TDS Blowdown Valve

BKV 5400

Installation and Operating Instructions

EN

English

NOTES

CONTENT

1. SAFETY INFORMATION

Installation, commissioning and maintenance of this device must be done by a qualified personnel in compliance with the operating instructions. Otherwise device and related equipments may be damaged and personnel may be injured. 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.

National and local regulations must be taken into consideration.

Warning!

Please make sure to remove the main supply before installation. Otherwise this may cause damage to the product, personal injuries or even death

1.1 Tools

Before starting work, make sure that you have suitable tools and and consumables available.

1.2 Temperature

Let the temperature to cool down after isolation to avoid danger of burns.

1.3 Freezing

Required precautions must be taken at the places where they may be exposed to temperatures below freezing point.

1.4 Lighting

Make sure there is enough lighting, particularly where detailed or tough work is required.

1.5 Pressure

Make sure that any pressure is isolated and safely vented to atmospheric pressure. Do not assume that the system has depressurised even when the pressure gauge indicates zero.

1.6 Access

Before attempting to work on the product, safe Access must be ensured. If necessary, lifting gear should be used.

1.7 Residual hazards

The external surface of the product may be very hot. If used at the maximum operating conditions according to the specs, the surface temperature of some products may reach temperatures of 239°C.

1.8 Hazardous environment

Plant rooms are usually explosion risk areas. There may be lack of oxygen, dangerous gases extremes of temperature, hot surfaces, fire hazard excessive noise, moving machinery.

1.9 Suitable protective clothing

In order to be protected against the hazards of chemicals, high temperature, radiation, noise, falling objects, and dangers to eyes and face, anyone around requires protective clothing suitable in the plant room.

1.10 Hazardous liquids or gases

Be aware of that it cannot be known what may have been in the pipeline at previous usage. Consider: flammable materials, substances hazardous to health, extremes of temperature.

1.11 Supervision

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 Operation Instructions.

1.12 Disposal

Unless otherwise stated in the Installation and Operation Instructions, this product is recyclable and no ecological hazard.

1.13 Returning products

When returning products to Vira Isı ve Endüstriyel Ürünler A.Ş the customers 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.

2.GENERAL INFORMATION

2.1 Description

As a boiler generates steam, any impurities which are in the boiler feedwater and which do not boil off with the steam will concentrate in the boiler water.

As the time passes and dissolved solids become more and more concentrated, the steam bubbles on the surface tend to become more stable. Eventually, substantial part of the steam space in the boiler becomes filled with bubbles and foam is carried over into the main steam.

This is obviously undesirable situation. Both, the steam leaves the boiler wet and boiler water contains high level of dissolved and suspended solids. These solids will contaminate control valves, heat exchangers and steam traps as well as whole installation.

The TDS (Total Dissolved Solids) level in steam boilers is controlled using TDS Blowdown Control System more accurately. The conductivity controller BK 5000-T measures the electrical conductivity and temperature of the boiler water with the help of the conductivity probe BD 5600-T and the integrated temperature sensor. The conductivity values are automatically compensated to the reference temperature of 25 ° C. The BK5000-T can also be used with the BD5400 or BD 5300-T conductivity probe. When used with BD 5400, the BK5000-T does not receive temperature information and therefore does not compensate for temperature.

The conductivity controller BK5000-T and the conductivity probe are used as limit switches. For example, in a boiler or feed water tank, the conductivity controller BK 5000-T instantly measures and displays the conductivity value. When the conductivity value reaches the set value, the blowdown valve BKV 5400 opens. If the water drops below the set value, the blowdown valve BKV 5400 is closed. The conductivity setpoint can be set to the desired value.

