m (ft)	Cold water capacity kg/h (lb/h)	Hot water capacity with flash steam kg/h (lb/h)
1 (3)	253 (557)	63 (138)
2 (6)	358 (787)	90 (198)
3 (9)	438 (963)	110 (242)
5 (15)	566 (1245)	142 (312)
10 (30)	800 (1760)	200 (440)

4. Mechanical installation

Observe the permissible pressure ranges given on the valve label.

Before installing the valve ensure pipeline etc. is free of foreign matter (e.g. metal fillings, seal materials, welding scale etc.)

A strainer should be fitted upstream of the valve. The valve should be fitted with the flow in the direction of the arrow, in a horizontal plane. The solenoid should be above the valve body (prevents foreign material accumulating around the armature tube and reducing product life).

Do not over-tighten screws, nuts, or pipework as this could damage the valve body.

The valve can be installed without a separate support in the pipeline or can be attached by means of two support holes of 7 mm diameter. Support and align pipelines sufficiently to prevent strain on the valve bodies.

Caution: When screwing the pipeline connections, **do not** use the solenoid as a lever. Threads should be sealed using PTFE tape.

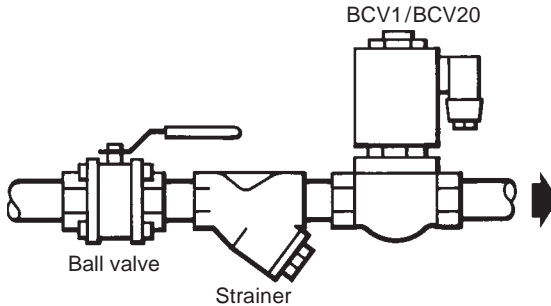


Fig. 2

5. Electrical wiring

All wiring materials and methods shall comply with relevant EN and IEC standards where applicable. For installations in the US and Canada, the controller and valve must be wired in accordance with the Local and National Electrical Code (NEC) or the Canadian Electrical Code (CEC).

Check the solenoid label to ensure the operating voltage is correct for the mains supply.

Suitable ac voltages are: -

230 V version	207 V to 253 V
110 V version	99 V to 121 V
120 V version	108 V to 132 V
Frequency	50 - 60 Hz
Maximum power consumption	40 VA (inrush)
	16 VA/12 W (hold)
Protection rating	IP65 (Nema 4)

Caution: Do not apply power to the coil unless it is fitted to the valve.

For ease of installation, the solenoid coil can be moved through 360°C by slackening the solenoid nut.

Wiring should be carried out using suitable 3 core, 1 mm² (18 AWG) high temperature (90°C minimum) cable.

Ensure that sufficient cable length is provided to allow removal of the cable socket and to ensure that no strain is placed on the unit.

The cable socket for the standard valve is fitted with a Pg 16 cable gland.

The cable socket (Type H) for the UL/CSA Listed valve is provided with a female ½" NPT thread for connection to a length of flexible metal conduit.

To retain the integrity of the approvals the UL/CSA Listed valve must be installed with the H type cable socket.

Caution: Care must be taken to ensure that any condensation, which might build up in the conduit network, is prevented from accumulating in the valve cable socket.

To unplug the cable socket, remove the central screw.

To gain access to the connector block within the cable socket for the standard valve, remove the plastic internal central screw and withdraw the connector block.

For the UL/CSA Listed valve, simply remove the top of the Type H cable socket.

The connector block maybe rotated in 90° steps to facilitate wiring (not available on the UL/CSA version).

Electrical connection must be made before the socket and the gasket is fitted to the valve.

Flat terminal = Earth connection (UL/CSA earth terminal coloured green).

Note: - To provide environmental protection the valve is supplied with a gasket between the cable socket and the valve connector. To maintain environmental integrity, ensure gasket is always present when reconnecting cable socket and contact surfaces are undamaged and are clean.

The tightening torque for the cable plug central retaining screw is 1 N m.

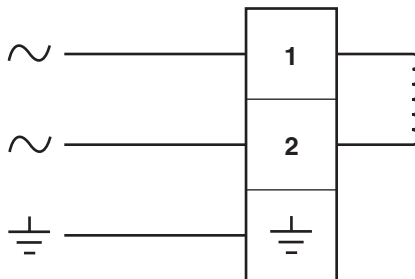


Fig. 3 Wiring diagram

6. Maintenance

If it becomes necessary to dismantle the valve, proceed as follows:-

1. Disconnect the mains supply.
2. Remove retaining nut and washer and withdraw solenoid coil.
3. Remove the bonnet nut and withdraw armature and spring.
4. Clean the valve and examine the seating surfaces for damage.
5. Replace the spring and armature if required.
6. Reassemble valve in the reverse order of dismantling.

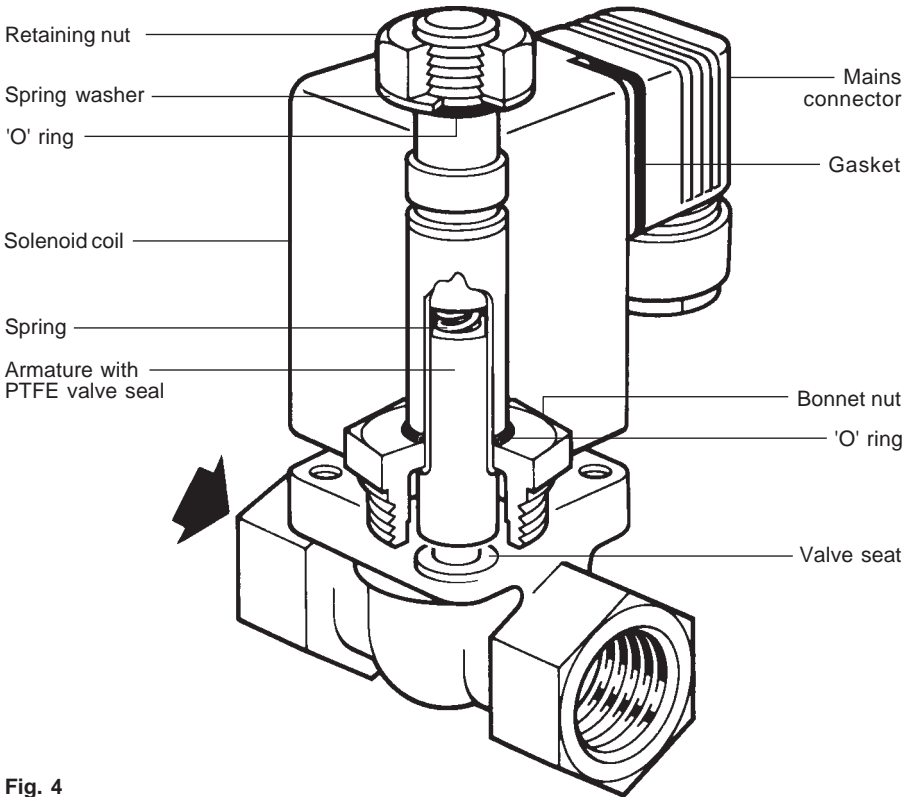


Fig. 4

Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

Available spares

Armature and spring set (kit).	Stock No.4034080
Solenoid coil 230 V	Stock No.4034081
Solenoid coil 110/120 V	Stock No.4034082

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the valve type.

Example: 1 off Armature and spring set (Stock No. 4034080) for a Spirax Spirax BCV20 blowdown valve.