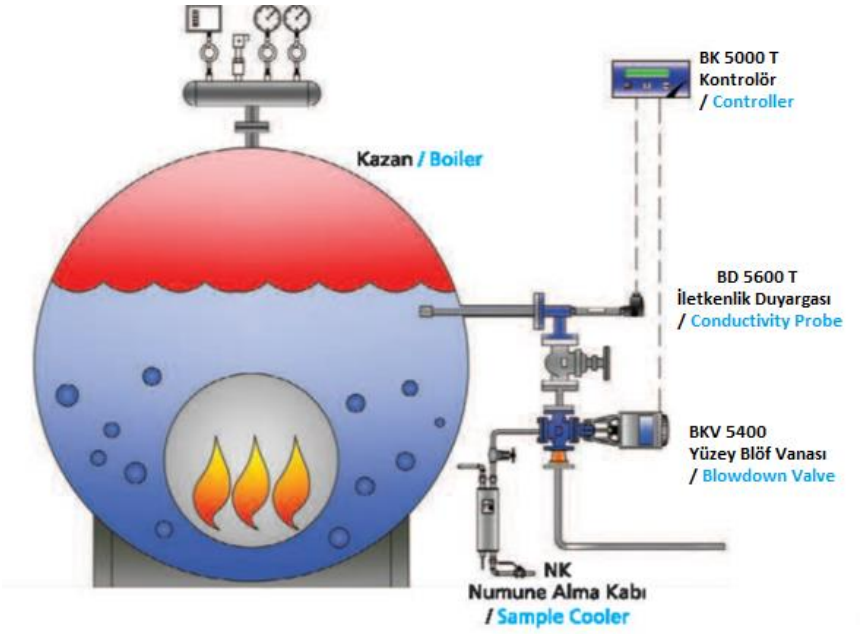

Figure 1: Connection of TDS Blowdown System BS4-T to a steam boiler

3.TECHNICAL SPESIFICATIONS

3.1. BKV 5400 TDS Blowdown Control Valve

Max. operating temperature	: 239°C
Max. operating pressure	: 32 bar g
Nominal pressure	: PN 40
Body	: GGG 40 Nodular Cast Iron
Connection	: DN 20 Flanged
Weight	: 10 kg

3.2. BKA 5400 TDS Blowdown Control Valve Actuator

Max. operating temperature	: 150 °C
Enclosure	: IP 54
Main supply voltage	: 230 V
Frequency	: 50 Hz
Power consumption	: 15 VA
Full open/close time	: 120 seconds

3.3. DG 5420 Blowdown Probe Elbow

Body	: GGG 40 Nodular Cast Iron
Boiler and valve connection	: DN 20 Flanged
Probe connection	: 1/2’’ BSP Screwed
Nominal pressure	: PN 40
Max. operating temperature	: 239°C
Max. operating pressure	: 32 bar g

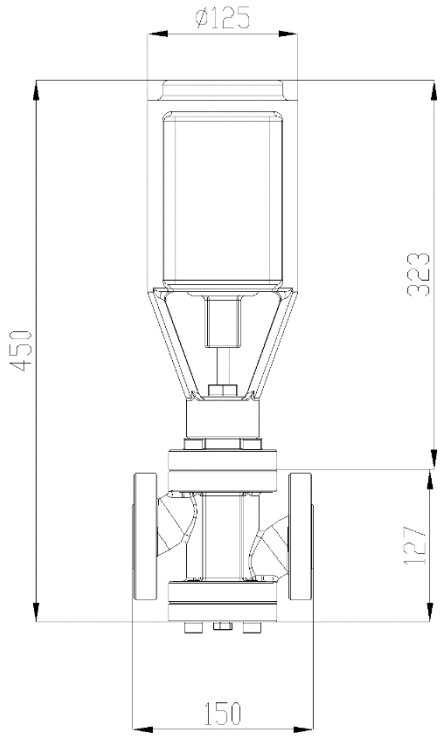

Figure 2: BKV 5420 Dimensions

Valve Blowdown Capacity DN 20	
Pressure (bar g)	**Capacity (kg/h)**
3	525
5	750
7	1200
10	1500
12	1550
15	1650

Table 1: BKV 5400 Pressure vs Capacity

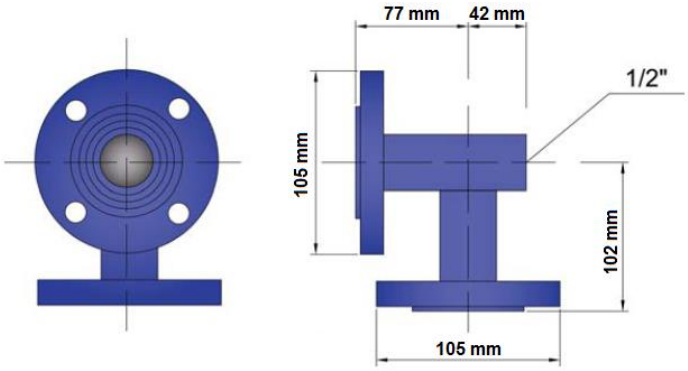

Figure 3: DG 5420 Blowdown Probe Elbow

4. INSTALLATION AND WIRING

4.1. Installation

Before installation of blowdown valve, DG 5420 Blowdown Probe Elbow must be installed to boiler. Valve and probe are installed to the probe elbow (Figure 5).

Valve can be installed vertically or canted maximum 90° left or right. It shall not be installed upside down.(Figure 4)

Pay attention to arrow mark located on the valve body which shows direction of water flow.

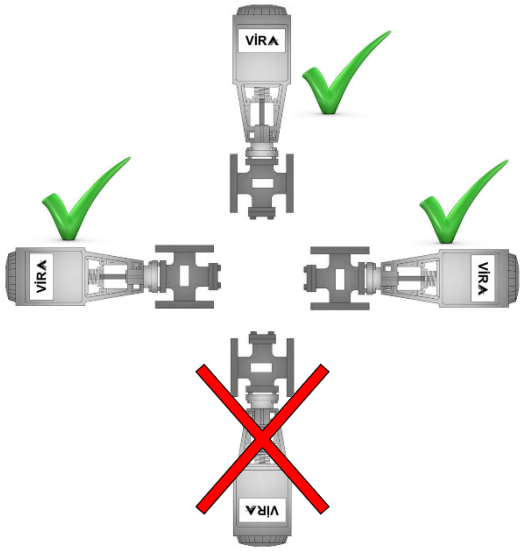

Figure 4: Installation positions of BKV 5400 TDS Blowdown Control Valve

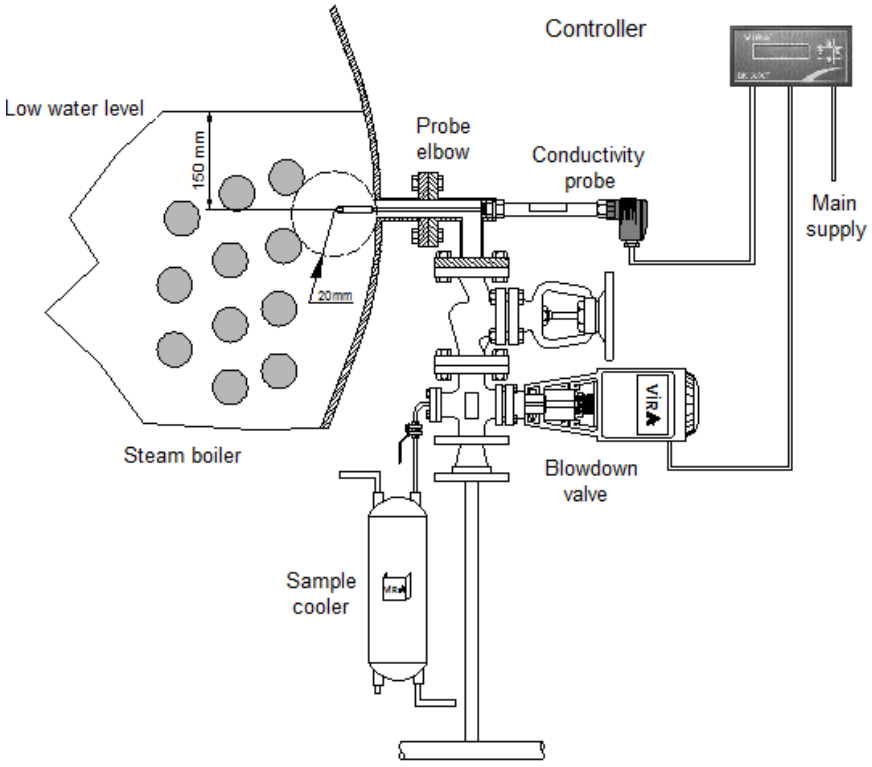

Figure 5: Horizontal installation of BKV 5400 TDS Blowdown Valve

4.2 Wiring

Wiring of the valve actuator with limit switch and without limit switch is shown in the Figure 6 below. 1mm2 normal cable can be used.

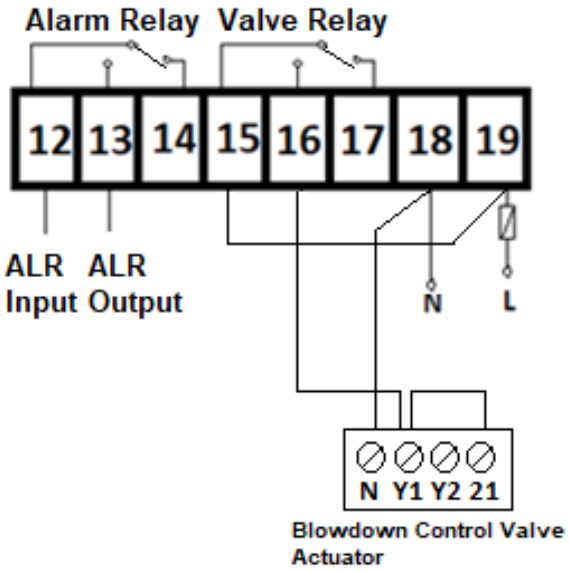

Figure 6: BKA 5400 TDS Blowdown Control Valve Actuator wiring diagram

5. COMMISSIONING

TDS Blowdown Control Valve has two operating mode as automatic and manual.

5.1. Automatic Operating Mode

In automatic mode, valve is operated full automatic by BK 5000-T TDS Blowdown Controller. There is no need to any user interferences. Automatic mode is factory default setting.

5.2. Manual Operating Mode

In manual mode, valve is out of control of BK 5000-T and is controlled manually. To change the valve operating mode as manual, hand lever up on the valve actuator is rotated at clockwise. Approximately an half turn, a red indicator marked «MAN» is visible under the hand lever. After that valve is operated manually and so valve is not operated automatically despite main supply is still on. Turning the hand lever clockwise moves the pressure cylinder downwards and opens the valve. Turning the hand lever counterclockwise closes the valve. The pressure cylinder moves upward to the “0” position of the valve. The red indicator marked «MAN» is no longer visible.

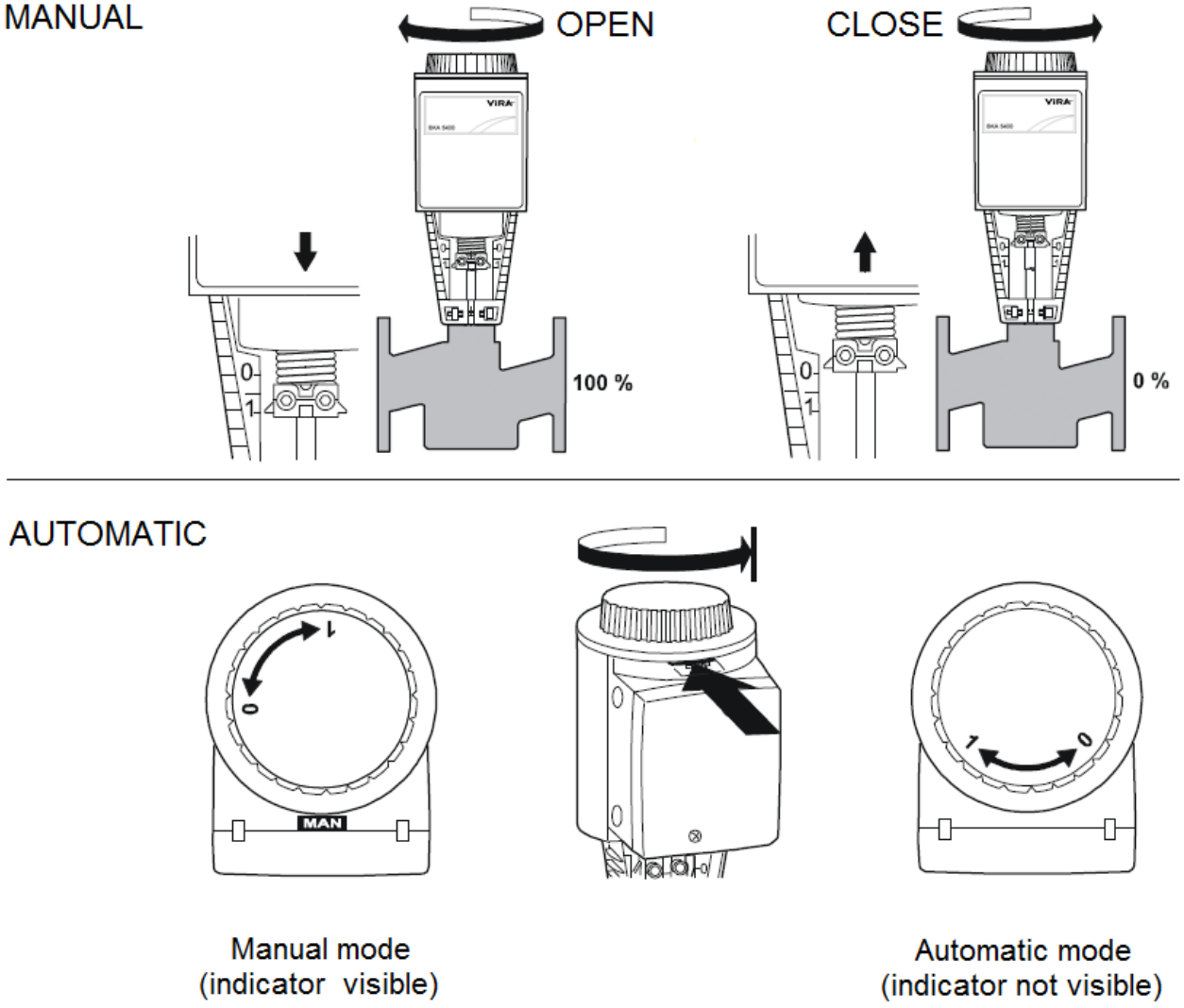

Figure 7: Changing operating mode of BKA 5400 TDS Blowdown Control Valve Actuator

6. MAINTENANCE

Warning!

The device may not be repaired and / or maintained except by authorized service personnel. If necessary, please contact **'Vira Isi Service Department'**.

Vira Isı ve Endüstriyel Ürünler A.Ş.

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